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COMMISSIONER OF EDUCATION

FOR

THE YEAR 1891-'92.

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THE UNITED STATES

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March 14, 1867, to March 15, 1870.

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TABLE OF CONTENTS.

CHAPTER X.—GERMAN UNIVERSITIES.

CHAPTER XI.—SCHOOLS FOR RECRUITING THE CIVIL SERVICE IN FRANCE, AND AN ACCOUNT OF THE CIVIL SERVICE REQUIREMENTS IN PRUSSIA.

CHAPTER XII.—EDUCATION IN SWEDEN.

CHAPTER XIII.—PHYSICAL TRAINING.

PART II.

Chapter XVI.—Name Register.

Chapter XVII.—City School Systems.

Chapter XVIII.—Secondary Schools.

Chapter XIX.—Universities and Colleges.

Chapter XX.—Colleges for Women.

Chapter XXI.

Chapter XXII.

Chapter XXIII.

Chapter XXIV.

Chapter XXV.

CHAPTER XXVI.—COEDUCATION OF THE SEXES IN THE UNITED STATES.

CHAPTER XXVII.—EDUCATION OF THE COLORED RACE.

CHAPTER XXVIII.—REPORT ON EDUCATION IN ALASKA.

CHAPTER XXIX.—HISTORY OF SUMMER SCHOOLS IN THE UNITED STATES.

PART III.

STATISTICAL TABLES.

REPORT OF COMMISSIONER OF EDUCATION.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, D. C., January 1, 1894.

SIR: I have the honor to submit herewith my fourth annual report, the same being for the year ending June 30, 1892.

GENERAL STATISTICS.[1]

The total number of pupils in schools of all grades, public and private, including all who attended for longer or shorter periods at some time during the school year, is given (p. 2) at 14,714,933, or 22.69 per cent of the population.

This number, however, does not include the pupils enrolled in evening schools, nor in schools of art or industry, in business colleges, in schools for defective classes, nor in the Indian schools. These make an aggregate of more than 300,000 pupils, and increase the total in school to over 15,000,000 pupils.

The average annual increase of the school enrollment for the six years next preceding (1885–1891) was nearly 250,000 pupils (249,260). This is about the same ratio as the increase in population. But the average increase for the twenty-one years, 1870–71 to 1891–92, has been something greater (268,780), and also in excess of the ratio of the increase in population.

GRADE OF PUPILS.

Of these pupils 14,165,182, or 96.27 per cent of all pupils, were enrolled in the elementary grades included in the first eight years of school work. In the secondary schools, including public high schools and private academies or seminaries, there were in all 402,089 pupils (or 2.73 per cent of all) engaged on studies belonging to the third period of four years of school work (ninth to twelfth year). Only 147,662 pupils (or 1 per cent of all) were enrolled in the higher studies included in the fourth period of four years' school work, carried on in colleges, universities, professional and technical schools, including normal schools for the training of teachers. Out of an average number of 1,000 pupils 963 are in the elementary schools, 27 in the high school, and 10 in the college or professional school.

[1] See Chapters I and II, pp. 1–72.

PUBLIC AND PRIVATE SCHOOLS.

Out of every 100 pupils in the elementary grade (or first eight years of school work) 91.54 pupils are in public schools and 8.46 pupils in private schools. But in secondary education (ninth to twelfth years' work) the proportion in private schools is much greater, reaching 38.41 per cent, while in the higher education 64.61 per cent of the pupils are in private institutions, and only 35.39 per cent in State universities and normal schools. The private schools enroll nearly one-sixth of the pupils in the North Atlantic division of States (including New England, New York, New Jersey, and Pennsylvania), but only one-fourteenth of the pupils in the Southern and Western States, and less than one-tenth of all the pupils in the nation. As I remarked in my last report, the private school assists the public school in the way of making useful educational experiments, and in providing a safeguard against a parsimonious management on the part of public school directors. When teachers' wages are reduced private schools increase in number and excellence, and a healthy reaction sets in on the part of the friends of free schools.

Moreover, a certain proportion of the children of the community have, or are supposed by their parents to have, need of special concessions either in regard to regularity of attendance, hours of schooling, course of study, or methods of instruction, and these pupils often find their requirements met in private schools. I have pointed out elsewhere that a certain proportion of private schools, say from 5 to 15 per cent of the whole teaching force, is desirable for the best progress of the whole school system. The pride of the public school system is its cultivation of the virtues of regularity, punctuality, self-control, and industry; its thoroughness of instruction and its democratic association of rich and poor, of high and low in the same school. But its danger lies in the direction of too much mechanism. In its school discipline this is generally healthy unless secured by harsh punishment; but in the matter of instruction it is sometimes an overcultivation of the verbal memory and a corresponding neglect of the more human training in power of thinking, the taste for literature and art, and the ability to make the most of the gifts peculiar to the individual pupil.

The private school sometimes discovers and develops better methods in these particulars, and the teachers of the public schools profit by adopting them. Especially is this the case in that feature of work called "thoroughness." It is often the case that pupils who have mastered the new thought of a study and gained all that it gives in the way of culture or mental nourishment are kept back in their course of study for the sake of more drill in mechanical accuracy in details.

It will be seen on the inspection of school programmes that pupils are sometimes kept five years on studies that can not nourish the mind of youth for more than three or four years. The elementary course is lengthened out to nine or ten years when pupils would do much better

to take up secondary studies after seven or eight years devoted to elementary studies. In these matters the private school is apt to make the opposite mistake, it is true, and begin the secondary studies before the pupil has a sufficient acquaintance with elementary work. In the former case the pupil is deadened by too much mechanical perfection in dealing with details; in the latter case he is discouraged by attempting subjects too difficult for him to grasp.

LENGTH OF SCHOOL YEAR.

The average length of the annual school term increases with the growth of cities. In the North Atlantic Division the average length of the last scholastic year was 169.1 days of actual school sessions. In the South Central Division (including the Gulf States and containing few cities) the average annual term was 94.5 days. The average for the whole country was 137.1 days, the same being an increase from 132.1 days in 1870–71. The average length of annual term is slowly approaching 200 days, which is the maximum length of the school year according to present opinion.

TOTAL AMOUNT OF SCHOOLING, PER CITIZEN, AT PRESENT RATES.

In the table showing the actual average amount of attendance on school in the public schools (Table No. 8, p. 46) it is seen that the total number of days' attendance reported for the year is 1,172,261,842, or an average of 88.8 days apiece for the 13,205,877 pupils enrolled. In my report for 1889–90 I showed that at the present rates of attendance each inhabitant is receiving an average of four and three-tenths years' schooling, counting full years of two hundred days each, the ratio for each section of the country being as follows (counting both public and private schools):

Schooling to each inhabitant, in years of 200 days each.	Years.
Whole country	4.30
North Atlantic Division	5.89
South Atlantic Division	2.52
South Central Division	2.56
North Central Division	5.15
Western Division	4.40

But it should be mentioned that the above estimate does not take into consideration the fact that the proportions of children and adults vary largely in the different sections. In former reports (for 1888 and for 1889) these variations have been fully discussed. The school population of six to fourteen years was on the average for the whole country and its divisions according to the census of 1880 as follows for each 100 of population:

For the United States	19.4
North Atlantic Division	17
South Atlantic Division	21.4
South Central Division	22.2
North Central Division	19.5
Western Division	15.9

If these proportions are considered, the average length of school life of the population will be increased for the Western Division, which shows a disproportionally small number of children in its population owing to the fact that, being newly settled, there are fewer families than in older settled parts of the country. According to the estimate based simply on the average number of days' schooling each child of the ages 5 to 18 years gets in the several States (see discussion of Table VIII, p. 51), omitting the private schools from calculations, each inhabitant receives 3.66 years of 200 days for the United States, 4.71 for the North Atlantic, 2.28 for the South Atlantic, 2.22 for the South Central, 4.38 for the North Central, 4.08 for the Western.

This estimate takes into account the variations in the proportions of children of school age in the entire population.

CLASSIFICATION BY SEX.

While the elementary schools show a somewhat larger number of boys in attendance, the secondary schools show 53.9 per cent of girls, or 216,658 girls to 185,431 boys. Of these the public high schools report 147,162 girls to 100,498 boys and the private academies and seminaries 69,496 girls to 84,933 boys. The institutions of higher education report 23,360 female students and 49,100 male students in colleges and universities, 26,725 female and 12,412 male students in the normal schools. The ratio of women to men in higher education is changing from year to year in favor of the former. The coeducational colleges and universities enroll 10,846 female students, while the colleges for women enroll 12,514.

TEACHERS.

The number of teachers in the public schools is reported at 374,460, of whom 252,822, or 67.5 per cent, are women. In 1870–71 the percentage of male teachers was 41; nine years later (1879–80) it was 42.8; ten years later (1889–90) it had fallen to 34.5.

SCHOOL EXPENDITURES.

The total expenditure for public schools is reported at $155,991,273, the same being an increase of $9,191,110 over the year preceding. Of this sum $100,333,071 went for the payment of salaries of teachers and superintendents. The average expenditure per pupil was $14.80, not counting the expenditures for new buildings.

HOW THE BUREAU OBTAINS ITS STATISTICS.

The statistics published in this and preceding annual reports are obtained partly from direct returns made to the Bureau from the superintendents of States and cities and the heads of institutions, and partly by compilation from printed reports. The schedules sent out annually

to superintendents of school systems and the heads of institutions number 24 in all. These call in the aggregate for 566 items. The total number of returns made the past year was 7,483, but in order to obtain this number an average of three schedules were mailed to each party who reported. The following exhibit shows the titles of these schedules and indicates the pages where the information is tabulated in this report:

Schedules (annual).	Items.	Schedules tabulated.	Schedules mailed, about—	Where information is tabulated in report for 1891.
State systems	20	50	200	Tables 1–18, Chap. I; Tables 1–21, Chap. II.
City systems	41	459	2,000	Tables 1–5, Chap. XVII; Tables 1–3, Part III, p. 962.
City and village systems	19	500	2,000	
Industrial training schools	31	.....	500	
Public secondary schools	20	3,035	7,000	Tables 1–7, Chap. XVIII; Tables 1–4, Part III, p. 1092.
Private secondary schools	20	1,549	5,000	Tables 1–7, Chap. VIII; Tables 5 and 6, Part III, p. 1084.
Universities and colleges	23	442	1,200	14 tables, Chap. XIX; Table 6, Part III, p. 1140.
Colleges for women	18	153	500	10 tables, Chap. XX; Tables 7 and 8, Part III, p. 1158.
Schools of technology	20	21	100	Table 22, Part III, p. 1196.
University extension	8	19	500	Table 29, Part III, p. 1206.
Agricultural colleges	20	60	400	Tables 19 and 20, Part III, p. 1188.
Medical schools	30	136	400	Tables 9 and 10, Part III, p. 1163.
Law schools	25	58	200	Tables 15 and 16, Part III, p. 1179.
Theological schools	25	141	450	Tables 17 and 18, Part III, p. 1182.
Dental schools	20	27	100	Table 11, Part III, p. 1172.
Schools of pharmacy	20	28	100	Table 12, Part III, p. 1174.
Nurses' training schools	12	37	150	Table 14, Part III, p. 1177.
Normal schools	24	178	1,000	Tables 24–28, Part III, p. 1198.
Commercial schools	18	234	750	Tables 30 and 31, Part III, p. 1216.
Institutions for the blind	33	34	150	Tables 39 and 40, Part III, p. 1251.
Institutions for the deaf	33	61	300	Tables 33–38, Part III, p. 1238.
Institutions for feeble minded	33	27	150	Tables 41–45, Part III, p. 1257.
Reform schools	33	79	300	Tables 45 and 46, Part III, p. 1263.
Schools for the colored	20	150	600	Chap. XVII, p. 863, Table 32, p. 1234, Part III.
Total	566	7,483	24,050	

The statistical division of the Bureau, besides tabulating the returns from the schedules, examines and compares the published reports of State and city school systems, the catalogues, yearbooks, and manuals of the several kinds of educational institutions. The division of foreign exchange studies the official reports on foreign systems and all the books published by investigators on those systems, whether in English or in other languages.

Besides the twenty-four regular annual schedules mentioned above, the Bureau undertakes each year some one or more extra inquiries, publishing the results either in the annual report or in a separate circular of information. Examples of this are the chapter on "kindergartens," published in the report of last year (1890–91); also the report on legal education in the different countries of the world, and the report showing all public libraries of over one thousand volumes, prepared by the statistical division and published as a separate circular of information.

To some extent special inquiries by clerks detailed from the office are made, as, for example, those into art and industrial instruction by

Mr. I. Edwards Clarke, and into laboratory work in educational pathology by Dr. Arthur MacDonald.

It has been the practice of the Bureau since the begining to obtain from experts special treatises on various topics of interest as they awaken public inquiry.

EDUCATION IN FOREIGN COUNTRIES.

France.—In Chapter III (pp. 73–96) a brief survey is given of the educational system of France, abridged from the more extended study made in a previous report. To this is appended an account of the important operations of the year 1892. France, since it began the work of educating the whole people, has been a profitable object lesson for the study of methods of organization, instruction, and course of study. There is no field on which a more interesting experiment is in progress. Will the universal education of the people develop local centers of self-government, or are the course of study and the methods employed such as to make it a second nature for the inhabitants of the provinces to look to Paris for each and every initiative? It is interesting to note in this connection (p. 91) that the provincial centers now show 13,287 university students, while Paris has only 10,110, whereas Paris had the larger number five years before.

The history of education in China shows that a nation may have a universal system of school education and yet develop little or no local self-government. If the memory is the chief faculty cultivated, and the course of study includes little else besides the sacred codes of morals and religion, the result is to fill the mind with the traditional forms of thinking and acting. Whence it results that the child learns to think and act and to take precisely the view of the world that his fathers took before him. The more education in Confucius and Mencius the more safely conservative will be the life of each new inhabitant in China. But on the other hand, let the child start in a kindergarten and develop self-activity along all the lines of his character; let him continue his studies in the primary and grammar schools, cultivating the habits of observation and scientific investigation; let him keep abreast with scientific research; let him have access to the literature of the world, and he will find a constant stimulus toward freedom and local self-government; toward emancipation from authority.

The fact that France lays great stress on scientific methods in its schools, therefore, goes to show that the universal education there in progress is an education that moves toward decentralization. The influence of Paris will now help emancipate the provinces, and each other city in France will develop within itself its own Paris. Meanwhile Paris will grow all the more in its influence on the world as one of the three great modern civilizing powers.

Great Britain and Ireland.—In Chapter IV is given a brief survey of education in England, Scotland, Wales, and Ireland, supplementary to

statements printed in the report of 1888–89, in which the system of England, and the report of 1889–90, in which that of Scotland, were presented historically. In 1891 school fees were remitted in the Government elementary schools. The statistics of the past year show an increase of attendance due to this fact, and the elementary schools of England now enroll 17.13 per cent of the population. The number of schools under municipal school boards has increased, and they now enroll 40 per cent of all pupils. The private and parochial schools still enroll 60 per cent, while the private and parochial schools in the United States enroll only 10 per cent of the pupils.

The struggle of the friends of the parochial schools will doubtless have a purifying and beneficial effect on the management of schools under public-school boards. The fire of opposition saves much wasteful experiment by exposing the weak features of a system in advance of the actual trial by experiment. In England the old challenges the new and pours upon it a storm of ridicule; points out its inconsistencies and want of logic; praises the good old way; foresees the dreadful consequences to church and state of the new plans if carried out. Such a winnowing of a new scheme lets through only the best and wisest features, and the progress is continuous if slow. There is much less of the pendulum movement in English reform, less swinging from one extreme to another, which "marks time," but does not march.

Meanwhile, an equal amount of interest exists for us in the course of study and methods of instruction pursued in English schools but not the same kind of interest that we found in those of France. English-speaking peoples have for centuries insisted on local self-government. We do not feel so anxious to see the modes by which English schools secure independence and freedom of local centers as to see how they correct tendencies to extreme individualism and provincialism. What place does English literature hold in the education of English and Irish and Scotch youth? There are more first-class poets in England at the present time than in all the rest of Europe, and the total roll of its poets and dramatists of high order of merit is also greater than that of the rest of Europe. The social and political atmosphere of this people, with its national idiosyncrasy tending to personal adventure and local self-government, seems to favor the evolution of poets. The poet makes public opinion by uttering his view of the world in beautiful forms of speech and canvassing the grounds and motives that tell in its favor. An education in the national poetry of England therefore furnishes the needed unifying influence for its adventure-seeking people. They form, whether in Great Britain or in English-speaking colonies, a nation whose rule is chiefly that of public opinion, fed by the national poets and novelists, and expressed in its organ, the daily newspaper.

It is of interest to note that the enrollment of children in the schools of Ireland slightly exceeds that of England, being 17.34 per cent of the population. Here the same investigation, as to the course of study and

methods of instruction, is necessary in order to answer the question whether this system of universal education is to settle the Irish political problem.

Chapter V gives a summary of the reports on technical instruction in Great Britain, showing the status of the great movement inaugurated after the first world's fair, when English statesmen learned that certain other countries surpassed their own in the artistic finish of goods.

Germany, Austria, Switzerland.—In Chapter VI the present operations of the schools for training teachers in the German speaking nations are discussed in the light of their history. Much interesting matter is to be found in the courses of study of those institutions.

In Chapter VII an historical and statistical review is given of the Swiss school system. In Chapter VIII is an interesting study of the schools of Vienna as regards the home influences of 9,000 children aged from 10 to 14. The article is translated from Franz Schoberle and is a contribution to the vast subject of child-study now gaining so large a place in educational literature. In last year's report I printed Dr. Francis Warner's studies made on 50,000 children of the London schools in respect to physical and mental condition, a noteworthy contribution to this same subject of child-study. In Chapter IX (pp. 239–246) are to be found notes on school museums in various parts of the world. Inasmuch as no complete list has been printed of such museums, contributions to such a list are desired. In Chapter X is given a translation of a remarkable article on the character and historical development of the German universities by Professor Paulsen, of Berlin, supplemented by a statistical review of the subject by Professor Conrad, of Halle. It is one of the noblest contributions made to the Columbian Exposition.

The civil service in France and Prussia.—Chapter XI contains the results of a special investigation made by experts for the Bureau into the schools for recruiting the civil services in France, and an account of the civil service requirements in Prussia. Prussia and France stand in the foremost rank of the world for the perfection of their civil service. In the infancy of our American system we naturally have much to learn from them in this particular. Prof. Herbert B. Adams's excellent suggestion of an academy in Washington for the training of candidates for civil service, is given a place in this chapter (pp. 410–412).

A brief survey of the education of Sweden, together with some account of current operations, is given in Chapter XII.

PHYSICAL TRAINING.

In Chapter XIII is given an historical sketch of physical training, together with a careful study of the systems in use in this country, namely, the Swedish, the German, Dr. Sargent's, and that of Delsarte. This elaborate article is closed with suggestions regarding school gymnasiums, and tabular views showing the statistics of physical training in the city schools of the United States.

I am not convinced that the present theory of physical education, as taught in the schools, gives enough weight to the bodily conditions that favor the restoration of nervous energy.

It is well known that physical exercise affects directly the muscular system, and that the muscular system is not all of the body, nor, indeed, itself directly the generator of what I have called nervous energy. There is a nutritive process of digestion and a distributive process of circulation through the heart and lungs and liver, the two forming a building-up function which restores, repairs, and increases the organism and removes the waste. There is, besides, a nervous organism which receives impressions from without and sends out impulses that react on the environment.

Physical training, as we understand it, deals directly and chiefly with the muscular system and with that part of the nervous system which conveys impulses from the brain outward through the limbs to the environment. Physical exercise indirectly acts on the digestion and the circulatory system and on the nerves of sensation, and its relation to those other bodily functions is nearly or quite as important as the direct relation of exercise to the muscles and the acquiring of strength.

During the first fifty years of agitation on the subject of bodily training, connected with the rise of Turner societies in Germany and the preaching of the gospel of bodily culture as auxiliary to intellect and will by Spurzheim, his disciple, George Combe, and their numerous followers, we may say without hesitation that the doctrine of physical exercise was passing through its stage of superstition and quackery. There was a sharp dividing line between the believers in hygiene and the old school of physicians, and this separation led quite naturally to dismal results. The doctors opposed with blind conservatism the new apostles, and the latter justified the attitude of the former by a radicalism equally blind and fanatical.

It is the glory of the present revival of physical exercise that it is led by educated physicians. It is a new movement of the highest importance, the establishment of a resident physician in each of our colleges as supervisor of gymnastics and recording inspector of physical development among the students. It means a synthesis of science with reform and the end of the era of quackery in hygiene.

But it is not something that can be matured all at once. There is a fringe of the old fanaticism which still attaches to the new movement, and consequently an unreasonable conservatism, which is the result of a reaction against obvious quackery. The regular medical directors of physical exercise are reducing their observations to a statistical form, and are rejecting many of the principles supposed to be fixed in former times. They are dispelling many old illusions. They are widening the survey of effects direct and indirect. Already we are beginning to have a harvest of treatises which record the more scientific observations.

The old athletism in a college produced a small quota of splendidly

trained bodies. The majority of the students made but little progress. Their exercise consisted for the most part in sitting on the damp ground (or on a dry fence) and seeing the picked men of their classes engage in a violent contest for mastery. Athletics was rather a system of eliminating the weak and of selecting the already strong for the contests at ball or boating. Even in the gymnasium it was the strong who held out and continued to practice the exercises. But a system that selected the already strong rather than transformed the weak into the strong was only a sham for physical education. That sham is now in process of removal by the substituting of special courses of exercise provided by the medical gymnasiarch for each individual after special diagnosis.

The athlete theory of gymnastics was a sort of survival of the old Greek and Roman customs. It was not realized that the Greeks and Romans attached not so much a hygienic value to athletics as a religious significance. The Greeks celebrated their worship of physical beauty, the gods of Olympus, by their games, and the Romans equally celebrated, not beauty, but self-sacrifice by their sports in the arena. The Greeks conceived the divine as a god-like control of the body by the mind in such a form as to produce gracefulness of carriage. The Roman worshipped the political state as the incarnation of the divine, and celebrated it by spectacles of self-sacrifice wherein human gladiators contended in the death struggle with each other or with wild beasts. This symbolized for him the struggle within each citizen who sacrificed his life or property for the safety or advancement of Rome.

Careless readers of history may suppose that all nations have cultivated bodily perfection in the same way as the Greeks and Romans, and for the same ends. But it is not so. The savage tribes seek skill in war by physical training, while we seek to increase the healthful generation of nervous energy. But many Asiatic nations have, for religious reasons, opposed physical culture as something leading to evil—as, for example, the Hindoos and the Buddhists.

The Hindoo worshipped an abstract unity, devoid of all form, which he called Brahma. His idea of the divine is defined as the negation not only of everything in nature, but also everything human. Nothing that has form, or shape, or properties, or qualities—nothing, in short, that can be distinguished from anything else, can be divine according to the thought of the Hindoo. This is a pantheism that worships a negative might which destroys everything.

If it admits that the world of finite things arises from Brahma as creator, it hastens to tell us that creation is only a dream, and that all creatures will vanish when the dream fades. There can be no hope for any individuality, according to this belief. Any art that grows up under such a religion will manifest only the nothingness of individuality, and the impossibility of its salvation. Instead of beauty as the attribute of divinity, the Hindoo studies to mortify the flesh; to shrivel up the body; to paralyze rather than to develop his muscles. Instead

of gymnastic festivals, he resorted to the severest penances, such as holding his arm over his head until it wasted away. If he could produce numbness in his body so that all feeling disappeared, he attained holiness. His divine was not divine-human, but inhuman rather.

But opposed to this oriental idea, the Greek religion made beauty the essential feature of the idea of the divine, and hence his art is created as an act of worship of the beautiful. It represents the supreme attainment of the world in pure beauty, because it is pure beauty and nothing beyond. Christianity reaches beyond beauty to holiness. Other heathen religions fall short of the Greek idea, and lack an essential element which the Greek religion possessed. The Greeks believed that the divine is at the same time human; and human not in the sense that the essence of man, his purified intellect and will, is divine, but human in the corporeal sense as well.

The gods of Olympus were thought to possess appetites and passions like men; to have bodies and live in a special place. They formed a society, or large patriarchal family. The manifestation of the divine was seen in celestial beauty. Moreover, it was supposed that the human being may, by becoming beautiful, become divine. Hence the Greek religion centered about gymnastic games. These were the Olympian, the Isthmian, the Nemean, and the Pythian games. Exercises that shall give the soul sovereignty over the body and develop it into beauty are religious in this sense. Every village had its games for physical development; these were attended by the people, who became, in time, judges of perfection in human form, just as a community that attends frequent horse races produces men that know critically the good points of a horse. It was known who was the best man at wrestling, boxing, throwing the discus, the spear, or javelin; at running, at leaping, or at the chariot and the horseback races.

Then, at less frequent intervals, there was the contest at games between neighboring villages. The successful hero carried off the crown of wild olive branches. Nearly every year there was a great national assembly of Greeks, and a contest open to all. The Olympian festival at Olympia and the Isthmian festival, near Corinth, were held the same summer; then at Argolis, in the winter of the second year afterward, was the Nemean festival, the Pythian festival near Delphi, and a second Isthmian festival occurred in the spring of the third year, and again a second Nemean festival in the summer of the fourth year of the Olympiad. The entire people, composed of independent states, united by ties of religion, assembled to celebrate this faith in the beautiful, and honor their successful youths. The results carried the national taste for the beautiful, as seen in the human body, to the highest degree.

The next step after the development of the personal work of art in the shape of beautiful youth, by means of the national games and the cultivation of the taste of the entire people through the spectacle of

these games, was the art of sculpture, by which these forms of beauty, realized in the athletes and existing in the minds of the people as ideals of correct taste, were fixed in stone and set up in the temples for worship. Thus Greek art was born. The statues at first were of gods and demigods exclusively. Those which have come down to us cause our unbounded astonishment at their perfection of form. It is not their resemblance to living bodies, not their anatomical exactness, that interests us, not their so-called "truth to nature," but their gracefulness and serenity—their "classic repose." Whether the statues represent gods and heroes in action or in sitting and reclining postures, there is this "repose," which means indwelling vital activity, and not mere rest as opposed to movement. In the greatest activity there is considerate purpose and perfect self-control manifested. The repose is of the soul, and not a physical repose. Even sitting and reclining figures—for example, the Theseus from the Parthenon, the torso of the Belvidere—are filled with activity, so that the repose is one of voluntary self-restraint and not the repose of the absence of vital energy. They are gracefulness itself.

Modern civilization has adopted from the Hebrew "chosen people" the idea of holiness; from the Greek the idea of beauty; from the Roman the idea of a social or civil whole as state and nation, as municipal corporation, and as free association—and it unites these ideas and subordinates each to a higher ideal. Even the Hebrew idea of holiness is subordinated to the Christian ideal of divine charity in the service of humanity. We do not approve the sacrifice of the higher interests of the soul for the beauty of the body; nor for the needs of military service; nor for the theatrical display of strength in brutal contests. We regard physical exercise as desirable for the increase of nervous energy, to be expended for rational spiritual purposes.

Our civilization is so bent on the conquest of nature and the production of wealth that it perpetually strains its supply of nervous energy and produces disaster. Here is the special problem of our time for hygiene to meet, How to restore and conserve nervous energy?

There are three factors here: First, the one of food and its proper assimilation; second, the factor of rest and sleep; third, the factor of exercise—muscular and mental. It is obvious enough that digestion requires nervous energy just as muscular and mental labor does. Hence, digestion must be given time. It must not be encroached on by bodily exercise, or by mental exercise. But what is the average amount of time required for this, and should it be total cessation from bodily and mental labor, or is light labor of both or either best for the digestive process?

Here our quantitative tables and the observations of our medical directors are to give us the true answer; not abstract, general answers like those old dogmatic answers, but definite answers, qualified to suit different temperaments and abounding with tests easily applied by

each individual. It is necessary to have the directions so specific that inexperienced youth will not err in their application. This is an age of self-educated men. The printed page is the means of such education. It is all the more necessary to surround new departures with the safeguards of printed rules and cautions.

If the chapters could be written which describe the grave mistakes committed by amateurs in the use of physical exercise as a hygienic measure, they would furnish a sufficient warning for the present generation. They would describe various experiments of using midnight hours for walks and rides in the open air—the student used all his day for intellectual work and supposed that an hour or two of exercise taken at a late hour of the night would answer his needs. Another experiment selected its period of exercise in the early morning, curtailing the period of sleep in order to secure the requisite time before breakfast. Violent physical exercise taken early in the morning is very exhaustive of nervous energy, and probably in most instances the student has cultivated nervous dyspepsia quite as much as he has cultivated his muscles. We have all read in the biography and autobiography of Thomas Carlyle the mention of his walks and horseback rides late in the night. Everyone has had something of this kind in his own experience or in the experience of persons of his acquaintance. A distinguished laborer in the cause of education told lately his own follies in this matter. Led on by reading injudicious writings on this subject of hygiene, he had so curtailed his night's rest for the sake of morning exercise that nervous collapse resulted. His physician prescribed as the only possible remedy a long period of total rest. The hours of sleep at night were nearly doubled and a relaxation from study in the daytime was insisted upon. Relief came as a consequence.

Besides this mistake of cutting off the sleeping hours at the beginning or at the end for the sake of physical exercise, there is an equally harmful mistake of bringing the hour of exercise close to the hours for meals. Just preceding or just succeeding a meal, any exercise of a sufficiently energetic character to cause the blood to leave the organs of digestion and fill the muscles of the body or the brain is injurious and tends to produce dyspepsia. The stomach needs the greater share of the nervous energy and likewise of the arterial circulation. Dr. Sargent thinks that violent exercise should not be taken at a period so long as three hours after a meal, on account of the danger of faintness, which neutralizes the good results of such exercise. Provided the person has just taken violent exercise, the blood is diverted to the muscles and brain and away from the stomach. The taking of food at this time, when the nervous system is depleted of its vitality, is considered unfavorable to the best action of the digestive functions.

It must be admitted, too, that cold bathing, which has been so often commended with a great lack of discrimination, is another source of injury to the health when it is resorted to by persons with nervous tem-

peraments or feeble constitutions, and at a time when the system has been depleted of its vital energy by work or exercise, or when the digestive organs are occupied with recently taken food.

The old rule, made by a farmer population to encourage early rising, which mentions, as its effect, health, wealth, and wisdom has made mischief with conscientious students who have supposed that early rising is in itself a good thing, even when not preceded by the precaution named in the adage, namely, "early to bed." It is a very important matter to consider that physical exercise has its best effect when it is carried on socially in the form of plays and games or contests with one's fellows. The stimulus which is derived from emulation and interest in one's fellow students has to be compensated for by a sheer exertion of the will in the case of calisthenic exercises and in the case of prescribed athletic training by the use of weights, ladders, and the other machines of the gymnasium.

The object of gymnastic training, it has been said often enough, is to put the will into the muscles. It is to give one such control over all his muscles that each act performed by the body is performed by the use of all the muscles which nature has provided for the purpose. The farmer or the blacksmith develops a few muscles and neglects others. The gymnasium is supposed to cultivate many muscles which remain rudimentary in the original man; and here, I think, is an item of compensation which makes up for a great deal of the deleterious results coming to the imprudent gymnast who is careless about the hygienic precautions just now mentioned in relation to eating and sleeping. The gymnast—and I mean by the gymnast one who has taken sufficiently violent exercise to develop to a considerable degree the muscles of the chest, back, arms, and the other limbs—the gymnast has acquired the power of putting his will into his muscles by a slight effort. The gymnast performs all slight bodily actions—such as rising from a chair, sitting down, walking, climbing stairs, swinging his arms, turning his head, everything, in short, that he does with his body—by using many more muscles than the untrained person uses. Hence, it happens that one who has taken gymnastic exercise retains till old age the power of getting a maximum of exercise out of a minimum of bodily movement. Walking a few rods and running up and down stairs two or three times a day gives him as much exercise as the average farmer gets from two hours of farm work.

It is most important to note that gymnastic and calisthenic training, so called, are violent demands upon the will power and a rapid drain of the nervous energy. Hence, physical exercise directly after a hard lesson is not a proper sequence. The will power which has been drained by the mental work is reduced to complete exhaustion by violent physical exercise.

"Every pound of energy expended on work, either of mind or of body," says Dr. Sargent, "must be made good by food, rest, or sleep."

Severe mental work can not be compensated for by severe physical work. It is rest for the will which is required, and the will is rested not by a new tension of its exercise, but by a state of collapse such as comes when caprice and arbitrariness and the yielding to one's humor succeeds the tension of work. Plato's description of the Greek athletes, stupid and lazy fellows, who did nothing but eat and sleep, describes the condition of rest after severe physical exercise, and still more the true condition of rest of the intellectual athlete after severe mental exercise.

I have here enumerated some of the results of injudicious physical exercise. The effects of judicious exercise are those which are usually described in works of hygiene and physical training. I quote an enumeration of them from Dr. Ray Lankester to show how simple the whole matter looks when the precautions are omitted. Nearly all things seem simple when taken out of their relation to their environment. He says:

> The employment of the muscles in exercise not only benefits their especial structure, but acts on the whole system. When the muscles are put in action the capillary blood vessels with which they are supplied become more rapidly charged with blood, and active changes take place, not only in the muscles but in all the surrounding tissues. The heart is required to supply more blood, and accordingly beats more rapidly in order to meet the demand. A large quantity of blood is sent through the lungs, and larger supplies of oxygen are taken in and carried to the various tissues. The oxygen, by combining with the carbon of the blood and the tissues, engenders a larger quantity of heat, which produces an action on the skin, in order that the superfluous warmth may be disposed of. The skin is thus exercised, as it were, and the sudoriparous and sebaceous glands are set at work. The lungs and skin are brought into operation, and the lungs throw off large quantities of water containing in solution matters which, if retained, would produce disease in the body. Wherever the blood is sent, changes of a healthful character occur. The brain and the rest of the nervous system are invigorated, the stomach has its powers of digestion improved, and the liver, pancreas, and other organs perform their functions with more vigor. By want of exercise the constituents of the food which pass into the blood are not oxidized, and products which produce disease are engendered. The introduction of fresh supplies of oxygen induced by exercise oxidizes these products and renders them harmless. All other things being the same, it may be laid down as a rule that those who take the most exercise in the open air will live longest.

But the student who reads of these direct effects without, at the same time, carefully learning the indirect effects on digestion and sleep and mental work or worry will be likely to neutralize all the good that comes from physical exercise.

The teacher who, full of faith in calisthenic exercise, thinks to do away with the old-fashioned recess and to gain a positive benefit by physical training, will fall into serious errors. A consideration of the conditions of the problem will show this. Within the school the pupil is supposed to be under a severe strain of discipline and attention to study. Regularity, punctuality, silence, conformity to rules as to sitting or standing, strict self-control on the part of the pupil, and a

forced attention to his lesson, or to the recitation of his fellow-pupils, or to the explanations of his teacher—all this produces a great tension of physical and mental powers. If it were continued too long, congestion would be produced, affecting the heart or brain or digestive functions, or some local nerve center. Past experience, noting this fact, has endeavored to avoid the danger by establishing the interval of rest and recreation known as the "recess."

The pupils are all dismissed from the school building and removed from the school restraints for an interval of a few minutes. The pupil leaves the close air of the schoolroom and rushes out into the pure air, suddenly relieved from the cramp of muscles in sitting in a particular position on a hard seat, and relieved likewise from the cramp of nervous energy that has been diverted from natural functions of digestion, circulation, and secretion, and concentrated on the conscious processes of attention and obedience to the external commands of the teacher or to his own self-imposed industry.

The chief use of the "recess" is its complete suspension of tension of will power and the surrender to caprice for a brief interval. Any form of calisthenics or gymnastic exercise is therefore a diversion of the recess from its normal function. It is the substitution of one kind of tension of the will for another. The tension of the will requisite to perform properly the requirements of school discipline and instruction is such as to withdraw the nervous energy from those great centers of secretion and circulation, stomach, heart, kidneys, liver, lungs. Congestion, as before said, is easily initiated, and if continued will produce functional derangements connected with the organs of digestion and circulation. The seeds of indigestion, renal weakness, liver complaint, constipation, even of fearful scourges like Bright's disease, may be sown in the system in early years by injudicious confinement in the schoolroom.

The great physical need of the pupil is relaxation. The pupil needs to stretch his cramped muscles and send the blood in torrents through his limbs, which have become torpid with disuse. The pupil is in want of fresh air and of the deep inflation of the lungs that exercise in the open air gives. He ought to use his voice, too. The reformers propose to substitute light exercises called "calisthenics" for the purpose of supplying all these wants. They will throw open the windows and let in fresh air; they will have a system of well-devised movements which will give the needed circulation of the blood, etc.

Calisthenic exercise serves a good place in the schoolroom, but its most important function is not a physiological one. It is true that the blood is caused to circulate more vigorously through the limbs and those parts of the body that have become partly torpid with sitting or standing still. But the chief demand upon the pupil in calisthenics is the requirement to strain his attention and exercise his will. It is a will training to a greater extent than a physiological training. The

great distinction between work and play is this one: In play, the mind is spontaneous, governed entirely by its own individuality; in work, the will power is exercised to conform its individuality to some externally prescribed course of action. Calisthenic exercise is severe work, and not by any means a relaxation. But the child needs relaxation and not merely a change of work, although the change is of some benefit. Exercise of the limbs, in accordance with a prescribed formula, is not the thing that nature requires.

The child has been exercising his will in the four directions of self-control: To be regular, punctual, silent, and industrious; now giving his attention to the mastery of some subject by himself, and anon, following with alertness and critical acumen the recitation of some fellow-pupil, or some explanation or direction by the teacher. Calisthenics does not afford relief to the will power. We have seen that all exercise of the will, in the act of fixed and unremitting attention, has a powerful influence over the digestive, circulatory, and secretory functions of the body. This influence, if not intermitted, will cause derangement of these functions. A run in the open air, a saunter at will, or a vigorous game with one's fellows, free from restraint or authority—any exercise, in short, of the spontaneous choice of the pupil, will give this desirable relief to the lungs, the heart, the stomach, the glands, and the ganglia.

Our medical advisers who supervise gymnastic exercises are in process of correcting the evils and extending the benefits of physical education. Their best service is to be along the line of enlightening the student who is on the verge (or beyond the verge) of nervous prostration how to build anew his nerves. For they will teach him the function of sleep and amusement; of rest before and after meals; of the danger of following a mental strain of the will by another strain of the will directed to the muscles; of the danger of exercise late at night; of the danger of tobacco and alcoholic liquors. We shall have science instead of quackery. These good things belong mostly to the physical education of the future.

THE AGE OF WITHDRAWAL FROM THE PUBLIC SCHOOLS.

In Chapter XVI I print a valuable essay of Prof. C. M. Woodward, of St. Louis, on the method of ascertaining the average age of withdrawal from public schools.

CLASSIFICATION IN GRADED SCHOOLS.

At the present time there is much inquiry for literature on the subject of grading in city schools and the proper length of class intervals. I have brought together in Chapter XV several discussions written on the advantages and defects of the graded system, and especially concerning the importance of classifying with short intervals between classes in order to render possible frequent promotions of those pupils making the most rapid progress.

SUMMER SCHOOLS, ETC.

In Chapter XXIX I have printed a history of summer schools in the United States prepared especially for this Bureau by Dr. W. W. Willoughby. In recent years the summer school has become a very important means of extending school and university advantages to adult persons.

State university organization.—In Chapter XXII I have presented an important suggestion of Dr. S. S. Laws, formerly president of the State University of Missouri, looking toward the federation of the colleges or universities of a State under the leadership of a State university. It seems possible that this idea may be adopted in some of our States to great advantage.

West Point Military School.—An excellent article on our national Military School at West Point is found in Chapter XXIV. It was prepared by Prof. E. S. Holden, of Lick Observatory.

Truants and incorrigibles.—In Chapter XXV I print one of the most thoughtful and wise articles yet written on the care of truants and incorrigibles, prepared by the superintendent of city schools, Boston, Mass.

Education in Alaska.—In Chapter XXVIII Dr. Sheldon Jackson, the United States general agent for education in Alaska, reports the work of the year for that Territory. He gives an account of the first trip to Siberia for the purchase of reindeer.

WM. T. HARRIS, *Commissioner.*

HON. HOKE SMITH,
Secretary of the Interior.

PART I.

CHAPTER I.

GENERAL CLASSIFIED SUMMARY OF PUPILS OF ALL GRADES, IN PUBLIC AND PRIVATE SCHOOLS AND INSTITUTIONS.

General table—Per cent of the population under instruction—Also of the school population—Proportion of each grade of instruction, and of public and private instruction—Higher students and population compared—Distribution of students in professional schools—Sex of secondary pupils and of college students—Female college students compared with the population—Proportion in each class of institutions—Normal school pupils.

The following table (Table 1) gives the number of pupils of all grades in the United States,* classified according to grade of instruction imparted, instead of according to the character of institution attended. Thus, all secondary pupils in colleges have been classed as secondary; and all elementary pupils as elementary, even though attending (in the "preparatory" department) an institution of secondary grade.

The statistics of private elementary education have never been completely gathered, and the figures in Column 3 are, therefore, largely estimated; they are known to be much less than the facts would warrant, and should possibly be increased as much as 50 per cent. The returns of pupils receiving secondary instruction, both public and private, are also incomplete.

*Excluding in general evening schools; art, industrial training, trades, and private business schools; schools for the defective, dependent, and delinquent classes, and Indian schools. These collectively enroll a considerable number of pupils.

TABLE 1.—*Total number of pupils or students of each grade, in both public and private schools.*

NOTE.—The classification of States made use of in the following table is the same as that adopted by the United States census, and is as follows: *North Atlantic Division:* Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania. *South Atlantic Division:* Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida. *South Central Division:* Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Texas, Arkansas, and Oklahoma. *North Central Division:* Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas. *Western Division:* Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Idaho, Washington, Oregon, and California.

	Pupils receiving elementary instruction ("primary" and "grammar" grades).		Pupils receiving secondary instruction ("high school" grade). *a*		Students receiving higher instruction—								
					In universities and colleges. *c*			In schools of medicine, law, and theology.			In normal schools. *f*		
	Public.	Private (largely estimated).	Public. *b*	Private (in preparatory schools, academies, seminaries, etc.).	Public. *d*	Private.	Total.	Public. *e*	Private.	Total.	Public.	Private. *g*	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
The United States	12,966,321	1,198,861	247,660	154,429	14,070	58,390	72,460	4,768	31,297	36,065	33,427	5,710	39,137
North Atlantic Division	3,092,976	537,815	88,070	45,638	1,751	20,652	22,403	0	12,772	12,772	15,392	418	15,810
South Atlantic Division	1,816,722	113,853	13,577	22,821	1,452	8,761	10,213	671	4,555	5,226	2,704	312	3,016
South Central Division	2,439,393	151,347	15,511	29,797	1,614	10,559	12,173	582	3,643	4,225	2,946	1,118	4,064
North Central Division	5,012,955	339,099	119,433	47,123	7,785	16,920	24,705	3,051	9,892	12,943	10,736	3,114	13,850
Western Division	604,275	56,747	11,069	9,050	1,468	1,498	2,966	464	435	899	1,649	748	2,397

a Including pupils in preparatory or academic departments of higher institutions, public and private, and excluding elementary pupils, who are classed in Columns 2 and 3.

b This is made up chiefly from the returns of individual high schools to the Bureau, and is considerably too small, as there are a great many secondary pupils outside the completely organized high schools whom there is no means of enumerating. The whole number of pupils studying secondary branches in public schools is probably near 500,000.

c Including colleges for women, agricultural and mechanical (land-grant) colleges, and scientific schools. Students in law, theological, and medical departments are excluded, being tabulated in columns 9-11.

d Mainly State universities and agricultural and mechanical colleges.

e Mainly in schools or departments of medicine and law attached to State universities.

f Nonprofessional pupils in normal schools are included in Columns 4 and 5.

g Private normal schools are, with one or two exceptions, scarcely superior to the ordinary secondary schools.

Total number of pupils or students of each grade, in both public and private schools—Continued.

	Summary of higher instruction.		Summary of pupils by grade.			Summary—public and private.		Grand total.
	Public.	Private.	Elementary.	Secondary.	Higher.	Public.	Private.	
1	15	16	17	18	19	20	21	22
The United States	52,265	95,397	14,165,182	402,089	147,662	13,266,246	1,448,687	14,714,933
North Atlantic Division	17,143	33,842	3,630,791	133,708	50,985	3,198,189	617,295	3,815,484
South Atlantic Division	4,827	13,628	1,930,575	36,398	18,455	1,835,126	150,302	1,985,428
South Central Division	5,142	15,320	2,590,740	45,308	20,462	2,460,046	196,464	2,656,510
North Central Division	21,572	29,926	5,352,054	166,556	51,498	5,153,960	416,148	5,570,108
Western Division	3,581	2,681	661,022	20,119	6,262	618,925	68,478	687,403

WHERE THE SECONDARY PUPILS ARE FOUND.

In the following table (Table 2) the secondary pupils are classified according to the character of the institution attended.

It will be seen from the table that there are comparatively few public secondary pupils outside of the common schools (i. e., in public universities, etc.), the proportion of such being only about 3 per cent of the public secondary pupils. In fact, a large number of the State universities have no preparatory departments, but confine themselves exclusively to collegiate instruction.

On the other hand, of the 154,429 private secondary pupils, over one-third are found in higher institutions. In the North Central Division, indeed, more than one-half of the private secondary pupils are found in institutions classed as collegiate, while in the North Atlantic Division only about one-sixth,—a good evidence of the higher degree of development of the colleges of the latter section.

The 239,556 high-school pupils of Column 2, combined with the 12,966,321 public elementary pupils of Column 2, Table 1, form the common-school enrollment, the statistics of which are given in detail in Chapter II ("Statistics of State common-school systems").

The statistics of public high schools and private secondary schools (Columns 2 and 6 of the following table) are also given more particularly by States and by schools in subsequent chapters.

TABLE 2.—*Showing distribution of pupils receiving secondary instruction.*

	Public.				Private.					
	In public high schools.	In preparatory departments of public universities and colleges.	Nonprofessional pupils in public normal schools.	Total public secondary.	In private secondary schools.	In preparatory departments of private universities and colleges.	In preparatory departments of colleges for women.	Nonprofessional pupils in private normal schools.	In manual-training schools.	Total private secondary.
1	2	3	4	5	6	7	8	9	10	11
The United States	239,556	3,457	4,647	247,660	100,739	40,534	6,891	4,315	1,950	154,429
North Atlantic Division	85,628	615	1,827	88,070	38,585	4,652	1,493	17	891	45,638
South Atlantic Division	12,556	232	789	13,577	15,847	3,992	1,906	700	376	22,821
South Central Division	13,720	659	1,132	15,511	19,553	6,800	1,940	1,341	163	29,797
North Central Division	117,289	1,551	793	119,433	21,101	22,065	1,293	2,172	492	47,123
Western Division	10,363	600	106	11,069	5,653	3,025	259	85	28	9,050

WHAT PER CENT OF THE TOTAL POPULATION IS UNDER INSTRUCTION.

Table 3 gives the per cent of the population receiving instruction in the different grades in public and in private schools. The same is also shown more clearly to the eye in Diagram 1.

Out of every 100 persons 22·69 are receiving school education; of these, 20·46 are in public schools and 2·23 in private schools.

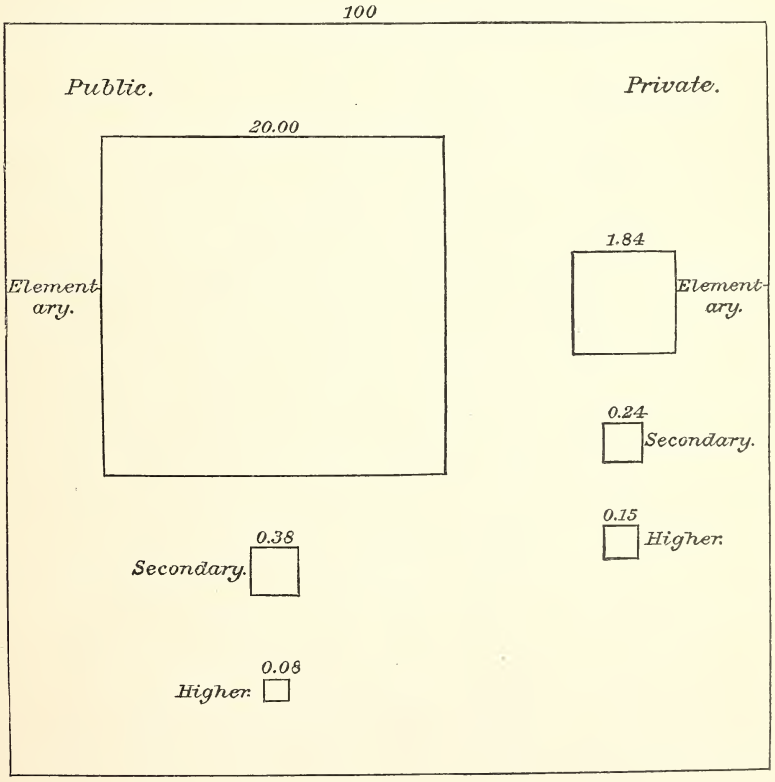
Of the 22·69 pupils, moreover, 21·84, or somewhat more than one-fifth of the population, are under elementary instruction; 0·62, or 1 person in every 160, is under secondary instruction; and 0·23, or 1 person in every 439, is under higher instruction.

Of the 21·84 elementary pupils, 20, or precisely one-fifth of the population, are found in public schools. A smaller proportion of the secondary pupils are public, and in the higher grade the private students are in the majority.

TABLE 3.—*Per cent of the total population enrolled in the different grades.*

Grade.	In public schools and colleges.	In private schools and colleges.	In public and private.
	Per cent.	*Per cent.*	*Per cent.*
Elementary	20.00	1·84	21·84
Secondary	·38	·24	·62
Higher	·08	·15	·23
Total	20·46	2·23	22·69

DIAGRAM 1.—*The outer square represents 100 persons of the population. The inner squares show how many of these 100 are receiving school or collegiate instruction.*



WHAT PART OF THE SCHOOL POPULATION IS ATTENDING SCHOOL.

In Table 4 a comparison is made between the school population (i. e., the whole number of children 5 to 18 years of age) and the number of pupils actually receiving elementary and secondary instruction. The results are also shown graphically, in part, in Diagram 2.

It will be seen that in each grade of instruction, in both public and private schools, the North and West have a greater percentage of their school population enrolled than the South, except that the North Central Division falls behind the South in regard to private secondary pupils. In most of the States of the North Central Division, however, the conditions have been such that they have not encouraged the establishment of private secondary schools, inasmuch as public high schools have almost from the beginning been a part of their public-school systems.

Secondary education especially lacks development in the South. Taking the public and private together (Column 7 of the table), it will be seen that there are less than half as many secondary pupils in proportion to the school population as there are in the North. The North Atlantic Division, for instance, has 2·94 secondary pupils to the 100 children of school age, against 1·14 in the South Central Division.

If public secondary education alone is considered (Column 5), the contrast is still stronger. The figures of Column 5 reflect the opposition that still exists in some parts of the South to the establishment of public high schools.

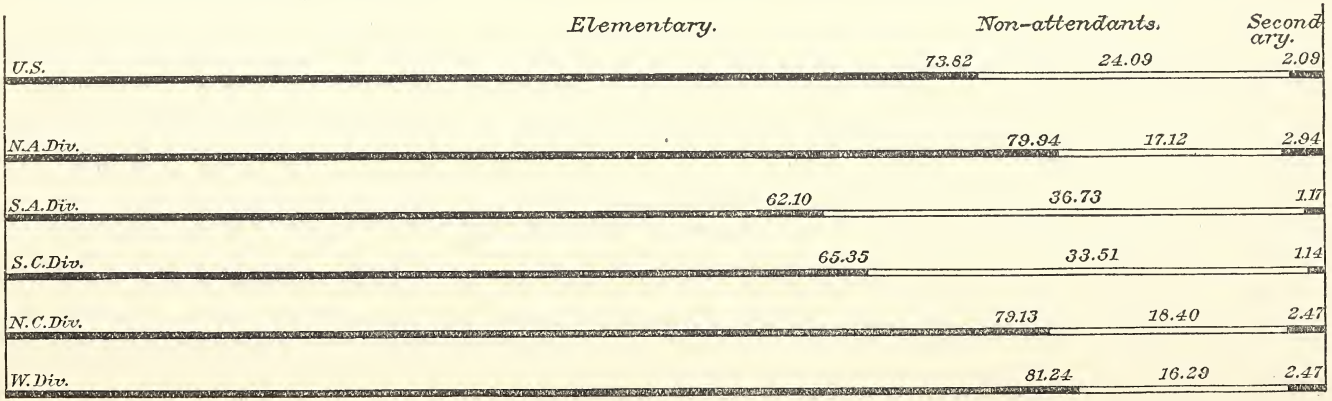
For every 100 children 5 to 18 years of age in the United States there are 73·82 pupils receiving elementary instruction, and 2·09 receiving secondary instruction; the remaining 24·09 are classed on Diagram 2 as "nonattendants," though as a small portion of the 75·91 (=73·82+2·09) pupils have passed the age of 18 years, the number of nonattendants between the ages of 5 and 18 years should be slightly larger than 24·09 to the 100. The number of nonattendants shown on the diagram may therefore be considered as representing the minimum values.

It is not to be understood, however, that all these nonattendants are growing up in ignorance. Some are too young to attend, others have passed through the elementary grades, perhaps have received some secondary education, and have left school for other occupations.

TABLE 4.—*Showing what per cent of the school population (5 to 18 years) is receiving elementary and secondary instruction, in public and in private schools and institutions.*

	Elementary instruction.			Secondary instruction.			Total of all.
	Public.	Private.	Total elementary.	Public.	Private.	Total secondary.	
1	2	3	4	5	6	7	8
The United States	67·57	6·25	73·82	1·29	0·80	2·09	75·91
North Atlantic Division	68·10	11·84	79·94	1·94	1·00	2·94	82·88
South Atlantic Division	58·44	3·66	62·10	·44	·73	1·17	63·27
South Central Division	61·53	3·82	65·35	·39	·75	1·14	66·49
North Central Division	74·12	5·01	79·13	1·77	·70	2·47	81·60
Western Division	74·27	6·97	81·24	1·36	1·11	2·47	83·71

DIAGRAM 2.—*Showing per cent of school population (5 to 18 years) receiving elementary and secondary instruction (including both public and private schools); being a graphic representation of Columns 4 and 7 of Table 4.*



PROPORTION OF ELEMENTARY, SECONDARY, AND HIGHER PUPILS.

Table 5 has been computed to show explicitly the relative number of pupils in the different grades.

In the public schools and colleges 97·73 per cent of all pupils are found in the elementary grades; 1·87 per cent, or about 1 pupil in 53, in the secondary grades; and only 0.40 per cent, or 1 in 250, is receiving the higher education.

In private teaching the proportion of elementary pupils is somewhat less, being only 82·76 per cent, or about five-sixths of the whole number of private pupils; secondary pupils, 10·66 per cent, or a little more than 1 private pupil in 10; higher pupils, 6·58 per cent, or about 1 in 15.

How overwhelming the majority of elementary pupils is, may be seen at a glance by comparing the relative lengths of the two groups of lines in Diagram 2, on the left and on the right.

TABLE 5.—*Per cent of pupils in each grade in public and private schools and colleges.*

	In public schools and colleges.			In private schools and colleges.			Public and private together.		
	Elementary.	Secondary.	Higher.	Elementary.	Secondary.	Higher.	Elementary.	Secondary.	Higher.
The United States	97·73	1·87	·40	82·76	10·66	6·58	96·27	2·73	1·00
North Atlantic Division	96·71	2·75	·54	87·13	7·39	5·48	95·16	3·50	1·34
South Atlantic Division	99·00	·74	·26	75·75	15·18	9·07	97·24	1·83	·93
South Central Division	99·16	·63	·21	77·63	15·17	7·80	97·52	1·71	·77
North Central Division	97·26	2·32	·42	81·49	11·32	7·19	96·09	2·99	·92
Western Division	97·63	1·79	·58	82·88	13·21	3·91	96·16	2·93	·91

PROPORTION OF PUBLIC AND OF PRIVATE INSTRUCTION.

Table 6 and Diagram 3 show the relative proportion of public and of private instruction in each grade.

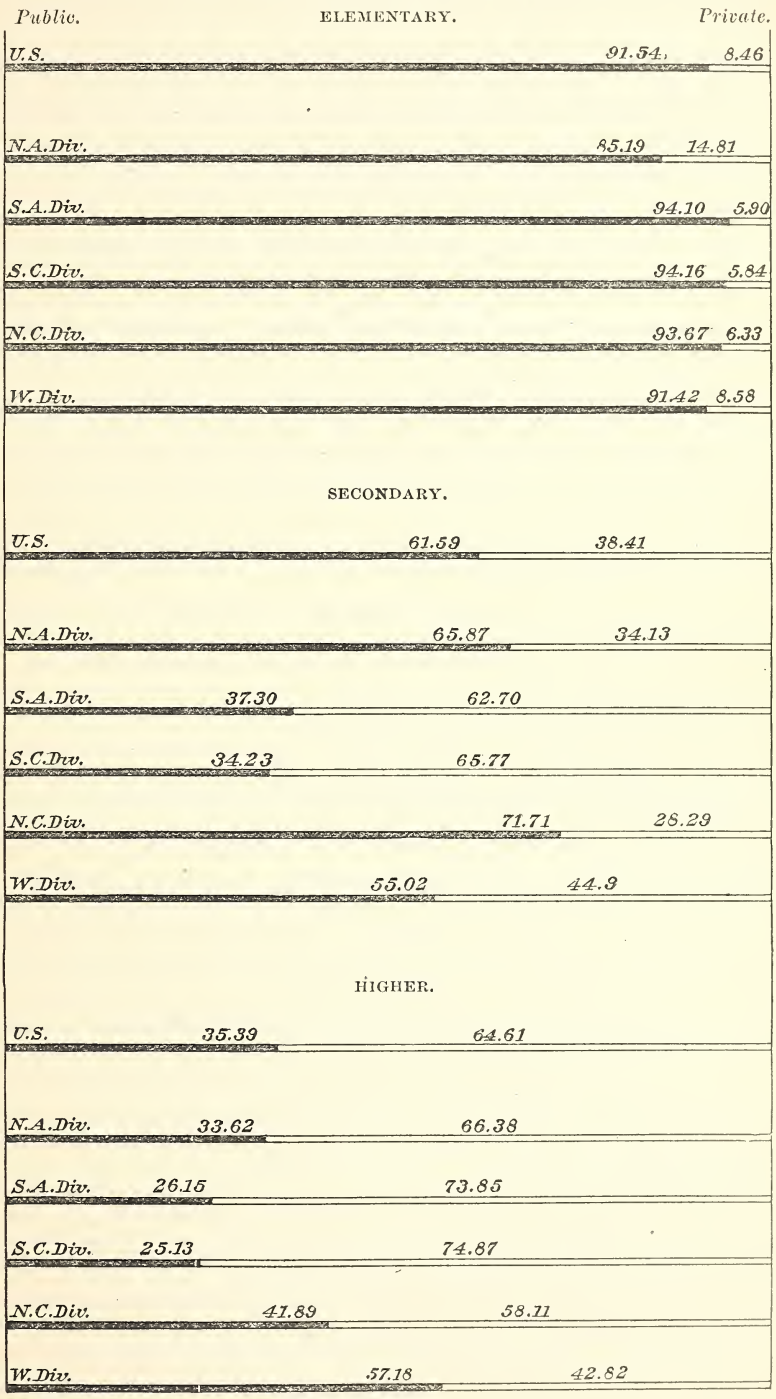
It may be repeated here that some of the data upon which this and the accompanying tables are based are incomplete, especially as relates to private elementary schools and public high schools.

Taking the figures as they stand, public schools give 91·54 per cent of all elementary instruction; 61·59 per cent of all secondary instruction; and 35·39 per cent of all higher instruction.

Normal schools are included in the institutions of higher instruction. These are for the most part public. Omitting them, the proportion of higher instruction given in public institutions, as compared with private, is somewhat less. (*See* Table 9.)

In the elementary grades the proportion of public instruction as compared with private is greater in the South than in the North. This may be ascribed to the predominance of the colored element in the South, who attend mainly the public elementary schools.

DIAGRAM 3.—*Showing the relative amounts of public and of private instruction in the different grades; being a graphic representation in part of Table 6.*



Of secondary education about twice as large a share is furnished by the public in the North as in the South. The lack of public high schools in some portions of the South, already referred to, is the cause of this showing.

Although the North Atlantic Division only gives 34·13 per cent of its secondary instruction in private schools, as compared with 62·70 per cent in the South Atlantic Division, yet the former division actually has more private secondary pupils, compared with its school population, than the latter, as will be seen by reference to Table 4.

TABLE 6.—*Per cent of public and private pupils in each grade.*

	Elementary.		Secondary.		Higher.		All grades combined.	
	Public.	Private.	Public.	Private.	Public.	Private.	Public.	Private.
The United States	91·54	8·46	61·59	38·41	35·39	64·61	90·15	9·85
North Atlantic Division	85·19	14·81	65·87	34·13	33·62	66·38	83·82	16·18
South Atlantic Division	94·10	5 90	37·30	62·70	26·15	73·85	92·43	7·57
South Central Division	94·16	5·84	34·23	65·77	25·13	74·87	92·60	7·40
North Central Division	93·67	6·33	71·71	28·29	41·89	58·11	92·53	7·47
Western Division	91·42	8·58	55·02	44·98	57·18	42·82	90·04	9·96

HIGHER INSTRUCTION SPECIALLY CONSIDERED.

(Tables 7 to 10.)

HIGHER STUDENTS AND POPULATION COMPARED.

In Table 4 data were given to show the extent of the diffusion of elementary and secondary instruction, as compared with the school population. In Table 7 corresponding data are given for higher instruction, but on a different basis, namely, on the basis of number of college students to each 100,000 persons of the population. This table is further illustrated by Diagram 4.

The number of college students relative to the population has been frequently made a subject of inquiry. The present number is shown by Column 2 of Table 7 to be 111·8 per 100,000 of the population; in other words, one person in 895 is receiving the higher education, taking into account only strictly collegiate and post-graduate students.

If, to this, the 55·7 medical, law, and theological students are added, there results 167·5 collegiate and professional students per 100,000, or 1 person in 597. By adding the normal students (60·4), we get a total of 227·9 students per 100,000, or 1 person in 439 receiving some form of higher instruction.

It does not appear that there is any very great difference in the relative number of college students proper in the different sections of the country. The North Atlantic Division is somewhat in excess, having 125·3 per 100,000, or 1 person in 798; and the Western Division the least, viz, 88·6 per 100,000, or 1 person in 1,129.

The maxima and minima of professional students are found in the same two divisions, 71·4 for the North Atlantic and 26·9 for the Western.

In normal instruction the South is distinctly in the rear; in each of the Southern divisions the number of normal students per 100,000 of the population is only slightly over one-half the average of the United States. It might be stated, in addition, that many of the normal schools in the South, especially those for the colored race, are of a comparatively low grade, hardly coming up to the standard of higher instruction in any rigid interpretation of the term.

TABLE 7.—*Number of students under higher instruction to each 100,000 persons of the total population.*

	In universities and colleges. *a*	In schools and departments of medicine, law, and theology.	In normal schools.	Total.
1	2	3	4	5
The United States	111·8	55·7	60·4	227·9
North Atlantic Division	125·3	71·4	88·4	285·1
South Atlantic Division	111·8	57·2	33·0	202·0
South Central Division	106·6	37·0	35·6	179·2
North Central Division	107·2	56·1	60·1	223·4
Western Division	88·6	26·9	71·6	187·1

a Collegiate and post-graduate students only.

PUBLIC AND PRIVATE HIGHER INSTRUCTION.

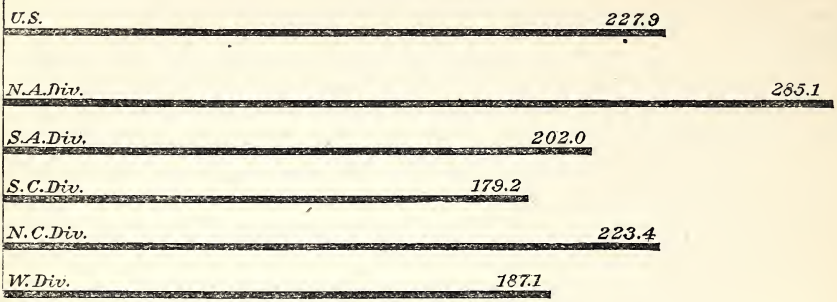
In order to give some precise idea as to what extent in general the state has assumed the office of higher instruction in this country Table 8 has been computed, showing the number of public and private students, respectively, to each 100,000 persons of the population. Diagram 5 contains the same data graphically exhibited; and Table 9 gives the relative proportions, or percentage, of public and private higher students.

Of the 111·8 collegiate students proper in the United States to each 100,000 persons, 21·7, or 19·4 per cent of the whole, are in public institutions and 90·1 are in private institutions. Four-fifths of the higher education in this country is therefore conducted under private auspices. Public higher education is confined almost exclusively to the State universities and the agricultural and mechanical colleges.

It is in the North Atlantic Division that the state has been the most backward in assuming the work of higher education. The States of that division have the highest number of collegiate students in proportion to population, viz, 125·3 per 100,000; yet of these only 9·8, or about 8 per cent, are in institutions that can be said to be under public management. Further westward the percentage of public collegiate students is largely augmented; in the North Central States it is 31·5 per cent of the whole; while in the States of the Western Division it reaches up to 49·5 per cent, or about one-half of the whole number.

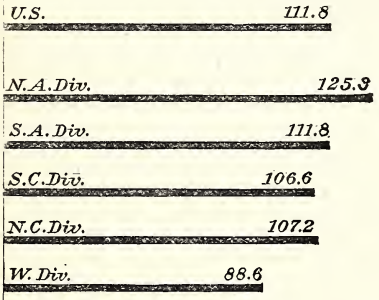
DIAGRAM 4.—*Showing the number of students under higher instruction to each 100,000 persons of the population; being a graphic representation of the data contained in Table 7.*

In all higher institutions.

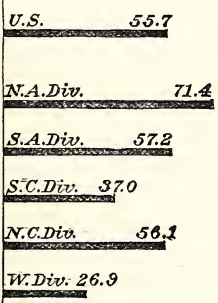


These may be classified as follows:

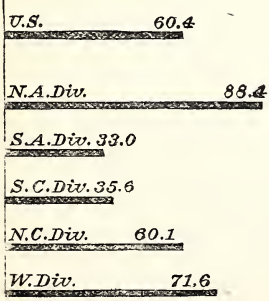
I.—*In universities and colleges.*



II.—*In schools of medicine, law, and theology.*



III.—*In normal schools.*



Professional instruction is still more largely under private management. Of the 55·7 medical, law, and theological students per 100,000 persons, only 7·4, or 13·2 per cent of the whole, are in public institutions, mostly departments of State universities. The proportion of public students of this class also largely increases westward. There is no professional instruction given by the state in the North Atlantic States, while in the Western Division the proportion slightly exceeds one-half (51·6 per cent), though the whole amount in this division is small.

As regards normal instruction, the geographical distribution of the percentage of public students is curiously reversed. The North Atlantic States have taken the lead in the matter of public normal schools. These States not only have the highest number of normal students (88·4 per 100,000), but educate 97·4 per cent of them, all but a trifling portion, in public schools. Private normal schools in that section that merit the name are almost nonexistent. The number of private normal-school pupils per 100,000 persons increases westward, it being 22·3 in the Western Division, or 31·2 per cent of the whole number.

TABLE 8.—*Number of higher students to each 100,000 of the population, classified as public and private.*

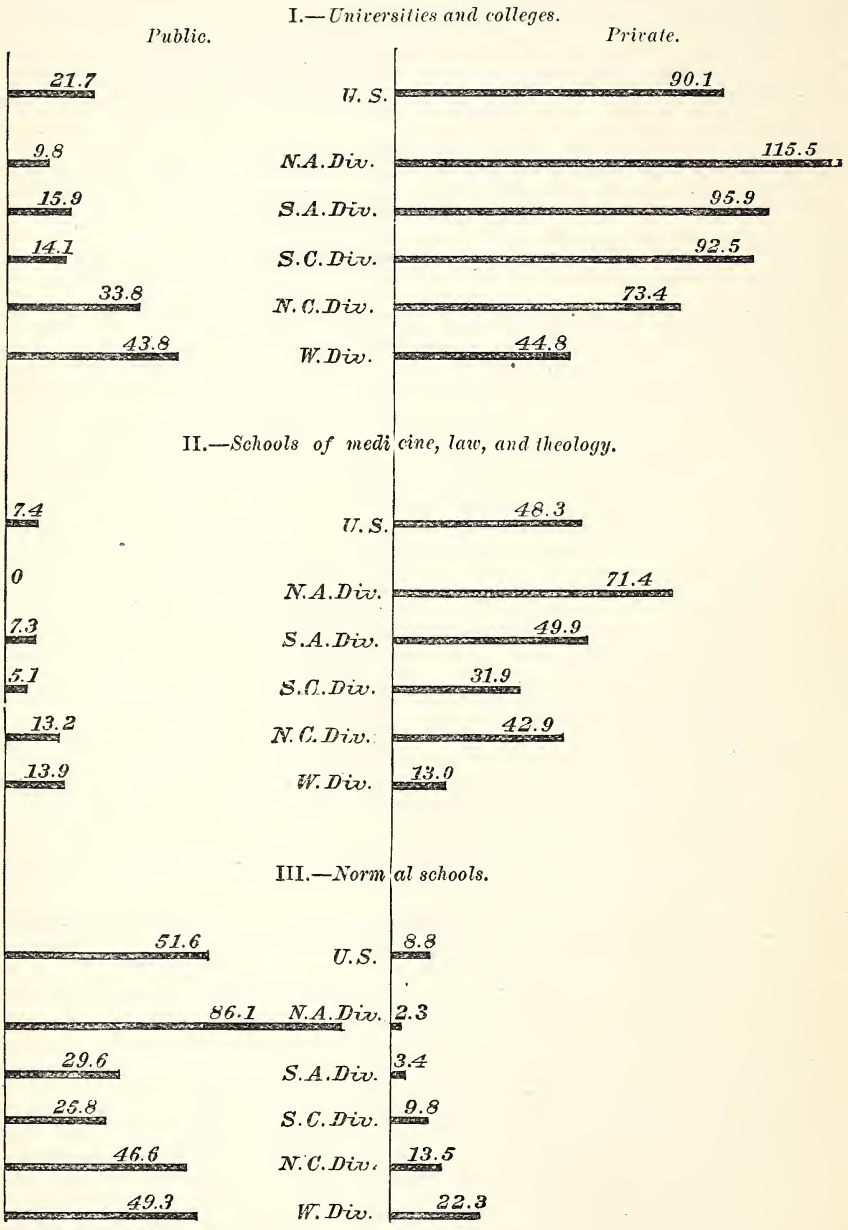
	In universities and colleges. *a*		In schools of medicine, law, and theology.		In normal schools.	
	Public.	Private.	Public.	Private.	Public.	Private.
The United States	21·7	90·1	7·4	48·3	51·6	8·8
North Atlantic Division	9·8	115·5	0	71·4	86·1	2·3
South Atlantic Division	15·9	95·9	7·3	49·9	29·6	3·4
South Central Division	14·1	92·5	5·1	31·9	25·8	9·8
North Central Division	33·8	73·4	13·2	42·9	46·6	13·5
Western Division	43·8	44·8	13·9	13·0	49·3	22·3

a Collegiate and post-graduate students only.

TABLE 9.—*Percentage of public and private students in the different departments of higher instruction.*

	In universities and colleges.		In schools of medicine, law, and theology.		In normal schools.	
	Public.	Private.	Public.	Private.	Public.	Private.
The United States	19·4	80·6	13·2	86·8	85·4	14·6
North Atlantic Division	7·8	92·2	0	100·0	97·4	2·6
South Atlantic Division	14·2	85·8	12·8	87·2	89·7	10·3
South Central Division	13·3	86·7	13·8	86·2	72·5	27·5
North Central Division	31·5	68·5	23·6	76·4	77·5	22·5
Western Division	49·5	50·5	51·6	48·4	68·8	31·2

DIAGRAM 5.—*Showing the number of higher students to each 100,000 persons of the population, classified as public and private; being a graphic representation of the data contained in Table 8.*



DISTRIBUTION OF STUDENTS IN PROFESSIONAL SCHOOLS.

Table 10 gives the number of professional students attending schools of medicine, law, and theology, and classifies them as public and private.

Of the 22,263 medical students in the United States 2,525, or about 1 in 9, are found in public institutions. The number of public law students is somewhat less, viz, 2,243, yet the proportion to the total number of law students is much greater, being about that of 3 to 8. This results from there being so few private law schools. In the North Central States there are 1,621 public law students to 525 private, or more than 3 to 1, while in the Western Division there are 147 public to only 5 private.

Theological instruction is given entirely in institutions under private management, and, with the present multiplicity of denominational creeds and beliefs, this practice, for obvious reasons, is likely to continue.*

The total number of medical, law, and theological students stand very nearly in the proportion of 15, 4, and 5, respectively.

TABLE 10.—*Distribution of students in professional schools.*

	In schools of medicine.			In schools of law.			In schools of theology (private).	Total of all.
	Public.	Private.	Total medicine.	Public.	Private.	Total law.		
The United States	2,525	19,738	22,263	2,243	3,830	6,073	7,729	36,065
North Atlantic Division	0	7,959	7,959	0	2,158	2,158	2,655	12,772
South Atlantic Division	346	2,473	2,819	325	938	1,263	1,144	5,226
South Central Division	432	2,711	3,143	150	204	354	728	4,225
North Central Division	1,430	6,223	7,653	1,621	525	2,146	3,144	12,943
Western Division	317	372	689	147	5	452	58	899

SEX OF SECONDARY AND HIGHER STUDENTS.

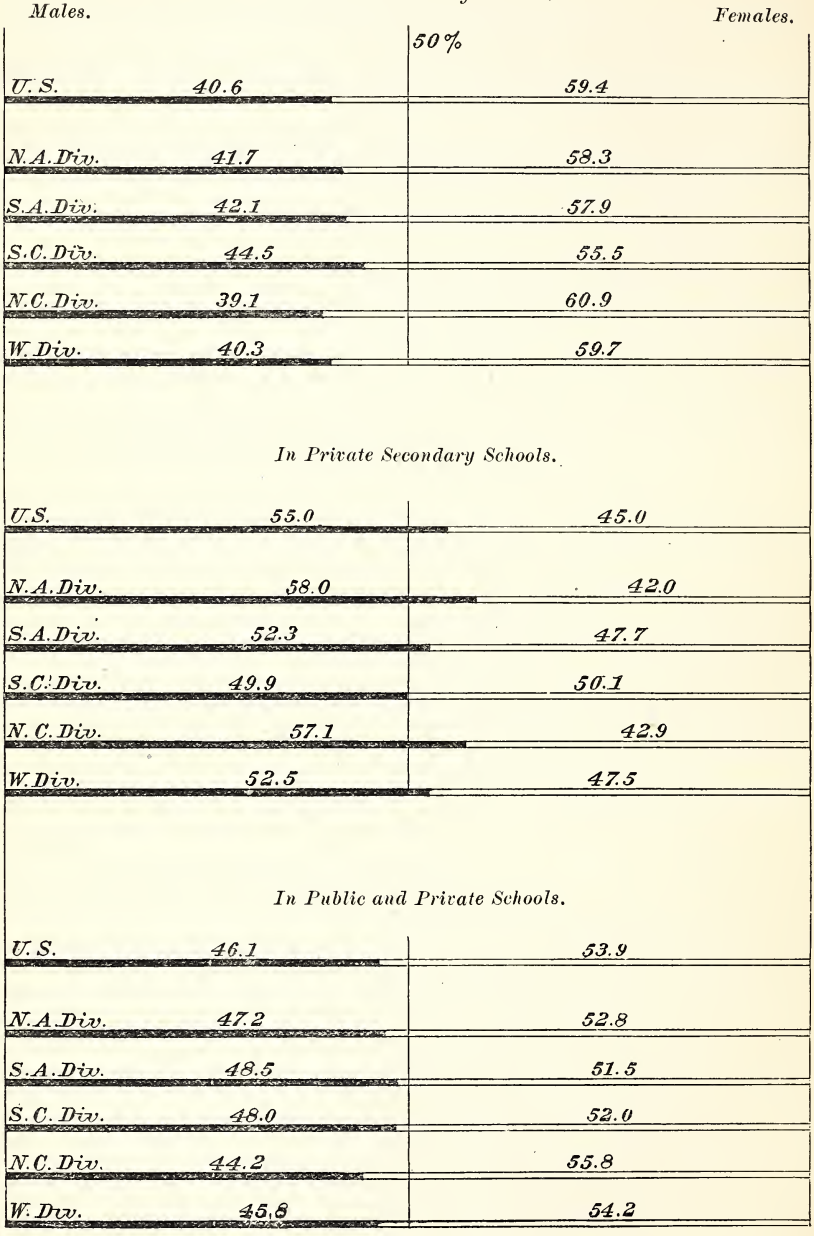
I.—SECONDARY.

The sex of pupils under secondary instruction is given in Table 11. The relative proportion or percentage of each sex has been computed for Table 12; this latter table is further illustrated by Diagram 6.

The feature of this diagram that chiefly attracts attention, perhaps, is the predominance of girls in public schools and of boys in private schools; 40·6 per cent of the pupils receiving secondary instruction in public schools, principally in public high schools (see Table 2), are boys,

*The University of Michigan is announced (1893) to have established a "scientific nonsectarian department" for the more thorough training of young men for the ministry. The University of Colorado had such a department more than a year previously. "In neither case is there any organic connection of the department with the institution, but it is so situated as to extend special privileges and advantages to this class of students." (Col. School Jour., Dec., 1893.)

DIAGRAM 6.—*Showing the per cent of male and female secondary pupils in public and in private schools; being a graphic representation of the data in Table 12.*



while 59.4 per cent are girls, so that there are about 3 girls to every 2 boys. This excess of girls receiving public secondary instruction is confined to no particular section of the Union, but characterizes each of the geographical divisions.

On the other hand, 55 per cent of the private secondary pupils are boys, and only 45 per cent girls. The excess of boys occurs in all the geographical divisions except the South Central, where the boys and girls are about evenly balanced.

In attempting to assign a reason for this contrast of sex of secondary pupils in public and private schools, it will probably be found that the public high schools fail to receive a due proportion of boys because so many of them are obliged or prefer to go to work after finishing their elementary school course; the more ambitious of them enter mercantile establishments or the offices of business men, or continue their education in commercial colleges, instead of going to public high schools. With the girls, especially those of the more well-to-do families, the case is different; fewer of them are pressed to engage in active employment at an early age, and more are left free to pursue the course of liberal culture that the public high school affords, or if they desire to prepare themselves to become teachers, the high school is right in the line to second their efforts.

Private secondary pupils, on the other hand, are largely found in schools especially designed to prepare for college, or in the preparatory departments of colleges themselves; and the fact that collegiate education is still principally confined to men would seem to be instrumental in determining the sex of the pupils preparing for it.

It may be that the present tendency to organize business and manual-training courses in high schools, as well as to establish high schools specifically designed to make business instruction or manual training predominating features, will be instrumental in inducing more boys to pursue a course of public secondary instruction.

TABLE 11.—*Sex of pupils receiving secondary instruction.* (*a*)

	In public schools.		In private schools.		In public and private schools.	
	Males.	Females.	Males.	Females.	Males.	Females.
The United States	100,498	147,162	84,933	69,496	185,431	216,658
North Atlantic Division	36,683	51,387	26,477	19,161	63,160	70,548
South Atlantic Division	5,711	7,866	11.943	10,878	17,654	18,744
South Central Division	6,897	8,614	14,868	14,929	21,765	23,543
North Central Division	46,741	72,692	26,890	20,233	73,631	92,925
Western Division	4,466	6,603	4,755	4,295	9,221	10,898

a See notes *a* and *b*, p. 2.

TABLE 12.—*Per cent of male and of female secondary pupils, public and private.*

	In public schools.		In private schools.		In public and private schools.	
	Per cent of males.	Per cent of females.	Per cent of males.	Per cent of females.	Per cent of males.	Per cent of females.
The United States	40·6	59·4	55·0	45·0	46·1	53·9
North Atlantic Division	41·7	58·3	58·0	42·0	47·2	52·8
South Atlantic Division	42·1	57·9	52·3	47·7	48·5	51·5
South Central Division	44·5	55·5	49·9	50·1	48·0	52·0
North Central Division	39·1	60·9	57·1	42·9	44·2	55·8
Western Division	40·3	59·7	52·5	47·5	45·8	54·2

II.—SEX OF COLLEGE STUDENTS.

Table 13 gives the sex of students in universities and colleges (considering only collegiate and post-graduate students). Table 14 gives the proportion or percentage of each sex, which is also shown graphically in Diagram 7.

It appears that of the 72,460 college students in the United States 49,100, or 67·8 per cent, are males, and 23,360, or 32·2 per cent, are females. There are, therefore, nearly half as many females receiving a collegiate education as there are males.

Taking the public universities and colleges alone the proportion of male students is greater, being 81 per cent of the total, or more than four-fifths. In fact, the number of female students in public universities and colleges is insignificant in all except the North Central and Western States. The North Central States count 2,000 female students in public institutions, and the States of the Western Division 459 out of a total of 1,468, or 31·3 per cent.

In private collegiate institutions the proportion of female students is considerably greater, being 35·4 per cent. In the two Southern divisions, indeed, the women outnumber the men. A great many of the so-called female colleges, however, especially in the South and West, are not strictly collegiate institutions, but belong rather to the grade of secondary schools.

TABLE 13.—*Sex of students receiving higher instruction in universities and colleges.* (*a*)

	Public.		Private.		Public and private combined.	
	Males.	Females.	Males.	Females.	Males.	Females.
The United States	11,394	2,676	37,706	20,684	49,100	23,360
North Atlantic Division	1,702	49	16,172	4,480	17,874	4,529
South Atlantic Division	1,425	27	4,343	4,418	5,768	4,445
South Central Division	1,473	141	4,968	5,591	6,441	5,732
North Central Division	5,785	2,000	11,119	5,801	16,904	7,801
Western Division	1,009	459	1,104	394	2,113	853

a See notes *c* and *d* on page 2. Only collegiate and post-graduate students are included in this table.

DIAGRAM 7.—*Percentage of male and female students in universities and colleges; being a graphic representation of the data contained in Table 14.*

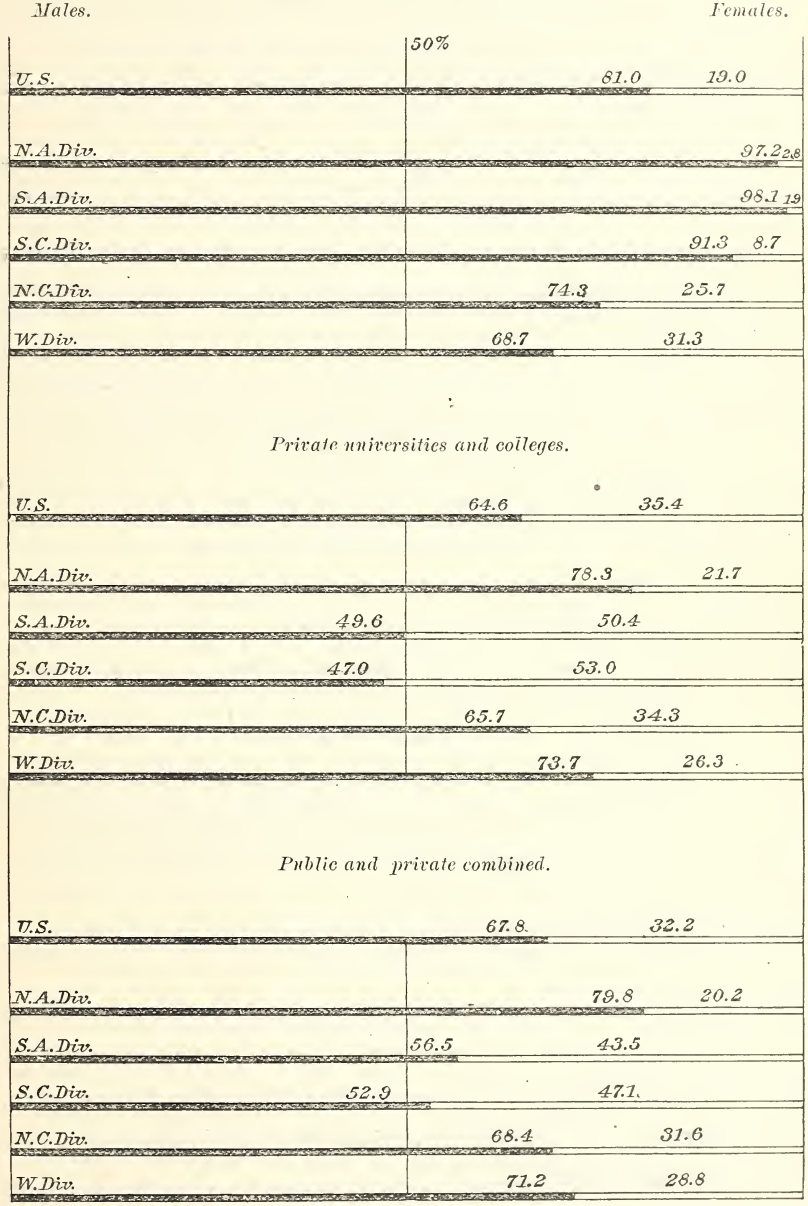


TABLE 14.—*Per cent of male and of female students in universities and colleges.*

	Public.		Private.		Public and private.	
	Per cent of males.	Per cent of females.	Per cent of males.	Per cent of females.	Per cent of males.	Per cent of females.
The United States	81·0	19.0	64·6	35·4	67·8	32·2
North Atlantic Division	97·2	2·8	78·3	21·7	79·8	20·2
South Atlantic Division	98·1	1·9	49·6	50·4	56·5	43·5
South Central Division	91·3	8·7	47·0	53·0	52·9	47·1
North Central Division	74·3	25·7	65·7	34·3	68·4	31·6
Western Division	68·7	31·3	73·7	26·3	71·2	28·8

NUMBER OF FEMALE COLLEGE STUDENTS AS COMPARED WITH THE POPULATION—PROPORTION IN EACH CLASS OF INSTITUTIONS.

Table 15 (p. 23) divides the whole number of female college students into three classes, according to the character of institution attended, viz, (1) public coeducational colleges, (2) private coeducational colleges, and (3) colleges for women only.

Table 16 compares the number of female college students with the population, giving the number to each 100,000 inhabitants, classified as before. The same is also shown graphically in Diagram 8.

DIAGRAM 8.—*Number of female college students to each 100,000 persons of the population; being a graphic representation of the data contained in Table 16.*

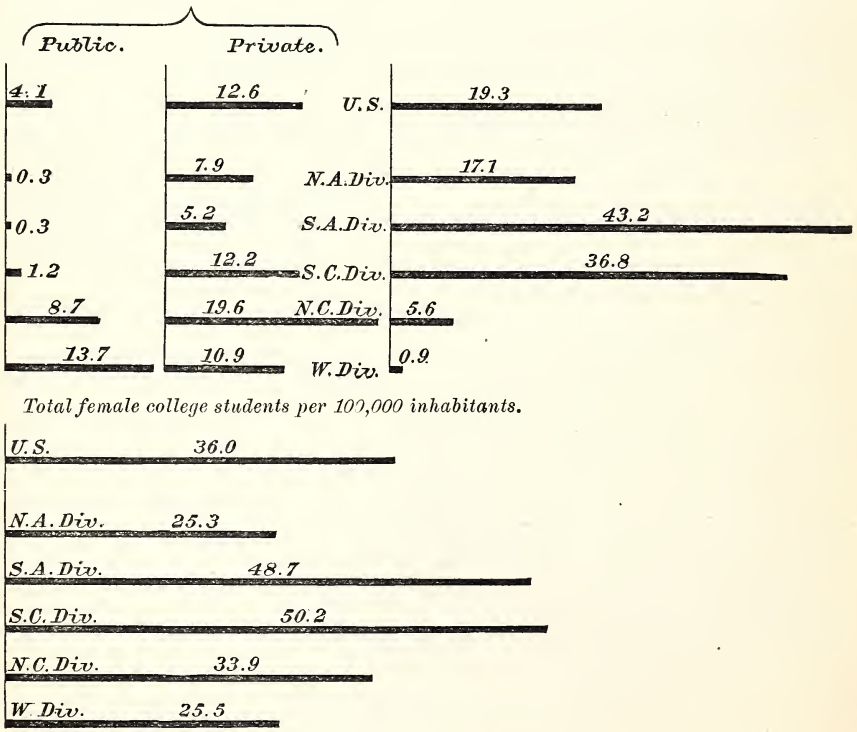
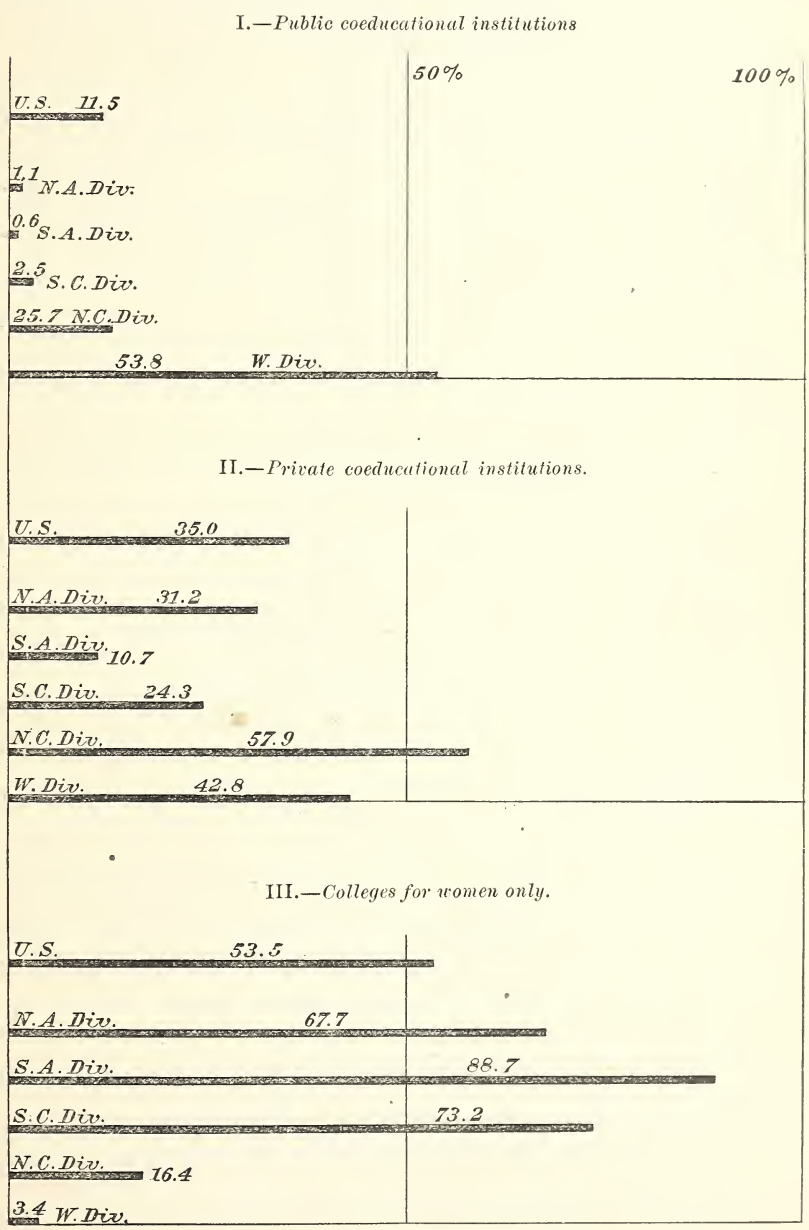


Table 17 and Diagram 9 give the proportion or percentage attending each class of institutions.

DIAGRAM 9.—*Per cent of the whole number of female college students in each class of institutions attended by them; being a graphic representation of Table 17.*



It appears that in the United States 36 women attend college for every 100,000 persons, which is in the ratio of 1 to 2,800 of the population. Of these 36 there are 4·1 attending public coeducational institutions, 12·6 attending private coeducational institutions, and 19·3 attending colleges for women only; 11·5 per cent of the whole number attend public coeducational institutions, or 1 in 9; 35 per cent attend private coeducational institutions, making a total of 46·5 per cent, or nearly one-half, in coeducational institutions; 53·5 per cent attend colleges for women only.

By inspecting the geographical classification the status of female college education is seen to present striking contrasts in the different sections of the country.

In the first place, it is developed by far to the greatest extent in the South, the two Southern divisions having 48·7 and 50·2 students per 100,000 persons, respectively (see Diagram 8), or nearly twice the average of the rest of the Union.

In the next place, this large attendance is found almost exclusively in colleges for women only, in the South Atlantic Division 88·7 per cent and in the South Central Division 73·2 per cent of the whole attending that class of institutions. (Diagram 9.)

The North Atlantic Division is distinguished by having a less number of female college students in proportion to population than any other section of the Union, viz, 25·3 per 100,000 persons; and this in spite of the fact that all the female colleges of a higher grade (included under Division A in the detailed female college tables of this Report), with three exceptions only, are found in the North Atlantic Division. The female college students in that section, therefore, while fewer in number, are pursuing more strictly collegiate courses, according to the generally recognized standards; in the South, on the other hand, female colleges frequently do not rise above the type of the secondary school. There is danger here as elsewhere of being led astray by names.

The North Atlantic States resemble the South, however, in their slow acceptance of the coeducational idea. Of all the female college students in those States 67·7 per cent, or more than two-thirds, are found in exclusively female colleges. In this respect the West offers a strong contrast to the East and South. In the North Central States only 16.4 per cent, or less than a sixth of the female students, are met with in colleges for women only, while in the Western Division all but 3·4 per cent, or more than 29 out of 30, attend coeducational institutions.

Coeducation is a distinguishing feature of the public as well as the private colleges in the North Central and Western States. Of the 33·9 female college students per 100,000 inhabitants in the North Central States 8·7, or more than one-fourth, attend public universities and colleges, while of the 25·5 students per 100,000 in the Western Division 13·7, or more than one-half, attend public institutions. Public female college students in the East and South are almost nonexistent. What

coeducational students there are in those sections are found almost wholly in private institutions.

TABLE 15.—*Classification of female college students according to character of institution attended. a*

	In coeducational universities and colleges.			In colleges for women only (all private).	Total of all.
	Public.	Private.	Total in coeducational institutions.		
The United States	2,676	8,170	10,846	12,514	23,360
North Atlantic Division	49	1,415	1,464	3,065	4,529
South Atlantic Division	27	475	502	3,943	4,445
South Central Division	141	1,395	1,536	4,196	5,732
North Central Division	2,000	4,520	6,520	1,281	7,801
Western Division	459	365	824	29	853

a In this table, as in the others relating to higher education, all secondary or preparatory students are excluded; only those in collegiate and post-graduate departments are considered.

TABLE 16.—*Number of female college students to each 100,000 persons of the population.*

	In coeducational universities and colleges.			In colleges for women only.	Total of all.
	Public.	Private.	Total in coeducational institutions.		
The United States	4·1	12·6	16·7	19·3	36.0
North Atlantic Division	·3	7·9	8·2	17·1	25·3
South Atlantic Division	·3	5·2	5·5	43·2	48·7
South Central Division	1·2	12·2	13·4	36·8	50·2
North Central Division	8·7	19·6	28·3	5·6	33·9
Western Division	13·7	10·9	24·6	·9	25·5

TABLE 17.—*Showing percentage of the whole number of female college students in each class of institutions.*

	Per cent in public coeducational institutions.	Per cent in private coeducational institutions.	Per cent in colleges for women only.
The United States	11·5	35·0	53·5
North Atlantic Division	1·1	31·2	67·7
South Atlantic Division	0·6	10·7	88·7
South Central Division	2·5	24·3	73·2
North Central Division	25·7	57·9	16·4
Western Division	53·8	42·8	3·4

Sex of normal students.

Table 18 gives the number of normal students of each sex in public and private normal schools, all nonprofessional students being excluded. Table 19 and Diagram 10 give the proportion, or percentage, of each sex.

Of the 39,137 professional students in normal schools, 12,412, or 31·7 per cent, are males, and 26,725, or 68·3 per cent, are females.

The smallest percentage of males is found in the public normal schools of the North Atlantic States and the extreme West.

In private normal schools the male students are slightly in excess, being 50·3 per cent of the whole. Only about one-seventh (14·6 per cent) of the whole number of normal students, however, are found in private normal schools, as was shown in Table 9.

The Western Division is strongly emphasized here as elsewhere, having the least proportion of males in public normal schools and the greatest in private.

Public normal students are divided as to sex in nearly the same proportions as the whole body of common-school teachers, as will appear from the following:

	Per cent of male normal students.	Per cent of male teachers.
The United States	31.7	32.5
North Atlantic Division	21·2	18·9
South Atlantic Division	46·4	46·4
South Central Division	43·1	55·3
North Central Division	37·7	29·7
Western Division	28·6	30·1

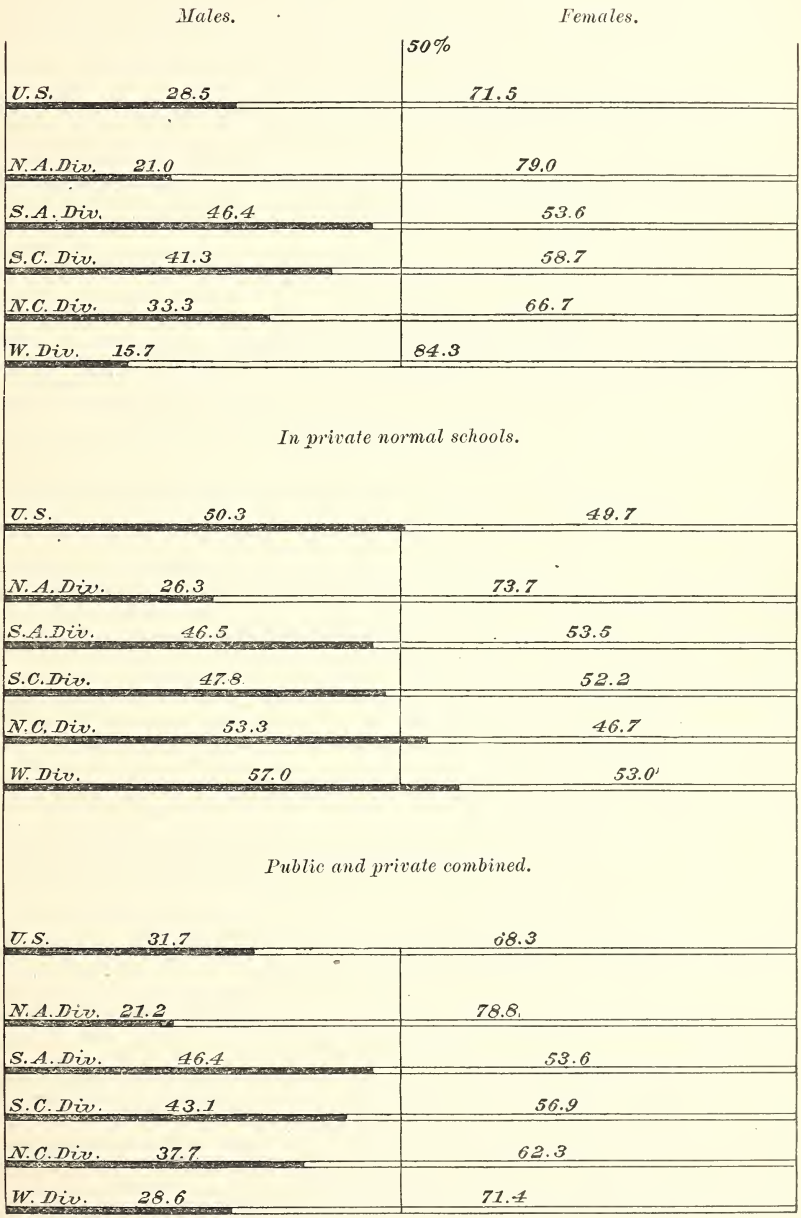
TABLE 18.—*Sex of professional students in normal schools.*

	In public normals.		In private normals.		Public and private.	
	Males.	Females.	Males.	Females.	Males.	Females.
The United States	9,538	23,889	2,874	2,836	12,412	26,725
North Atlantic Division	3,239	12,153	110	308	3,349	12,461
South Atlantic Division	1,255	1,449	145	167	1,400	1,616
South Central Division	1,216	1,730	534	584	1,750	2,314
North Central Division	3,569	7,167	1,659	1,455	5,228	8,622
Western Division	259	1,390	426	322	685	1,712

TABLE 19.—*Per cent of male and female professional students in normal schools.*

	Public.		Private.		Public and private.	
	Per cent of males.	Per cent of females.	Per cent of males.	Per cent of females.	Per cent of males.	Per cent of females.
The United States	28·5	71·5	50·3	49·7	31·7	68·3
North Atlantic Division	21.0	79.0	26·3	73.7	21·2	78·8
South Atlantic Division	46·4	53·6	46·5	53.5	46·4	53·6
South Central Division	41·3	58·7	47·8	52.2	43·1	56·9
North Central Division	33·3	66·7	53·3	46.7	37·7	62·3
Western Division	15·7	84·3	57.0	43.0	28·6	71·4

DIAGRAM 10.—*Per cent of male and female professional students; being a graphic exhibition of Table 19.*



CHAPTER II

STATISTICS OF STATE COMMON SCHOOL SYSTEMS.[1]

NOTE.—This chapter relates to public day schools of elementary and secondary grade (primary, grammar, and high schools).

SUMMARY.

The following statement is made up from returns for 1891–'92 from all the States except two, viz, Alabama and Delaware, for which the figures of 1889–'90 are used. Some slight correction will therefore be required when the returns from those States shall have been received.

GENERAL STATISTICS.

Population of the United States (estimated)	64,834,561
Number of persons 5 to 18 years of age (estimated)	19,192,894
Per cent of the total population	29·61
Number of pupils enrolled in the common schools	13,295,877
Increase	203,238
Percentage of increase	1·56
Per cent of persons 5–18 years of age enrolled	63·82
Average daily attendance	8,547,551
Increase	142,539
Percentage of increase	1·70
Ratio to enrollment (per cent)	64·73
Aggregate number of days' attendance	1,172,261,842
Average number of days the schools were kept	137·1
Increase, in days	1·9
Average number of days attended by each pupil enrolled	88·8
Number of public schoolhouses	229,118
Increase	4,656
Value of all public school property	$382,457,167
Whole number of teachers employed:	
Males	121,638
Females	252,822
Total	374,460
Per cent of male teachers	32·5
Average salary of male teachers	$45.48
Increase	1.17
Average salary of female teachers	37.56
Increase	.64

[1]Classification by race, as far as possible, will be given in the chapter on the "Education of the Colored Race."

FINANCES.

Receipts:	
From permanent funds (income) and rents	$8,084,582
From State taxes	29,693,487
From local taxes	105,551,726
From other sources	13,448,956
Total revenue	156,778,751
Increase of State taxes	1,586,403
Increase of local taxes	5,094,726
Per cent of the total revenue derived from—	
Permanent funds and rents	5·2
State taxes	13·9
Local taxes	67·3
Other sources	8·6
Expenditures:	
For sites, buildings, furniture, libraries, and apparatus	$29,504,414
For salaries of teachers and superintendents	100,333,071
For other purposes	26,153,788
Total amount expended	155,991,273

	Amount.	Per cent.
Increase for sites, buildings, etc	$3,198,111	12·15
Increase for salaries	4,240,899	4·41
Increase for total	8,812,569	5·99

Per cent of total expended for—	
Sites, buildings, etc	18·9
Salaries	64·3
Other purposes	16·8
Average expenditure per pupil—	
For sites, buildings, etc	$3·45
For salaries	11·74
For other purposes	3·06
Total	18·25
Cost per day for each pupil—	
For salaries only	cents.. 8.6
Total cost per day	do.... 13.3

GENERAL REMARKS UPON THE TABLES.

The following tables give the statistics of 1891–'92 for each of the States except Delaware and Alabama; in the case of these two States the figures of 1889–'90 are the latest obtainable.

In several instances State superintendents have not included reports from all of their counties, so that the totals for the State show an abrupt falling off of school attendance, expenditure, etc., which really did not exist. Whenever practicable the figures for these missing counties have been supplied by the Bureau, using the latest reports available or some reliable estimate. Though the results obtained thereby are not accurate, they are considerably nearer the truth than if the missing counties were given 0, which is what is virtually done when they are omitted altogether.

It is a matter of much satisfaction that the practice of reporting a part of a State for the whole is much less common than in former years,

when it was a source of much misconception and caused many of the apparent anomalies familiar to those who make a study of educational statistics.

The observations upon statistical methods made in connection with the tables are commended to the attention of those who have to do with such matters.

TABLE 1.—*The total population, the school population, and the adult male population.*

State or Territory.	Estimated total population, 1892.	School population.				Estimated adult male population, 1892.
		Estimated number of children 5 to 18 years of age, 1892.			Per cent of males.	
		Males.	Females.	Total.		
1	2	3	4	5	6	7
United States	64,834,561	9,685,973	9,506,921	19,192,894	50·47	17,565,881
North Atlantic Division	17,876,400	2,278,240	2,264,062	4,542,302	50·15	5,190,880
South Atlantic Division	9,135,524	1,567,331	1,540,960	3,108,291	50·43	2,079,919
South Central Division	11,413,817	2,008,442	1,956,504	3,964,946	50·65	2,618,252
North Central Division	23,061,400	3,419,450	3,344,330	6,763,780	50·56	6,398,120
Western Division	3,347,420	412,510	401,065	813,575	50·70	1,278,710
North Atlantic Division:						
Maine	657,700	81,760	80,040	161,800	50·53	200,200
New Hampshire	382,700	42,700	42,600	85,300	50·06	120,100
Vermont	326,100	41,450	38,960	80,410	51·55	99,780
Massachusetts	2,310,800	263,300	265,100	528,400	49·83	686,400
Rhode Island	367,000	44,540	44,930	89,470	49·78	106,200
Connecticut	772,100	91,300	90,406	181,700	50·24	231,800
New York	6,026,000	739,700	741,300	1,481,000	49·95	1,778,000
New Jersey	1,556,000	*a* 202,990	*a* 202,232	*a* 405,222	50·09	445,400
Pennsylvania	5,478,000	770,500	758,500	1,529,000	50·38	1,523,000
South Atlantic Division:						
Delaware *b*	168,493	24,071	23,420	47,491	50·69	47,559
Maryland	1,065,000	156,500	155,500	312,000	50·18	276,706
District of Columbia	*c* 258,431	31,850	33,750	65,600	48·55	72,360
Virginia	1,700,000	292,800	288,000	580,800	50·41	388,900
West Virginia	791,800	134,600	131,600	266,200	50·56	188,300
North Carolina	1,650,000	294,800	288,500	583,300	50·54	349,400
South Carolina	1,185,000	222,200	217,900	440,100	50·48	242,500
Georgia	1,895,000	340,200	332,500	672,700	50·57	410,500
Florida	421,800	70,310	69,790	140,100	50·17	103,700
South Central Division:						
Kentucky	1,916,000	317,200	310,500	627,700	50·53	464,700
Tennessee	1,828,000	318,300	307,200	625,500	50·89	416,200
Alabama *b*	1,513,017	273,812	266,414	540,226	50·69	324,822
Mississippi	1,324,000	246,600	239,100	485,700	50·78	278,300
Louisiana	1,158,060	198,000	196,300	394,300	50·22	259,400
Texas	2,397,000	425,700	415,500	841,200	50·61	574,600
Arkansas	1,177,000	213,100	206,800	419,900	50·75	269,000
Oklahoma	100,800	15,730	14,690	30,420	51·73	31,230
North Central Division:						
Ohio	3,714,000	532,900	521,100	1,054,000	50·57	1,028,000
Indiana	2,210,000	329,350	323,450	652,800	50·45	599,900
Illinois	4,018,000	571,700	564,300	1,136,000	50·34	1,126,000
Michigan	2,157,000	302,000	297,000	599,000	50·42	636,100
Wisconsin	1,761,000	265,100	261,200	526,300	50·37	482,100
Minnesota	1,392,000	203,300	199,400	402,700	50·48	402,000
Iowa	1,954,000	299,400	290,100	589,500	50·79	531,800
Missouri	2,795,000	438,600	430,800	869,400	50·45	736,200
North Dakota	190,800	26,910	25,170	52,080	51·67	58,420
South Dakota	355,600	50,290	48,010	98,300	51·16	98,700
Nebraska	1,137,000	174,900	167,500	342,400	51·08	323,800
Kansas	1,397,000	225,000	216,300	441,300	50·98	375,100
Western Division:						
Montana	162,000	14,780	14,470	29,250	50·52	80,170
Wyoming	75,100	8,310	7,740	16,050	51·78	33,510
Colorado	459,800	51,150	50,050	101,200	50·56	183,900
New Mexico	160,500	23,000	22,030	45,030	51·07	46,960
Arizona	67,290	8,641	8,459	17,100	50·52	26,750
Utah	236,600	38,830	37,930	76,760	50·59	61,980
Nevada	44,230	4,909	4,766	9,675	50·73	20,250
Idaho	102,300	14,250	13,450	27,700	51·43	38,190
Washington	422,300	49,060	46,770	95,830	51·20	177,600
Oregon	352,300	47,980	47,000	94,980	50·52	125,500
California	1,265,000	151,600	148,400	300,000	50·54	483,900

a State school census. *b* 1890 (U. S. Census). *c* District police census.

TABLE 2.—*Relation of the school population to the total population and to the adult male population; proportion of the white school population of foreign birth or extraction; percentage of foreign born of total population.*

State or Territory.	Number of children 5 to 18 years of age to every 100 persons of the total population.			Number of adult males to every 100 children 5 to 18 years of age, in 1890.	Percentage of white children 5 to 18 years of age that were of foreign birth or parentage in 1890.	Percentage of foreign born of total population.		
	1870.	1880.	1890.			1870.	1880.	1890.
1	2	3	4	5	6	7	8	9
					Per ct.	*Per ct.*	*Per ct.*	*Per ct.*
United States	31·27	30·04	29·61	91·4	33·5	14·44	13·32	14·77
North Atlantic Division	28·20	26·87	25·39	114·4	45·8	20·49	19·40	22·34
South Atlantic Division	33·02	32·24	34·04	66·8	6·6	2·85	2·29	2·35
South Central Division	33·92	33·13	34·76	65·9	8·6	3·62	3·08	2·93
North Central Division	32·40	30·63	29·33	94·6	41·5	17·97	16·80	18·16
Western Division	25·57	25·13	24·33	156·7	44·7	31·64	28·29	25·46
North Atlantic Division:								
Maine	28·01	25·71	24·60	123·7	25·0	7·80	9·07	11·94
New Hampshire	24·75	22·80	22·29	140·8	38·4	9·30	13·34	19·21
Vermont	27·18	25·96	24·65	124·1	33·4	14·27	12·33	13·26
Massachusetts	25·51	23·98	22·87	129·9	60·5	24·24	24·87	29·35
Rhode Island	25·66	24·64	24·38	118·7	62·4	25·49	26·76	30·77
Connecticut	25·86	24·97	23·54	127·6	54·6	21·14	20·88	24·60
New York	28·09	26·32	24·57	120·1	54·8	25·97	23·83	26·19
New Jersey	29·01	27·98	26·04	109·9	48·3	20·85	19·60	22·77
Pennsylvania	30·55	29·43	27·92	99·6	32·3	15·48	13·73	16·08
South Atlantic Division:								
Delaware	31·84	29·11	28·19	100·1	17·3	7·31	6·46	7·81
Maryland	31·30	29·89	29·28	88·7	24·4	10·68	8·86	9·05
District of Columbia	27·01	26·87	25·38	110·3	26·3	12·34	9·64	8·15
Virginia	32·39	32·43	34·16	67·0	2·8	1·12	·97	1·11
West Virginia	34·13	33·37	33·62	70·7	5·9	3·87	2·95	2·48
North Carolina	33·60	32·30	35·35	59·9	·7	·28	·27	·23
South Carolina	33·15	33·21	37·14	55·1	2·3	1·14	·77	·54
Georgia	34·42	33·17	35·50	61·0	2·1	·94	·69	·66
Florida	34·03	32·82	33·23	74·0	11·5	2·65	3·68	5·86
South Central Division:								
Kentucky	34·41	33·14	32·76	74·0	8·7	4·80	3·61	3·19
Tennessee	34·13	33·44	34·22	66·5	2·9	1·53	1·08	1·13
Alabama	34·40	33·37	35·70	60·1	3·2	1·00	·77	·98
Mississippi	33·70	34·12	36·69	57·3	3·1	1·35	·81	·62
Louisiana	31·11	31·93	34·04	65·8	17·8	8·51	5·76	4·45
Texas	34·80	32·60	35·10	68·3	16·9	7·62	7·20	6·84
Arkansas	34·16	33·15	35·68	64·0	3·5	1·04	1·29	1·26
Oklahoma	.....	.....	60·18	102·7	9·6	.....	.....	4·43
North Central Division:								
Ohio	31·74	29·75	28·37	97·6	30·4	13·98	12·35	12·51
Indiana	33·75	31·37	29·54	91·9	17·8	8·42	7·29	6·67
Illinois	32·24	30·66	28·26	99·2	47·0	20·28	18·96	22·01
Michigan	30·28	28·37	27·77	106·2	56·1	22·63	23·73	25·97
Wisconsin	33·57	30·85	29·88	91·6	72·4	34·56	30·82	30·78
Minnesota	32·45	30·43	28·93	99·8	76·4	36·55	34·28	35·90
Iowa	33·06	31·40	30·17	90·2	42·6	17·14	16·11	16·95
Missouri	33·57	32·35	31·11	84·7	22·5	12·91	9·76	8·77
North Dakota	23·74	24.34	27·30	112·2	80·3	33·95	38·32	44.58
South Dakota			29·29	100·5	61·2			27·69
Nebraska	28·07	29·88	30·12	94·5	42·1	25·00	21·53	19·13
Kansas	29·83	31·73	31·59	85·0	26·4	13·28	11·05	10·36
Western Division:								
Montana	10·20	17·10	18·06	274·0	49·4	38·74	29·42	32·61
Wyoming	9·39	18·06	21·33	208·8	47·2	38·53	28·14	24·57
Colorado	22·47	18·72	22·00	181·8	36·3	16·55	20·48	20·38
New Mexico	31·90	29·85	28·07	104·3	13·2	6·12	6·73	7·33
Arizona	16·78	19·59	25·42	156·4	57·1	60·45	39·69	31·52
Utah	35·05	33·39	32·45	80·7	66·6	35·38	30·56	25·52
Nevada	12·56	18·22	21·87	209·3	60·8	44·25	41·20	32·14
Idaho	11·30	22·98	27·07	137·9	41·1	52·57	30·59	20·69
Washington	26·96	27·19	22·69	185·3	39·3	20·97	21·04	25·76
Oregon	32·34	28·63	26·96	132·1	27·9	12·76	17·45	18·27
California	24·48	25·03	23·72	161·3	51·8	37·45	33·87	30·32

POPULATION.

(Tables 1 and 2.)

Table 1 gives (1) the total population of each State, (2) the school population, or number of possible pupils, and (3) the adult male population, or number of taxpayers or school supporters. These are all estimated for 1892 upon the basis of the U. S. Census of 1890.

The slow diminution in the relative number of children in the population since 1870, and the differences which characterize the different States as regards their relative number of children, are shown in Columns 2 to 4 of Table 2. This is an important matter in considering actual school attendance and one which has already been emphasized in previous reports of this office.

Column 5 of the same table exhibits the relation which the number of adult males bears to that of children. When it is considered that in Montana, for instance, there are five times as many male adults to the hundred children as in South Carolina, which is one of the surprising facts developed by the U. S. Census of 1890, an idea may be had of the adverse conditions the latter State, as well as the entire South in a greater or less degree, has to contend with in this regard alone in sustaining a public-school system. In Diagram 1 the inequalities in the ratios of adult to school population are rendered more striking to the eye.

The proportion of white children of foreign birth or parentage is given in Column 6 of Table 2, while Columns 7 to 9 give the percentage of foreign-born population since 1870. The foreign born number 14.77 per cent, or about one-seventh, of the total population, which is a slight increase over the percentage of 1870. The foreign element is almost wanting in the South, while in the North and West persons of foreign birth form about one-fifth of the population.

DIAGRAM 1.—*Showing for each State the number of adult males to every 100 children of school age in 1890. (Table 2, Column 5.)*

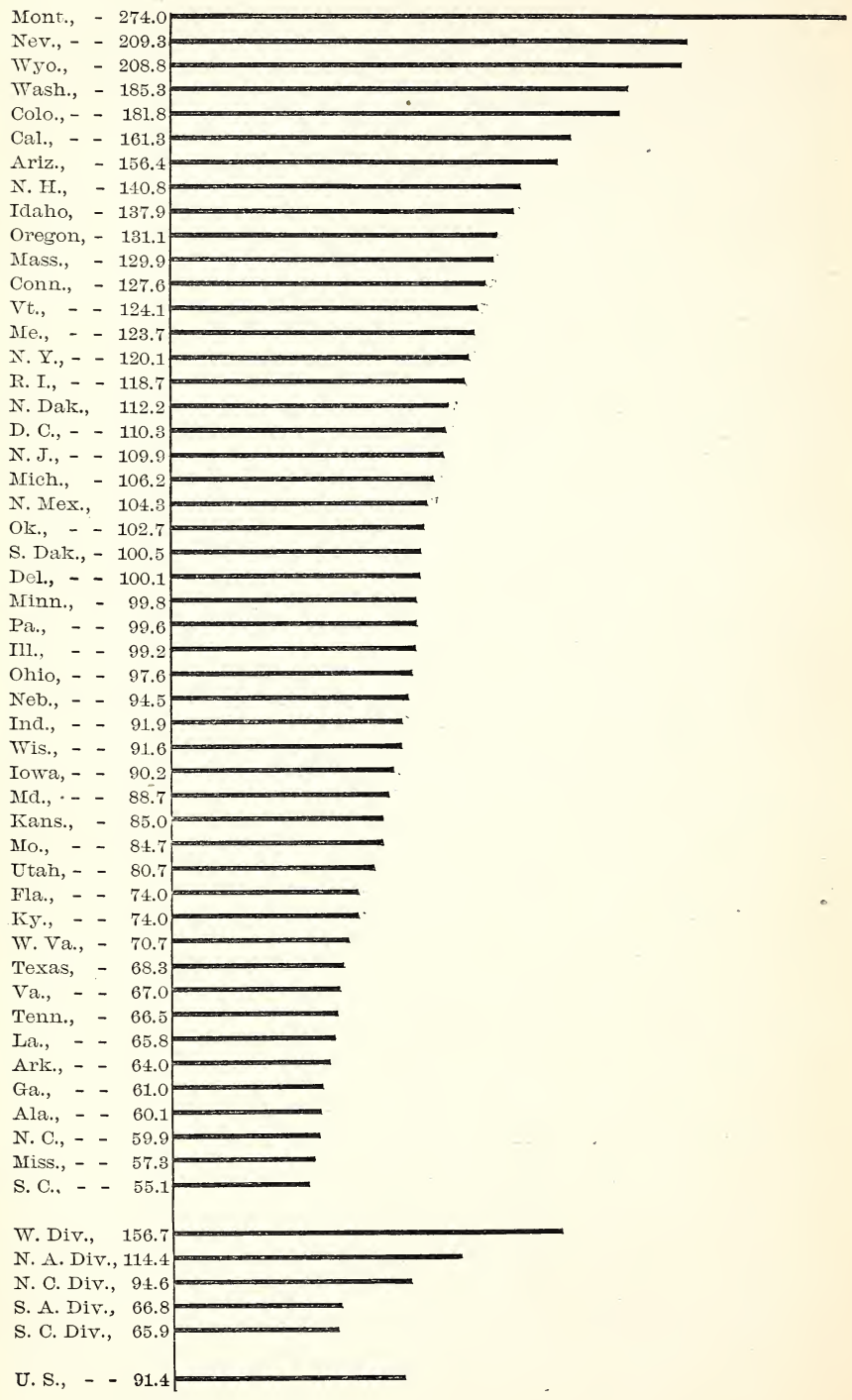


TABLE 3.—*Number of pupils enrolled at various periods, and relation of the enrollment to the school population.*

State or Territory.	Whole number of pupils enrolled on the school registers during the school year, excluding duplicates.				Number of pupils enrolled for every 100 children 5 to 18 years of age.			
	1870–'71.	1879–'80.	1889–'90.	1891–'92.	1870–'71.	1879–'80.	1889–'90.	1891–'92.
1	2	3	4	5	6	7	8	9
United States	7,561,582	9,867,505	12,722,581	13,205,877	61·45	65·50	68·61	68·82
North Atlantic Division.	2,743,344	2,930,345	3,112,622	3,178,604	77·95	75·17	70·45	69·97
South Atlantic Division.	603,619	1,242,811	1,785,486	1,829,278	30·51	50·74	59·22	58·84
South Central Division..	767,839	1,371,975	2,293,579	2,453,113	34·17	46·43	60·14	61·87
North Central Division..	3,300,660	4,033,828	5,015,217	5,130,244	76·87	75·84	76·46	75·84
Western Division	146,120	288,546	515,677	614,638	54·77	64·96	70·01	75·55
North Atlantic Division:								
Maine	a 152,600	149,827	139,676	136,634	87·35	89·80	85·88	84·45
New Hampshire b	71,957	64,341	59,813	61,271	91·31	81·32	71·28	71·85
Vermont	c 65,384	75,238	d 65,608	c 65,314	.....	87·21	.....	.....
Massachusetts	273,661	306,777	371,492	383,217	72·34	71·76	72·56	72·52
Rhode Island	a 34,000	40,604	52,774	52,737	59·24	59·59	62·66	58·94
Connecticut	113,588	119,694	126,505	130,971	80·83	76·97	72·03	72·08
New York	1,028,110	1,031,593	1,042,160	1,073,093	82·98	77·10	70·71	72·47
New Jersey d	169,430	204,961	234,072	243,254	63·20	64·77	62·21	60·03
Pennsylvania e	834,614	937,310	1,020,522	1,032,113	76·35	74·37	69·53	67·48
South Atlantic Division:								
Delaware	20,058	27,823	31,434	f 31,434	50·04	65·20	66·19	f 66·19
Maryland	115,683	162,431	184,251	189,129	46·70	58·13	60·37	60·64
District of Columbia.	15,157	26,439	36,906	39,678	41·60	55·40	63·10	60·49
Virginia	131,088	220,736	342,269	335,646	32·34	45·00	60·51	57·79
West Virginia	76,999	142,850	193,064	200,789	49·47	69·21	75·27	75·42
North Carolina	a 115,000	252,612	322,533	335,358	31·23	55·87	56·39	57·47
South Carolina	66,056	134,072	201,260	205,649	27·28	40·56	47·08	46·74
Georgia	49,578	236,533	381,297	397,815	11·89	46·24	58·46	59·14
Florida	14,000	39,315	92,472	93,780	21·21	44·16	71·10	66·93
South Central Division:								
Kentucky	g 178,457	g 276,000	399,660	389,860	.....	.....	65·64	62·11
Tennessee	a 140,000	300,217	447,950	487,507	32·00	58·21	74·06	77·95
Alabama	141,312	179,490	301,615	f 301,615	40·36	42·60	55·83	f 55·83
Mississippi	117,000	236,654	334,158	340,927	40·60	61·29	70·62	70·20
Louisiana	57,639	77,642	120,253	140,233	24·78	25·87	31·58	35·57
Texas	63,504	a 220,000	466,872	528,314	21·00	42·40	59·50	62·80
Arkansas	69,927	81,972	223,071	251,452	40·29	30·81	55·41	59·89
Oklahoma	.....	.....	.....	13,205	.....	.....	.....	43·40
North Central Division:								
Ohio	719,372	729,499	797,439	800,356	84·04	76·69	76·54	75·97
Indiana	450,057	511,283	512,955	511,823	78·64	82·39	79·21	78·42
Illinois	672,787	704,041	778,319	809,452	81·01	74·61	71·97	71·27
Michigan	292,466	362,556	427,032	447,467	79·66	78·08	73·44	74·72
Wisconsin	265,285	299,457	351,723	362,064	73·92	73·78	69·77	68·80
Minnesota	113,983	180,248	280,960	300,333	75·92	75·87	74·59	74·60
Iowa	341,938	426,057	493,267	509,830	84·44	83·52	85·51	86·50
Missouri	330,070	482,986	620,314	640,799	56·03	68·85	74·43	73·72
North Dakota	1,660	13,718	35,543	37,916	39·26	41·68	71·26	72·81
South Dakota			78,043	74,070			81·04	75·35
Nebraska	23,265	92,549	240,300	253,909	58·79	68·48	75·36	74·13
Kansas	89,777	231,434	399,322	382,225	74·22	73·23	88·56	86·64
Western Division:								
Montana	a 450	4,270	16,980	21,768	70·24	63·77	71·14	74·42
Wyoming	1,657	2,907	7,052	9,426	45·34	77·44	54·46	58·75
Colorado	4,357	22,119	65,490	76,647	42·28	60·82	72·20	75·77
New Mexico	a 1,320	4,755	18,215	24,297	4·42	13·32	42·26	53·95
Arizona	.....	4,212	7,989	a 10,080	.....	53·16	52·72	58·94
Utah	16,992	24,326	37,279	55,448	53·36	50·61	55·26	72·25
Nevada	3,106	9,045	7,387	7,161	53·97	79·73	73·80	74·02
Idaho	906	5,834	14,311	a 17,360	46·06	77·85	62·66	a 62·66
Washington	a 5,000	14,780	55,964	78,819	69·00	72·36	70·58	82·24
Oregon	21,000	37,533	63,254	75,526	67·73	75·02	74·78	79·52
California	91,332	158,765	221,756	238,106	63·63	73·37	77·38	79·38

a Estimated.
b Number of pupils attending two weeks or more.
c Includes only pupils of legal school age (5 to 20).
d Same (5 to 18).
e Enrollment of Philadelphia estimated.
f In 1889–'90.
g Highest number enrolled.

TABLE 4.—*The school enrollment of 1891-'92 classified by sex, and compared with the enrollment of the preceding year. Per cent of the male and of the female school population enrolled.*

State or Territory.	Whole number of pupils enrolled, excluding duplicates.			Increase or decrease since the preceding year.	Per cent of increase or decrease.	Number of pupils enrolled for every 100 children 5 to 18 years of age.	
	Males.	Females.	Total.			Males.	Females.
1	2	3	4	5	6	7	8
					Per cent.		
United States			13,205,877	I..203,238	I..1·56	*68·42	*67·48
North Atlantic Division			3,178,604	I..*a*36,078	I..*a*1·17	*68·31	*67·48
South Atlantic Division			1,829,278	I.. 12,994	I.. ·72	*59·99	*58·41
South Central Division			2,453,113	I.. 45,928	I..1·91	*61·67	*61·24
North Central Division			5,130,244	I.. 67,799	I..1·34	*76·32	*74·78
Western Division			614,638	I.. 40,439	I..7·04	*77·77	*76·10
North Atlantic Division:							
Maine			136,634	D.. 4,799	D..3·39		
New Hampshire *b*	31,223	30,048	61,271	I.. 1,076	I..1·79	73·13	70·53
Vermont *c*	33,993	31,321	65,314			81·98	80·38
Massachusetts			383,217	I.. 6,231	I..1·65		
Rhode Island	26,645	26,092	52,737	I.. 1,255	I..2·44	59·83	58·07
Connecticut			130,971	I.. 2,066	I..1·60		
New York			1,073,093	I.. 19,049	I..1·81		
New Jersey *d*			243,254	I.. 5,754	I..2·42		
Pennsylvania *e*	522,443	509,670	1,032,113	I.. 5,446	I.. ·53	67·81	67·20
South Atlantic Division:							
Delaware *f*			31,434	D.. 559	D..1·72		
Maryland			189,129	D.. 85	D.. ·04		
District of Columbia	18,890	20,788	39,678	I.. 1,292	I..3·37	59·30	61·60
Virginia	169,441	166,205	335,646	D.. 7,074	D..2·06	57·87	57·70
West Virginia	104,563	96,226	200,789	I.. 2,413	I..1·22	77·60	73·12
North Carolina	171,125	164,233	335,358	I.. 4,638	I..1·40	58·05	56·94
South Carolina	102,000	103,649	205,649	D.. 3,910	D..1·87	45·91	47·59
Georgia	200,103	197,712	397,815	I.. 16,518	I..4·33	58.81	59·47
Florida	46,918	46,862	93,780	D.. 239	D.. ·25	66·74	67·14
South Central Division:							
Kentucky			389,860	D.. 36,627	D..8·59		
Tennessee	250,788	236,719	487,507	I.. 4,170	I.. ·86	73·80	77·05
Alabama *f*			301,615	I.. 31,411	I..11·62		
Mississippi			340,927	I.. 13,072	I..3·99		
Louisiana	70,652	69,581	140,233	I.. 9,524	I..7·29	35·68	35·44
Texas	262,984	265,330	528,314	I.. 12,235	I..2·37	61·79	63·87
Arkansas	130,939	120,513	251,452	I.. 9,333	I..3·85	61·44	58·26
Oklahoma	6,872	6,333	13,205	I.. 2,810	I..27·03	43·67	43·11
North Central Division:							
Ohio	411,641	388,715	800,356	I.. 45,487	I..6·03	77·25	74·69
Indiana	260,130	251,693	511,823	D.. 10,018	D..1·92	78·98	77·82
Illinois	411,158	398,294	809,452	I.. 10,394	I..1·30	71·92	70·58
Michigan			447,467	I.. 1,443	I.. ·32		
Wisconsin			362,064	I.. 4,247	I..1·19		
Minnesota			300,333	I.. 9,691	I..3·33		
Iowa			509,830	I.. 6,075	I..1·21		
Missouri	324,956	315,843	640,799	I.. 1,070	I.. ·17	74·08	73·32
North Dakota	20,175	17,741	37,916	I.. 2,373	I..6·68	74·97	70·48
South Dakota	38,956	35,114	74,070	D.. 2,207	D..2·89	77·47	73·15
Nebraska	130,083	123,826	253,909	I.. 6,589	I..2·66	74·35	73·93
Kansas	196,043	186,182	382,225	D.. 7,345	D..1·89	87·14	86·06
Western Division:							
Montana			21,768	I.. 2,717	I..14·26		
Wyoming	4,808	4,618	9,426	I.. 698	I..8·00	57·86	59·66
Colorado	38,814	37,833	76,647	I.. 3,256	I..4·44	75·88	75·60
New Mexico	14,391	9,906	24,297	I.. 1,698	I..7·51	62·57	44·97
Arizona *g*			10,080	I.. 1,110	I..12·37		
Utah			55,448	I.. 8,654	I..18·50		
Nevada	3,610	3,551	7,161	D.. 407	D..5·38	73·53	74·50
Idaho *g*			17,360	I.. 2,180	I..14·36		
Washington	39,947	38,872	78,819	I.. 9,209	I..13·23	81·43	83·12
Oregon	37,605	37,921	75,526	I.. 3,204	I.. 4·43	78·38	80·67
California	122,141	115,965	238,106	I.. 8,120	I..3·53	80·56	78·16

* This summary includes only the States belonging to the group that are tabulated in the same column below.

a Excluding Vermont.

b Number of pupils attending two weeks or more.

c Includes only pupils of legal school age (5–20).

d Includes only pupils of legal school age (5–18.)

e Enrollment of Philadelphia estimated.

f In 1889-'90.

g Estimated.

ENROLLMENT.

Tables 3 and 4 give various facts relating to the common school enrollment, past and present.

It appears that the total number of pupils enrolled on the school registers during the school year 1891–'92, so far as can now be determined, was 13,205,877, or an average of 68·82 pupils for each 100 children of school age (5 to 18 years), as against 69·03 in 1890–'91.

A consolidation of the gains and losses of one year shows a net increase of 203,238 pupils over the last preceding reports (in the case of most of the States over those of 1890–'91). This indicates a gain of 1·56 per cent, which is less than for several years past; the gain of 1890–'91 over 1889–'90, indeed, was 2·57 per cent.

These figures seem to show that the increase in enrollment has not kept pace during the past year with the growth of the school population. Some of the State reports of enrollment are imperfect, however, and this loss of pupils as compared with the total number of children may be only apparent. Kentucky, for instance, shows (Table 4, Column 5) a loss of 36,627 pupils since 1890–'91; but Supt. Thompson, of that State, attributes this seeming loss to imperfect reports, and informs the Bureau that it is doubtful if there has been any real loss. The decrease of 10,018 pupils in Indiana may probably be explained in the same way.

The increase in some of the States of the Western Division is phenomenal; Montana, Idaho, and Washington each increased their school enrollment by about one-seventh, and Utah by nearly one-fifth (18·50 per cent).

Sex.—The attempt has been made in the present Report to classify the common school enrollment by sex. The result shows that in each section of the Union, as a rule, more boys are enrolled in the common schools than girls. This might have been expected from the fact that there is an excess of boys in the school population, 50·47 per cent of all the children from 5 to 18 years of age being boys (Table 1, Columns 3, 4, and 6). But it is further shown (Table 4, Columns 7 and 8) that in proportion to the total numbers of each sex more boys than girls are enrolled. Out of every 100 boys of school age in 31 States 68·42 are enrolled; girls, 67·48. The difference is slight, and may be due to the reluctance of parents to intrust their girls to the public schools at so early an age as their boys.

Classification of pupils by age.—A knowledge of the ages of common-school pupils is a great desideratum. Only three States, viz, Vermont, New Jersey, and North Carolina, furnish complete information upon this point. Several other States report the number of pupils above and below certain age limits. Using this information as a basis, an estimate has been made of the number of pupils of each year of age from 5 to 18, which is probably not grossly in error, and may serve for most purposes in lieu of more accurate figures. A corresponding esti-

mate was made of the whole number of children of each year of age. The results appear in the following table (Table 5), and are plotted in part in Diagram 2.

DIAGRAM 2.—*Showing for each year of age from 5 to 18 the whole number of children and the number enrolled in the common schools.* (*See Table 5.*)

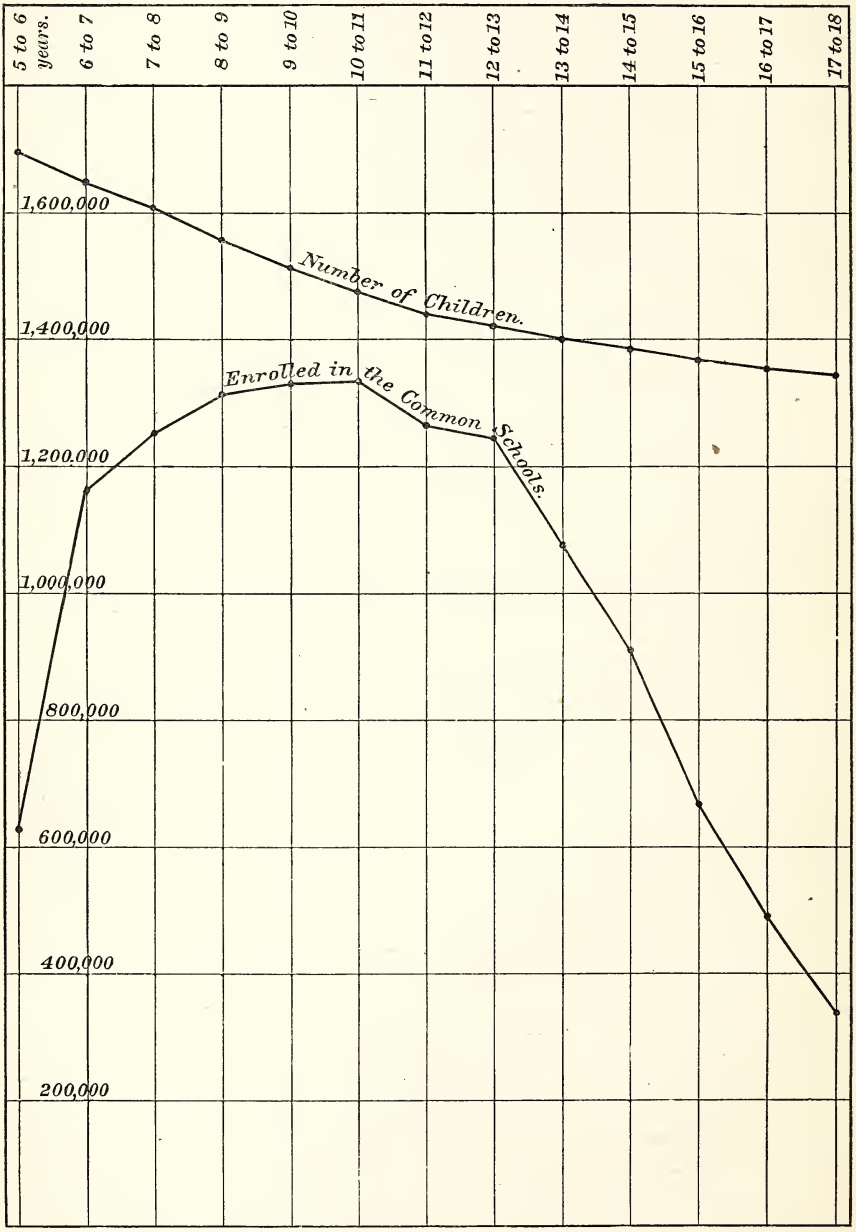


TABLE 5.—*Showing for each year of age from 5 to 18 the whole number of children and the number enrolled in the common schools.*

Years of age.	School population.			Enrollment.		
	Whole number of children.	Per cent of the school population.	Per cent of the total population.	Number enrolled in the common schools.	Per cent of the total enrollment.	Per cent of the school population.
From 5 to 6	1,698,300	8·85	2·62	627,200	4·75	36·9
6 to 7	1,646,300	8·58	2·54	1,163,000	8·80	70·6
7 to 8	1,601,000	8·34	2·47	1,253,100	9·49	78·3
8 to 9	1,555,700	8·10	2·40	1,317,800	9·98	84·7
9 to 10	1,510,300	7·87	2·33	1,331,100	10·08	88·1
10 to 11	1,471,400	7·66	2·27	1,332,500	10·09	90·6
11 to 12	1,439,000	7·50	2·22	1,262,500	9·56	87·7
12 to 13	1,419,400	7·40	2·19	1,244,000	9·42	87·6
13 to 14	1,400,300	7·30	2·16	1,077,600	8·16	77·0
14 to 15	1,387,100	7·23	2·14	904,400	6·85	65·2
15 to 16	1,367,700	7·13	2·11	668,200	5·06	48·9
16 to 17	1,354,700	7·06	2·09	488,000	3·70	36·1
17 to 18	1,341,694	6·98	2·07	339,300	2·57	25·3
Over 18	.....	.....	.....	196,577	1·49	.....
Total	19,192,894	100·00	29·61	13,205,877	100·00	68·8

According to the above table, of the 13,205,877 common-school pupils in the United States, 10,608,800, or 80·33 per cent, are under 14 years of age. Indeed, it will appear from the diagram that the pupils begin to thin out very rapidly after reaching the thirteenth year. The maximum attendance is from 9 to 11 years of age.

It is worthy of note that, according to this table, 90·6 per cent of the children from 10 to 11 years of age are enrolled in the common schools. As all persons who reach maturity pass through this age period, it is evident that, if this percentage remained constant from year to year, more than nine-tenths of the adult population of the United States (disregarding immigrants) would have received some degree of education in the common schools, the more so, in that many between 10 and 11 not in school now have attended school at an earlier age or will attend hereafter.

Add to this number those who have received their education in private schools only, and making due allowance for duplicate registrations, there would remain only an inconsiderable fraction of persons raised in this country who had never attended school at all.

This well-nigh universal education is almost wholly voluntary. Probably not one child in a hundred is sent to school under compulsion of the law.

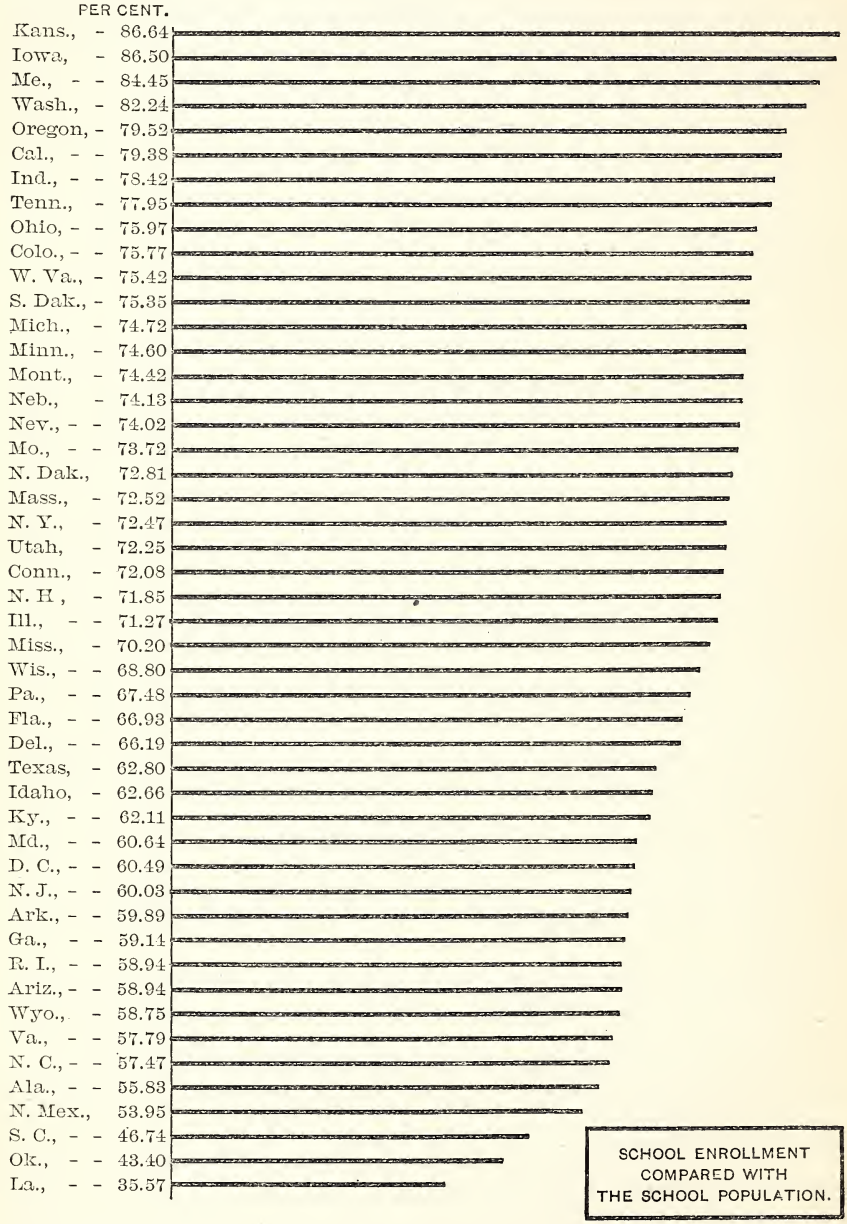
Percentage of school population enrolled.—The number of pupils enrolled in each State at four different dates or epochs is given in Columns 2 to 5 of Table 3; and in Columns 6 to 9 is given for the same dates the percentage of school population enrolled. The number of pupils enrolled for every 100 children of school age has increased from 68·61 in 1889–'90 to 68·82 in 1891–'92.

Diagram 3 shows graphically for each State the percentage of school population enrolled at the present time, the arrangement of States being in the order of magnitude in this particular.* Four have enrolled

* This diagram considers only the number of pupils whose names were entered on the school registers, without regard to the number of days they attended.

DIAGRAM 3.—*Showing graphically the percentage of the school population (5 to 18 years) enrolled in the common schools in 1891–92. (See Table 3, Column 9.)*

NOTE.—This diagram has only to do with the number of pupils enrolled, without regard to their regularity of attendance or the length of the school term.



more than 80 per cent of all persons from 5 to 18 years of age. It is probable that a rigorous exclusion of duplicate enrollments, such as is practiced in Massachusetts and Rhode Island, would somewhat alter this showing. In addition to what has been already said upon this subject in previous reports of this office, reference may be made to certain wholesale duplications to which State Superintendent Knoepfler, of Iowa, calls attention. In his report for 1892–'93 (p. 133) he says:

> Experience shows that many young teachers do not understand how properly to keep a daily register and make a term report therefrom. * * * Frequently the enrollment for three separate terms is added to get the enrollment for the year, when in fact the majority of the names have thus been counted three times, thus giving a greatly exaggerated enrollment.

Iowa, it will be observed, stands next to the highest in Diagram 3.

The relation of enrollment to school population is given in the following table for each year since 1870–'71, and illustrated further by Diagram 4:

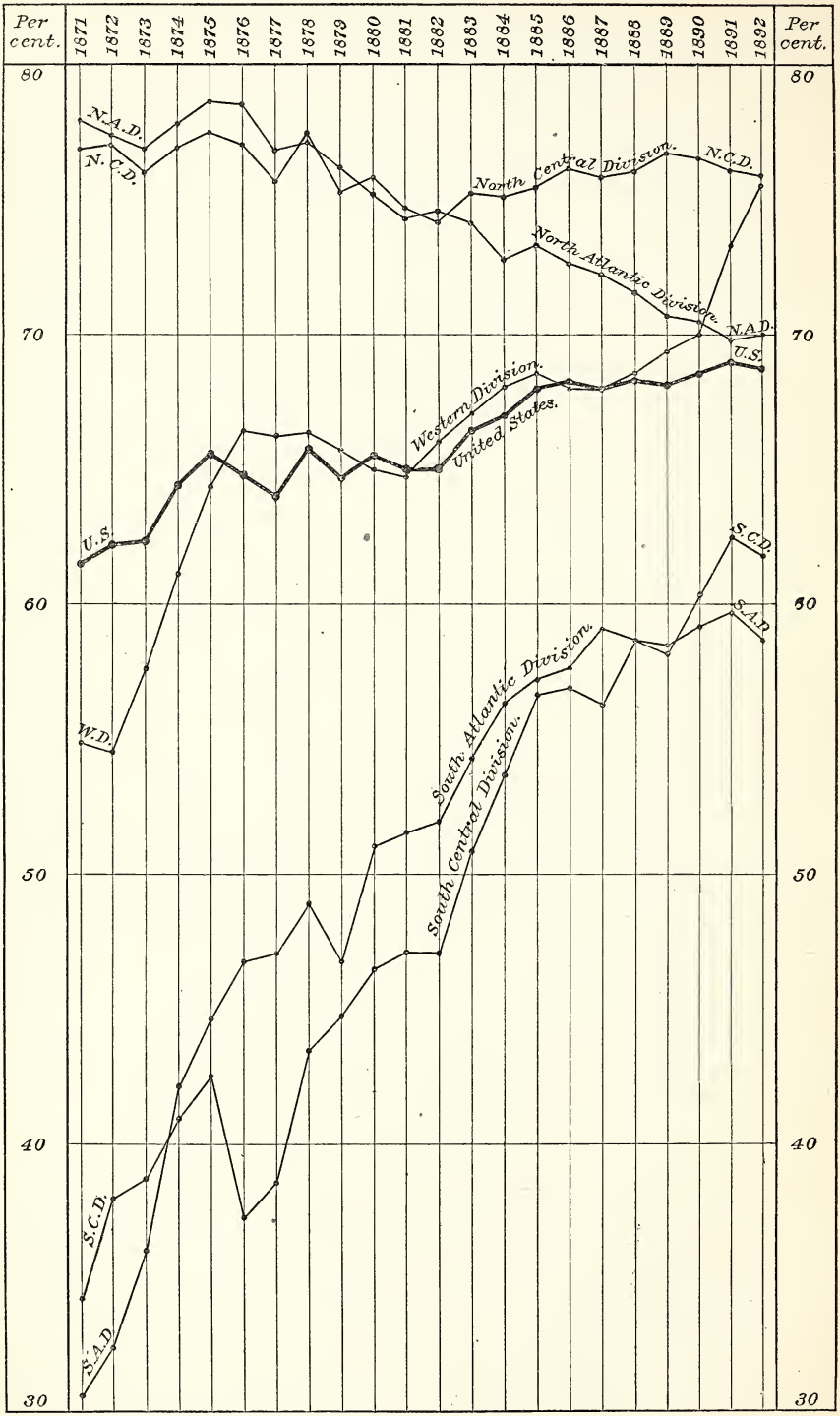
TABLE 6.—*Showing school population of the United States and number of pupils enrolled each year since 1870–'71; also per cent of school population enrolled in each geographic division.*

Years.	Estimated school population (persons 5 to 18 years of age) of the United States.	Pupils enrolled.	Per cent of the school population enrolled.					
			United States.	North Atlantic Division.	South Atlantic Division.	South Central Division.	North Central Division.	Western Division.
1870–'71	12,305,600	7,561,582	61·45	77·95	30·51	34·17	76·87	54·77
1871–'72	12,535,600	7,815,306	62·20	77·33	32·27	37·94	77·04	54·43
1872–'73	12,833,700	8,003,614	62·36	76·79	35·86	38·67	75·97	57·52
1873–'74	13,112,900	8,444,251	64·40	77·77	42·10	40·82	76·98	61·04
1874–'75	13,405,200	8,785,678	65·54	78·59	44·61	42·47	77·54	64·39
1875–'76	13,708,000	8,869,115	64·70	78·55	46·72	37·36	77·05	66·37
1876–'77	14,025,800	8,965,006	63·92	76·83	47·02	38·51	75·60	66·12
1877–'78	14,356,000	9,438,883	65·75	77·09	48·85	43·50	77·38	66·26
1878–'79	14,702,800	9,504,458	64·64	76·18	46·72	44·71	75·28	65·63
1879–'80	*a* 15,065,767	9,867,505	65·50	75·17	50·74	46·43	75·84	64·96
1880–'81	15,379,290	10,000,896	65·03	74·28	51·49	47·03	74·59	64·82
1881–'82	15,704,660	10,211,578	65·03	74·56	51·90	47·02	74·15	65·93
1882–'33	16,044,410	10,651,828	66·39	74·15	54·30	50·68	75·13	67·05
1883–'84	16,401,280	10,982,364	66·96	72·83	56·25	53·59	75·06	68·01
1884–'85	16,773,190	11,398,024	67·96	73·23	57·17	56·57	75·46	68·53
1885–'86	17,122,060	11,664,460	68·14	72·63	57·68	56·82	76·08	68·03
1886–'87	17,482,020	11,884,944	67·98	72·23	58·98	56·21	75·77	67·97
1887–'88	17,827,310	12,182,600	68·33	71·60	58·68	58·67	75·96	68.53
1888–'89	18,168,580	12,392,260	68·20	70·60	58·40	58·28	76·63	69·39
1889–'90	*a* 18,543,201	12,722,581	68·61	70·45	59·22	60·14	76·46	70·01
1890–'91	18,906,950	13,050,132	69·03	69·85	59·80	62·51	76·60	73·28
1891–'92 *b*	19,192,894	13,205,877	68·82	69·97	58·84	61·87	75·84	75·55

a U. S. Census. *b* Subject to correction.

The strong upward trend of the lines of the two Southern divisions in the diagram records a growth in public school attendance during the past two decades of epoch-making proportions. The close coincidence of these two lines throughout their length indicates a similarity of conditions obtaining simultaneously over a wide extent of territory.

DIAGRAM 4.—*Showing the per cent of the school population enrolled in the common schools since 1871.* (*See Table 4.*)



There are grounds for apprehending that these two Southern lines will not rise much higher than at present. The small proportion of adults in the South compared with the number of children to be educated (*see* Diagram 1), and the fact that of this small proportion fully one-third are negroes who contribute a minimum to the support of the schools, are circumstances adverse to the highest development of a public-school system. Those who are familiar with the educational history of the North are aware of the widespread repugnance that has been exhibited of one class of people to support schools for the benefit of another; of the rich for the benefit of the poor; of those having no children for the benefit of those having them; of the people of one locality to be taxed for the benefit of those of another. Instances have occurred of lawsuits being instituted over the petty question of whether a child should be educated in this or that district school. It is inevitable that these antagonisms should be intensified in the South, with its sharply defined race contrasts; one race with little property being dependent for education largely upon the financial resources of another.

That the lines of the Southern divisions have approached so near the Northern, as is the case in the diagram, is a testimonial to the existence in that section of a widespread determination to secure the benefits of education to all the people, and shows that it has in a large measure been effective in bringing the children into the schools. The chief drawback is the short school term. (*See* Diagram 6.)

The line of the Western States also bears strongly upward. The twenty years covered by the diagram have witnessed the change of many of these States from frontier communities to more settled conditions. Here the great preponderance of adults and sparsity of children render the financial burden of providing education for all youth peculiarly light.

The North Central States have about held their own in the last two decades as regards proportion of school population enrolled. In the North Atlantic States there has been a marked loss. When it is considered, however, to what extent enrollment statistics were formerly inflated through duplicate registrations, there is reason for supposing that the loss in the North Atlantic States is more apparent than real. A complete eradication of duplicate enrollments would probably bring both the northern divisions down still lower in the scale. The low position of Rhode Island in Diagram 3 must be attributed, at least in part, to rigidly correct reports of enrollment, each pupil being reported only once, no matter in how many schools enrolled.

TABLE 7.—*Average daily attendance at various periods, and its present relation to the average attendance of the preceding year, to the enrollment, and to the school population.*

State or Territory.	Average number of pupils in attendance each day.				Increase or decrease since last year reported.	Per cent of increase or decrease.	Average number attending for every 100 enrolled.	Average number attending for every 100 children 5 to 18 years of age.
	1870–'71.	1879–'80.	1889–'90.	1891–'92.				
1	2	3	4	5	6	7	8	9
						Per cent.		
United States	4,545,317	6,144,143	8,153,635	8,547,551	I .. 142,539	I .. 1·70	64·73	44·54
North Atlantic Division	1,627,268	1,824,487	2,036,459	2,109,154	I .. 23,957	I .. 1·15	66·36	46·43
South Atlantic Division	368,111	776,798	1,126,683	1,112,509	D.. 13,856	D.. 1·23	60·81	35·78
South Central Division	535,632	902,767	1,467,649	1,553,104	I .. 59,075	I .. 3·95	63·31	39·17
North Central Division	1,911,720	2,451,167	3,188,732	3,370,869	I .. 37,534	I .. 1·13	65·70	49·83
Western Division	102,646	188,924	334,112	401,915	I .. 35,789	I .. 9·78	65·39	49·40
North Atlantic Division:								
Maine	100,392	103,115	98,364	90,191	D.. 12,871	D..12·49	66·00	55·73
New Hampshire	48,150	48,966	41,526	43,508	I .. 1,412	I .. 3·35	71·00	51·01
Vermont	*a* 44,100	48,606	45,887	45,057	D.. 418	D.. 0·92	68·98	53·02
Massachusetts	201,750	233,127	273,910	283,648	I .. 5,046	I .. 1·81	74·03	53·67
Rhode Island	22,485	27,217	33,905	37,001	I .. 2,100	I .. 6·02	70·17	41·35
Connecticut	62,683	73,546	83,656	84,887	I .. 583	I .. 0·69	64·80	46·71
New York	493,648	573,089	642,984	665,574	I .. 15,557	I .. 2·39	62·03	44·95
New Jersey	86,812	115,194	133,286	150,569	I .. 3,806	I .. 2·59	61·89	37·15
Pennsylvania	567,188	601,627	682,941	708,719	I .. 8,782	I .. 1·25	68.66	46·33
South Atlantic Division:								
Delaware	*a* 12,700	17,439	19,649	*b* 19,649	D.. 851	D.. 4·15	*b* 62·51	41·38
Maryland	56,435	85,778	102,351	105,063	D.. 1,107	D.. 1·04	55·55	33·69
Dist. of Columbia	10,261	20,637	28,184	29,762	I .. 752	I .. 2·59	75·00	45·37
Virginia	77,402	128,404	198,290	186,026	D.. 7,510	D.. 3·88	55·44	32.04
West Virginia	51,336	91,604	121,700	128,044	I .. 4,057	I .. 3·27	63·76	48·09
North Carolina	*a* 73,000	170,100	203,100	198,747	D.. 3,016	D.. 1·49	59·27	34·07
South Carolina	*a* 44,700	*a* 90,600	147,799	148,761	I .. 158	I .. 0·11	72·33	33·81
Georgia	31,377	145,190	240,791	234,231	D.. 6,560	D.. 2·72	58·89	34·82
Florida	*a* 10,000	27,046	64,819	62,226	I .. 221	I .. 0·36	66·36	44·41
South Central Division:								
Kentucky	120,866	178,000	225,739	243,192	D.. 2,217	D.. 0·90	62·39	38·75
Tennessee	*a* 89,000	208,528	323,548	349,483	I .. 11,665	I .. 3·45	71·68	55·87
Alabama	107,666	117,978	182,467	*b* 182,467	I .. 10,366	I .. 6·02	*b* 60·50	33·78
Mississippi	90,000	156,761	207,704	197,275	D.. 305	D.. 0·15	57·86	40·62
Louisiana	*a* 40,500	*a* 54,800	87,536	96,475	I .. 4,655	I .. 5·07	68·80	24·47
Texas	*a* 41,000	*a* 132,000	*a* 291,941	336,257	I .. 16,757	I .. 5·24	63·63	39·96
Arkansas	*a* 46,600	*a* 54,700	*a* 148,714	140,445	I .. 16,820	I ..13·60	55·85	33·45
Oklahoma	.....	.....	.....	7,510	I .. 1,334	I ..21·60	56·87	24·68
North Central Division:								
Ohio	432,452	476,279	549,269	563,481	I .. 3,188	I .. 0·57	70·40	53·48
Indiana	295,071	321,659	342,275	360,664	D.. 8,396	D.. 2·28	70·45	55·25
Illinois	341,686	431,638	538,310	574,738	I .. 14,679	I .. 2·62	71·00	50·60
Michigan	*a* 193,000	*a* 240,000	*a* 282,000	296,671	D.. 1,719	D.. 0·58	66·30	49·53
Wisconsin	*a* 132,000	*a* 156,000	200,457	*a* 217,200	I .. 2,500	I .. 1·16	*a* 59·99	41·27
Minnesota	50,694	*a* 78,400	127,025	141,472	I .. 390	I .. 0·28	47·11	35·14
Iowa	211,562	259,836	306,309	321,708	I .. 4,441	I .. 1·40	63·10	54·57
Missouri	187,024	*a* 281,000	384,627	433,951	I .. 21,818	I .. 5·30	67·72	49·92
North Dakota	*a* 1,040	8,530	20,694	21,413	I .. 719	I .. 3·47	56·49	41·13
South Dakota			48,327	45,870	D.. 1,370	D.. 2·90	61·93	46·67
Nebraska	*a* 14,300	60,156	146,139	154,402	I .. 8,087	I .. 5·53	60·81	45·08
Kansas	52,891	137,669	243,300	239,299	D.. 6,803	D.. 2·76	62·59	54·22
Western Division:								
Montana	*a* 1,100	*a* 3,000	10,596	14,940	I .. 2,847	I ..23·54	68·63	51·07
Wyoming	*a* 250	1,920	*a* 4,700	*a* 6,110	I .. 310	I .. 5·35	*a* 64·82	38·08
Colorado	2,611	12,618	38,715	47,946	I .. 4,240	I .. 9·70	62·54	47·39
New Mexico	*a* 880	3,150	*a* 13,000	16,720	I .. 2,285	I ..15·83	68·82	37·13
Arizona	.....	2,847	4,702	*a* 6,080	I .. 730	I ..13·64	*a* 60·31	35·55
Utah	12,819	17,178	20,967	31,632	I .. 5,275	I ..20·01	57·06	41·22
Nevada	*a* 1,800	5,401	5,064	5,152	D.. 181	D.. 3·39	71·95	53·25
Idaho	*a* 600	3,863	*a* 9,500	*a* 11,020	I .. 1,380	I ..14·31	*a* 63·49	39·78
Washington	*a* 3,300	10,546	36,946	50,716	I .. 6,304	I ..14·19	64·34	52·91
Oregon	*a* 15,000	27,435	43,333	52,724	I .. 7,329	I ..16·13	69·80	55·51
California	64,286	100,966	146,589	158,875	I .. 5,276	I .. 3·43	66·73	52·96

a Estimated. *b* In 1889–'90.

AVERAGE DAILY ATTENDANCE.

The average number of pupils in attendance upon the schools of the United States each day, according to the most recent reports (mainly 1891–'92), was 8,547,551.

By comparing the reports of each State for the next preceding year, the aggregate increase is found to be 142,539, or a gain of 1·70 per cent, against a gain in enrollment of only 1·56 per cent. This indicates, if the reports are correct, a more regular attendance of enrolled pupils.

The average attendance forms 64·73 per cent of the enrollment; that is, 64·73 pupils attended school each day for every 100 enrolled; or, viewing the matter in another light, each enrolled pupil attended school on an average, 64·73 days out of every 100 the schools were in session.

This percentage indicating regularity of attendance, being the relation of the average attendance to the enrollment, is affected by any error in either of these quantities. If the enrollment, which is the divisor, is too large, through containing duplicates or other cause, the resulting percentage will be too small. On this ground it is probable that the percentage, 64·73, is less than it should be. Massachusetts and Rhode Island, which are known to exclude duplicates, show a high regularity of attendance, the former State over 74 per cent.

A high regularity of attendance may, however, and probably does in some cases erroneously appear, through inflating the average attendance, i. e., increasing the dividend. This may occur in the case of computing the average attendance of any single school, for instance, through adding together the three reports of the average attendance of the school for three consecutive terms, instead of taking the average of them.

The phenomenally low regularity of attendance in Minnesota (47·11) probably results from some method of ascertaining average attendance in that State not in uniformity with the general practice in that regard.

The following table shows the per cent of regularity of attendance by five-year periods since 1870–'71.

Ratio of average daily attendance to enrollment since 1870–'71.

	1870–'71.	1874–'75.	1879–'80.	1884–'85.	1889–'90.	1891–'92.
The United States	60·1	59·7	62·3	64·0	64·1	64·7
North Atlantic Division	59·3	58·4	62·3	64·7	65·4	66·4
South Atlantic Division	61·0	61·4	62·5	63·2	63·1	60·8
South Central Division	69·8	68·1	65·8	63·4	64·0	63·3
North Central Division	57·9	57·7	60·8	64·1	63·6	65·7
Western Division	70·3	62·8	65·5	64·6	64·8	65·4

The increase in the North Atlantic Division from 59·3 to 66·4 is probably due in part to more correct records of enrollment in recent years. Where the same pupil is registered twice during the school year, he

appears in the statistics as two pupils, each attending only a portion of the year, and the "regularity of attendance" appears too small, as already noted.

What increase in the regularity of attendance there actually is may be ascribed in some measure to the greater proportion of urban schools existing at present. In cities attendance is more regular than in the country. The District of Columbia, which is a pure urban system, stands first in point of regularity, viz, 75 per cent.

The South Central Division has decreased in the 21 years from 69·8 to 63·3. Here the course of events apparently has been reversed. At the earlier date common schools had not spread beyond the cities to any great extent in some of the States of that division, so that their school systems were of a general urban character. Then there were largely exaggerated reports of average attendance in Mississippi for a number of years, which made the regularity of attendance in that section appear greater than was actually the case. Teachers were paid in that State according to the number of pupils in average attendance, and the accuracy of their statistics was allowed to suffer in behalf of their pecuniary interests, as appears from the State school reports.

School population and school attendance.—Diagram 5 shows the relation between the number of children of school age and the number of pupils in daily attendance on the schools, for each State. States in this diagram are higher or lower in rank than in Diagram 4 according to the greater or less regularity of attendance of the pupils enrolled.

DIAGRAM 5.—*Showing the percentage of the school population in attendance at school, in 1891–92; or, the number of pupils in daily attendance for every 100 children of school age (5 to 18 years).* (*See Table 7, Column 9.*)

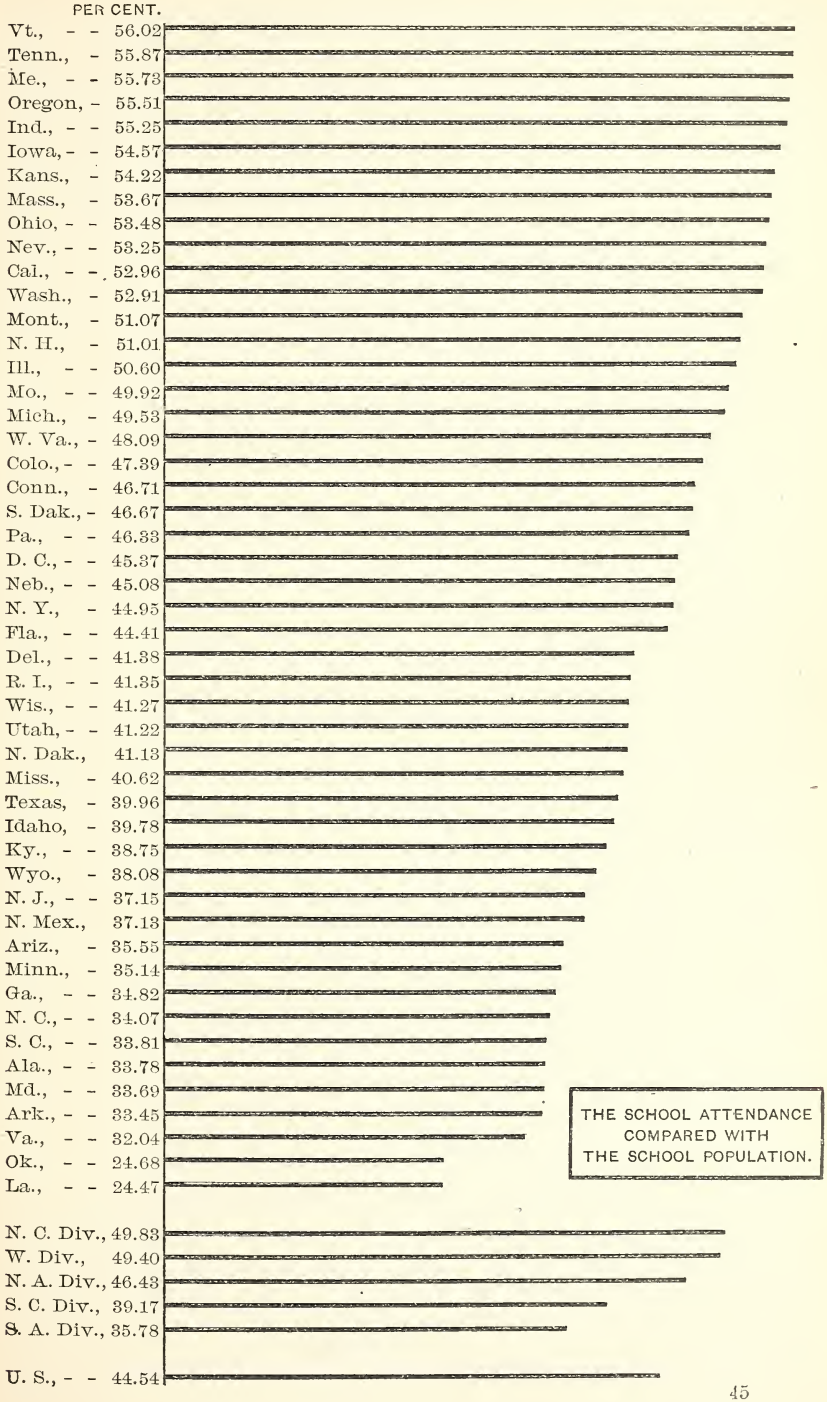


TABLE 8.—*Aggregate number of days schooling given to all pupils, compared with the population 5 to 18 and with the enrollment.—Length of school term.*

State or Territory.	Average length of school term in days.				Increase or decrease since 1890–'91.	Aggregate number of days schooling given.	Average number of days schooling given for each child 5 to 18 years of age.	Average number of days attended by each pupil enrolled.
	1870–'71.	1879–'80.	1889–'90.	1891–'92.				
1	2	3	4	5	6	7	8	9
United States	132·1	130·3	134·7	137·1	I.. 1·9	1,172,261,842	61·1	88·8
North Atlantic Division	152·0	159·2	166·6	169·1	I.. 1·0	356,587,356	78·5	112·2
South Atlantic Division	97·4	92·4	99·9	106·5	I.. 6·0	118,354,964	38·1	64·7
South Central Division	91·6	79·2	88·2	94·5	I.. 2·3	146,757,051	37·0	59·8
North Central Division	133·9	139·8	148·0	146·8	I.. ·7	494,668,765	73·1	96·4
Western Division	119·2	129·2	135·0	139·1	I.. 3·7	55,893,706	68·7	90·9
North Atlantic Division:								
Maine	98	109	112	123	I..12	11,093,493	68·5	81·2
New Hampshire	70	105·3	117·7	121·6	I.. 2·9	5,290,573	62·0	86·3
Vermont	115·6	125·5	136	138	I.. 1	6,215,847	77·3	95·2
Massachusetts	169	177	177	171	I.. 2	48,503,808	91·8	126·6
Rhode Island	170	184	188	188	0	7,145,440	79·9	135.5
Connecticut	172·4	179	182·5	182·3	I.. ·04	15,474,900	85·2	118·2
New York	176	178·5	186·5	185	D. ·5	124,120,252	83·8	115·7
New Jersey	178	192	192	190	0	28,608,110	70·6	117·6
Pennsylvania	127·2	133·4	147·6	155·4	I.. ·2	110,134,933	72·0	106·7
South Atlantic Division:								
Delaware	132	158	166	*a* 166	I.. 2	*a* 3,261,734	*a* 68·7	*a* 103·7
Maryland	183	187	184	184	0	19,331,592	62·0	102·2
District of Columbia	200	193	178	185	I.. 6	5,505,970	83·9	138·8
Virginia	93·2	112·8	118·2	118	I.. 2	21,951,068	37·8	65·4
West Virginia	76·8	90	97	110	I..11	14,084,840	52·9	70·1
North Carolina	*b* 50	50	59·2	62·4	I.. 2·1	12,410,483	21·3	37·0
South Carolina	*b* 100	70	69·6	73·4	I.. 3·2	10,919,057	24·8	53·1
Georgia	59	*b* 65	83·3	100	I..16·7	23,423,100	34·8	58·9
Florida	.....	.....	*b* 120	*c* 120	.....	*b* 7,467,120	*b* 53·3	*b* 79·6
South Central Division:								
Kentucky	*b* 110	102	94	100	0	24,319,200	38·8	62·4
Tennessee	*b* 77	68	86	96	0	33,550,368	53·6	68·8
Alabama	66·5	81·3	73·5	*a* 73·5	D. 2·3	*a* 13,405,900	*a* 24·8	*a* 44·4
Mississippi	110	74·5	*b* 86	95	I..10	18,743,007	38·6	55·0
Louisiana	*b* 65	78·8	100·6	104·4	I.. 3·7	10,071,616	25·5	71·8
Texas	*b* 140	71·7	100	105·9	I.. 5·4	35,598,130	42·3	67·4
Arkansas	.....	.....	*b* 75	74	D. 2	10,392,930	24·7	41·3
Oklahoma	.....	.....	.....	*b* 90	I..10	*b* 675,900	*b* 22·2	*b* 51·2
North Central Division:								
Ohio	165	152	166·5	165·5	I.. 5·6	93,256,106	88·5	116·5
Indiana	98·5	136	130	132	D. 1	47,607,648	72·9	93·0
Illinois	146·7	150	155·4	155·4	I.. ·4	89,314,402	78·7	110·4
Michigan	140	150	156	156	I.. 2	46,280,676	77·3	103·4
Wisconsin	155	165	158·6	*a* 158·6	0	*b* 34,460,000	*b* 65·5	*b* 95·2
Minnesota	*b* 83	94	128	155·2	I.. 4·2	21,485,578	53·4	71·5
Iowa	130	148	156	158	I.. 2	50,829,800	86·2	99·7
Missouri	90	*b* 104	129·4	122·3	D. 4·1	53,072,159	61·1	82·8
North Dakota	*b* 75	*b* 96	113	117	I.. 4	2,510,153	48·2	66·2
South Dakota			145	100·7	D. 1·8	4,617,000	47·0	62·3
Nebraska	72	82	140	135	D. 4	20,844,270	60·9	82·1
Kansas	116	120	135	127	D. ·5	30,390,973	68·9	79·5
Western Division:								
Montana	*b* 89	96	142·7	148	.....	2,211,120	75·6	101·6
Wyoming	*b* 200	119	*b* 120	*b* 120	.....	*b* 732,960	*b* 45·7	*b* 77·8
Colorado	92	*b* 132	144·4	150·1	I.. ·4	7,196,695	71·1	93·9
New Mexico	*b* 111	111	*b* 67	90	I..20	1,504,800	33·4	61·9
Arizona	0	109	126	*b* 172	I..23	*b* 1,045,760	*b* 61·1	*b* 103·7
Utah	152	128	133	153	I..23	4,839,696	63·1	87·3
Nevada	142	143	140	154·4	I..10·6	795,469	82·2	111·1
Idaho	*b* 45	94	*b* 69·8	86·4	I.. 2·4	*b* 952,128	*b* 34·4	*b* 54·8
Washington	*b* 80	*b* 91	97·2	106·6	I.. 6·4	5,406,326	56·4	68·6
Oregon	*b* 90	90	118·2	112·8	I.. 2·6	5,947,627	62·6	78·7
California	123	146·6	157·6	159	D. 2	25,261,125	84·2	106·1

a In 1889–'90. *b* Estimated.

c Rough estimate of State Superintendent Russell for 1889–90. A later estimate by Superintendent Sheats, received too late to incorporate in the tables, places the present school term of Florida at 100 days.

LENGTH OF SCHOOL TERM, ETC.

The average school term of the United States in 1891–'92 was 137·1 days, as against 130·3 in 1879–'80, and 134·7 in 1889–'90. There has thus been an increase of 6·8 days in 12 years.

The length in days of the school term of each State in 1891–'92 is given in Column 5 of Table 8, and the same is also shown graphically in Diagram 6, where the several States are arranged according to their length of school term.

It will be noticed that New Jersey has the longest school term, viz, 190 days, while North Carolina has the shortest, 62·4 days, or somewhat less than a third of that of New Jersey.

Whole amount of instruction given. — The total number of days attended by all pupils, or, what is the same thing, the total number of days schooling given, in 1891–'92 was 1,172,261,842, which allows an average of 61·1 days for every child 5 to 18 years of age. (Columns 7 and 8 of Table 8.)

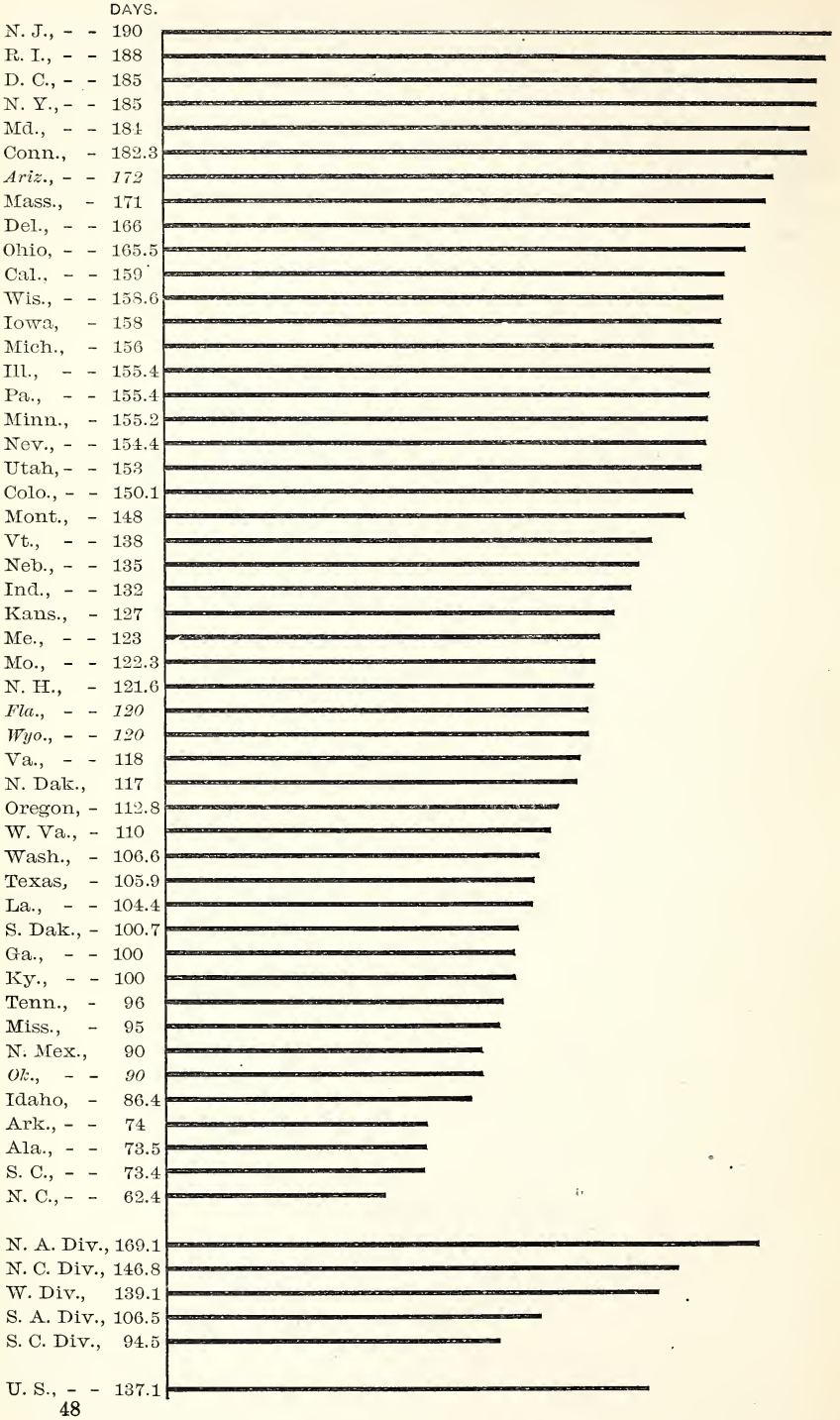
This average number of days schooling given for every child 5 to 18 years of age is in fact the result of a comparison of the amount of instruction given with the number of children of school age, and is the best single quantity for determining the extent and prevalence of school education in one community as compared with another. A State may have a good attendance at school, but only for a brief period; or, on the other hand, it may have a long school term but comparatively few pupils in attendance. The quantity under consideration takes into account both the attendance of pupils and the length of school term, and compares the total amount of instruction given with total number of children who are subjects for instruction.

In Column 8 of Table 8, and in Diagram 7 (p. 50), is shown this average number of days schooling given for every child of school age for each State. The order of States in Diagram 7 differs from that of either Diagram 5 or 6; in fact the former diagram is in a sense compounded of the two latter. Massachusetts stands at the head of Diagram 7, and so gives the most school instruction as compared with its school population, though it does not rank the highest in either number of pupils or length of school term taken singly. Where a State has both a low attendance (Table 7, Column 9) and a short school term it makes a very poor showing on Diagram 7, so that the contrasts exhibited in it are stronger than in either 5 or 6. Massachusetts, for instance, is seen to give more than four times as much school instruction as North Carolina, considering their relative numbers of children of school age, the numbers being 91·8 and 21·3 days, respectively, per child of school age.

The summaries by divisions at the foot of Diagram 7 bring into sharp relief the small amount of school instruction in the South as a whole when considered in reference to the number of children of school age—about one-half of what is given in the North and West. This is an unquestionable conclusion, despite inaccuracies here and there in the statistics.

DIAGRAM 6.—*Average length of school term in days, in 1891–92.* (*See Table 8, Column 5.*)

NOTE.—The school term of the States printed in italics is uncertain.



But there is another face to the matter. The South teems with children, but has comparatively few adults; conversely the North, and especially the far West, have few children and a large ratio of adults. (*See* Diagram 1, p. 32.) It is the male adults in general who provide and pay for the schools. It will be in order to inquire, then, What is the relation between the total amount of instruction given and the number of male adults? or, How many days' schooling does each male adult provide and pay for? The answer to this question is given in the following table:

Average number of days' schooling provided for by each male adult.

	Days.
North Atlantic Division	68·69
South Atlantic Division	56·90
South Central Division	56·05
North Central Division	77·30
Western Division	43·70
The United States	66·73

Here the South is well up to the North and considerably in advance of the West.

The facts in the case, then, may be summed up as follows: The average male adult in the South provides nearly as many days' schooling as in the North and more than in the West. But, on account of the excess of children in the South to be provided for and the few adults, the total amount of schooling provided is only sufficient to furnish each child in the South with about half as many days on the average as falls to the Northern or Western child.

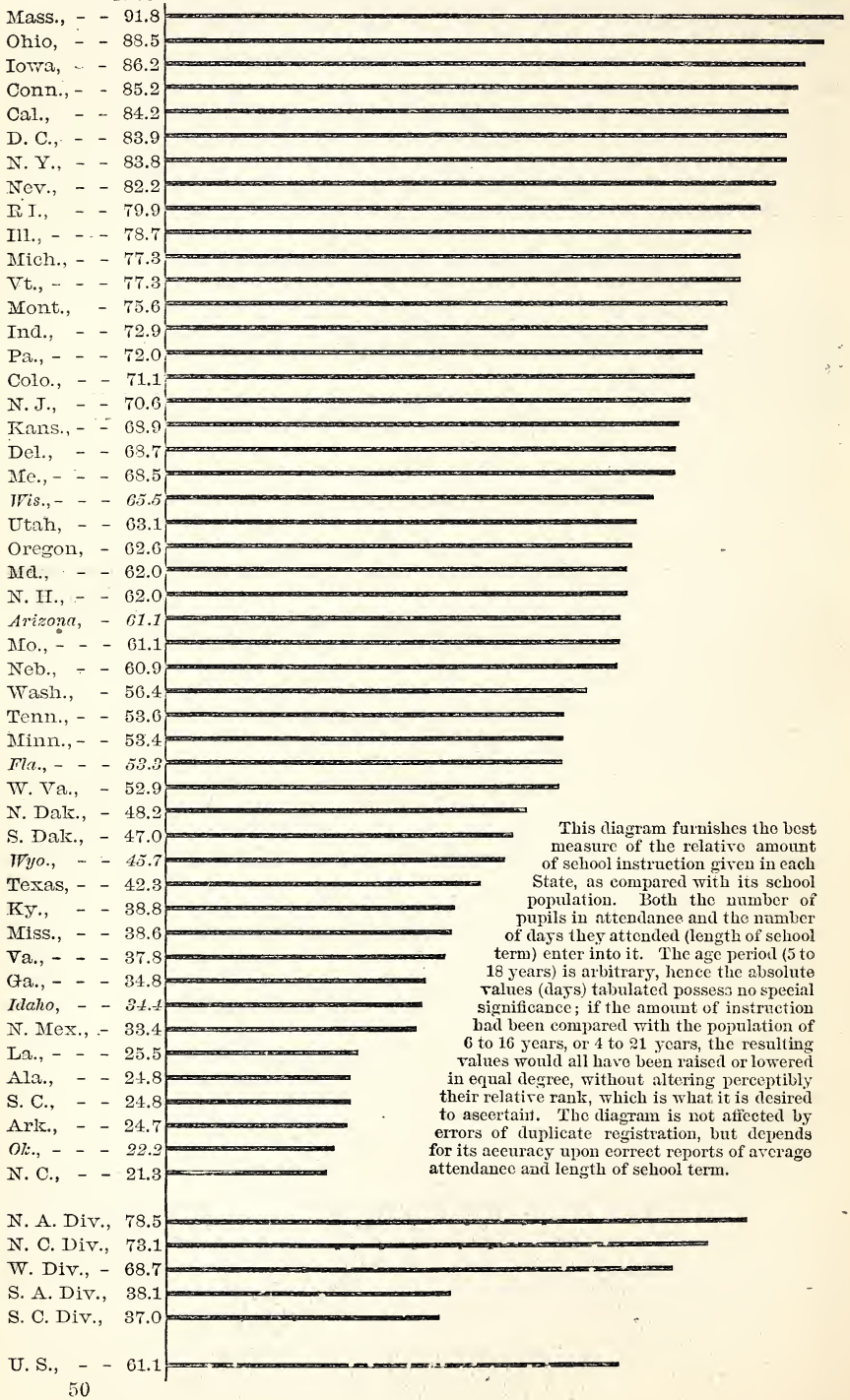
Observations on ascertaining the average length of school term.—The aggregate number of days' attendance given in Table 8, when not reported direct by State superintendents, has been obtained by multiplying the average daily attendance of pupils by the average length of school term in days. Either of these three quantities is thus made a simple function of the other two, and can be readily obtained when the other two are given. This relation between these three quantities does not rigidly subsist in the statistical systems of some of the States, owing to the diverse methods of computing average attendance and average length of school term. It is believed, however, that it would conduce to the accuracy and uniformity of school statistics if such were the case.

A practical application is made of this principle in finding the average length of school term of a number of States, as recorded in the summaries of Column 5, where the aggregate attendance in days in each division and in the United States is divided by the corresponding average daily attendance to get the average length of school term in days of each group of States.

By this method the school term of each State in taking the average is in fact given a weight proportioned to the school attendance of the State, as should be done under a correct interpretation of the expression "average length of school term." The result might more properly be called "average length of attendance," which is essentially what it is desired to know.

DIAGRAM 7.—*Showing for 1891–92 the average number of days schooling given for every child 5 to 18 years of age; or the amount of instruction given (in days) compared with the school population.* (*See Table 8, Column 8.*)

NOTE.—The position of the States printed in italics is uncertain.



This diagram furnishes the best measure of the relative amount of school instruction given in each State, as compared with its school population. Both the number of pupils in attendance and the number of days they attended (length of school term) enter into it. The age period (5 to 18 years) is arbitrary, hence the absolute values (days) tabulated possess no special significance; if the amount of instruction had been compared with the population of 6 to 16 years, or 4 to 21 years, the resulting values would all have been raised or lowered in equal degree, without altering perceptibly their relative rank, which is what it is desired to ascertain. The diagram is not affected by errors of duplicate registration, but depends for its accuracy upon correct reports of average attendance and length of school term.

A method in use in some States for finding the average school term, of a county, for instance, is to weight the different school terms of the towns or districts the county is composed of by the number of schools in each; in other words, the total number of days (or months) all the schools of a county were kept is divided by the total number of schools to get the average time each one was kept. So, in finding the average term for the State, the school is taken as the unit instead of the pupil, as in the Bureau's method. When the schools differ much in size (number of pupils), as they do in all mixed urban and rural systems, varying from some half dozen to 500 or more pupils each, the average term obtained by this method varies considerably from that obtained by the foregoing. The long terms of the large city schools not being given their proper weight, the resulting average is too small. The same objection applies still more forcibly to weighting the school terms of the different counties or towns by the number of school districts in each.

Still another method is to add together the school terms of the different counties or towns and divide by the number of such counties or towns; i. e., the simple arithmetical mean is taken. Smithville, for instance, with its 100 pupils, counts for as much in forming the average as the metropolis, with its 100,000. Smithville, 60 days; metropolis, 180 days; average term of the two, 120 days. This method, if it can be so called, gives altogether too short an average term, and nothing can be said in defense of it. It is as if, wishing to get the population per square mile of Minnesota and Dakota combined, we said, Minnesota, 9·86; Dakota, 0·92; average number of persons per square mile in the combined territory $(0{\cdot}92+9{\cdot}86)\div 2=5{\cdot}39$, instead of dividing the total population of the two States together by the combined area in square miles.

The "aggregate number of days attendance" is a statistical item of the utmost simplicity and of great value, about the meaning of which there can be little or no difference of opinion. Every teacher's register that records the number of pupils present each day in any schools, as they all presumably do, contains the data for ascertaining it for that school for the school year by the simple process of addition or summing up.

Progress.—Table 9 gives the length of school term in days for each section of the country since 1870–'71; also the average number of days schooling given for each child of school age. The same is also graphically exhibited in Diagram 8.

The amount of instruction given as compared with the school population, shown in the lower part of the diagram, exhibits a decided increase in every section of the Union. This increase has been effected in the North Atlantic Division mainly through lengthening the school term; in the two Southern Divisions, until about 1880, however, there was a decrease in the average school term, the multiplication of short-term schools outside the cities bringing down the general average term length. Still, owing to the continued accessions of pupils, the total amount of instruction per child of school age has been almost uninterruptedly increasing in the South, and is now about double what it was in 1870–'71.

DIAGRAM 8.—*Upper section: Average length of school term. Lower section: Average number days schooling given for every child 5 to 18 years of age.* (*Table 9.*)

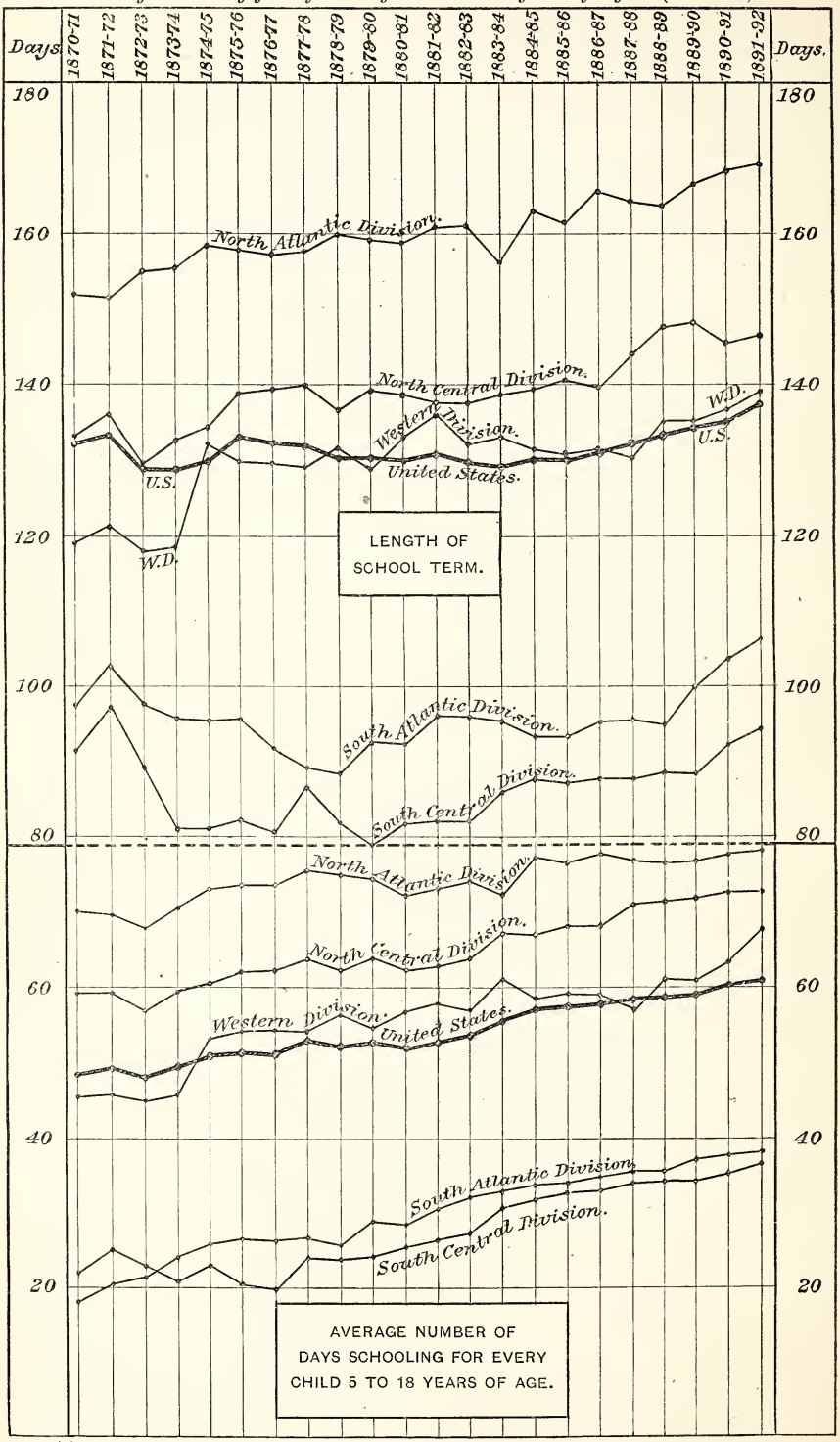


TABLE 9.—*Length of school term—The number of days' schooling given compared with the school population.*

Years.	Average length of school term in days.						Average number of days' schooling given for every child 5 to 18 years.					
	The United States.	North Atlantic Division.	South Atlantic Division.	South Central Division.	North Central Division.	Western Division.	The United States.	North Atlantic Division.	South Atlantic Division.	South Central Division.	North Central Division.	Western Division.
1870–'71	132·1	152·0	97·4	91·6	133·9	119·2	48·7	70·2	18·1	21·8	59·6	45·9
1871–'72	133·4	151·9	103·4	97·7	136·1	121·8	49·5	68·9	20·3	25·8	59·8	46·0
1872–'73	129·1	154·6	97·4	89·1	129·6	118·3	47·8	67·9	21·7	23·4	56·8	45·0
1873–'74	128·8	154·8	95·6	81·1	132·6	119·0	49·6	70·4	24·5	21·9	59·8	46·1
1874–'75	130·4	158·7	95·2	81·0	134·6	132·5	51·0	72·9	26·1	23·5	60·2	53·6
1875–'76	133·1	158·0	95·6	82·5	139·1	130·3	51·4	73·7	26·8	20·1	62·2	54·4
1876–'77	132·1	157·2	91·4	80·3	139·8	130·1	51·1	73·6	26·3	19·8	62·3	54·3
1877–'78	132·0	157·6	89·7	86·7	140·1	129·9	53·2	75·6	26·8	24 3	64·3	54·5
1878–'79	130·2	160·1	88·6	81·9	136·4	132·0	52·0	75·0	25·7	23·9	62·3	56·7
1879–'80	130·3	159·2	92·4	79·2	139·8	129·2	53·1	74·5	29·3	24·2	64·4	54·9
1880–'81	130·1	158·7	92·4	82·1	138·8	133·8	52·0	72·2	28·5	25·0	62·7	56·9
1881–'82	131·2	160·6	95·9	82·5	137·1	136·2	52·9	73·3	30·6	25·6	63·2	58·0
1882–'83	129·8	161·0	95·9	82·5	137·1	132·6	53·8	74·4	32·0	26·8	63·9	57·3
1883–'84	129·1	156·0	95·6	85·9	138·6	133·8	55·5	72·5	32·7	30·0	67·7	61·6
1884–'85	130·7	163·1	93·4	87·5	139·1	131·8	56·8	77·2	33·7	31·4	67·3	58·3
1885–'86	130·4	161·6	93·4	86·9	140·4	130·8	57·3	76·7	33·7	32·0	68·7	59·6
1886–'87	131·3	165·9	95·3	87·5	139·5	131·6	57·7	77·8	34·8	32·1	68·7	59·1
1887–'88	132·3	164·4	95·7	87·6	144·0	130·7	58·7	76·8	35·5	33·6	71·3	57·3
1888–'89	133·7	164·1	95·0	88·9	147·5	135·7	58·9	76·7	35·4	34·0	71·6	61·7
1889–'90	134·7	166·6	99·9	88·2	148·0	135·0	59·2	76·8	37·3	33·9	71·9	61·2
1890–'91	135·7	168·1	103·8	92·0	145·8	136·9	60·4	77·9	37·9	35·5	73·0	64·0
1891–'92 *a*	137·1	169·1	106·5	94·5	146·8	139·1	61·1	78·5	38·1	37·0	73·1	68·7

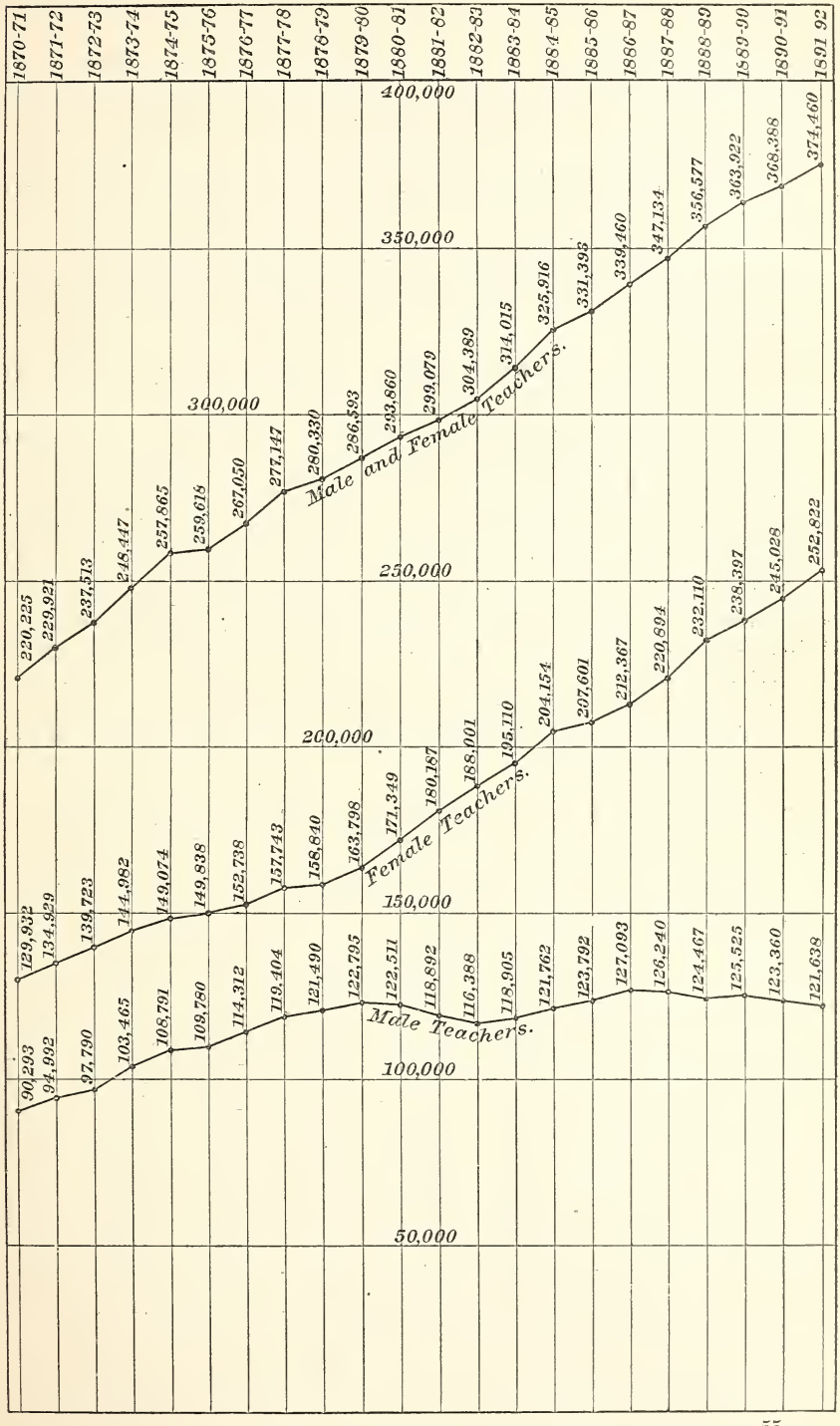
a Subject to correction.

TABLE 10.—*Number and sex of teachers.*

State or Territory.	Whole number of different teachers employed.			Per cent of male teachers.				Number of teachers' places.	Number employed for every 100 places.
	Males.	Females.	Total.	1870–'71.	1879–'80.	1889–'90.	1891–'92.		
1	2	3	4	5	6	7	8	9	10
United States	121,638	252,822	374,460	41·0	42·8	34·5	32·5	.....	*a* 124.4
North Atlantic Division	17,810	76,261	94,071	26·2	28·8	20·0	18.9	.....	.....
South Atlantic Division	19,194	22,218	41,412	63·8	62·5	49·1	46·4	.....	.....
South Central Division	29,283	23,680	52,963	67·5	67·2	57·5	55·3	.....	.....
North Central Division	49,990	118,182	168,172	43·2	41·7	32·4	29·7	.....	.....
Western Division	5,361	12,481	17,842	45·1	40·3	31·1	30·1	.....	.....
North Atlantic Division:									
Maine	*b* 1,116	*b* 6,570	7,686	*b* 24·4	*b* 27·2	*b* 16·0	*b* 14·5	.....	.....
New Hampshire	290	2,814	3,104	15·0	16·8	9·8	9·3	.....	.....
Vermont	538	3,813	4,351	16·5	16·8	12·0	12·4	.....	.....
Massachusetts	992	9,973	10,965	12·7	13·2	9·8	9·0	9,486	115·6
Rhode Island	156	1,276	1,432	*b* 20·4	20·2	12·6	10·9	1,267	113·0
Connecticut	*b* 498	*b* 3,754	*b* 4,252	*b* 22·1	*b* 22·8	*b* 13·4	*b* 11·7	.....	.....
New York	5,292	26,869	32,161	22·9	26·0	16·9	16·5	24,884	129·2
New Jersey	766	4,015	4,781	32·5	28·5	18·4	16.0	.....	.....
Pennsylvania	8,162	17,177	25,339	42·8	45·5	34·2	32·2	.....	.....
South Atlantic Division:									
Delaware	*c* 191	*c* 541	732	*b* 23.9	*b* 46·6	*b* 31·0	*c* 26·1	.....	.....
Maryland	1,040	3,011	4,051	45·0	42·6	27·8	25·7	.....	.....
District of Columbia	111	734	845	*b* 8·2	7·8	13·0	13·1	.....	.....
Virginia	3,017	4,776	7,793	64·5	61·8	41·5	38·7	.....	.....
West Virginia	3,463	2,284	5,747	79·0	75·2	63·4	60·3	.....	.....
North Carolina	3,849	3,101	6,950	*b* 73·2	*b* 71·3	59·1	55·4	.....	.....
South Carolina	2,043	2,355	4,398	62·4	59·5	49·6	46·4	.....	.....
Georgia	4,144	3,970	8,114	71·4	*b* 65·2	53·3	51·1	.....	.....
Florida	*b* 1,336	*b* 1,446	2,782	*b* 65·7	61·6	48·0	*b* 48·0	.....	.....
South Central Division:									
Kentucky	4,573	4,929	9,502	*b* 66·0	64·6	49·8	48·1	.....	.....
Tennessee	5,176	3,436	8,612	*b* 75·0	74·4	61·8	60·1	.....	.....
Alabama	*c* 4,168	*c* 2,440	6,608	66·3	63·8	62·9	*c* 63·1	.....	.....
Mississippi	3,780	4,142	7,922	*b* 60·8	61·2	49·6	*c* 62·9	.....	.....
Louisiana	1,354	1,831	3,185	50·9	46·1	44·7	42·5	.....	.....
Texas	6,037	4,984	11,021	*b* 77·3	*b* 75·0	61·1	54·8	.....	.....
Arkansas	3,990	1,651	5,641	*b* 75·6	78·4	68·5	70·7	.....	.....
Oklahoma	205	267	472	.....	.....	.....	43·4	.....	.....
North Central Division:									
Ohio	10,560	15,060	25,620	43·2	47·8	43·1	41·2	20,386	125·7
Indiana	6,577	6,972	13,549	60·5	57·5	51·1	48·5	.....	.....
Illinois	6,170	16,176	22,346	43·5	39·7	32·5	27·6	.....	.....
Michigan	3,359	12,741	16,100	26·3	29·2	22·3	20·9	11,363	141·7
Wisconsin	2,207	10,148	12,355	*b* 28·8	28·9	19·8	17·9	.....	.....
Minnesota	1,978	7,287	9,265	33·7	35·9	23·9	21·4	.....	.....
Iowa	4,978	22,275	27,253	39·0	33·6	20·6	18·3	.....	.....
Missouri	5,918	8,427	14,345	65·3	58·1	44·4	41·3	.....	.....
North Dakota	613	1,625	2,238	*b* 24·7	40·8	28·3	27·4	.....	.....
South Dakota	1,056	3,072	4,128			29·0	25·6	.....	.....
Nebraska	2,335	6,750	9,085	51·9	40·7	27·1	25·7	7,877	115·3
Kansas	4,239	7,649	11,888	47·2	45·1	40·8	35·7	11,151	106·6
Western Division:									
Montana	157	597	754	*b* 60·3	38·5	22·9	20·8	.....	.....
Wyoming	79	288	367	*b* 28·6	44·3	22·4	21·5	.....	.....
Colorado	665	2,088	2,753	48·8	36·4	26·2	24·2	.....	.....
New Mexico	377	224	601	*b* 91·7	78·0	*b* 62·2	62·7	.....	.....
Arizona	*b* 89	*b* 180	*b* 269	.....	47·5	38·8	*b* 33·1	.....	.....
Utah	401	532	933	55·0	54·5	46·6	43·0	.....	.....
Nevada	36	223	259	32·4	46·7	16·3	13·9	.....	.....
Idaho	*b* 277	*b* 281	*d* 558	*b* 64·3	57·4	*b* 33·4	*b* 49·6	.....	.....
Washington	1,014	1,749	2,763	*b* 46·5	37·4	40·6	36·7	2,050	134·8
Oregon	1,044	1,650	2,694	*b* 51·7	48·3	43·3	38·8	.....	.....
California	1,222	4,669	5,891	40·0	33·3	21·4	20·7	.....	.....

a In the eight States tabulated below.
b Estimated.
c In 1890–'91.
d Number of schools.

DIAGRAM 9.—*Showing the whole number of teachers in the United States, also the number of each sex, for each year since 1870–71.*



NUMBER AND SEX OF TEACHERS.

The whole number of teachers employed during the school year 1891–'92, as shown by Table 10, was 374,460.

Of these 121,638, or 32·5 per cent, were males; 252,822, or 67·5 per cent, were females.

About one-third of all the teachers in the United States are therefore males.

In two States, Massachusetts and New Hampshire, less than one-tenth of the teachers are males (Column 8). In each of the other North Atlantic States except Pennsylvania more than five-sixths of the teachers are women.

Arkansas has the highest proportion of male teachers, viz, 70·7 per cent.

In Diagram 9 the total number of teachers, and the number of each sex, are plotted for each year since 1870–'71.

It will be noted that there has been no perceptible increase in the number of male teachers since about the year 1880. The total number of teachers has continued to increase uninterruptedly, but the gain comes entirely from accessions to the ranks of the female teachers.

The year 1880 marks an epoch where the lines of the male and the female teachers, which had been ascending at a uniform grade, begin to diverge widely.

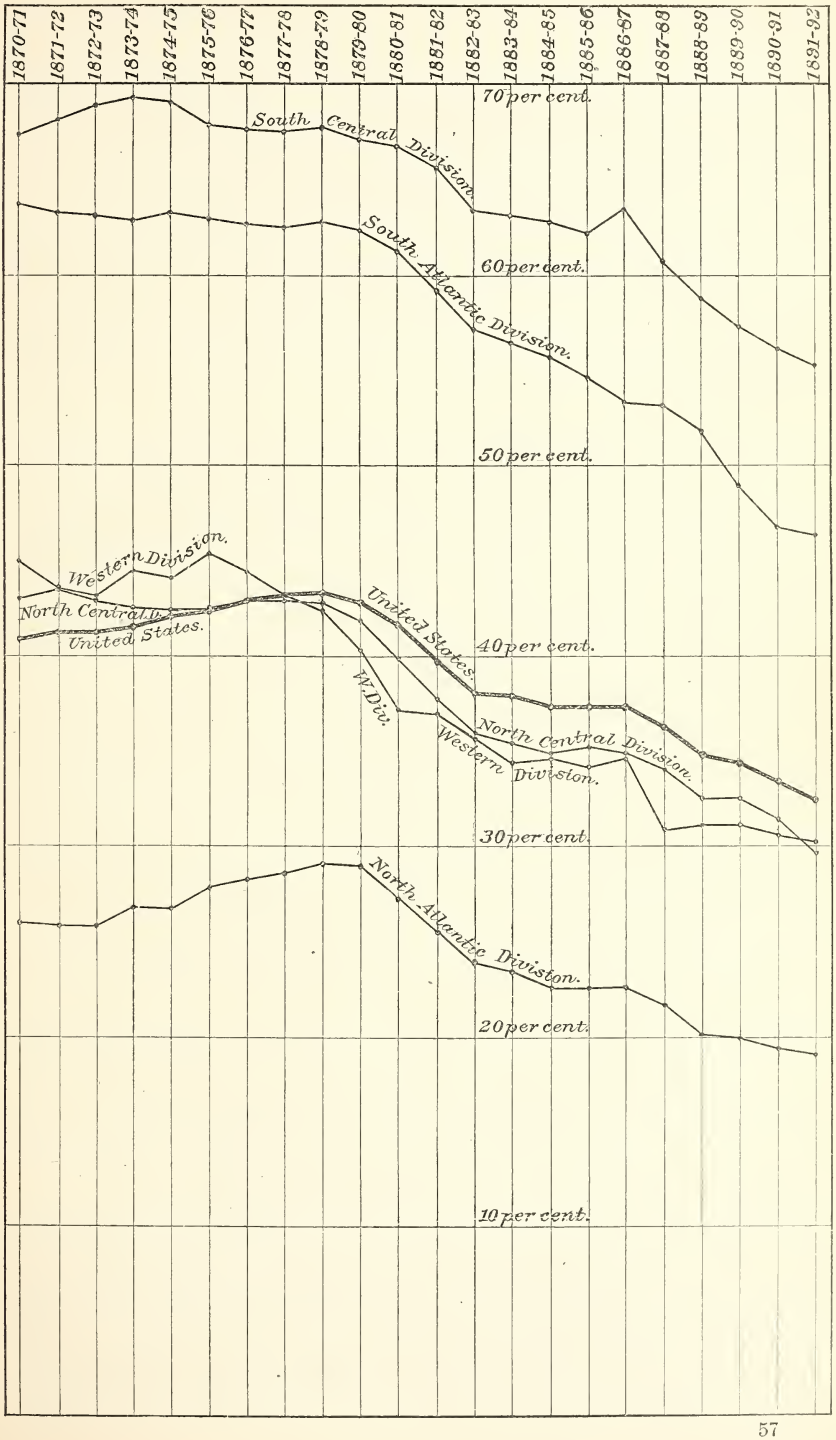
The following table shows the per cent of male teachers in each geographical division each year since 1870–'71. In Diagram 10 the same is graphically reproduced.

TABLE 11.—*Showing what per cent of the whole number of teachers are males.*

Year.	United States.	North Atlantic Division.	South Atlantic Division.	South Central Division.	North Central Division.	Western Division.
1870-'71	41·0	26·2	63·8	67·5	43·2	45·0
1871-'72	41·3	26·1	63·4	68·3	43·4	43·5
1872-'73	41·2	26·1	63·3	68·9	42·8	43·0
1873-'74	41·6	26·8	62·9	69·4	42·5	44·5
1874-'75	42·2	26·7	63·3	69·1	42·5	44·1
1875-'76	42·3	27·9	63·1	68·0	42·4	45·3
1876-'77	42·8	28·2	62·7	67·8	43·0	44·4
1877-'78	43·1	28·5	62·6	67·7	42·8	43·0
1878-'79	43·3	29·1	62·8	67·8	42·7	42·3
1879-'80	42·8	28·8	62·5	67·2	41·7	40·3
1880-'81	41·7	27·4	61·4	67·0	39·9	37·3
1881-'82	39·7	25·7	59·4	65·8	37·7	37·1
1882-'83	38·2	23·9	57·3	63·5	35·9	35·9
1883-'84	37·9	23·4	56·5	63·2	35·3	34·5
1884-'85	37·4	22·5	55·6	62·9	34·8	34·6
1885-'86	37·4	22·4	54·5	62·2	35·2	34·2
1886-'87	37·4	22·6	53·4	63·5	34·8	34·5
1887-'88	36·4	21·6	53·2	60·7	34·0	30·8
1888-'89	34·9	20·2	51·7	58·8	32·3	31·2
1889-'90	34·5	20·0	49·1	57·5	32·4	31·1
1890-'91	33·5	19·4	47·0	56·4	31·4	30·4
1891-'92 *	32·5	18·9	46·4	55·3	29·7	30·1

* Subject to correction.

DIAGRAM 10.—*Showing the ratio of male teachers to whole number of teachers each year since 1870–71. (See Table 11.)*



The trend of the lines in the diagram shows that in every section of the country the proportion of male teachers, which for ten years had been either constant or actually increasing, commenced to diminish rapidly about 1880. To what cause should be ascribed so decided and widespread a change at that particular period is not immediately apparent. It may be that a long course of discussion on the avenues open for the support of women and the active steps taken in the direction of their higher education had gradually familiarized the public mind with their needs, capabilities, and aptitudes, and paved the way for more advanced ideas; so that when once inaugurated in favorable centers here and there, the movement toward the more extended employment of women spread rapidly far and wide, the time being ripe for it and only a sufficient impetus being necessary.

CHANGES IN THE TEACHING FORCE DURING THE SCHOOL YEAR.

Eight States, in addition to reporting the whole number of different teachers employed, report the number of teachers' places or positions; or, what is equivalent, the number of teachers necessary to supply the schools (Table 10, Column 9).

If there is no change in the teaching force of a system during the school year, if each teacher occupies, to the end of the year, the place he held at the beginning, then the two numbers just referred to will be identical. But in the eight States which report the number of positions, there were in all 88,464 positions in 1891–'92, and 110,014 different teachers; in other words, there were 124·4 teachers to every 100 positions, so that an average of 24·4 positions out of every 100 show a change of teachers during the year in the eight States. This average should, probably, be larger, as there are, doubtless, cases where a teacher is transferred from one school to another and not counted as a different teacher, though a change has been effected.

The number of teachers to 100 positions varies from 106·6 in Kansas to 141·7 in Michigan (Column 10).

It is probable that the number of teachers, as reported in several, perhaps many, of the States outside of the eight referred to, is made up in whole or in part (especially in the reports of cities), of the number of teachers necessary, instead of the whole number of different teachers, and in so far the statistics of teachers are not uniform. The headings of the tables or columns in school reports are often not sufficiently explicit to determine which one of the two quantities it is designed to give, the number of places or the whole number of different teachers.

The significant quantity of the two is the number of teachers necessary or required by the schools. This, from a statistical point of view, is what should be understood by the "number of teachers." The whole number of *different* teachers, including in the count all who taught for any period of time, however brief, affords some collateral information, that is of value principally when considering the changes in the teaching force during the school year.

A table giving the number of teachers in each State required by the schools as conducted, with sex and race classifications, would admit of various useful applica-

tions that the present Table 10 does not, and would not even if it showed uniformly the whole number of different teachers in each State. Such a table is still a desideratum.

Teachers' examinations, etc.—The following table gives some information relating to teachers' examinations and appointments:

TABLE 12.—*Teachers' examinations and certificates.*

State.	Whole number of different teachers (from Table 10).	Number of applicants for examination.	Failed to pass and rejected.	Per cent of failures.	Whole number of certificates issued.	Number of different persons who received certificates.
United States (15 States)				26·4		
North Atlantic Division (3 States)				22·5		
South Central Division (3 States)				13·3		
North Central Division (7 States)				30·1		
Western Division (2 States)				19·0		
North Atlantic Division:						
Vermont	4,351	3,243	674	20·9	2,569	
New Jersey	4,781	2,362	876	37·1	1,486	
Pennsylvania	25,339	22,035	4,681	21·2	17,354	
South Central Division:						
Kentucky (1890–'91)	9,161	7,830	1,349	17·2	6,481	
Tennessee	8,612	10,033	600	6·0	9,433	9,283
Texas	11,021	8,511	1,558	18·3	6,953	
North Central Division:						
Ohio	25,620	39,202	18,802	48·0	20,400	18,167
Michigan	16,100	17,601	6,220	35·3	11,381	
Wisconsin	12,355	16,315	4,607	28·2	11,708	
Iowa	27,253	29,754	4,274	14·4	25,480	21,397
North Dakota	2,238	1,414	263	18·6	1,151	
Nebraska	9,085	9,323	1,024	11·0	8,299	
Kansas	11,888	14,117	3,249	23·0	10,868	
Western Division:						
Washington	2,763	2,234	320	14·3	1,914	
Oregon	2,694	1,729	432	25·0	1,297	

The ratio of failures to the whole number examined would seem to indicate to some extent the degree of severity of the examination and the standard of proficiency required in order to successfully pass it.

In Ohio, where, it may be noted, there were more than half as many again examined as there were teachers employed during the year, 48 per cent, or nearly one-half, failed to pass the examination; from which may be argued an excess of candidates for teachers' positions, and a rigid examination. In New Jersey 37·1 per cent, or about 3 out of every 8, failed, and in Michigan 35·3 per cent, more than one-third.

On the other hand, in Tennessee only 6 per cent of those examined were refused certificates, and in Nebraska 11 per cent.

The average of 15 States, of which only 3 are Southern, is 26·4 per cent of failures. Evidently in these States considerable discrimination is exercised in the selection of teachers.

A comparison of the whole number of certificates issued with the number of different persons who received certificates, in Tennessee, Ohio, and Iowa, shows numbers of persons who received more than one certificate; this is especially noticeable in Iowa.

TABLE 13.—*Facts relating to the education, previous experience, and continuous service of teachers.*

State.	Whole number of different teachers (from Table 10).	Teachers graduates of higher institutions.				Teachers without previous experience (beginners).		Continued in the same position throughout the year.	
		Of normal schools.		Of colleges or universities.					
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
1	2	3	4	5	6	7	8	9	10
North Atlantic Division:									
Maine	7,686	756	9·8	.....	.....	1,398	18·2	2,123	27·6
New Hampshire	3,104	.....	.....	.....	.....	506	16·3	.....	.....
Vermont	4,351	482	11·1	.....	.....	.....	.....	.....	.....
Massachusetts	10,965	3 267	29·8	.....	.....	.....	.....	.....	.....
Rhode Island	1,432	458	32·0	80	5·6	142	9·9	.....	.....
New Jersey	4,781	*a* 426	*a* 8·9	.....	.....	660	*b* 14·2	.....	.....
Pennsylvania	25,339	2,870	11·3	284	1·1	3,878	15·3	.....	.....
South Atlantic Division:									
West Virginia	5,747	.....	.....	.....	.....	1,462	25·4	.....	.....
South Central Division:									
Kentucky (1890–91)	9,161	.....	.....	.....	.....	1,671	18·2	.....	.....
North Central Division:									
Michigan	16,100	.....	.....	.....	.....	2,515	15·6	.....	.....
Wisconsin	12,355	620	5·0	.....	.....	.....	.....	.....	.....
Minnesota	9,265	1,065	11·5	545	5·9	.....	.....	4,459	48·1
Iowa	27,253	*a* 277	*a* 1·0	*c* 1,249	4·6	*d* 3,562	*d* 12·0	.....	.....
Missouri	14,345	.....	.....	.....	.....	1,645	11·5	.....	.....
Kansas	11,888	.....	.....	.....	.....	3,127	26·3	.....	.....
Western Division:									
Montana	754	135	17·9	.....	.....	.....	.....	.....	.....
California	5,891	1,516	25·7	.....	.....	.....	.....	.....	.....

a From the State Normal school only.
b Of those reported.
c Including graduates of private normal and denominational schools classed in the State report as "higher."
d Of the applicants for certificates (29,754).

In Table 13 certain facts relating to the education, previous experience, and continuity of service of teachers have been collected. Much of the information given on these subjects in the different State reports lacks uniformity and can not be collected in any one table.

So far as the information extends, however, the percentage of normal graduates (Column 4) ranges from 32 per cent in Rhode Island and 29·8 in Massachusetts to 5 per cent in Wisconsin. In Iowa, as in New Jersey, only the graduates of the State normal school are given.

Three States show a percentage of college graduates (Column 6) of 5·6, 5·9, and 4·6, respectively, while Pennsylvania has only 1·1 per cent. Probably there is some diversity of standards lurking here. Rhode Island reports the number who have received a "college education," which in the absence of any explanation may be inferred to mean the number who have graduated; otherwise the term is an indefinite one and might embrace those who have attended college only a brief period.

Experience.—The number of beginners, or wholly inexperienced teachers, is an important item to know. This is given for 11 States in column 7. It ranges from 9·9 per cent in Rhode Island to 26·3 per cent in Kansas. This percentage may be taken as some indication of the efficiency and standing of the schools. Inexperience generally implies poor teaching, whatever may be the native undeveloped talent of the teacher.

The 660 given as "beginners" in New Jersey (Column 7) are those who had been "teaching one year or less" at the close of the year.

The New Jersey records of the experience and terms of service are almost the only consolidated statistics that exist upon this subject, and are, therefore, of peculiar value. Some of the results are as follows:

Total experience of New Jersey teachers, including the current year (1891–'92).

	In the State (cities included).	Per cent of total classified.	In the cities only.	Percent of city total.
Have taught 1 year or less	660	14·2	241	10·1
Between 1 and 5 years	1,491	32·1	640	26·9
Between 5 and 10 years	1,067	23·0	594	24·9
Between 10 and 15 years	637	13·7	372	15·6
Between 15 and 20 years	391	8·4	263	11·0
Between 20 and 25 years	217	4·7	150	6·3
Over 25 years	181	3·9	123	5·2
Total classified	4,644	.....	2,383	.....
Average time of service	7 yrs. 8 mos.	.....	9 yrs. 5 mos.	.....

It will be seen that 30·7 per cent of all the teachers in the State reported have taught 10 years or over. In the cities 38·1 per cent have taught 10 years or over.

In the country schools, taken separately, the average time of service was 5 years, 9 months.

The longest time of service of any one teacher varied in the different counties from 13 to 54 years, the latter being the longest time of service of any teacher in the State.

Term of service of Prussian teachers.—The term of service of teachers in the people's schools of Prussia exceeds considerably that of teachers in the United States, as will appear from the following table, compiled from data given in *Die Volksschulen im preussischen Staate im Jahre 1891:*

Total experience of teachers in the Volksschulen of Prussia.[1]

	Male teachers.	Per cent of whole number of males.	Female teachers.	Per cent of whole number of females.	Males and females.	Per cent of total.
Have taught 1 year or less	2,773	4·4	548	6·5	3,321	4·7
Between 1 and 5 years	11,190	18	1,963	23·3	13,153	18·6
Between 5 and 10 years	12,954	20·8	2,131	25·3	15,085	21·3
Between 10 and 15 years	9,599	15·4	1,767	21	11,366	16·1
Between 15 and 20 years	6,496	10·4	983	11·6	7,479	10·6
Between 20 and 25 years	5,333	8·6	511	6	5,844	8·3
Over 25 years	13,927	22·4	536	6·3	14,463	20·4
Total	62,272	100	8,439	100	70,711	100

[1] Includes only fully employed (*vollbeschäftigte*) teachers.

It may be seen from the table that 55·4 per cent of the whole number of teachers in the Prussian *Volksschulen* have served ten years and upward. This is nearly twice the percentage of New Jersey.

The per cent who have served twenty-five years and upwards (20·4 per cent) is more than five times that of New Jersey.

The beginners, or those who have taught one year or less, form only 4·7 per cent of the whole.

TABLE 14.—*Superintendents' and teachers' salaries.*

State or Territory.	Salary of State superintendent.	Salaries or compensation of county superintendents.			Average monthly salaries of teachers.			
		Maximum.	Minimum.	Average.	Males.	Increase or decrease.	Females.	Increase or decrease.
1	2	3	4	5	6	7	8	9
United States*					$45.48	I .. $1.17	$37.56	I .. $0.64
North Atlantic Division*					57.65	I .. 2.01	39.30	D .. .25
South Atlantic Division*					31.41	I .. .83	30.40	I .. .51
South Central Division*					39.00	I .. .04	32.81	I .. 2.38
North Central Division*					45.63	I .. 1.40	36.47	I .. 1.02
Western Division*					64.52	I .. 1.61	55.91	I .. .82
North Atlantic Division:								
Maine				(a)	43.95	I .. .85	25.02	D .. .24
New Hampshire				(a)	48.02	D .. .97	26.09	I .. .20
Vermont	$2,000			(a)	38.40	I .. .04	24.80	D .. .72
Massachusetts	3,000			(a)	134.22	I .. 16.15	46.52	D .. 1.65
Rhode Island				(a)	93.23	I .. 3.69	49.38	I .. .27
Connecticut				(a)	83.69	I .. 6.58	39.48	D .. .36
New York	5,000			(a)	b66.11	D .. 1.86	b47.32	I .. 2.49
New Jersey	3,000	$1,300	$800	$1,072	77.25	I .. .87	43.54	D .. .86
Pennsylvania	4,000	c d 2,000	c 1,000		42.15	I .. 1.56	31.41	I .. .51
South Atlantic Division:								
Delaware					be36.00		be34.08	
Maryland		1,500	398	1,059	b49.80	I .. .78	b40.04	I .. .62
District of Columbia	3,300				b110.70	I .. f 4.40	b68.40	I .. f 2.70
Virginia	2,000	740	200	418	31.93	I .. .53	26.86	I .. .20
West Virginia	1,500	300	150	248				
North Carolina		933	5	199	25.21	I .. 1.21	21.80	I .. .37
South Carolina	2,100	624	450	587	28.05	I .. .43	23.92	I .. .51
Georgia	2,000	900	24	296				
Florida		1,200	52	599				
South Central Division:								
Kentucky	2,500	1,500	92	557	37.72		23.86	
Tennessee	2,000	3,800	35	333	b32.83	D .. .43	b27.82	D .. .46
Alabama	2,250							
Mississippi	2,000	c 800	c 150		bg30.05	I .. 1.05	b g27.23	D .. .54
Louisiana	2,000	2,600	50	252	g35.03	I .. .68	g31.61	I .. .64
Texas	3,750	c 1,000			53.25	D .. .93	45.10	I .. 7.98
Arkansas				(a)	36.27	I .. 1.15	32.80	I .. .62
Oklahoma	1,200			h 500	34.20	D .. 1.10	32.90	I .. .69
North Central Division:								
Ohio				(a)	42.19	I .. 1.81	35.69	I .. 3.07
Indiana					46.00	I .. 2.20	40.20	I .. 2.20
Illinois		5,744	701	1,290	56.92	I .. 1.37	46.06	I .. .75
Michigan	2,000	1,500	150	756	47.72	I .. .49	34.15	I .. .88
Wisconsin	1,200				50.36	I .. 1.11	32.28	I .. .72
Minnesota	2,500	2,000	20	816	48.28	I .. 2.66	34.58	I .. .41
Iowa		1,500	342	1,177	37.76	I .. .22	30.78	I .. .26
Missouri		c 1,000	c 200		45.28		40.72	
North Dakota	2,000	1,200	100	646	43.31	I .. .98	34.26	D .. .08
South Dakota		c i 1,500						
Nebraska		i 1,800	i 50	i 862	45.20	I .. .39	39.20	D .. .10
Kansas		c 1,200			42.15	I .. 1.47	35.42	I .. 1.17
Western Division:								
Montana	1,200							
Wyoming								
Colorado		3,000			64.70	I .. 2.07	53.51	I .. 1.10
New Mexico	2,000							
Arizona	1,200			g 300	b85.82		b73.15	
Utah	1,500				68.13	I .. 12.08	42.95	I .. 5.22
Nevada	2,000				103.38	D .. .81	64.79	I .. .19
Idaho								
Washington	2,500	i 3,149	i 79	i 1,014	52.17	D .. .12	45.78	I .. 3.62
Oregon	1,800	1,800	100	542	50.04	D .. .04	41.91	D .. .52
California	3,000	4,500	100	1,497	82.96	I .. .85	66.12	D .. .36

* These summaries include only the States tabulated in the same columns below.

a No county supervision.

b Estimated.

c Statutory limit; actual amounts paid are not reported.

d School boards may vote a higher salary.

e In 1889-90.

f Average for two years.

g In 1890-91.

h Uniform in all counties.

i Total compensation.

TABLE XV.—*Schoolhouses and value of school property.*

State or Territory.	Number of school-houses.	Increase or decrease.	Number built during the year.	Value of same.	Average value of same.	Value of all school property.
1	2	3	4	5	6	7
United States	229,118	I. 4,656				$382,457,167
North Atlantic Division	46,276	I. 316				144,743,112
South Atlantic Division	33,815	I. 905				18,609,574
South Central Division	40,110	I. 1,377				17,496,879
North Central Division	98,503	I. 1,204				169,510,683
Western Division	10,414	I. 854				32,096,919
North Atlantic Division:						
Maine	4,348	I. 30	58	$62,302	$1.074	3,803,970
New Hampshire	2,073	D. 2				2,960,693
Vermont	*a* 2,524	I. 100				1,298,005
Massachusetts	*a* 7,336	I. 97				28,500,000
Rhode Island	490	D. 1				3,271,186
Connecticut	1,633	D. 17	6			7,237,001
New York	12,017	D. 55				47,064,407
New Jersey	1,688	I. 19				10,004,236
Pennsylvania	14,167	I. 145				40,603,614
South Atlantic Division:						
Delaware (*b*)	452	I. *c* 2				836,749
Maryland	*a* 2,263	I. 27				*c* 5,230,000
District of Columbia	105	I. 7				*c* 2,713,000
Virginia	6,595	I. 86				2,763,637
West Virginia	5,004	I. 105	192			2,741,234
North Carolina	6,160	I. 347				892,364
South Carolina	3,614	I. 104	*d* 95	41,861	441	485,534
Georgia	*a* 7,254	I. 207				*c* 2,310,000
Florida	*a* 2,368	I. 20				637,056
South Central Division:						
Kentucky	*e* 7,703	I. 218				*f* 4,094,504
Tennessee	6,885	I. 256				3,211,000
Alabama (*b*)	*a* 6,495	I. 318				*c* 1,120,000
Mississippi	6,201	I. 130				1,400,490
Louisiana	*a* 2,641	I. 140				*c* 680,000
Texas	6,941		396	294,215	743	5,439,618
Arkansas	2,986	I. 250	*d* 172	97,347	566	1,485,071
Oklahoma	258	I. 65				66,196
North Central Division:						
Ohio	12,825	I. 11	354	1,645,412	4,648	34,527,816
Indiana	9,873	I. 72	243	513,577	2,113	16,777,504
Illinois	12,372	I. 59	244		3,148	30,679,868
Michigan	7,666	I. 50				15,248,703
Wisconsin	6,570	I. 362				10,224,926
Minnesota	6,265	I. 230	249	784,077		10,728,633
Iowa	13,275	I. 146				13,800,152
Missouri	*a* 9,465	D. 246				13,774,860
North Dakota	1,584	I. 101				2,423,286
South Dakota	3,253	I. 53				2,562,600
Nebraska	6,234	I. 349				8,058,627
Kansas	9,121	I. 17	179	151,620	847	10,703,708
Western Division:						
Montana	422	I. 37				1,569,356
Wyoming	226	I. 3				*c* 316,000
Colorado	1,378	I. 93				5,441,908
New Mexico	*a* 548	I. 96				*c* 195,000
Arizona (*c*)	130					361,600
Utah	*ag* 618	I. 104				1,457,966
Nevada	153	I. 5				292,214
Idaho	491	I. 101				*c* 686,000
Washington	1,515	I. 269				4,088,645
Oregon	1,701	I. 88	154			2,494,234
California	3,232	I. 58	141			15,193,996

a Number of schools.
b In 1890.
c Estimated.
d Report incomplete.
e Also about 200 churches and halls used for schools.
f Houses and furniture.
g In 1891.

TABLE XVI.—*Public secondary education—Private schools.*

State or Territory.	Public secondary education.			Private schools.		
	Number of pupils in public high schools or studying secondary branches.	Per cent of the whole public school enrollment.	Same percentage in 1889–90.	Number of pupils.	Total number of pupils in both public and private schools.	Per cent of pupils in private schools.
1	2	3	4	5	6	7
United States*	.....	.....	.....	1,299,600	14,505,477	8·96
North Atlantic Division*	.....	.....	.....	576,400	3,755,004	15·35
South Atlantic Division*	.....	.....	.....	129,700	1,958,978	6·62
South Central Division*	.....	.....	.....	170,900	2,624,013	6·51
North Central Division*	.....	.....	.....	360,200	5,490,444	6·56
Western Division*	.....	.....	.....	62,400	677,038	9·22
North Atlantic Division:						
Maine	15,884	11·62	10·95	.....	.....	.....
New Hampshire	7,321	11·95	11·84	8,181	69,452	11·78
Vermont	2,425	3·71	3·71	7,857	73,171	10·74
Massachusetts	27,482	7·17	6·82	60,605	443,822	13·66
Rhode Island	1,962	3·72	3·32	10,669	63,406	16·83
Connecticut	*a* 4,450	*a* 3·45	.....	21,477	152,448	14·09
New York	.....	.....	.....	208,816	1,281,909	16·28
New Jersey	.....	.....	.....	47,157	290,411	16·24
Pennsylvania	.....	.....	.....	.....	.....	.....
South Atlantic Division:						
Delaware	.....	.....	.....	.....	.....	.....
Maryland	5,052	2·67	2·43	.....	.....	.....
District of Columbia	2,192	5·52	4·79	*b* 3,119	*b* 40,025	*b* 7·80
Virginia	8,545	2·55	2·67	.....	.....	.....
West Virginia	.....	.....	.....	.....	.....	.....
North Carolina	.....	.....	.....	*c* 26,198	361,556	7·25
South Carolina	8,435	4·10	3·58	.....	.....	.....
Georgia	.....	.....	.....	25,243	423,058	5·97
Florida	.....	.....	.....	.....	.....	.....
South Central Division:						
Kentucky	*d* 5,600	1·44	.....	*d* 15,000	404,860	3·70
Tennessee	15,502	3·18	.....	*c* 45,428	532,935	8·53
Alabama	.....	.....	.....	.....	.....	.....
Mississippi	.....	.....	.....	23,688	364,615	6·50
Louisiana	.....	.....	.....	10,665	150,898	7·07
Texas	*e* 37,758	7·15	6·89	.....	.....	.....
Arkansas	4,545	1·81	.....	.....	.....	.....
Oklahoma	.....	.....	.....	.....	.....	.....
North Central Division:						
Ohio	38,581	4·82	4·58	.....	.....	.....
Indiana	.....	.....	.....	.....	.....	.....
Illinois	21,836	2·70	2·25	90,444	899,896	10·05
Michigan	14,180	3·17	3·96	26,614	474,081	5·61
Wisconsin	11,022	3·04	3·01	.....	.....	.....
Minnesota	*f* 4,290	*f* 1·43	1·30	.....	.....	.....
Iowa	.....	.....	.....	30,408	540,238	5·63
Missouri	.....	.....	.....	23,181	663,980	3·49
North Dakota	*d* 1,500	3·96	.....	826	38,742	2·13
South Dakota	.....	.....	.....	.....	.....	.....
Nebraska	5,779	2·28	2·57	.....	.....	.....
Kansas	5,675	1·49	1·44	.....	.....	.....
Western Division:						
Montana	.....	.....	.....	1,014	22,782	4·45
Wyoming	.....	.....	.....	.....	.....	.....
Colorado	2,393	3·12	2·65	.....	.....	.....
New Mexico	.....	.....	.....	3,982	28,279	14·08
Arizona	*g* 60	·60	.....	.....	.....	.....
Utah	.....	.....	.....	10,934	66,382	16·47
Nevada	.....	.....	.....	471	7,632	6·17
Idaho	.....	.....	.....	.....	.....	.....
Washington	.....	.....	.....	3,419	82,238	4·34
Oregon	.....	.....	.....	*c* 10,083	85,609	11·78
California	6,021	2·53	1·60	21,001	259,107	8·10

* These summaries are estimates embracing all the States composing the divisions respectively.
a In 1890–91.
b In 1889–90.
c Including some students in higher institutions.
d Estimated by State superintendent.
e Number studying either algebra or geometry.
f Includes only pupils in schools under State supervision.
g Approximately.

TABLE 17.—*Receipts of school moneys.*

State or Territory.	Income from permanent funds and rents.	From taxation.					From all other sources.	Total receipts, excluding sales of bonds and balance on hand.
		State taxes.	Increase or decrease since preceding year.	Local taxes.	Increase or decrease since preceding year.	Total raised by taxation.		
1	2	3	4	5	6	7	8	9
United States	$8,084,582	$29,693,487	I..$1,586,403	$105,551,726	I..$5,094,726	$135,245,213	$13,448,956	$156,778,751
North Atlantic Division	1,027,315	8,644,770	I.. 256,477	38,645,237	I..1,072,285	47,290,007	5,202,116	53,519,438
South Atlantic Division	403,653	4,346,902	I.. 397,513	4,549,844	I.. 156,028	8,896,746	477,349	9,777,748
South Central Division	1,543,827	6,549,327	I.. 589,309	3,483,014	I.. 203,073	10,032,341	887,892	12,464,060
North Central Division	4,463,327	7,333,064	I.. 258,210	50,937,026	I..2,628,220	58,270,090	5,515,402	68,248,819
Western Division	646,460	2,819,424	I.. 84,894	7,936,605	I..1,035,120	10,756,029	1,366,197	12,768,686
North Atlantic Division:								
Maine	*a* 98,845	421,219	I.. 79,096	903,607	D.. 146,029	1,324,826	0	1,423,671
New Hampshire	13,065	77,092	I.. 12,735	726,153	I.. 50,035	803,245	19,403	835,713
Vermont	*a* 68,359	89,030	I.. 89,030	540,634	D.. 54,248	629,664	29,759	727,782
Massachusetts	251,621	0	0	9,058,939	I.. 667,100	9,058,939	4,996	9,315,556
Rhode Island	18,643	110,009	D.. 1,004	919,708	I.. 46,361	1,029,717	314,688	1,363,048
Connecticut	165,729	246,079	I.. 4,218	1,635,385	I.. 108,275	1,881,464	218,989	2,266,182
New York	266,566	3,663,086	D.. 5,899	12,303,721	I.. 150,371	15,966,807	1,973,154	18,206,527
New Jersey	144,487	2,052,560	I.. 57,300	1,572,270	I.. 57,714	3,624,830	0	3,769,317
Pennsylvania	0	1,985,695	I.. 21,001	10,984,820	I.. 192,706	12,970,515	2,641,127	15,611,642
South Atlantic Division:								
Delaware *a b*	60,000	*c* 6,000	.....	209,000	.....	215,000	0	275,000
Maryland	54,436	578,552	D.. 34,353	1,124,988	D.. 21,949	1,703,540	163,452	1,921,428
District of Columbia	0	*d* 482,035	I.. 31,716	482,035	I.. 31,716	964,070	0	*e* 964,070
Virginia	41,650	858,413	D.. 9,218	757,056	I.. 39,256	1,615,469	32,699	1,689,818
West Virginia	*a* 30,331	*a* 317,316	I.. 63,139	1,040,083	I.. 35,582	1,357,399	122,364	1,510,094
North Carolina	0	638,835	I.. 72,812	*a* 36,588	D.. 808	675,423	125,027	800,450
South Carolina	0	454,976	D.. 11,168	57,322	D.. 797	512,298	7,614	519,912
Georgia	182,694	925,540	I.. 279,346	*b* 329,903	I.. 10,493	1,255,443	20,129	1,458,266
Florida	34,542	85,235	I.. 5,239	512,869	I.. 62,535	598,104	6,064	638,710
South Central Division:								
Kentucky	111,929	1,310,036	I.. 57,733	869,000	I.. 63,481	2,179,036	*f* 137,787	2,428,752
Tennessee	163.871	1,411,691	I.. 269,431	*g* 299,489	I.. 19,745	1,711,180	50,289	1,925,340
Alabama *b*	143,938	465,729	I.. 77,868	*a* 290,000	.....	755,729	115	899,782
Mississippi	73,393	574,456	I.. 118,348	451,777	D.. 74,186	1,026,233	149,811	1,249,437
Louisiana	49,085	282,483	D.. 19,998	330,115	I.. 20,894	612,598	302,096	963,779
Texas	*a* 997,000	*a* 1,992,172	I.. 86,659	632,191	I.. 162,799	2,624,363	224,148	3,845,511
Arkansas	0	509,041	I.. 32,767	571,923	D.. 28,179	1,080,964	15,306	1,096,270
Oklahoma	4,611	*d* 3,719	D.. 33,499	38,519	I.. 38,519	42,238	8,340	55,189

a Estimated. *b* In 1889–'90. *c* Appropriation for colored schools. *d* United States appropriation. *e* Expenditure. *f* In 1890–'91. *g* Report incomplete.

TABLE 17.—*Receipts of school moneys*—Continued.

State or Territory.	Income from permanent funds and rents.	From taxation.					From all other sources.	Total receipts, excluding sales of bonds and balance on hand.
		State taxes.	Increase or decrease since preceding year.	Local taxes.	Increase or decrease since preceding year.	Total raised by taxation.		
1	2	3	4	5	6	7	8	9
North Central Division:								
Ohio	$244,013	$1,693,495	D..$187,519	$8,757,139	I ..$319,657	$10,450,634	$408,255	$11,102,902
Indiana	635,327	1,638,548	I .. 221,555	2,872,173	D.. 223,879	4,510,721	463,607	5,609,655
Illinois	602,107	1,000,000	0	11,128,163	I ..1,027,552	12,128,163	432,597	13,252,867
Michigan	308,247	600,215	D.. 25,184	4,488,120	I .. 335,748	5,088,335	344,942	5,741,524
Wisconsin	*a* 188,000	*a* 723,206	I .. 129,996	3,336,056	I .. 485,850	4,059,262	546,337	4,793,599
Minnesota	*a* 381,000	*a* 659,069	D.. 30,989	3,046,234	D.. 9,921	3,705,303	432,013	4,518,316
Iowa	233,989	0	0	6,241,358	I .. 168,721	6,241,358	934,784	7,410,131
Missouri	880,249	690,929	I .. 15,328	3,556,598	I .. 50,075	4,247,527	521,586	5,649,356
North Dakota	38,906	190,760	I .. 119,741	570,514	I .. 129,362	761,274	34,295	834,475
South Dakota	*a* 75,649	0	0	1,502,484	I .. 203,487	1,502,484	39,078	1,617,211
Nebraska	*a* 457,000	136,842	I .. 15,282	1,898,201	I .. 140,033	2,035,043	1,013,843	3,505,886
Kansas	*a* 328,840	0	0	3,539,986	I .. 1,535	3,539,986	344,071	4,212,897
Western Division:								
Montana	0	0	0	523,401	I .. 108,452	523,401	28,299	551,700
Wyoming	0	0	0	216,555	I .. 33,981	216,555	0	216,555
Colorado	108,463	0	0	1,462,109	I .. 210,439	1,462,109	753,182	2,323,754
New Mexico	0	0	0	*a* 112,367	I .. 7,825	112,367	*a* 72,215	184,582
Arizona *b*	0	1,783	D.. 1,713	170,267	I .. 24,458	172,050	0	172,050
Utah	0	351,239	I .. 81,803	363,486	I .. 68,863	714,725	35,688	750,413
Nevada	79,412	15,681	I .. 148	104,765	D.. 9,473	120,446	247	200,105
Idaho	15,009	0	0	260,785	I .. 60,837	260,785	6,655	282,449
Washington	46,509	0	0	1,311,474	I .. 223,713	1,311,474	31,809	1,389,792
Oregon	162,067	0	0	864,364	I .. 91,294	864,364	171,646	1,198,077
California	*a* 235,000	2,450,721	I .. 4,656	2,547,032	I .. 214,731	4,997,753	266,456	5,499,209

a Estimated.

b In 1889-'90.

TABLE 18.—*The school revenue compared (1) with the adult male population (taxpayers), and (2) with the school population. Percentage analysis of the school revenue.*

State or Territory.	Amount raised per taxpayer.					Amount raised per capita of the school population, (5–18 years).	Per cent of the total revenue derived from—			
	From permanent funds and rents.	From State taxes.	From local taxes.	From other sources.	Total.		Permanent funds and rents.	State taxes.	Local taxes.	Other sources.
1	2	3	4	5	6	7	8	9	10	11
United States	$0.46	$1.69	$6.01	$0.77	$8.93	$8.17	5·2	18·9	67·3	8·6
North Atlantic Division	.20	1.66	7.44	1.00	10.30	.....	1·9	16·1	72·2	9·8
South Atlantic Division	.19	2.09	2.19	.23	4.70	.....	4·1	44·5	46·5	4·9
South Central Division	.53	2.50	1.33	.34	4.76	.....	12·3	52·5	27·9	7·3
North Central Division	.70	1.15	7.96	.86	10.67	.....	6·5	10·7	74·6	8·2
Western Division	.51	2.20	6.21	1.07	9.99	.....	5·1	22·1	62·1	10·7
North Atlantic Division:										
Maine	*a* .49	2.10	4.52	0	7.11	.....	*a* 6·9	29·6	63·5	0
New Hampshire	.11	.64	6.05	.16	6.96	.....	1·6	9·2	86·9	2·3
Vermont	*a* .69	.89	5.42	.30	7.30	.....	*a* 9·4	12·2	74·3	4·1
Massachusetts	.37	0	13.19	.01	13.57	.....	2·7	0	97·2	0·1
Rhode Island	.18	1.04	8.66	2.95	12.83	.....	1·4	8·1	67·5	23·0
Connecticut	.72	1.06	7.05	.94	9.77	.....	7·3	10·9	72·2	9·6
New York	.15	2.06	6.92	1.11	10.24	.....	1·5	20·1	67·6	10·8
New Jersey	.32	4.61	3.53	0	8.46	.....	3·8	54·5	41·7	0
Pennsylvania	0	1.31	7.21	1.73	10.25	.....	0	12·7	70·4	16·9
South Atlantic Division:										
Delaware (1889–'90) *a*	1.26	*b*. 13	4.39	0	5.78	.....	21·8	*b* 2·2	76.0	0
Maryland	.20	2.09	4.07	.58	6.94	.....	2 8	30·1	58·6	8·5
District of Columbia	0	*c* 6.66	6.66	0	13.32	.....	0	*c* 50·0	50·0	0
Virginia	.11	2.21	1.95	.07	4.34	.....	2·5	50·8	44·8	1·9
West Virginia	*a* .16	*a* 1.69	5.52	.65	8.02	.....	*a* 2·0	*a* 21·0	68·9	8·1
North Carolina	0	1.83	*a* .10	.36	2.29	.....	0	79·8	*a* 4·6	15·6
South Carolina	0	1.88	.24	.02	2.14	.....	0	87·5	11·0	1·5
Georgia	.44	2.26	*d*. 80	.05	3.55	.....	12·5	63·5	*d* 22·6	1·4
Florida	.33	.82	4.95	.06	6.16	.....	5·4	13·3	80·3	1·0
South Central Division:										
Kentucky	.24	2.82	1.87	*e* .30	5.23	.....	4·6	53·9	35·8	*e* 5·7
Tennessee	.40	3.39	*f*. 72	.12	4.63	.....	8·5	73·3	*f* 15·6	2·6
Alabama (1889–'90)	.44	1.43	*a*. 89	.01	2.77	.....	16·0	51·8	*a* 32·2	.....
Mississippi	.26	2.07	1.62	.54	4.49	.....	5·9	46·0	36·2	11·9
Louisiana	.19	1.09	1.27	1.17	3.72	.....	5·1	29·3	34·2	31·4
Texas	*a* 1.73	*a* 3.47	1.10	.39	6.69	.....	*a* 25·9	*a* 51·8	16·4	5·9
Arkansas	0	1.89	2.13	.06	4.08	.....	0	46·4	52·3	1·3
Oklahoma	.15	*c* .12	1.23	.27	1.77	.....	8·4	*c* 6·7	69·8	15·1
North Central Division:										
Ohio	.24	1.64	8.52	.40	10.80	.....	2·2	15·3	78·9	3·6
Indiana	1.06	2.73	4.79	.77	9.35	.....	11·3	29·2	51·2	8·3
Illinois	.61	.89	9.88	.38	11.76	.....	5·2	7·5	84 0	3·3
Michigan	.49	.95	7.06	.54	9.04	.....	5·4	10·5	78·2	5·9
Wisconsin	*a*. 39	*a* 1.50	6.92	1.13	9.94	.....	*a* 3·9	*a* 15·1	69·6	11·4
Minnesota	*a*. 95	*a* 1.64	7.58	1.07	11.24	.....	*a* 8·4	*a* 14·6	67·4	9·6
Iowa	.44	0	11.73	1.76	13.93	.....	3·2	0	84·2	12·6
Missouri	1.20	.94	4.82	.71	7.67	.....	15·6	12·2	63·0	9·2
North Dakota	.67	3.26	9.76	.59	14.28	.....	4·7	22·9	68·3	4·1
South Dakota	*a*. 77	0	15.21	.40	16.38	.....	*a* 4·7	0	92·9	2·4
Nebraska	*a* 1.42	.42	5.86	3.13	10.83	.....	*a* 13·0	3·9	54·1	29·0
Kansas	*a*. 88	0	9.43	.92	11.23	.....	*a* 7·8	0	84·0	8·2
Western Division:										
Montana	0	0	6.53	.35	6.88	.....	0	0	94·9	5·1
Wyoming	0	0	6.46	0	6.46	.....	0	0	100·0	0
Colorado	.59	0	7.95	4.09	12.63	.....	4·7	0	62·9	32·4
New Mexico	0	0	*a* 2.39	*a* 1.54	3.93	.....	0	0	*a* 60·9	*a* 39·1
Arizona (1889–'90)	0	.07	6.36	0	6.43	.....	0	1·0	99·0	0
Utah	0	5.67	5.86	.58	12.11	.....	0	46·8	48·4	4·8
Nevada	3.92	.77	5.18	.01	9.88	.....	39·7	7·8	52·4	0·1
Idaho	.39	0	6.83	.17	7.39	.....	5·3	0	92·3	2·4
Washington	.26	0	7.39	.18	7.83	.....	3·3	0	94·4	2·3
Oregon	1.29	0	6.89	1.37	9.55	.....	13·5	0	72·1	14·4
California	*a*. 49	5.06	5.26	.55	11.36	.....	*a* 4·3	14·6	46·3	4·8

a Estimated.
b Appropriations for colored schools.
c From U. S. Treasury.
d In 1889–'90.
e In 1890–'91.
f Report incomplete.

TABLE 19.—*Progress of school expenditure.*

State or Territory.	Total expenditure for common schools.				Expended per capita of population.			
	1870–'71.	1879–'80.	1889–'90.	1891–'92.	1870–'71.	1879–'80.	1889–'90.	1891–'92.
1	2	3	4	5	6	7	8	9
United States	$69,107,612	$78,094,687	$140,506,715	$155,991,273	$1.75	$1.56	$2.24	$2.41
North Atlantic Division	29,796,835	28,538,058	48,023,492	52,496,544	2.38	1.97	2.76	2.94
South Atlantic Division	3,781,581	5,130,492	8,767,165	9,716,742	.63	.68	.99	1.06
South Central Division	4,854,834	4,872,829	10,678,680	12,370,243	.73	.55	.97	1.08
North Central Division	28,430,033	35,285,635	62,823,563	67,864,408	2.14	2.03	2.81	2.95
Western Division	2,244,329	4,267,673	10,213,815	13,543,336	2.15	2.41	3.37	4.05
North Atlantic Division:								
Maine	950,662	1,067,991	1,327,553	1,393,833	1.51	1.65	2.01	2.12
New Hampshire	418,545	565,339	844,333	850,886	1.30	1.63	2.24	2.22
Vermont	499,961	446,217	711,072	738,058	1.51	1.34	2.14	2.26
Massachusetts	5,579,363	4,983,900	8,286,062	9,315,557	3.73	2.80	3.70	4.03
Rhode Island	461,160	526,112	884,966	1,267,369	2.05	1.90	2.56	3.45
Connecticut	1,496,981	1,408,375	2,157,014	2,269,260	2.74	2.26	2.89	2.94
New York	9,607,904	10,296,977	17,543,880	18,365,562	2.17	2.03	2.92	3.05
New Jersey	2,302,341	1,873,465	3,340,190	3,966,879	2.48	1.66	2.31	2.55
Pennsylvania	8,479,918	7,369,682	12,928,422	14,329,140	2.36	1.72	2.46	2.62
South Atlantic Division:								
Delaware	153,509	207,281	a 275,000	a b 275,000	1.21	1.41	1.63	a b 1.63
Maryland	1,214,729	1,544,367	1,910,663	2,149,972	1.53	1.65	1.83	2.02
District of Columbia	373,535	438,567	905,777	964,070	2.77	2.47	3.93	3.73
Virginia	587,472	946,109	1,604,509	1,690,465	.47	.63	.97	.99
West Virginia	577,719	707,553	1,198,493	1,408,065	1.26	1.14	1.57	1.78
North Carolina	177,498	376,062	714,900	760,991	.16	.27	.44	.46
South Carolina	275,688	324,629	450,936	483,698	.38	.33	.39	.41
Georgia	292,000	471,029	1,190,354	1,447,245	.24	.31	.65	.76
Florida	129,431	114,895	516,533	537,236	.66	.43	1.32	1.27
South Central Division:								
Kentucky	a 1,075,000	1,069,030	2,140,678	2,490,712	.80	.65	1.15	1.30
Tennessee	a 758,000	744,180	1,526,241	1,687,058	.59	.48	.86	.92
Alabama	a 370,000	a 500,000	a 890,000	a b 890,000	.36	.40	.59	a b .59
Mississippi	950,000	830,705	1,109,575	1,266,865	1.11	.73	.86	.96
Louisiana	531,834	411,858	817,110	1,004,741	.71	.44	.73	.87
Texas	a 650,000	a 1,030,000	3,178,300	3,799,459	.74	.65	1.42	1.59
Arkansas	a 520,000	287,056	1,016,776	1,159,653	1.02	.36	.90	.99
Oklahoma	.....	.....	.....	a 71,755	.....	.....	.....	a .71
North Central Division:								
Ohio	6,831,035	7,166,963	10,602,238	11,839,998	2.52	2.24	2.89	3.19
Indiana	a 2,897,537	4,491,850	5,245,218	5,609,655	1.70	2.27	2.39	2.54
Illinois	6,656,542	7,014,092	11,645,126	13,121,708	2.57	2.28	3.04	3.27
Michigan	2,840,740	2,775,917	5,349,366	5,746,161	2.33	1.70	2.55	2.66
Wisconsin	1,932,539	2,177,023	3,801,212	4,259,321	1.79	1.65	2.25	2.42
Minnesota	960,558	1,328,429	4,187,310	4,384,413	2.06	1.70	3.22	3.15
Iowa	3,269,190	4,484,043	6,382,953	7,056,222	2.70	2.76	3.34	3.61
Missouri	1,749,049	2,675,364	5,434,262	5,792,032	.99	1.23	2.03	2.07
North Dakota	a 23,000	245,000	626,949	803,253	1.29	1.81	3.43	4.21
South Dakota			1,199,630	1,380,727			3.65	4.11
Nebraska	365,520	1,108,617	3,376,332	3,524,151	2.61	2.45	3.19	3.10
Kansas	904,323	1,818,337	4,972,967	4,346,767	2.24	1.83	3.48	3.11
Western Division:								
Montana	a 35,600	78,730	364,084	679,394	1.62	2.01	2.76	4.20
Wyoming	a 7,000	28,504	225,000	216,555	.71	1.37	3.71	2.88
Colorado	67,395	395,227	1,681,379	1,981,635	1.44	2.03	4.08	4.31
New Mexico	a 4,900	28,973	a 85,000	205,100	.05	.24	.55	1.28
Arizona	.....	61,172	181,914	a 204,000	.....	1.51	3.05	a 3.03
Utah	a 117,000	132,194	394,685	911,010	1.28	.92	1.90	3.85
Nevada	a 85,000	220,245	161,481	185,223	1.93	3.54	3.53	4.19
Idaho	19,003	38,411	169,020	223,278	1.17	1.18	2.00	2.27
Washington	a 35,000	112,615	958,111	2,391,093	1.30	1.50	2.74	5.66
Oregon	a 160,000	307,031	805,979	1,102,832	1.65	1.76	2.57	3.13
California	1,713,431	2,864,571	5,187,162	5,443,216	2.93	3.31	4.29	4.30

a Approximately. *b* In 1889–'90.

TABLE 20.—*School expenditure.*

State or Territory.	Permanent expenditure.			Current expenditure.				Total expenditure, excluding payment of bonded debt.	Increase or decrease since preceding year.	Per cent of increase or decrease.
	Sites, buildings, furniture, libraries, and apparatus.	Increase or decrease since preceding year.	Per cent of increase or decrease.	Salaries of teachers and superintendents.	Increase or decrease since preceding year.	Per cent of increase or decrease.	Other current expenses.			
1	2	3	4	5	6	7	8	9	10	11
United States	$29,504,414	I ..$3,198,111	I .. 12·15	$100,333,071	I ..$4,240,899	I .. 4·41	$26,153,788	$155,991,273	I ..$8,812,569	I .. 5·99
North Atlantic Division	11,468,684	I .. 1,353,034	I .. 13·37	31,543,485	I .. 1,164,341	I .. 3·83	9,484,375	52,496,544	I .. 3,167,587	I .. 6·42
South Atlantic Division	1,209,136	D.. 68,363	D.. 5·35	7,461,256	I .. 516,721	I .. 7·44	1,046,350	9,716,742	I .. 461,445	I .. 4·99
South Central Division	1,419,592	I .. 354,637	I .. 33·31	9,908,384	I .. 382,589	I .. 4·02	1,042,267	12,370,243	I .. 726,532	I .. 6·24
North Central Division	11,871,865	I .. 1,379,035	I .. 13·14	43,473,617	I .. 1,471,443	I .. 3·50	12,518,926	67,864,408	I .. 3,199,083	I .. 4·95
Western Division	3,535,137	I .. 179,768	I .. 5·36	7,946,329	I .. 705,805	I .. 9·75	2,061,870	13,543,336	I .. 1,257,922	I .. 10·24
North Atlantic Division:										
Maine	62,302	D.. 47,426	D.. 43·22	*a* 857,244	I .. 19,167	I .. 2·29	474,287	1,393,833	D.. 91,760	D.. 6·18
New Hampshire	122,840	D.. 26,807	D.. 17·91	561,441	I .. 21,447	I .. 3·97	166,605	850,886	D.. 39,697	D.. 4·46
Vermont	104,403	I .. 33,844	I .. 47·97	558,719	I .. *a* 8,719	I .. 1·59	74,936	738,058	I .. 37,499	I .. 5·35
Massachusetts	2,170,655	I .. 797,113	I .. 58·04	*a* 5,400,724	D.. 116,058	D.. 2·10	1,744,178	9,315,557	I .. 761,011	I .. 8·90
Rhode Island	473,599	I .. 209,034	I .. 79·02	659,929	I .. 25,512	I .. 4·02	133,841	1,267,369	I .. 244,772	I .. 23·94
Connecticut	353,879	D.. 67,944	D.. 16·11	1,461,427	I .. 59,607	I .. 4·25	453,954	2,269,260	I .. 69,794	I .. 3·17
New York	4,361,851	I .. 209,565	I .. 5·05	11,808,167	I .. 614,631	I .. 5·49	2,195,544	18,365,562	I .. 1,039,282	I .. 6·00
New Jersey	758,938	I .. 78,106	I .. 11·47	2,469,177	I .. 26,115	I .. 1·07	738,764	3,966,879	I .. 336,254	I .. 9·26
Pennsylvania	3,060,217	I .. 167,549	I .. 5·79	7,766,657	I .. 505,201	I .. 6·96	*b* 3,502,266	*b* 14,329,140	I .. 810,432	I .. 6·00
South Atlantic Division:										
Delaware *ac*	*d* 23,795	I .. 2,895	I .. 13·85	225,000	I .. 11,000	I .. 5·14	26,205	275,000	I .. 15,000	I .. 5·77
Maryland	257,400	D.. 129,221	D.. 33·43	1,618,829	I .. 61,001	I .. 3·92	273,743	2,149,972	D.. 71,309	D.. 3·21
District of Columbia	220,344	D.. 8,734	D.. 3·81	586,386	I .. 36,873	I .. 6·71	157,340	964,070	I .. 63,432	I .. 7·04
Virginia	158,200	I .. 8,165	I .. 5·44	1,356,513	I .. 34,416	I .. 2·60	175,752	1,690,465	I .. 53,482	I .. 3·27
West Virginia	276,391	I .. 31,250	I .. 12·75	885,731	I .. 50,851	I .. 6·09	245,943	1,408,065	I .. 67,912	I .. 5·07
North Carolina	79,804	I .. 16,177	I .. 25·42	602,939	I .. 55,432	I .. 10·13	78,248	760,991	I .. 84,362	I .. 12·47
South Carolina	24,306	D.. *e* 7,493	D.. 23·57	432,076	I .. *e*17,076	I .. 4·12	27,316	483,698	I .. *e*18,698	I .. 4·02
Georgia	138,995	I .. 18,598	I .. 15·45	1,303,682	I .. 248,958	I .. 23·60	4,568	1,447,245	I .. 256,891	I .. 21·58
Florida	*f* 29,901	----------	----------	450,100	I .. 1,114	I .. 0·25	57,235	537,236	D.. 27,023	D.. 4·79
South Central Division:										
Kentucky	483,629	I .. 150,622	I .. 45·24	2,007,083	I .. 81,868	I .. 4·25	(*g*)	2,490,712	I .. 182,207	I .. 7·89
Tennessee	186,853	D.. 2,796	D.. 1·47	1,383,905	D.. 39,020	D.. 2·74	116,300	1,687,058	D.. 37,001	D.. 2·15
Alabama *ac*	150,000	I .. 60,808	I .. 68·17	660,000	I .. 6,102	I .. ·93	80,000	890,000	I .. 50,000	I .. 5·95
Mississippi	(*g*)	----------	----------	1,071,615	I .. 53,858	I .. 5·29	195,250	1,266,865	I .. 97,777	I .. 8·36
Louisiana	35,117	D.. 4,297	D.. 10·90	656,342	I .. 78,477	I .. 13·58	313,282	1,004,741	I .. 137,088	I .. 15·80

a Approximately.
b Includes payment of bonds.
c In 1889–'90.
d City of Wilmington only.
e One-half the change in 2 years.
f Report incomplete.
g Not reported separately.

TABLE 20.—*School expenditure*—Continued.

State or Territory.	Permanent expenditure.			Current expenditure.				Total expenditure, excluding payment of bonded debt.	Increase or decrease since preceding year.	Per cent of increase or decrease.
	Sites, buildings, furniture, libraries, and apparatus.	Increase or decrease since preceding year.	Per cent of increase or decrease.	Salaries of teachers and superintendents.	Increase or decrease since preceding year.	Per cent of increase or decrease.	Other current expenses.			
1	2	3	4	5	6	7	8	9	10	11
South Central Division—Cont'd										
Texas	$423,179	I .. $145,668	I .. 52·49	$3,094,033	I .. $115,395	I .. 3·87	$282,247	$3,799,459	I .. $203,400	I .. 5·66
Arkansas	122,814	I .. 1,932	I .. 1·60	987,151	I .. 80,009	I .. 8·82	49,688	1,159,653	I .. 82,838	I .. 7·69
Oklahoma *a*	18,000	I .. 2.694	I .. 17·60	48,255	I .. 5,900	I .. 13·93	5,500	71,755	I .. 10 223	I .. 16·62
North Central Division:										
Ohio	1,820,118	I .. 487,159	I .. 36·54	7,438,067	I .. 227,481	I .. 3·15	2,581,813	11,839,998	I .. 1,022,712	I .. 9·46
Indiana	895,220	I .. 112,254	I .. 14·34	3,835,919	D.. 113,417	D.. 2·87	878,516	5,609,655	D.. 26,545	D.. ·47
Illinois	2,802,148	I .. 483,388	I .. 20·84	8,105,877	I .. 420,522	I .. 5·47	2,213,683	13,121,708	I .. 1,087,062	I .. 9·03
Michigan	921,017	I .. 29,338	I .. 3·29	3,589,464	I .. 156,775	I .. 4·57	1,235,680	5,746,161	I .. 287,320	I .. 5·26
Wisconsin	694,309	I .. 64,526	I .. 10·25	2,863,532	I .. 112,294	I .. 4·08	701,480	4,259,321	I .. 236,865	I .. 5·89
Minnesota	899,480	D.. 68,327	D.. 7·06	2,776,787	I .. 188,179	I .. 7·27	708,146	4,384,413	D.. 426,728	D.. 8·87
Iowa	1,099,115	I .. 146,503	I .. 15·38	4,589,236	I .. 130,646	I .. 2·93	1,367,871	7,056,222	I .. 349,793	I .. 5·22
Missouri	1,098,364	I .. 42,431	I .. 4·02	3,846,963	I .. 163,621	I .. 4·44	846,705	5,792,032	I .. 261,089	I .. 4·72
North Dakota	141,282	I .. 56,290	I .. 66·21	421,918	I .. 40,446	I .. 10·60	240,053	803,253	I .. 176,304	I .. 28·12
South Dakota	*a*277,720	I .. 12,183	I .. 4·59	686,427	D.. 24,101	D.. 3·39	*a*416,580	1,380,727	I .. 6,856	I .. ·50
Nebraska	863,181	I .. 113,548	I .. 15·15	2,258,970	I .. 142,301	I .. 6·72	402,000	3,524,151	I .. 302,029	I .. 9·37
Kansas	359,911	D.. 100,258	D.. 21·78	3,060,457	I .. 26,696	I .. ·88	926,399	4,346,767	D.. 77,674	D.. 1·76
Western Division:										
Montana	283,698	I .. 40,390	I .. 16·60	316,822	I .. 49,821	I .. 18·66	78,874	679,394	I .. 101,793	I .. 17·62
Wyoming	*b* 12,220	.....	.....	124,721	I .. 15,963	I .. 14·68	79,614	216,555	.....	.....
Colorado	659,562	D.. 69,986	D.. 9·59	985,137	I .. 90,727	I .. 10·14	336,936	1,981,635	I .. 50,821	I .. 2·63
New Mexico	39,961	.....	.....	123,395	.....	.....	41,744	205,100	.....	.....
Arizona *a*	45,000	.....	.....	136,000	.....	.....	23,000	204,000	.....	.....
Utah	346,619	I .. 183,207	I .. 112·10	412,921	I .. 117,040	I .. 39·56	151,470	911,010	I .. 377,075	I .. 70·62
Nevada	13,748	I .. 3,576	I .. 35·16	151,691	I .. 10,153	I .. 7·17	19,784	185,223	I .. 12,769	I .. 7·40
Idaho	53,255	I .. 19,262	I .. 56·60	162,731	I .. 31,130	I .. 23·66	16,292	232,278	I .. 46,985	I .. 25·36
Washington	1,006,353	D.. 127,510	D.. 11·24	882,450	I .. 193,702	I .. 28·13	502,290	2,391,093	I .. 295,783	I .. 14·12
Oregon	348,106	I .. 71,021	I .. 25·64	693,789	I .. 36,476	I .. 5·55	60,937	1,102,832	I .. 133,305	I .. 13·75
California	726,615	I .. 59,808	I .. 8·97	3,956,672	I .. 160,803	I .. 4·24	750,929	5,434,216	I .. 239,391	I .. 4·61

a Approximately.

b Report incomplete.

TABLE 21.—*(1) Expenditure per pupil. (2) Percentage analysis of expenditure. (3) Expenditure per pupil per day.*

State or Territory.	Average expenditure per pupil (for the whole school year)				Per cent of total expenditure devoted to—			Average daily expenditure per pupil.	
	For sites, buildings, etc.	For salaries.	For other current purposes.	Total.	Sites, buildings, etc.	Salaries.	Other current purposes.	For salaries.	For all purposes.
1	2	3	4	5	6	7	8	9	10
					Per ct.	*Per ct.*	*Per ct.*	*Cents.*	*Cents.*
United States	$3.45	$11.74	$3.06	$18.25	18·9	64·3	16·8	8.6	13.3
North Atlantic Division	5.44	14.96	4.50	24.90	21·8	60·1	18·1	8.8	14.7
South Atlantic Division	1.09	6.71	.93	8.73	12·4	76·8	10·8	6.3	8.2
South Central Division	.91	6.38	.67	7.96	11·5	80·1	8·4	6.8	8.4
North Central Division	3.52	12.90	3.71	26.13	17·5	64·1	18·4	8.8	13.7
Western Division	8.80	19.77	5.13	33.70	26·1	58·7	15·2	14.2	24.2
North Atlantic Division:									
Maine	0.69	*a* 9.51	5.26	15.46	4·4	*a* 61·5	34·1	*a* 7.7	12.6
New Hampshire	2.82	12.90	3.83	19.55	14·4	66·0	19·6	10.6	16.1
Vermont	2.32	12.40	1.66	16.38	14·1	75·7	10·2	9.0	11.9
Massachusetts	7.65	*a* 19.04	6.14	32.83	23·3	*a* 58·0	18·7	*a* 11.1	19.2
Rhode Island	12.80	17.84	3.63	34.27	37·4	52·1	10·5	9.2	17.7
Connecticut	4.17	17.22	5.35	26.74	15·6	64·4	20·0	9.4	14.7
New York	6.55	17.74	3.30	27.59	23·8	64·3	11·9	9.5	14.8
New Jersey	5.04	16.40	4.91	26.35	19·1	62·2	18·7	8.6	13.9
Pennsylvania	4.32	10.96	*b* 4.94	20.22	21·4	54·2	*b* 24·4	7.1	13.0
South Atlantic Division:									
Delaware (1889–90) *a*	1.21	11.45	1.33	13.99	8·7	81·8	9·5	6.9	8.4
Maryland	2.45	15.41	2.60	20.46	12·9	75·3	12·7	8.4	11.1
District of Columbia	7.40	19.70	5.29	32.39	22·9	60·8	16·3	10.6	17.5
Virginia	.85	7.29	.95	9.09	9·4	80·3	10·3	6.2	7.7
West Virginia	2.16	6.92	1.92	11.00	19·6	62·9	17·5	6.3	10.0
North Carolina	.40	3.03	.40	3.83	10·5	79·2	10·3	4.9	6.1
South Carolina	.16	2.90	.19	3.25	5·0	89·4	5·6	4.0	4.4
Georgia	.59	5.57	.02	6.18	9·6	90·1	0·3	5.6	5.9
Florida	*c* .48	7.23	.92	8.63	*c* 5·6	83·8	10·6	6.0	7.2
South Central Division:									
Kentucky	1.99	8.25	(*d*)	10.24	19·4	80·6	(*d*)	8.3	10.2
Tennessee	.54	3.96	.33	4.83	11·1	82·0	6·9	4.1	5.0
Alabama (in 1889–90) *a*	.82	3.62	.44	4.88	16·9	74·1	9·0	4.9	6.6
Mississippi	(*d*)	5.43	.99	6.42	(*d*)	84·6	15·4	5.7	6.8
Louisiana	.36	6.80	3.25	10.41	3·5	65·3	31·2	6.5	10.0
Texas	1.26	9.20	.84	11.30	11·2	81·4	7·4	8.7	10.7
Arkansas	.88	7.03	.35	8.26	10·6	85·1	4·3	9.5	11.2
Oklahoma *a*	2.40	6.43	.72	9.55	25·1	67·2	7·7	7.1	10.6
North Central Division:									
Ohio	3.23	13.20	4.58	21.01	15·4	62·8	21·8	8.0	12.7
Indiana	2.48	10.64	2.44	15.56	16·0	68·4	15·6	8.1	11.8
Illinois	4.88	14.10	3.85	22.83	21·4	61·8	16·8	9.1	14.7
Michigan	3.10	12.10	4.17	19.37	16·0	62·5	21·5	7.8	12.4
Wisconsin	3.20	13.18	3.23	19.61	16·3	67·2	16·5	8.3	12.4
Minnesota	6.36	19.62	5.00	30.98	20·5	63·3	16·2	12.9	20.0
Iowa	3.42	14.26	4.25	21.93	15·6	65·0	19·4	9.0	13.9
Missouri	2.53	8.86	1.95	13.34	19·0	66·4	14·6	7.2	10.9
North Dakota	6.60	19.70	11.21	37.51	17·6	52·5	29·9	16.8	32.0
South Dakota	*a* 6.05	14.97	*a* 9.08	30.10	*a* 20·1	49·7	*a* 30·2	14.9	29.9
Nebraska	5.59	14.63	2.60	22.82	24·5	64·1	11·4	10.8	16.9
Kansas	1.50	12.79	3.87	18.16	8·3	70·4	21·3	10.1	14.3
Western Division:									
Montana	18.98	21.21	5.28	45.47	41·8	46·6	11·6	14.3	30.7
Wyoming	*c* 2.00	20.42	13.03	35.45	*c* 5·6	57·6	36·8	17.0	29.5
Colorado	13.76	20.55	7.03	41.34	33·3	49·7	17·0	13.7	27.5
New Mexico	2.39	7.38	2.50	12.27	19·5	60·2	20·3	8.2	13.6
Arizona *a*	7.40	22.37	3.78	33.55	22·1	66·7	11·2	13.0	19.5
Utah	10.95	13.05	4.79	28.79	38·0	45·3	16·7	8.5	18.8
Nevada	2.66	29.46	3.84	35.96	7·4	81·9	10·7	19.1	23.3
Idaho	4.83	14.77	1.48	21.08	22·9	70·1	7·0	17.1	24.4
Washington	19.84	17.40	9.91	47.15	42·1	36·9	21·0	16.3	44.2
Oregon	6.60	13.16	1.16	20.92	31·6	62·9	5·5	11.7	18.5
California	4.57	24.90	4.73	34.20	13·4	72·8	13·8	15.7	21.5

a Approximately.
b Includes payments on bonded debt.
c Report incomplete.
d Not reported separately.

CHAPTER III.

EDUCATION IN FRANCE.[1]

I. Brief View of the Educational Systems and Operations in 1892.

France, Republic.—Area, 204,092 square miles. Population (actual) April 12, 1891, 38,095,156; domiciled, or legal, 38,343,192.

Civil divisions.—For purposes of civil government France is divided into eighty-six departments (90 if Algiers be included), each having its local legislative assembly, which is formed by election. The departments are subdivided into arrondissements, and these into cantons. The smallest civil divisions comprised within the cantons are communes.

No complete report of education in France has been published since 1888, but official statistics of recent date give the following particulars:

Number of students inscribed in 1892 in the state faculties (corresponding to university students in other countries), 22,516; in the private falculties (*facultés libres*), 988; in the public secondary school for boys (*lycées*, and *collèges communaux*), 85,291; in private secondary schools for boys, 89,566; in public secondary schools for girls (*lycées*, *collèges*, and *cours secondaires*), in 1891, 11,645. The enrollment in primary schools, public and private (the latter chiefly clerical), in 1891–92 was 5,556,470 pupils (2,805,849 boys, 2,750,621 girls). The total is 37,413 less than that for the previous year. Public schools comprised 77.2 per cent of the total, as against 78.3 per cent in 1890–91. Furthermore it appears that 72 per cent of the pupils were in schools under lay as against 28 per cent under clerical teachers.[2] The teaching force of the public primaries in 1892 comprised 142,660 persons. The enrollment in infant schools (*Écoles Maternelles* ages 2 to 6 years) in 1891 was 709,579 (public 465,333; private 244,246).

To summarize, disregarding dates, the total of university students was 23,504, or one for every 1,621 inhabitants, of secondary students (boys), 174,856, or one for every 218 inhabitants. The enrollment in primary schools exclusive of infant schools, *i. e.*, 5,556,470, was equal to 14.58 per cent of the actual population as against 14.57 per cent in 1888. The state appropriation for education in 1893 amounted to $32,899,943, about 73 per cent being for primary education. The appropriation from state, departments and communes for public primary schools in 1892 was $32,424,000, an increase of 60 per cent over 1872.

[1] By A. Tolman Smith, specialist in English and French school systems.

[2] For the statistics of primary schools the office is indebted to M. E. Levasseur, chairman of the "Commission de statistique de l'enseignement primaire."

The administration and control of public education and the supervision of private schools are functions of the central government confided to a department, whose chief, the minister of public instruction, fine arts, and worship, is a cabinet officer.[1]

Scholastic institutions are grouped in three classes—superior, secondary, primary—to each of which corresponds a subdivision of the department of education named, respectively, the department of superior instruction, the department of secondary instruction, the department of primary instruction. At the head of each of these divisions is a director, who is appointed by reason of special qualification for the duties of the position and is not, as a rule, disturbed by political changes.[2] The work of administration and supervision employs a large body of officials, who are appointed by the minister, or by the President of the Republic upon the recommendation of the minister. They belong either to the central administration or to the local divisions (*académies*), seventeen in number, including one in Algiers. Each *académie* forms a scholastic unit, whose chief (*recteur*) is the official head of all the teaching institutions located within its bounds. The possession of a doctor's degree is an essential qualification for the rectorship.

The ninety departments (districts of civil administration) are treated as subdivisions of the *académies* in respect to educational affairs, the prefects of departments having a measure of control over primary and normal schools.

The supervision of secondary instruction is intrusted to general inspectors, at present ten in number, and that of primary instruction to a graded series of inspectors, (1) general inspectors, including nine assigned to particular sections of the country, several assigned to the oversight of special branches of study, and general inspectresses of infant schools. These officials report directly to the minister as to the manner in which the educational law is carried out. (2) Academic inspectors (*inspecteurs d'académies*), one for each department, who are subordinate to the rectors. They have the general direction of primary schools, conduct examinations for teachers' certificates, appoint all teachers on probation, and name the candidates from whom the prefects of departments may appoint full teachers. (3) Primary inspectors, at present about 450 in number, or one for every 150 primary schools. They inspect the work of individual schools, and report to the academic inspector. (4) Medical inspectors, whose duties include the examination of children with respect to their physical condition and of sites and buildings with respect to sanitary particulars. There are also inspectresses of board-

[1] M. Léon Bourgeois, who assumed the office March 17, 1890, was succeeded, January 11, 1893, by M. Charles Dupuy. He held the office till April 4, 1893, at which date M. Poincaré was appointed.

[2] The present incumbents are M. Louis Liard, director of superior instruction; M. Rabier, of secondary; M. F. Buisson, of primary.

ing schools for girls. It should be observed that all these officials must have access also to private schools.

The several classes of officials named constitute the executive branch of the ministry. The link between this and the scholastic work is furnished by the councils. These are composed of members elected by their peers from the body of professors, instructors, and teachers, and of a certain proportion of appointed members. The superior council, whose seat is at Paris, deliberates upon all projects of school law, curricula, creation of chairs, nominations to professorships, estimates of expenditure, text-books, applications for the privilege of conducting private schools, and in general upon matters submitted by the minister, whose action is determined largely by the judgment of the council. This body has also a final jurisdiction in cases of contention and discipline appealed from inferior councils. The members of the superior council are generally men of distinction as professors, teachers, authors, or administrators. The academic rectors have the advice of academic councils composed of *inspecteurs d'académies*, professors, and teachers; finally, the prefects are assisted by departmental councils. These several councils save the work of public education to some degree at least, from the mechanical routine which is one danger of a highly centralized system.

The control of the public scholastic work is completed by the organization of the teaching service and the imposition of official programmes. All professors and teachers of public institutions are employés of the state; their qualifications, tenure, and discipline are fixed by law, or by ministerial decree; their salaries are paid by the state; all professors must be university graduates. University professors (*professeurs des facultés*), who must have the doctor's degree, are appointed by the President of the Republic; assistant professors of faculties and professors of secondary schools, by the minister of public instruction. The appointment of primary teachers, as before stated, lies with the academic inspectors and the prefect. So far, the system would seem to be entirely removed from the sympathies and the active participation of the people.

As regards primary schools, however, the people are enlisted in several ways. The law (1833) makes it obligatory upon every commune to establish a public school, which under the law of June 16, 1881, must be a free school and, under laws of 1882 and 1886, secular and taught by a lay teacher. A commune, it must be remembered, is the simplest civil division in France. Its local affairs are controlled by a council, and a mayor chosen from the members of the same. A commune may have less than 20 inhabitants; it may be a populous city. Paris, indeed, is a commune, although differing somewhat from others in its form of local government. Large or small, the commune must establish a free primary school, provide the site and building and a proportion of the current expenditure; not only so, but every com-

mune of more than 500 inhabitants must have a separate school for girls (laws of March 15, 1850, and April 10, 1867).

But although the law is imperative, the Republic is wary, and since many communes are too small and too poor to obey the law, and others require stimulating, the state has been exceedingly liberal with subsidies to help in the initial steps. The subsidies and advances for this purpose only amounted in the decade 1878–1888 to $105,000,000.

In order that the communes should perform their part, provision must be made for concerted action. Hence, the departmental councils appoint delegates to confer with the communal authorities and with the primary inspectors as to sites, buildings, material, etc. The mayors of communes have free access to the schools at all times; their duties and those of the delegates are much like those of our district school committees, excepting that they have no control over teachers or programmes. It is incumbent also upon communes to maintain funds (*caisses des écoles*) for the assistance of indigent pupils. Although the law (March 28, 1882) obliges parents to secure the instruction of their children, they can make choice of the means, i. e., public schools, private schools, home tuition.

As the state intends that public schools shall be nurseries of patriotism, there is a powerful motive for making them attractive.

II. State Faculties.

A. Proposed transformation: *Movement toward decentralization, resulting in project of law for transforming the faculties into universities—Superior institutions, i. e., special schools, not affected by the proposed law—Origin, classification, and purposes of the faculties by imperial decree, 1802—Number and location of the original faculties—Subordination of the faculties to the university chief—The university, its antecedents and spirit—Reference to reactionary movements, 1815–1870—The Republic pledged to reform the faculties by law of 1875—Condition of the faculties in 1875, as set forth in the debate upon the law—Delay in carrying out the order, and practical reforms preceding legislation—Chief provisions of the proposed law—Adherence to a French type; characteristics of the same—Measures for securing.*

B. Development of teaching functions: *Destructive work of the revolution—Special schools for medical instruction and for advanced instruction in arts and sciences; adaptation to practical demands—Absence of teaching facilities in the faculties; Paris the only exception—Spirit of freedom, active after the fall of Napoleon, develops a new ideal of a university professor—New agencies introduced for the work of teaching—Multiplication of special teaching professors, provision of buildings and material appliances, and increase of funds under the Republic—Effect of these measures in attracting students—Spirit of solidarity fostered by students' associations—Citation from M. Lavisse.*

A.—Proposed Transformation.

In the province of elementary education the communes, through their control of the school tax, have a check upon the central authority. In the two higher departments of education there is a steady movement toward decentralization.[1]

[1] This movement as it affects secondary schools, i. e. *lycées* and communal colleges, was considered in the Commissioner's Report for 1889–'90, pp. 104–124.

In the department of superior instruction the reaction against absolute control has culminated in a project of law for the transformation of the faculties into independent universities. This project, submitted in 1890 by M. Bourgeois, then minister of public instruction, is still before the Chambers. To comprehend its scope and bearings it is necessary to have in mind the form in which higher education is now maintained in France and the conditions from which this form has arisen.

The institutions for higher education are faculties and special schools,[1] the latter, with few exceptions, created by the Revolutionary leaders or formed after their models. The proposed law relates to the faculties only. These are groups of professors appointed by the President of the Republic in advice with the minister of public instruction, to maintain advanced instruction and to examine for and confer degrees.

[1] The special schools which are under the exclusive control of the minister of public instruction and fine arts are the *Collège de France, Muséum d' Histoire Naturelle, École Normale Supérieure, École Française de Rome, École Française d' Athènes, École Nationale des Chartes, École Spéciale des Langues Orientales Vivantes, École Nationale et Spéciale des Beaux Arts á Paris, Conservatoire Nationale de Musique et de Déclamation. École Pratique des Hautes Études. The École Libre des Sciences Politiques,* at Paris, is a private foundation, which ranks with the highest institutions.

The oldest and greatest of the special institutions was founded about 1530 by Francis the First. When this King, imbued with the spirit of the Renaissance, sought to foster the new learning in his own Kingdom his project found no favor at the University of Paris. Hence a new institution, the *Collège de France.* It was spared by the Convention and has enjoyed uninterrupted progress to the present moment. The first professorships here established were those of Greek and Hebrew; these were soon followed by professorships of mathematics, philosophy, Latin, and rhetoric. From age to age the curriculum of the college has increased with the expansion of knowledge, and it comprises now forty-one chairs, the latest addition being chairs of the history of economic doctrines, modern philosophy, Assyrian philosophy and archæology, languages and literature of southern Europe, general anatomy, Greek epigraphy and antiquities, and esthetics.

The Museum of Natural History, which is at present a school for scientific instruction and research, had its origin in the *Jardin des Plantes,* founded by Louis XIII in 1626. At the request of his chief physician, the King granted letters patent for the establishment of a botanical garden, to be under the charge of the physician and his successors. It was to serve for purposes of research and demonstration. The scheme encountered opposition from the Faculty of Medicine, as the *Collège de France* had from the Faculty of Arts, but with the royal favor it prospered.

The original purpose was extended little by little, and when Buffon was made intendant (1739) he immediately developed plans for the equipment of a complete scientific establishment of high order. In response to his efforts collections poured in from every part of Europe and representing equally every domain of nature.

The genius of Buffon was exercised in the classification of the material and in plans for its suitable display. Before his death, which occurred in 1788, the year preceding the revolution, he had secured additional grounds and buildings and imparted scientific order to the entire work.

"The revolution," says M. Dumont, "conceived the foundation of great independent institutions, each devoted to a particular branch of science and enjoying absolute freedom." In accordance with this principle the Museum of Natural History was enlarged and endowed with the attributes of a great teaching institution. It was organized under its present name in 1793. Two years later the school of Living Oriental Languages was created, and the Bureau of Longitudes, to which the

Origin, classification and functions; the faculties.—The faculties are of five orders, *i. e.*, of law, medicine, theology, letters, and sciences. They were thus classified in the decree by which they were created, namely, the decree for the general organization of the Imperial University (issued by Napoleon March 17, 1808. [1])

Observatory of Paris was transferred. Thus, instead of the assemblage of all studies in a common center where they might support and illuminate each other, there was isolation, specialization, and a supreme regard to the practical applications of the sciences. The synthesis of the sciences was, however, provided for in the Institute of France, created in 1796, the year after the Convention was replaced by the Directory.

Says M. Duruy: "The institute appeared as a center of information, of research, of correspondence, the common asylum of the sciences, letters, and arts. Embracing in its extent all the branches of human knowledge formed by the union of all orders of knowledge, and all talents, it was certain to be in time, the crown of the scholastic edifice, the keystone of the system." (*L'instruction publique et la Révolution*, p. 140.) Even here, however, the principle of separation appeared, although, properly enough, in the division into three sections, i. e., physics and mathematics, the moral and political sciences, and literature and the fine arts.

The Superior Normal School (*École Normale Supérieure*) was definitely organized under a statute of March 30, 1810. The decree creating the Imperial University had, however, included a *pensionnat normal*, which was intended to be a school for professors—that is, aspirants for appointment in the higher teaching orders. Such is the special function of the Superior Normal School at the present time. A prototype was furnished by the normal school established by the Convention in 1794, but closed the following year.

The tendency to separation, so strongly marked during the revolutionary period, and the disposition to extend the province of existing institutions which has characterized the Republic, are both illustrated in the organization of the *École Pratique des Hautes Études.*

In 1868, when M. Duruy, then minister of public instruction, wished to afford students facilities for the practical study of philology and history, he found it impossible either to secure or to accommodate all the resources necessary at any one seat of learning. There resulted an institution for which the material equipment of existing institutions could be called into service, while special provisions were made for the new department of study.

The purpose of the founder is indicated in a single sentence embodied in his report (submitted in 1868), in which the plan of the school is unfolded.

"We must not," he says, "give to the expression practical school its ordinary signification, which implies a school of industrial utility. It is to be taken in the most elevated sense, since the work of the eyes and hands is necessary in these studies to fix and extend the highest and most delicate conceptions of the scientific spirit. What is chemistry without manipulation? physics and physiology without experiments? botany without analysis?"

In addition to the special schools here considered belonging to the province of the minister of public instruction there are important institutions under the charge of other ministers. Such are the School of Bridges and Roads (*École des Ponts et Chaussées*) under the minister of public works; the Polytechnic School (*École Polytechnique*), under the minister of war.

Detailed accounts of the special schools under the minister of public instruction are to be found in the successive *Statistiques de l'Enseignement supérieur*, i. e., 1865–1876, 1878–1888.

[1] The law creating the university was passed May 10, 1806, nearly two years before the organic decree. (See *Recueil des lois et réglements sur l'enseignement supérieur.* Tome I, 1789–1847, pp. 156, 171–88).

The functions of the faculties as specified in the decree were "the extension or deepening of science, and the conferring of degrees" (*facultés pour les sciences approfondies et la collation des grades*). Three degrees were authorized, *i. e.*, bachelor, *licencié*, and doctor; these were to be conferred at the end of a public examination, all the conditions of candidature being carefully defined. The fact that a degree was a prerequisite for nearly all civil offices gave great importance to the prerogative of the faculties with respect to conferring these honors. According to M. Bréal this was indeed the sole purpose of the faculties of sciences and arts. "Napoleon," he says, "whose conceptions assumed inevitably a hierarchical and administrative form, would probably never have created faculties of letters and of science, but that it was necessary to have some one to confer the diplomas."[1]

The teaching functions of the faculties were specifically defined in regulations issued from time to time, but they had really no practical development under the empire.

As regards number there were to be as many groups of faculties as there were academies or local divisions of the university. The original purpose contemplated 26 of these divisions, or as many as there were courts of appeal. Only 23 academies were really constituted; their chief cities became the seats of the faculties and gave to them their distinctive names. Various readjustments of the academic divisions have been made since the fall of Napoleon. By a law of 1854 their number was reduced to 16, subsequently increased to 17 by the addition of Algiers.[2]

Subordination; teaching to official orders.—From the nature of the university organization it followed that the faculties had none of the attributes of self-governing bodies; they were subordinate parts of a machinery admirably devised for centralizing the control of education.

The inferior rank assigned to the teaching as compared with the administrative orders in the university is plainly shown by a tabular scheme embodied in the organic decree. The officials are arranged in two columns, the first pertaining to administration, the second to instruction. The teaching orders begin with the faculties at the tenth rank. A slight form of organization was given to the individual faculties in that each had its own dean, appointed, however, by the grand master. The deans are included among the officers of administration, occupying there the ninth rank. The faculties, as we have said, belonged to the academies. Their official chiefs, the intermediaries between them and the grand master, were the academic rectors, who occupied the seventh rank in the administration. Supreme over all is the grand master, who was appointed by the Emperor. In him was vested absolute control of education. If schools were established or instruction given outside

[1] *Quelques mots sur l'instruction publique en France*, p. 328.

[2] For the present number and distribution of the faculties, *see* conspectus, pp. 92–95.

of the university bounds it must be done by the sanction of the chief.[1] Such monopoly and centralization had not been dreamed of by the revolutionary leaders. They had emphasized the rights of man as opposed to the rights of states. Among the rights of man, education[2] was included. The state existing for the service of man was to make provision for this universal right. From the subtle conception of the state as the servant of man in this particular to the simpler idea of the state as a supreme authority in the matter, the transition was easy.

The revolution had indeed prepared the way by the suppression of the old universities and colleges which had often in times past resisted the encroachment of tyranny. It is true that immediately after the passage of the decree of suppression (1793) new institutions were authorized, but time and resources were wanting to give them an abiding form. Such as were actually created, by their very specialization, prevented the sense of an independent, but common, mission in the progress of humanity. When Napoleon entered upon the scene the need of teaching agencies was pressing. He met it according to the dictates of an imperial will and with an organization which, as the subsequent history proves, was destined to take deep root in the nation. The concentration of power, the hierarchy of officials, the exact prescription of functions, the official programmes, the official degrees and titles of honor which made up the university system were all well calculated to impress a people accustomed to imposing forms in both civil and ecclesiastical affairs. The likeness between the university organization and that of the Roman Catholic church has often been pointed out.

Dr. Bücheler says, in a critical exposition.

> On the one side the most striking feature of this creation of Napoleon appears in this, that to it he gave the right of teaching as a monopoly; hence, to no one else was this privilege allowed, but every one was forced more or less to receive the instruction of the *Université*. Thus education and instruction were made entirely an affair of the state. On the other hand, however, it is noticeable that he left to the *Université* as little autonomy as possible; rather its whole constitution was such that neither independence nor individual activity was possible for the teacher but all were brought under one and the same rule. To this end the whole educational system was forced into the net of an administration closely coordinated and welded together after the hierarchy of the Romish church. All and each, school-books and methods, personal affairs and organization were surrendered to a central authority at Paris, the Grand-master and the council of the University of France.—(Schmid's Encyclopædia, article France, p. 580.)

Reaction against officialism.—In the period from the fall of Napoleon (1815) to the establishment of the Republic (1870) various projects relative to higher education were entertained, but no radical changes were

[1] Decree of March 17, 1808. By reference to the decree it will be seen that article 3 gave certain privileges to bishops with reference to the clerical seminaries.

[2] See plans of Talleyrand, Condorcet, and Lakanal; also system elaborated by Mirabeau, *l'Instruction Publique et la Révolution* by A. Duruy; *Dictionnaire de Pédagogie et d'Instruction Primaire* by F. Buisson, Part 1, Vol. 1, articles France, Talleyrand, etc.; also *"Procés-Verbaux du Comité d'Instruction Publique de la Convention Nationale,"* with notes by J. Guillaume.

effected. As regards organization and functions the faculties were substantially in 1870 what they had been made in 1808.

In 1875, July 12, a law was passed relative to the "liberty of superior instruction," which in brief accorded the right of teaching to any person who should conform to very easy requirements. One article of this law provided that at the expiration of a year the Government should present a bill having for its object such reforms in higher education as were seen to be necessary. In the course of the debate M. Paul Bert made the following statement as to the conditions of the faculties with respect to equipments and internal relations:

I do not know what words I could use that might give you an exact idea of the buildings in which certain of our faculties of science and of letters are installed. As to other equipments, the collections are miserable. There are no laboratories, the libraries are meager. How can it be otherwise, since even the chairs in our law faculties have on an average only 65 francs ($13) with which to purchase books and heat their halls? Is it true even that at Paris where everything centers, at Paris, for which it is said we have sacrificed everything else, there are to be found model establishments which make up for the poverty of the provinces? Gentlemen, it is only necessary to cross to the left bank of the river and behold the condition of these institutions. The condition of the school of medicine has been depicted; the condition of the school of pharmacy has been described, but I believe no one has spoken of the Sorbonne. It suffices to say that the laboratories and collections of the Sorbonne are installed in buildings that the city purchased, but, seeing their ruined condition, is about to demolish. It may be said, borrowing the severe but authoritative words of Claude Bernard, that the laboratories of Paris are the tombs of savants.

Consider the faculties now in respect to organization—the same miserable state. Gentlemen, we have in France forty-three faculties of diverse orders; they are distributed in fifteen or sixteen cities and they comprise each four or five professors charged to cover the whole domain of the sciences and of letters. In the science courses there is scarcely a single student, and few in those of letters. The professional faculties alone have followers and are inspired by the presence of interested hearers. The other faculties have no hold upon students, they have scarcely any relation with them; they have no interest in the increase of their number and therefore in encouraging their attendance. The faculties are isolated. No common purposes can be developed among the professors of the faculties of letters and of the sciences.

In France, save at Paris, in France in the country of Burnouf there is not a chair of philology; in the country of Champollion there is not a chair of epigraphy and of archæology; in the country of Cuvier there is not a chair of paleontology.

If we consider not the organization only, but the spirit of the instruction, we find even a worse state. As a consequence of the incessant surveillance of officials, every new doctrine, every original idea is proscribed. We follow, and follow to the letter, a phrase in the plan of a university traced by M. de Fontanes (first Grand Master of the university). "It ought to be," said he, "a guaranty against theories, pernicious and subversive of the social order."

Urgent as appeared the need of reform the project which the law of 1875 called for was not forthcoming, as we have seen, until 1890.

Practical reforms.—As explained by the ministers who presented the measure to the chambers (M. Léon Bourgeois, minister of public instruction, and M. Rouvier, minister of finance) the cause of the delay was the determination of the Government to remedy the evils so

graphically depicted by M. Bert and others, and to impart the spirit and conditions of university life to the existing establishments, before attempting to give them a new form and a new name.

In the years that have elapsed since the project of reform was authorized, buildings and equipments have been supplied at a cost amounting already in 1887 to $22,195,000, of which the cities bore $9,650,000, and the state the balance.[1]

The annual appropriations have meanwhile been more than doubled. In 1870 they amounted to no more than $1,152,773; at that time, says M. Fallières, the faculties very nearly covered their expenses by their receipts. In 1878 the credits for superior instruction had increased by $787,000; from 1878 to 1888 they were doubled; in 1889 they rose to the exact sum of $2,797,071. If from this amount be taken the receipts of the faculties, examination, diploma, and entrance fees, there remain $1,833,500 from the public treasury. It may be added that in 1892 the appropriations for superior instruction amounted to $3,065,718, of which $2,331,999 was for the faculties. The net proceeds from the state for this year can not be given, as no report has been published of the receipts from fees. The increase of the teaching forces has kept pace with the other improvements, as will be shown later.

While the internal life of the faculties has thus been enriched and expanded, measures have been maturing for giving them organic unity, civil personality, and autonomy. The advice of the faculties themselves with respect to the proposed law was sought at the outset by a circular letter addressed to them by the minister in order to secure

[1] In his decennial report (1877–1887) M. Fallières refers to the new Sorbonne, since inaugurated with imposing ceremonies, and notes in addition the enlargement of the faculty of medicine at Paris, the construction of the school of pharmacy, the enlargement of the museum, and in the departments the following buildings projected or begun: Building for the faculty of medicine, of science and letters at Bordeaux, the faculty of sciences at Toulouse, the faculties of medicine and of science at Lyons, the institution of chemistry in the faculty of science at Nancy, the faculty of science at Clermont, the faculty of medicine at Montpellier, the faculties at Caen, and the schools of Algiers. In addition to the above, he says, the following are nearly ready for operation: "The faculty of science at Rennes, the new faculty of letters at Toulouse, the faculties of justice and of letters, and the scientific departments of the faculties of science and of medicine at Montpellier, the faculties of law and of letters at Lyons, and the departments of the faculty of science at Lille.

Of these buildings, those which belong to the domain have been built entirely at the charge of the state; the others, those belonging to the faculties, have been erected at the common expense of the state and the cities, sometimes aided by the departments. * * * The façades of these new buildings indicate the transformations which have been wrought in our superior instruction, but in order to become thoroughly informed upon the subject, it is necessary to enter the interior. These palaces, whose exteriors, often beautifully ornamented, serve for the passers-by as a sign of the dignity of science, are, within, veritable studios, arranged and equipped for purposes of instruction and study. But lately, our faculties had only lecture halls; at present there are everywhere laboratories for instruction and for researches, cabinets, libraries, study and conference halls; everywhere the laboratories, cabinets, and libraries are furnished."

the formal expression of their opinions. The measure is thus the outcome of large and varied experience and judgment.

The changes which it is designed to effect in the constitution of the faculties are clearly enunciated in the first two articles, to wit:

ARTICLE I. The universities are public establishments of higher education, whose purpose is instruction and culture by all the sciences (*l'ensemble des sciences*). "They are civil personalities." "They are named from the cities in which they are located."

ART. II. A university must comprise at least the four faculties of law, medicine, sciences, and letters; other establishments of superior instruction may also be incorporated with it at the instance of the minister.

The remaining articles (thirteen in number) define in detail the scholastic and administrative organization of the universities, the extent and limitation of their powers, the sources and control of their budgets.

To the foreign student, the most interesting thing about the scheme is its adherence to an organic type which is essentially French. Two principles nationalized in France by the Revolution and the Imperial University are conserved in the new ideal, the principle of state responsibility in education and of the subordination of teaching bodies to civil authorities. To preserve these principles and yet give independence to the proposed universities was a delicate problem. Its solution is to be found in the measures proposed for maintaining the relations of the universities to the central administration on the one hand and on the other for transferring certain powers to the universities. These measures may be conveniently considered under three heads, the councils, the rectors, the control of finances.

The Councils.—Councils, supreme and academic, were a feature of the Imperial University; their functions as determined by the decree of 1808 were deliberative and advisory, and in certain cases judicial. They reflected, however, the will of the central authority, since their members were appointed either by the grand master or by the Emperor.

Transformed into representative bodies by subsequent legislation[1] they have largely substituted the professional for the official influence in the conduct of education. The law of February 27, 1880, under which the councils are at present organized, allowed 24 elected members out of a total of 60 in the superior council. Eleven of these elected members are chosen from the faculties. In the academic councils each faculty is represented by its dean and one member. In the latter council all matters pertaining to the local administration of the faculties, i. e., expenses, material appliances, promotions, are considered, and the conclusions formed are transmitted by the rectors to the minister of public instruction, who in turn refers them to the superior council. The superior council is, in fact, an advisory body for the

[1] By a law of March 15, 1850, the superior council comprised 16 elected members upon a total of 27; by a law of February 27, 1880, the elective policy was extended to the academic councils.

service of the minister, and has also final judgment in certain cases of appeal. Complaint has arisen because the council has no initiative, but simply considers the matters submitted by the minister.[1]

In reality all matters of importance are thus submitted, and the decrees of the minister respecting programmes, the creation of new faculties and new chairs, the requirements for degrees, etc., voice the matured opinions of this imposing body.

In 1885 two important measures were adopted in the interests of the faculties. The first of these, the decree of July 25, revived a right conferred upon all institutions of public instruction in 1801, but practically nullified as regards the faculties in 1875. This was the right to hold property, to receive gifts, and to manage their own estates. The decree also permitted funds to be given to the faculties by cities, departments, private corporations, and individuals.

In order that the faculties should exercise this right the same decree instituted a general council of the faculties of each *académie* composed as follows: the rector, president, the deans of the faculties, and two delegates from each faculty elected by their colleagues. Thus, at once, civil personality and organic form were secured.

A second decree of the same year (December 28, 1885) carried the work of organization still further. This decree extended the authority of the general council of each group of faculties to all matters pertaining to the internal conduct of the group, such as the courses and coördination of studies, estimates of expenditure, the division of common funds, discipline of students, etc. The same decree constituted a council of each faculty composed of the titular or full professors, and an assembly of each comprising full professors and *agrégés*.

The council was empowered to administer the affairs of the particular faculty in accordance with the laws and decrees and subject to the approval of the academic rector. The assembly deliberates upon the scholastic work of the faculty. The dignity and authority of the dean were confirmed by the decree, but the choice of the dean was virtually given to the faculties, the minister being authorized to make the appointment every three years from two lists furnished, the one by the assembly of the individual faculty, the other by the council general of the academic group.

Under the proposed law the academic council ceases to have jurisdiction over the faculties. The general council of a group of faculties becomes the council of the university when the group receives the

[1] Says H. Marion: The pedagogical prerogatives of the council, although large, are considered by many people too limited, because the council is merely consultative; its advice is given only when demanded; because its members have no initiative; because, in fine, the minister is not obliged to follow the advice he has sought. * * * In fact, all the ministers of public instruction have always promulgated the projects of decrees and orders submitted to the council in accordance with its decisions. (*L'Éducation dans l'Université*, p. 27.

benefit of the law. Subject only to the rulings of the minister in advice with the superior council of education and to the legal prerogatives of the academic rector, this council becomes the governing body of the university.

The academic rector (an appointee, it must be remembered, of the minister of public instruction) will be the administrative head of the university of his district. Nominally his position will be the same as that of the rectors of the ancient universities, although his authority may be less. He will execute the decisions of the university council, which must not conflict with the general laws and decrees.

The correlation of all grades of instruction is an essential element of the French ideal of public instruction. It has not been lost sight of in the university project, nor is it left entirely to the superior council, which remains unaffected by the proposed law. The removal of superior instruction from the academic council has already been noted. The unity of scholastic orders thus lost is restored in the local administration by the power granted the rector to convoke at his will the university council, the council general of faculties (not transformed into universities), and the academic council, to deliberate upon the common interests of secondary and superior instruction. (Title II, article 15.)

Control of funds.—Absolute control of their own funds is a power which the extreme advocates of decentralization would have vested in the individual universities. This policy is, however, not possible in the French system so long at least as state appropriations are the main dependence of higher education. That this is now the case will readily be seen by examining the financial showings.

The present sources of income, as specified in the bill, are private funds belonging to the universities, gifts and bequests of private individuals, societies, communes and departments, tuition and examination fees, state appropriations. (Title I, article 2.)

The income from private property and bequests is as yet a trifling sum; tuition and examination fees, which are turned over to the state treasury, amounted in 1887 (the latest year for which the data are given) to about two-fifths the total income. The state contributed then about three-fifths of the income, or $1,354,583 on a total of $2,296,540.

The proposed law following the decrees of 1885 already noted vests the control of gifts and legacies in the council of the universities. The receipts from tuition fees and the state appropriations will be managed as heretofore by special agents appointed by the minister of finance. The report of these operations must be submitted each year as a part of the report of the expenditures of the department of public instruction.

It should be noted that every organization whose contributions to

the support of the university are accepted may be represented in the sessions of the university councils in which the financial affairs and the annual reports upon the state of instruction are discussed. Cities may be represented by their mayors, departments by the presidents of their councils, etc. (Title I, article 12). Thus the sense of a common interest and responsibility is stimulated. Should the pending measure be carried the number of universities will be less than the number of academic divisions, as at least four faculties will be required for organization under the law. Each university will be created by a special decree of the council of state, based upon the proposition of the superior council of public instruction. Seven seems to be the largest number of universities that the Government is prepared to recognize.

Without going further into the details of this project, which is likely to be much modified during the debate, enough has been said to show that it in no way impairs the authority of the state and the organic unity of the public teaching and administrative services.

B.—DEVELOPMENT OF THE TEACHING FUNCTIONS OF THE FACULTIES.

It will be interesting at this point to consider the most important change that has taken place in the faculties since their origin; i. e., the development of teaching functions. To understand this portion of their history it will be necessary to go back to the Revolution of 1789.

Provision for medical instruction after 1789.—After the suppression of the old universities (1793) the medical profession was the first to make its urgent needs felt. The very next year, 1794, three schools of health (*Écoles de Santé*) were established to prepare health officers (*officiers de Santé*) for the service of hospitals, and especially for military and marine hospitals. Three additional schools of health were created in 1803, and to them all the term faculty was applied by the decree organizing the university (March 17, 1808). The subsequent history of these schools belongs to that of the medical faculties.

The necessity of maintaining medical training had also induced individual physicians to open clinics wherever there were hospitals. Around these practical demonstrations there grew up courses of theoretical instruction in anatomy, therapeutics, etc. These courses were gradually developed into schools and brought under official control. In a statute of October 28, 1808, they are referred to "as secondary schools of medicine, henceforth to be termed colleges of medicine," a title however which seems to have been seldom employed.

In 1855 and 1856, apparently under the impulse given by the law of 1850, which favored the liberty of teaching, several medical schools were established, and additions were still made to the number so late as 1880. Thus the existence of schools for practical instruction in medicine side by side with the medical faculties is accounted for. (*See* prospectus, pp. 92–95). Despite the deplorable condition of this profession,

painted by Fourcroy, councilor of state, in 1802,[1] it is evident that even in the decade immediately following the brief rule of the Convention the importance of special medical training had not been wholly ignored.

Prior to 1875 none of the schools of medicine had the same rank as the faculties. Of the four years' course required for graduation three might be taken in the schools, but the fourth year's enrollment must be in the faculty. Exception should be made of two schools of pharmacy that were authorized to confer the diploma of a pharmacist of the first class.

By a decree of July 14, 1875, it was ordered that such of the schools as fulfilled specified conditions should complete the course of medical instructions. Hence the distinction into full-course schools (*Écoles de plein exercice*) and preparatory schools.

Provision for letters and science.—The development of advanced courses of instruction in letters and in science, that is, courses of a higher order than those available in the *lycées*, whose goal was the bachelor's degree, followed the same line as the professional courses. Individual cities began the work, maintaining courses in letters and in science according to local demands. By a decree of August 22, 1854, the courses established by cities that were not the seat of faculties were recognized as preparatory schools of science and letters, and the time spent in them was made equivalent to a certain proportion of the faculty course. The fact that by the decree mentioned these schools were assimilated to the preparatory schools of medicine indicates that they had arisen in part from the increasing demand for scientific knowledge as a preparation for professional studies. This inference is confirmed by the tenor of subsequent regulations as well as by the programmes of the schools.[2] They present courses very similar to those of the scientific colleges of our own country.

Faculty teaching under the Empire.—The characteristics of the schools as distinguished from the faculties were equipment for practical instruction and teaching professors. Events have proved that they were the outcome of a spirit which the faculties themselves could not resist.

Under the Empire the teaching functions of the faculties were nec-

[1] Said Fourcroy: "Since the decree of August 18, 1792, which suppressed the universities, the faculties, and the learned societies, there are no more regular guaranties for physicians and surgeons. Complete anarchy has taken the place of the ancient organization. Those who have learned their art are confounded with those who have not the least notion of it. Almost everywhere licenses are accorded as readily to the one as to the other. The lives of citizens are at the mercy of men as greedy as they are ignorant. The most dangerous empiricism, the most unblushing charlatanism everywhere imposes upon credulity and confidence. No proofs of knowledge and ability are required. Those who have studied during the last seven years in the three schools of medicine created by the law of Frimaire, An. III (November, 1794), can hardly receive any testimonials whereby they may be distinguished from the pretenders who are encountered everywhere." (*Exposé des motifs du projet de loi sur l'exercice de la médecine*, Ventose, An. XI, March 1802.)

[2] The number and location of these schools (*Écoles preparatoires á l'enseignement des sciences et des lettres*) are shown in the prospectus, pp. 92–95.

essarily in abeyance; even if the conditions had been favorable, the number of professors was too small for the work. Outside of Paris 3 professors only were assigned to a faculty of letters and 4 to a faculty of science, or not more than 86 professors for the service of liberal education in the provinces. The degrees which the faculties of letters and of science conferred were sought almost exclusively by teachers of the *lycées* aspiring to the degree of *licencié* or of doctor in letters or science; and the courses which these faculties maintained were just sufficient to carry candidates over the interval between the successive examinations, as may be seen from the official programmes.[1]

The state of the professional faculties was little better; 4 professors sufficed for a faculty of law and 8 for a faculty of medicine. The faculties could hardly be said to have even fixed location, for, although the chief cities of the *académies* were their seats, their examinations were conducted each year at the centers specified by the grand master. Thus everything contributed to foster the purely official character of the faculties and to sever them from the intellectual life of the nation. Paris alone formed an exception. Here the faculty groups comprised a larger number of professors, and for the most part professors who were attached to some one of the special schools. The spirit of the old university was continued by such men as Delille, Luce de Lancival, Delaplace, Boissonnade, in the faculty of letters; Biot, Brongniart, Geoffroy Saint-Hilaire, Thénard, in the faculty of science.

New ideal of a faculty professor.—The abdication of Napoleon (April 4, 1814), and the restoration of the Bourbons in the person of Louis XVIII, was followed by a desperate attack upon the university, in which the clergy, many statesmen, eminent writers, and heads of families participated. The assent of the King to a project of decentralization was readily secured and on the 17th of February, 1815, an ordinance to that effect was promulgated. The sudden return of Napoleon put an end to this effort. In the hundred days of his recovered power, the university was legally restored. Although attacks upon it were renewed after his final overthrow, they accomplished nothing more than the diminution of its power.

This particular part of the university history concerns us here solely because the reaction against absolute control proved a great stimulus to professional activity.

Says M. Liard:

> It is at this epoch, however, that our superior instruction, deprived of institutions which would have given it a form adequate to its functions, took on another form that has become its chief glory. At this moment, sustained and inspired by the spirit of liberty, instruction at the Sorbonne became all at once, with Guizot, Cousin, and Villemain, an extraordinary manifestation of the French genius. To this initiative, to the influence of these models, is due the origin and the persistence of the ideal of a professor of the French faculties.[2]

[1] See *arrêtés* determining the courses in these faculties, March 6, 1809, October 31, 1809, etc.; also statutes of February 16, 1810.

[2] *Universités et Facultés, p. 9.*

M. Taine says:

During several years in the State chairs at the Sorbonne, M. Guizot, M. Cousin, M. Villemain, lectured freely and with great effect before an attentive and enthusiastic throng upon the highest questions of philosophy, of literature, of history.[1]

The lectures, which were henceforth a distinguishing feature of the faculty careers, were for the most part delivered before mixed audiences of hearers and students. For students only, there was generally not more than one exercise a week, and this often for no more than four or five months in the year. These special exercises were too few, and the conditions of the public lectures too distracting for the purposes of serious study. Moreover the lecture fervor did not tend to develop in the professors an enthusiasm for continuous and detailed instruction, and for the intimate interchange of questions and explanation which belongs to this work. So late as 1825, the Paris faculty of law advised that professors who gave lessons to students should not take part in the degree examinations, and this position was confirmed by an order from the council in 1829. The order applied also to the faculty of science.[2] Although the faculty of law abandoned its position in 1838, declaring that every professor ought to give at least three lessons a week,[3] the effect of the order was not easily overcome.

New teaching agencies.—The necessity of increasing the personnel of the faculties was not greater than that of infusing into them a new spirit. The beginning was made in 1823 by the reorganization of the Paris Faculty of Medicine. Twenty-three full or titular professors and thirty-six special professors (*agrégés*) made up the new body. In 1840, at the instigation of Victor Cousin, Louis Philippe authorized similar reforms in the faculties of law, of letters, and of science. In the report which led to the creation of supplementary courses in the law faculties, M. Cousin said:

The *agrégés* of the school of medicine are a class of professors young and full of zeal who represent progress and the spirit of innovation in the school, with, however, sufficient guarantees, as the titular professors represent, it may be said, the conservative spirit in science, the maintenance of traditional knowledge, and the authority of doctrines confirmed by experience.[4]

Through the success of Cousin's propositions a veritable teaching force was introduced into the faculties. Following this precedent, the Republic has greatly increased the number and importance of special and assistant professors, while enlarging, also, the force of titular professors.

In the decennial report for 1877–1887, M. Fallières, the minister of public instruction, says:

Since 1876 practical courses of instruction to the number of 129, and complementary courses to the number of 200 have been added, and 201 new professorships created.

[1] *Les Origines de la France Contemporaine—Le Régime Moderne*, Tome II, p. 235.

[2] *Statistique de l'enseignement supérieur*, 1876, pp. 201, 319.

[3] *Ibid.*, p. 202.

[4] For reports of M. Cousin and the royal decrees, see *Recueil des lois et règlements sur l'enseignement supérieur*. Vol. I, 1789–1847, pp. 838, 846.

The term *agrégé*, applied to a class of special professors, has no exact equivalent in our language. The *agrégés* are appointed by the minister of public instruction from candidates who have gained a doctor's degree, and have successfully passed a competitive examination (*agrégation*) in a special branch of knowledge. They are assigned to the faculties by the minister according to the exigencies of the service. They rank immediately after the professors; they may take part in the assembly of the faculty (or school), may participate in the degree examinations, replace the professors, in their absence giving the regular lectures, and conduct *conférences* or exercises intended to round out or complete, in detail, the courses of titular professors. (Decree of July 30, 1886.)

The *agrégés* are the only class of assistant professors allowed to the faculties of law and of medicine, and in these faculties alone are they found at present, although they may be assigned to the other orders. In the faculties of letters and of science supplementary instruction is confided to *maîtres de conférences* and *chargés du cours*. The distinction between these instructors and the *agrégés* is chiefly that of position.

The *maîtres de conférences* provided with the doctor's degree may be admitted to take part in degree examinations and also to a place in the assembly of the faculties; the latter is also the privilege of the *chargés du cours* who have the doctor's degree, but neither of these two classes of instructors can replace the titular professor.

The distinction between the two classes of exercises, *i. e.*, *conférences* and *cours*, is thus explained by M. Liard:

> Complementary courses—this word is plain and expresses well what is meant. These are courses of instruction in subjects that are not taught by the titulary chairs. Thus in a faculty of letters where there is only one chair of philosophy, a course of the history of philosophy would be complementary. The *conférences* are different; they were established not only for the purpose of enforcing the instruction of the faculties, but especially in order to change the character of the instruction. The word *conférences* came from the normal school. There instruction never was a monologue of the professor before passive hearers, it was an active colloquy between the teacher and the scholars; the teacher brought his method and his science, the scholars their rough-written drafts and oral statements; something in a word as in the German universities. This intimate, active, living method of instruction, it was desired to introduce into the faculties. *Conférences* were therefore created, not for the general public, but for the true scholars whom the teachers labored to create.[1]

Effect of reforms in attracting students.—The great purpose for which all these efforts have been made, i. e., the attraction of students, has not failed.

In 1887–'88 the number of students in the faculties was 17,630, an increase of 7,667, or 77 per cent since 1875. With reference to this showing, M. Fallières says:

> In this increase there figure two entirely new categories of students—the student of science and the student of letters. No farther back than 1876 these were so few that they were not mentioned. If some were enumerated in former statistics, it does

[1] *Universités et facultés*, pp. 53, 54.

not prove that they really studied at the faculties; there were students of law who were compelled, for financial reasons, to enroll themselves in the faculty of letters without being obliged to follow the courses, and there were candidates for licenses who were obliged to enroll themselves in four courses before proceeding to examination. At present our 2,358 students of letters and our 1,335 students of sciences are real students—permanent pupils of the faculties.

The increase has continued since the date of the report. In 1892 the total number of students in the state faculties was 22,516, of whom 9,837 were at Paris. The total includes 400 women, of whom 258 were French. The statistics for 1893, just published, give a total of 23,397 students—10,110 at Paris and 13,287 in the provincial centers (Algiers included). The distribution by faculties, Paris and the provincial faculties being presented separately, is as follows: Protestant theology, 47 (42); law, 3,503 (4,707); medicine, 3,634 (2,836); sciences, 599 (1,267); letters, 1,230 (1,770); pharmacy, 1,097 (2,665).

Two features of this increase deserve attention. In 1887–'88 more than half the whole number of students were at Paris; the excess is now on the side of the provincial groups. The gain in the number of foreign students is noticed with satisfaction by the reporter. The total of these in 1892 was 1,397; in 1893 there were 35 more, or a total of 1,432.

To recapitulate, the main features of the scholastic organization of the faculties are seen to be general courses under titular professors, complementary courses, and *conférences* confided to *agrégés*, *chargés du cours* and *maîtres de conférences*. The general courses are either public or closed (*fermés*), that is, for students only. For students also are reserved the complementary courses and *conférences*. Students are enrolled (*inscrits*) as candidates for degrees. This formality takes place four times a year, the fee for each inscription being 30 francs or 120 francs ($24) per annum. There are, besides, the uniform fee of 10 francs yearly for the use of libraries, and varying fees for laboratories, apparatus, and examinations. In a faculty of science the total tax on a student who should secure the three degrees in the regular course would be 470 francs ($94); in a faculty of law for the certificate of capacity and three degrees, 1,955 francs ($391). Numerous scholarships maintained by the state, the departments, and the municipalities are offered for competitive examinations, the fortunate candidates being relieved from all, or from a portion, of the fees.

The growing sense of solidarity among the students is indicated by the formation of student societies, of which the chief is the Association of Paris Students (*Association générale des facultés et écoles supérieures de Paris*). By its attitude toward professors, whom it welcomes as honorary members, and by its efforts to secure the representation of alumni in the government of the new universities, the association fosters the idea that a common life, common purposes, and common interests are the essence of a university.

Said M. Lavisse in an address to this association:

You have had the happy idea of grouping in your society students and teachers. This little event is not without importance. It is the visible sign of a transformation which is taking place under our eyes, and which, in effect, will substitute for the impersonal student and professor, who entertain for each other the cold sentiment that may pass between two abstractions, professors and students living together, knowing each other, speaking together, and cherishing toward each other the sentiments that unite two beings endowed with form, character, and determined spirit.[1]

From the events here reviewed we may estimate to some degree, at least, the forces that have caused higher education in France to deviate so widely from the model first presented to the world by the University of Paris, "commonly called the mother of universities."

University faculties and schools. Conspectus.

	Personnel, 1888.			Students, 1892.
	Titular professors.	Agrégés.	Other professors and instructors.	
ACADEMY OF PARIS.				
At Paris.				
Faculty of Protestant theology	6	.....	3	39
Faculty of law	23	9	5	3,612
Faculty of medicine	30	32	2	3,464
Faculty of sciences	20	.....	18	609
Faculty of letters	19	.....	24	1,163
Superior school of pharmacy	11	4	1	1,038
At Reims.				
Preparatory school of medicine and pharmacy	12	.....	6	55
Total	121	45	59	9,980
ACADEMY OF AIX.				
At Aix.				
Faculty of law	8	4	7	288
Faculty of letters	4	.....	10	49
At Marseilles.				
Faculty of sciences	8	.....	5	57
Superior school of medicine and pharmacy	18	.....	8	191
Total	38	4	30	585
ACADEMY OF BESANÇON.				
At Besançon.				
Faculty of sciences	6	.....	2	70
Faculty of letters	6	.....	3	88
Preparatory school of medicine and pharmacy	11	.....	6	64
Total	23	.....	11	222
ACADEMY OF BORDEAUX.				
At Bordeaux.				
Faculty of law	12	4	4	570
Faculty of medicine and pharmacy	23	17	6	722
Faculty of sciences	6	.....	8	99
Faculty of letters	7	.....	14	195
Total	48	21	32	[2] 1,586

[1] *Études et Étudiants*, p. 222.

[2] Incomplete.

University faculties and schools. Conspectus—Continued.

	Personnel, 1888.			
	Titular professors.	Agregés.	Other professors and instructors.	Students, 1892.
ACADEMY OF CAEN.				
At Caen.				
Faculty of law	9	4	6	322
Faculty of sciences	5	.....	6	54
Faculty of letters	7	.....	3	173
Preparatory school of medicine and pharmacy	12	.....	6	66
At Rouen.				
Preparatory school of medicine and pharmacy	12	.....	7	101
Preparatory school of sciences	3	.....	3	.....
Preparatory school of letters	10	.....	.....	.....
Total	58	4	31	*a* 716
ACADEMY OF CHAMBERY.				
At Chambéry.				
Preparatory school of sciences and letters	10	.....	.....	.....
Total	10	.....	.....	.....
ACADEMY OF CLERMONT.				
At Clermont.				
Faculty of sciences	6	.....	3	41
Faculty of letters	5	.....	5	39
Preparatory school of medicine and pharmacy	12	.....	6	81
Total	23	.....	14	161
ACADEMY OF DIJON.				
At Dijon.				
Faculty of law	10	3	5	208
Faculty of sciences	6	.....	3	63
Faculty of letters	6	.....	4	37
Preparatory school of medicine and pharmacy	11	.....	5	60
Total	33	3	17	368
ACADEMY OF GRENOBLE.				
At Grenoble.				
Faculty of law	8	3	7	260
Faculty of sciences	6	.....	4	94
Faculty of letters	4	.....	7	101
Preparatory school of medicine and pharmacy	12	.....	6	81
Total	30	3	24	536
ACADEMY OF LILLE.				
At Lille.				
Faculty of law	9	3	13	242
Faculty of medicine and pharmacy	16	10	9	234
Faculty of sciences	6	.....	6	110
Faculty of letters	6	.....	12	202
At Amiens.				
Preparatory school of medicine and pharmacy	12	.....	6	100
At Arras.				
Preparatory school of medicine and pharmacy	.....	.....	.....	.....
Total	49	13	46	*a* 888

a Incomplete.

University faculties and schools. Conspectus—Continued.

	Personnel, 1888.			Students, 1892.
	Titular professors.	Agrégés.	Other professors and instructors.	
ACADEMY OF LYONS.				
At Lyons.				
Faculty of law	10	3	6	402
Faculty of medicine and pharmacy	26	19	3	784
Faculty of sciences	9	.....	10	142
Faculty of letters	10	.....	17	165
Total	55	22	36	1,493
ACADEMY OF MONTPELLIER.				
At Montpellier.				
Faculty of law	8	4	7	377
Faculty of medicine	17	17	7	445
Faculty of sciences	5	.....	7	109
Faculty of letters	4	.....	10	115
Superior school of pharmacy	5	4	2	73
Total	39	25	33	1,119
ACADEMY OF NANCY.				
At Nancy.				
Faculty of law	10	3	5	183
Faculty of medicine	16	12	9	178
Faculty of sciences	8	.....	8	120
Faculty of letters	7	.....	14	111
Superior school of pharmacy	4	1	5	80
Total	45	16	41	672
ACADEMY OF POITIERS.				
At Poitiers.				
Faculty of law	9	3	6	381
Faculty of sciences	6	.....	4	72
Faculty of letters	5	.....	6	105
Preparatory school of medicine and pharmacy	11	.....	5	60
At Limoges.				
Preparatory school of medicine and pharmacy	12	.....	4	94
At Tours.				
Preparatory school of medicine and pharmacy	11	.....	4	60
Total	54	3	29	772
ACADEMY OF RENNES.				
At Rennes.				
Faculty of law	10	5	5	282
Faculty of sciences	7	.....	2	65
Faculty of letters	5	.....	7	95
Preparatory school of medicine and pharmacy	12	.....	6	151
At Angers.				
Preparatory school of medicine and pharmacy	11	.....	4	107
At Nantes.				
Preparatory school of sciences and letters	10	.....	.....	.....
Superior school of medicine and pharmacy	18	.....	8	168
Total	73	5	32	868

University faculties and schools. Conspectus—Continued.

	Personnel, 1888.			
	Titular professors.	Agrégés.	Other professors and instructors.	Students, 1892.
ACADEMY OF TOULOUSE.				
At Montauban.				
Faculty of Protestant theology	7	.....	1	59
At Toulouse.				
Faculty of law	8	8	7	650
Faculty of sciences	6	.....	9	98
Faculty of letters	10	.....	7	167
Superior school of medicine and pharmacy	17	.....	8	*a* 240
Total	48	8	32	1,214
ACADEMY OF ALGIERS.				
At Algiers.				
Superior school of law	19	1	9	242
Preparatory schools of—				
Medicine and pharmacy	10	.....	10	139
Sciences	6	.....	4	45
Letters	6	.....	10	117
Total	31	1	33	543
Grand total	768	173	500	*b* 21,723

a Incomplete.

b The slight difference between this total and that given in the text is explained by the fact that the statistics were taken at different dates in the year and also by the omission of a few schools in the table.

CHAPTER IV.

ELEMENTARY EDUCATION IN GREAT BRITAIN AND IRELAND IN 1892.[1]

GREAT BRITAIN AND IRELAND.

Constitutional Monarchy. Total population (census 1891), 37,879,285.

SUMMARY OF EDUCATIONAL STATISTICS.

Sources of information.	Institutions.	Date of report.	Registered students or pupils.	Number of professors or teachers.	Expenditure.
	GREAT BRITAIN.				
	England and Wales	1892			
Statesman's Year Book, 1893.	Universities:				
	Oxford (23 colleges)		3,212	89	*a* $317,832
	Cambridge (19 colleges)		*b* 2,909	120	*a* 212,055
	Durham (1 college)		212	13	
	Detached colleges (15)		7,607	702	
Official report 1892-'93.	Elementary day schools		5,037,402	99,291	39,919,145
	Night schools		65,561		
	Training colleges for elementary teachers.		3,957		
	Scotland	1892			
Statesman's Year Book, 1893.	Universities:				
	Aberdeen (1 college)		881	39	
	Edinburgh (1 college)		3,208	95	*c* 207,048
	Glasgow (1 college)		2,140	88	*d* 125,416
	St. Andrews (2 colleges)		196	23	
	Dundee University College		160	22	
Official report 1892-'93.	Elementary day schools		681,080	13,690	6,038,754
	Night schools		16,007		
	Training colleges for elementary teachers.		860		
	Ireland	1892			
Statesman's Year Book, 1893.	Universities:				
	Dublin University (1)		1,193	74	
	Belfast, Queen's college (1)		422	20	
	Cork, Queen's college (1)		255	17	
	Galway, Queen's college (1)		110	17	
Official report 1892-'93.	Elementary day schools		815,972	12,250	5,294,329
	Night schools		1,928		
	Training colleges for elementary teachers.		674		
Official report 1892...	Under department of Science and Art:	1892			
	Science schools and classes		180,410		3,092,197
	Art schools and classes		115,848		
	Royal College of Science		294		
	National Art Training School (South Kensington).		572		

a University, exclusive of the colleges. Whitaker's Almanac (1893) gives a total of £200,187 as the combined income of 19 Oxford colleges and £305,061 as that of 17 Cambridge colleges.

b The number of students given in the Commissioner's report for 1889-'90, vol. 1, p. 563, is much too small; the figures there tabulated were taken from "Minerva," which in its recent edition has corrected the mistake.

c Calendar 1892-'93.

d Calendar 1891-'92.

[1] By A. Tolman Smith, specialist in English and French school systems.

ENGLAND.

Estimated population, 29,403,346.

Statistics 1892—Effects of the law of 1891 remitting school fees—Subjects of study required or recognized by Government—Training colleges, attendance and expenditure—Relations of education department to secondary schools and colleges—Importance of university training colleges; views of J. G. Fitch.

According to the official report[1] for the year ending August 31, 1892, accommodation had been provided in schools on the list for Government inspection for 5,730,888 pupils; the enrollment in these schools was 5,037,402 (17·13 per cent of the estimated population), and the average attendance 3,892,989. Comparison at this point with the statistics of other countries will be misleading unless it be considered that the children in infant schools under 7 years of age are included in the foregoing enrollment. If the number of these (1,493,620) be subtracted the enrollment reduces to 12 per cent of the population. The establishment and local control of these schools is in the hands of (1) school boards (2,331 in number), elected under the school law of 1870; (2) private managers, chiefly denominational. About 40 per cent of the pupils registered are in board schools. Further statistics given in the report relate to schools actually visited by the Government inspectors in the year under review (119 less than the number on the list). These schools enrolled 5,006,979 pupils, a little more than 99 per cent of the entire enrollment. Their average attendance was 3,870,774 (boys, 2,029,240; girls, 1,841,534), or 77·3 per cent of the enrollment. The teaching force employed comprised 99,291 persons, of whom 49·12 per cent had Government certificates; 23·72 per cent were assistant teachers, not certificated, and 27·16 pupil teachers. The proportion of women teachers, which has been steadily rising since 1870, was as follows in each class: Certificated, 60 per cent (48 in 1869); assistant, 79 per cent (60 in 1869); pupil teachers, 78 per cent (57 in 1870). In addition to the pupils in day schools, night schools had an average attendance of 65,561. The total expenditure (day and night schools) was $39,919,145, derived as follows: From Government grant, 43·72 per cent; local taxes (rates), 20·75 per cent; school fees, 15·65 per cent; voluntary subscriptions, chiefly in denominational schools, 19·88 per cent. Of the entire expenditure 76·46 per cent was for salaries, 6·18 per cent for books and apparatus, 17·36 per cent miscellaneous. The rate of expenditure per capita of average attendance was $10.22, all schools included; in board schools only, $11.75. The total expenditure was equivalent to $1.35 per capita of population, and the amount derived from public funds (i. e., Government grant and local taxes, $25,769,037) to 87½ cents.

The year under review is the first year of the operation of the law providing for the remission of school fees (law of 1891), and the report

[1] Signed by the president of the committee of council on education, Right Hon. Earl of Kimberley, and by the vice-president, Right Hon. A. H. Dyke Acland.

gives some indications of the effect of this provision. As regards expenditure, nothing can be inferred at present, because schools accepted the terms at different times, many just at the close of the year, and the accounts are not yet adjusted. Of the schools inspected 15,170 had remitted fees, the number of free pupils on their registers being 3,429,577, or 68 per cent of their total enrollment. Since the close of the year the number of free schools has increased. At present only 142 schools have refused the fee grant. The report says:

It was anticipated that the abolition or diminution of school fees for children between 3 and 15 would raise the number of children on the registers, and more especially that of infants. This has been found to be the case. The number of infants has increased by 114,577 (6.94 per cent) and that of older scholars by 67,719 (2.13 per cent), and had the statistics now under consideration related to a period of twelve months, showing the full effect of the act, the increase shown, both of infants and of older scholars, would doubtless have been somewhat larger. But still more satisfactory than the increase in the number of children on the books is the increase in the average attendance (3.22 per cent), which is, indeed, the special feature of the statistics for 1892. This increase is mainly due to the increased regularity of attendance of the older scholars, for while every 100 infants added to the register increased the average attendance by 51 only, there was an addition of 92 to the average attendance for every 100 older scholars added to the registers during the year.

The item of average attendance has peculiar importance because the whole of the grant for infant schools (i. e., for children 3 to 7), and 96 per cent of the grant for schools for older pupils (7 to 14), is estimated on that basis. In order to share in the grant a school must have had at least 400 half-day sessions in the year, and must have afforded instruction in reading, writing, arithmetic, drawing for boys, and needlework for girls. Few schools limit themselves to these branches. In 1891–'92 only 11 per cent of schools for older scholars failed to secure the grant for additional subjects, while 90,070 pupils were presented for examination in one or two specific subjects which correspond to our high-school studies. One-third of this number were in the London school board district. The grant for cookery was earned by 90,794 girls, and that for laundry work by 2,766. As a result of the regulation making drawing compulsory for boys, which took effect September, 1891, the number of schools in which the branch was taught rose from 6,075 in 1890–'91 to 17,048 in 1891–'92. Manual instruction was given in 285 schools, science in 513, and physical exercises in 1,703. School libraries have been established in 5,560 schools. The training colleges for teachers under Government inspection and receiving public grants number 44 residential colleges and 14 day colleges, having a total of 3,957 students. The year's expenditure for these colleges, practice schools included, was $970,791, of which 68 per cent was borne by the Government.

The official report under consideration deals only with elementary schools, in which category the training colleges are included. Elementary education, however, although the chief, is not the exclusive province of the educational department. It has been brought into relations

with secondary education through the "endowed schools act," which requires "that every scheme framed by the charity commissioners for the management of these institutions shall be submitted to the committee of council on education for approval." Some of the higher grade or advanced board schools receiving grants from the department have also, in part, the character of secondary schools. The report also calls attention to the relations of the department with the university colleges which share in the grant of £15,000 annually made from the public treasury.

Each of these colleges sends an annual report and statement of accounts to the department, and the treasury officials do not pay the grant to any college until they have been informed by the department that the required report has been received and examined.

The department is also brought into direct communication with the university colleges through the medium of the day training colleges for teachers. All the university colleges that receive a portion of the grant above mentioned have established such training schools. These schools, first authorized in 1890, give promise of great influence. In the report before us, Mr. J. G. Fitch, chief inspector of the training colleges for women, discusses their special adaptation to the professional training of teachers for secondary schools. Upon this subject he says:

The aspirant to the calling of a secondary or public school teacher may complain with reason that however he may desire systematic guidance and preparation before entering upon his work, he does not know where to look for it. The existing residential training colleges are not open to him, and the only attempt made in England to establish a training institution for secondary schoolmasters proved to be a failure. Schoolmistresses have from the first shown a keener perception of the need of professional education than their brothers, but the supply of such training, even for them, is lamentably inadequate. The Maria Grey College, at Brondesburg, the Cambridge Training College for Women, the department for student teachers in the famous Ladies' College at Cheltenham, and the nongovernment department at the Home and Colonial Training College, are the only resources known to me by which gentlewomen who wish to qualify themselves as teachers in intermediate and higher schools can obtain systematic instruction.

In these circumstances, the establishment of normal departments in the great provincial colleges of university rank in England and Wales, and the encouraging success which has already been attained in those institutions, open out an opportune and most hopeful prospect. It is not likely that new institutions, expressly designed like the first two just named, will be multiplied even for women. Still less is it likely that any such institutions will be successfully established for men. Nor is it quite clear that it would be desirable. Neither in France or America, nor in any country known to me, is it the practice to require special training in a normal seminary in the case of candidates for teacherships in higher schools. Such seminaries are indeed needed for primary teachers, because the general education of the class from which they are drawn is deficient, and because in fact three-fourths of the time spent in those seminaries is required for instruction in language, literature, history, and mathematics, subjects which form essential parts of every system of general education, and are required in all liberal professions alike. Presumably, the young student who is destined to become a teacher in a high school has acquired all this in some college or university. What he wants is a special course of peda-

gogic instruction and practice, as a technical supplement to his general studies, analogous to that which would be needed if he contemplated law or medicine as his career. And this special preparation will probably be best found not in an institution composed exclusively of persons whose whole studies are directed by a syllabus, and with a view to a professional examination, but in a separate normal department in a good general college, wherein for six or twelve months he may devote himself mainly to a study of the principles and methods of education, and to systematic practice under due supervision and criticism in one or more good schools.

Now, this is precisely the want which the institutions, now newly recognized by your lordships as day training colleges, have it in their power to supply.

SCOTLAND.

Estimated population 4,057,852; population 5 to 14 years (estimated), 846,582.

Statistics, 1892—Effects of the law of 1889 for the remission of fees—Proportion of pupils in advanced studies—Effects of award of "leaving certificates"—Provision for blind and deaf-mute children—Secondary schools under Government inspection.

The report of the committee of council on education [1] in Scotland for the year ending September 30, 1892, gives the following particulars as to the schools under Government inspection. Provision is made for 752,309 children, an excess of about 76,000 places above the actual demand. The accommodation is not perfectly equalized throughout the country, and in some few localities there is a call for additional accommodation; in others, the extra places are needed for drawing and other special exercises.

The total enrollment was 681,080 (16·78 per cent of the population, or deducting the number of children under seven years of age, i. e., 136,200, 13 per cent); the average attendance was 549,420. As in England, the local control of elementary schools is in the hands of school boards elected under the education law of 1872 or of private managers. About 85 per cent of the enrollment is in school-board schools.

Further particulars relate only to schools actually inspected during the year. These had an enrollment of 666,992 pupils and an average attendance of 538,678 (80·76 per cent of the enrollment). The night schools under inspection had an average attendance of 16,007 pupils, showing a continuance of the increase in numbers which has been going on since 1890.

The teaching force comprised 13,690 persons, of whom 60·28 per cent held Government certificates, 12·4 per cent were assistants not certificated, and 27·32 per cent pupil teachers.

Since the beginning of the present system (1872), teachers' salaries have been greatly increased, as appears from the following statement:

The average salary of a schoolmaster (whether principal or assistant) is now $662.88, whereas, in 1870 it was $494.88; that of a school mistress was then $270.70, and is now $306.25. Besides this, 1,665 masters and 451 mistresses are provided with residences free of rent.

[1] Signed by the president, Right Hon. Earl of Kimberley, and the vice-president for Scotland, Right Hon. Sir G. O. Trevelyan.

The expenditure for elementary education (day and night schools) was $6,038,754. Of this 73·6 per cent was from Government funds (two-thirds from the annual grant and one-third allowed from duties on spirits), 21 per cent from local taxes, 3·6 from school fees, and the small balance from subscriptions. Fees, as will be observed, have almost entirely disappeared under the law of 1889 providing for the remission of the same for all pupils of the legal school age, i. e., 5 to 14. Less than 4 per cent of the pupils paid tuition in the year under review. The total expenditure was equivalent to $10.88 per capita of average attendance (in inspected schools), and to an expenditure of $1.48 per capita of population. The summary of the reports of the examination by the Government inspectors shows that 79 per cent of the pupils examined took one or more studies additional to the three obligatory branches, and 8 per cent took optional branches, corresponding to our high-school studies.

In 1890 the educational department offered a merit certificate as a means of inducing pupils to strive for the thorough mastery of elementary subjects. The scheme has excited much interest, and 2,346 certificates have already been awarded.

Under a law of 1890 a special grant is allowed to institutions that make suitable provisions for the education of blind and of deaf-mute children. During the year such grants were authorized through school boards in respect to "129 children (80 deaf-mute, 47 blind, 2 both blind and deaf-mute). The payments sanctioned run as a rule from £10 to £15 for each child. In some cases an amount for transit has also been allowed. An amount below £10 has been sanctioned in one or two cases in which the parent can afford to contribute a certain amount but can not bear the whole expense. Eleven schools with special provision for blind and deaf-mute children are under inspection by the department in various parts of Scotland. Grants of £3 3*s*. in each case were paid during the year ended 30th September, 1892, on account of 311 scholars in these schools whose attainments in elementary or class subjects were found to be satisfactory, and of £2 2*s*. in each case on account of 270 scholars who made satisfactory progress in some course of manual instruction."

The number of secondary schools availing themselves of Government inspection is "61, i. e., 24 higher-class public schools, 22 endowed schools, and 15 schools under voluntary (private) managers." The number offering pupils for the leaving-certificate examination, instituted in 1888, was: "Higher-class schools, 55; state-aided schools (higher departments), 97; and the total number of candidates presenting themselves for examination from both classes of schools was 7,148. The total number of papers taken was 24,240."

IRELAND.

Population (census 1891), 4,704,750; population of school-going age, 5 to 13 (both inclusive), 939,694 (estimated).

Statistics 1892—Remission of school fees—Curriculum of elementary schools.

The report of the commissioner of national education in Ireland for the year ending December 31, 1892, shows an average enrollment of 815,972 pupils (17·34 per cent of the population; the deduction of children under seven years of age in infant classes would reduce this proportion by a least four per cent), and an average attendance of 495,254 (243,504 boys, 251,750 girls), or 60·7 per cent of the enrollment given.[1] There were also 1,928 pupils in average attendance upon the evening schools during the year.

The total teaching force in the employment of the commissioners at the end of the year comprised 12,250 persons, i. e., principals, men, 4,685; women, 3,508; assistants, men, 885; women, 2,297; temporary assistants, industrial teachers, etc., 83. There were also 5,336 paid monitors (boys, 1,725; girls, 3,611). As explained in the report, these "monitorships are practically scholarships open to the pupils of the schools in which they are educated. They are the rewards of efficiency on the part of the teachers, and of industry, ability, and good attendance on the part of pupils."

The five training colleges under Government inspection enrolled 674 students, of whom 349 were men and 325 women. They received grants from the Government to the amount of $100,179.60.

The income of the schools, from all sources, amounted to £1,104,465 9*s.* 1*d.* ($5,294,329). Of this amount 86·4 per cent was from Government funds and the remainder from local sources. The total income was equivalent to £2 5*s.* 3¼*d.* ($11) per capita of daily average attendance.

By the education act of 1892 parents were in whole or in part relieved of the payment of school fees for their children. In accordance with this provision the school fees paid by pupils were abolished from October 1, 1892, in schools where the average rate of fees received during the year 1891 had not exceeded 6 shillings a year for each child of the number of children in average daily attendance. In schools where the average rate had exceeded that sum the fees to be charged were not to be such as to make the average rate exceed for any year the amount of the said excess.

The commissioners report that "7,173 schools were declared to be absolutely free on the 1st of October from the imposition of school fees. In the remaining 1,071 schools, the excess fee that may be charged under the act was only 2*s.* 7¾*d.* per pupil on the average."

The curriculum of the elementary schools includes, as in England and

[1] The number of pupils who attended a national school at least once during the year was 1,019,624 (boys, 509,617; girls, 510,007).

Scotland, class subjects (i. e., grammar, geography, bookkeeping, agriculture for boys, needlework for girls), and also an extensive range of extra or optional subjects corresponding to high-school studies in our own country.

The statistics do not enable us to give the number of pupils in branches beyond the three elements. It appears, however, that more than half the pupils pursued grammar and geography. In needlework 158,555 girls were examined, and in agriculture 79,260 pupils. These were exclusive of 546 pupils in schools having experimental gardens and a special course in agriculture.

CHAPTER V.

TECHNICAL INSTRUCTION IN GREAT BRITAIN.[1]

Introductory statement; recent legislation; antecedent causes, i. e., exposition of 1851, report of royal commission of 1881, recent investigations—Government aid supplementing local efforts—Elementary and secondary education as related to technical.

SUMMARIES OF REPORTS.—*Reports of county action with respect to the application of funds from the duties on spirits—Of national agencies for promoting technical instruction—Of work in individual cities—London: Varied character of agencies; City and Guilds of London Institute; the polytechnics; appropriations from the London council—Bristol: Merchant Venturers' School—Birmingham: Influence of Mason College; Birmingham Municipal Technical School—Sheffield: Active interest of school board in technical instruction; the Central Higher Grade School; Sheffield Technical School of Firth College—Liverpool: Provision for technical instruction prior to 1889; concerted effort of school board and private school authorities for giving effect to the technical instruction act; extracts from their report; University College provision for higher forms of technical instruction; manual training in elementary schools; recommendations—Manchester: Preliminary work in elementary schools—Central Higher Grade School; influence of Owens College, Mather and Platts School, and the Manchester Grammar School; the Manchester Technical School—Leeds: Yorkshire College; provision for higher technical training; science schools of Leeds Mechanics' Institution; progressive spirit of the school board; Central Higher Grade School—Bradford: Technical College.*

SCOTLAND.—*Glasgow and Dundee as centers of effort.*

AGRICULTURAL EDUCATION.—*Government grants—University College of North Wales.*

CITATIONS.—*Report of royal commission of 1881; reports of a technical instruction committee of the city of Manchester, 1891; report of a deputation of the council of Manchester Technical School, 1891.*

INTRODUCTION.

The report of the Commissioner of Education for 1890–'91 contains a brief account of measures affecting technical instruction in Great Britain, especially the recent laws pertaining thereto, i. e., the technical instruction act, Scotland, 1887, empowering local authorities to establish technical schools and authorizing the levy of a tax not exceeding a penny in the pound for the support of the same, a similar law for England in 1889—amended 1891, and in 1890 the local taxation (customs and excise) act, which placed about $3,500,000 at the disposal of the county councils (England and Scotland) with the privilege of applying the same to technical instruction. Since the date of the report referred to, new agencies have been established for giving effect

[1] By A. Tolman Smith.

to the laws relative to this interest, and existing agencies strengthened and expanded. The movement is so important, and is developing so rapidly that a fuller account of its causes and operations than was possible in the preceding report, seems desirable. Since that volume was issued the only legislation on the subject has been a new technical instruction act for Scotland (1892), giving larger liberty to local authorities than did the law of 1887. These several laws, and the practical measures resulting therefrom, are the outcome of agitations and efforts dating from the exposition of 1851. The effect of that exposition in rousing attention to the lack of the artistic element in English manufactures is well known. The superiority of continental goods over those of England in this respect could not be ignored, and was attributed to the superior provision made by continental countries for scientific and artistic training. The necessity of multiplying science and art schools for the benefit of English artisans was at once recognized.

The royal commission appointed in 1881 to investigate the status of technical instruction in various countries pointed out many subjects, both of scientific and technical training, in respect to which the provision in England was still far inferior to that of continental countries. The immediate effect of the report was to stimulate efforts for overcoming this inferiority in the chief manufacturing centers of England. Nevertheless, after the lapse of ten years it does not appear that these scattered enterprises have fully met the demands; such, at least, is the opinion expressed by various committees that have recently investigated the conditions. The importance of local action in this matter, however, is not likely to be undervalued in England, where local initiative is always made the basis of Government action. The recent laws simply empower and foster local action, and make provision for supplementing local resources by appropriations from the public funds. As a result of the distribution of the surplus derived from the duties on liquors (Customs and Excise Act), every county has been made a district for the organization of technical instruction. In every manufacturing town, the resources of existing schools are being increased or new schools arising, while the leaders of the movement are working zealously to insure the adoption of the best schemes of instruction, a wise gradation or coördination of the various technical schools and classes, and the judicious application of the funds that the public treasury annually yields to the work, *i. e.*, $2,570,000 through the science and art department and $3,800,000 from the surplus of duties on spirits.

The interest that the subject excites is also reflected in measures relating to elementary and secondary instruction. Thus in 1890 the education department announced that the time devoted to drawing and manual training might be counted in making up the estimates of average attendance. This was in line with the action of the science and art department, which offered the same year a grant upon results of exam-

ination in manual work. In 1891 the education department made drawing compulsory for boys, the order to take effect after August 31 of that year. The intimate relation between technical and secondary instruction is emphasized in all public measures pertaining to the latter. It is manifested in the proposed new regulations for evening schools,[1] which are intended to give greater freedom of choice in respect to studies and to make provision for both science and technical courses.

The same relation is kept in view in the efforts for the organization of secondary instruction, which have resulted in a bill lately submitted to Parliament.

As to the actual state of technical instruction in Great Britain, it would be impossible to form a just estimate without careful study of the work in every county. Reports of operations in the chief cities, however, help to give a clearer impression of the movement that has permeated the entire country than can be formed from general statements. For this reason summaries and extracts from recent reports on the subject are appended. These relate (1) to general agencies for fostering technical instruction; (2) to local agencies and schools. The latter differ so widely in their character and the reports which are available are so varied in scope and arrangement as to preclude any general plan in the selection of particulars, such as might facilitate comparisons. It may be observed, however, that local technical schools are organized with special regard to local industries and their courses of study almost always arranged with reference to the examinations of the science and art department, which disburses the annual appropriations from the public treasury for science and art instruction. This grant amounted in 1891–'92 to $2,578,750.

The conclusions of the commission of 1881 were republished in the report of this office (1882–'83). Their repetition in part at this time seems desirable in connection with the views of recent committees appointed for similar investigations. These opinions, set forth at the interval of a decade, afford an insight into the industrial needs of England, and into the educational policy relating thereto, of great interest to our own people. Citations from the sources indicated are therefore appended to the summaries of current operations.

Report of Operations under Recent Laws.

In December, 1892, the committee of council on education addressed a circular letter of inquiry to the local authorities empowered to make provision for technical instruction, requesting information as to the extent to which the funds accruing under the customs and excise act (amounting for the year to about $3,800,000) had been applied to technical instruction, and the nature of the provision created or fostered thereby.

[1] Issued for 1893.

The following is the summarized report of the returns:

	England, excepting Monmouth.[a]		Wales, including Monmouth, to which the Welsh intermediate education act (1889) applies.		Scotland.		
	49 counties.	61 county boroughs.	13 counties.	3 county boroughs.	33 counties.[b]	82 burghs.[c]	105 police burghs.[d]
Number of councils which have furnished returns	49	58	13	3	.....	.....	.....
Number applying whole amount of residue received under local taxation (customs and excise) act, 1890, to technical education	42	47	.....	.....	.....	.....	.....
Number applying part of residue to technical education	7	e 10	.....	.....	.....	21	18
Number levying a rate or making grants out of the rates under the technical instruction act, 1889. (Rates have been raised by certain local authorities in some counties, but not by the county councils themselves).	.....	.....	.....	.....	.....	.....	.....
Number applying whole amount of residue to intermediate and technical education, chiefly under the Welsh intermediate education act, 1889	.....	.....	12	3	.....	.....	.....
Number applying part of residue to intermediate and technical education, chiefly under the Welsh intermediate education act, 1889	.....	.....	1	.....	.....	.....	.....
Number levying a rate or making grants out of the rates under the technical instruction act, 1889	.....	.....	6	1	.....	.....	.....
Number levying a rate under the Welsh intermediate education act, 1889	.....	.....	13	3	.....	.....	.....
Number of local authorities which have furnished returns	.....	.....	.....	.....	32	80	102
Number applying whole amount of residue to technical education	.....	.....	.....	.....	20	7	9
Number considering the question of applying the whole or part of residue to technical education	.....	.....	.....	.....	4	1	9
Number applying whole of residue to relief of rates.	.....	.....	.....	.....	2	51	66

a No returns received from Portsmouth, West Bromwich, and Ipswich, but it is believed that in each case the whole of the residue is being applied to technical education.
b No returns received from Ross and Cromarty Counties.
c No returns received from Annan and Whithorn.
d No returns received from Bonnyrigg, Cove and Kilcreggan, and Johnstone.
e One not yet decided (Great Grimsby).

The operations of the county and county borough councils in England and Wales are in many cases carried out by technical education committees, to whom the councils have delegated their powers (except the power of raising a rate or borrowing money) under subsection 1 (2) of the technical instruction act, 1889. Organizing secretaries or directors of technical education have been appointed in the great majority of counties and in some of the county boroughs. Several of the county councils (Cheshire, Stafford, etc.), have, evidently with a view to stimulate local effort, made grants to urban sanitary authorities on condition that the latter levy a tax (rate) or contribute a sum out of the rates, under the technical instruction act, 1889, or provide funds from other local sources to supplement such grants.

A noticeable feature with regard to the work of the county boroughs is that many of the councils have either erected, or decided to erect, technical schools, or have taken over existing schools for the purpose of supplying technical instruction under their direct control, to which they have decided to apply the whole of the funds at their disposal, in some cases including the proceeds of a local tax levied under the law of 1889.

It appears from the returns that the promotion of technical instruction in Scotland is progressing, though slowly. Technical education committees have been formed, particularly in the counties, and in one case (the county of Aberdeen) an organizing secretary has been appointed to arrange and supervise instruction. Most

of the county councils devote the whole or part of the residue to the purposes of technical education, but the majority of the burghs still apply the money to the relief of rates.

National Agencies for Promoting Technical Instruction.

In 1891 an association was formed, styled the National Association for the Promotion of Technical and Secondary Education.[1]

The objects of the association were to encourage "the educational reforms which will improve the capacity in a broad sense of all those upon whom our industries depend." One of the measures adopted for accomplishing this purpose was the diffusion of information in a cheap and popular form. To this end the association has published a bimonthly journal, i. e., The Record of Technical and Secondary Education, which keeps the public fully informed on the subject. In the same year (1891) another association was formed, having a more limited and more definite scope. This was the association of organizing secretaries, i. e., officers appointed by county councils to carry out the provisions of the technical instruction acts, and to insure the most economical use of the Government funds which were allowed for the work. This was a very important step toward the systematic organization of the agencies for technical instruction. The association is truly national, nearly every county in England and Wales being represented therein.

Agencies for Technical Instruction in Individual Cities.

LONDON.

Population (1891), 4,211,056.

Enrollment in elementary schools, 1891–'92, 678,000 (board schools, 465,000; voluntary schools, 213,000). Average attendance, 527,000 (board schools, 362,000; private or voluntary schools, 165,000). Number of elementary pupils examined in secondary studies, 30,977 (board schools, 23,639; voluntary, 7,338).

A return of the charity commissioners appointed to reorganize the "parochial charities of the city of London" enumerates 46 "metropolitan institutions connected with technical education." These include schools and classes of such widely differing character as Dr. Barnardo's Homes for Friendless Children and higher schools organized for the sole work of technical instruction. South Kensington Normal and Art School is the only one of the number which draws its support from the Government, and since its students come from every part of Great Britain, this school does not, strictly speaking, belong to London. The remaining 45 institutions are supported by endowments, subscriptions, fees, and in a few cases, municipal grants.

The most important of the private agencies for technical instruction is the City and Guilds of London Institute, which was formed in 1876 by an association of the livery companies of the city. It has been the

[1]The officers of the association were: President, Lord Hartington; treasurer, Sir John Lubbock; general secretaries, Sir Henry E. Roscoe, Mr. A. H. D. Acland; secretary, Llwellyn Smith.

chief promotor of technical education in the metropolis, and has also extended its influence and support to other cities. The Institute possesses in London at present three schools, i. e., the Central Institution for Advanced Instruction in Applied Science, Finsbury Institute or Technical College, and the South London School of Art.

The departments and numerical strength of the staff in each school are as follows:

Central Institution.—Mechanics and mathematics, 3; engineering, 5; physics, 5; chemistry, 5.

Finsbury Technical College.—Mechanical engineering and applied mathematics, 7; applied physics, 7; applied chemistry, 4; applied art, 6; trade classes, 5.

The South London School of Technical Art is in charge of a superintendent of studies and 7 instructors.

From the report of 1892 it appears that the institute had in its own schools 1,560 students, distributed as follows: Central, 199; Finsbury, 198 day, 1,017 evening; Art School, 146.

The chief work of the institute, in addition to the maintenance of these schools, is the support of examinations.

At the examination in manual training, held for the first time in 1892, and restricted to teachers in public elementary schools, 615 candidates presented themselves, of whom 350 passed. The examination was held at 29 centers throughout the country.

The council state in the same report that—

> They have long felt that for the further improvement of technical teaching, a system of inspection by educational authorities and trade experts was necessary, and they are at last able to take the initial steps in organizing such a system. As a practical beginning of the work, the institute undertook during the year, the inspection of some of the classes of the Merchant Venturers' School, Bristol, and the examination and inspection of special classes at the Municipal Technical School, Birmingham. They have also examined and reported upon the woodworking classes in the county of Southampton, and at the request of the technical instruction committee of the Kent County council, they have prepared suggestions for the guidance of teachers at evening classes in woodworking, which they hope may give direction to and improve the teaching of that subject.

In 1888 the Institute gave its aid to the establishment of manual-training classes in the elementary schools of London, appointing a joint committee to coöperate with the school board in the conduct of the same.

Practical housework has since been added to the subjects under charge of this committee.

> Rooms were fitted up in one of the board schools, one as a bedroom, one as a sitting or day room, and one for general work (kitchen, etc.). These rooms are furnished similarly to those of a workman's home; and girls are instructed every Saturday in the various duties—bed-making, preparation of fires, cleaning of grates, black-leading, dusting, scrubbing, polishing, washing of tea things, setting of tables for various meals, etc.

The income of the Institute for the year under review amounted to £33,093 18*s.* 9*d.* ($160,836), not including £300 ($1,450) assigned to scholarships by the Clothworkers' and Saddlers' Company out of their subscriptions to the Institute. Of the total income, 28 per cent only was derived from students' fees and payments for material. The large proportion (72 per cent) was from subscriptions and donations.

The council of the Institute anticipate decided modifications in their plans of work as new agencies are created for similar purposes. Among these agencies the most important are the polytechnic institutions, for whose maintenance large sums have been appropriated from the funds of the city parochial charities. The council of the Institute urge the importance of such an organization of the new corporation agencies as shall secure to London a graded system of technical instruction coördinated with elementary schools on the one hand, and on the other with the higher or more specialized training supplied by the college of the Institute.

The Polytechnics.—In 1883 an act was passed providing for the reorganization of the city of London Parochial Charities, and empowering the charity commissioners to devise schemes for giving effect to this purpose. The aggregate annual income of the charities which the commissioners deal with is £118,602 ($576,400).

Naturally in the present state of public feeling, technical education has engaged the attention of the commissioners. The most important scheme which they have evolved in this interest is that for the appropriation of £15,000 annually to the support of five polytechnics in different sections of the city. These are to be modeled, so far as may be, on the plan of the Polytechnic in Regent street, started some years ago by Mr. Quinton Hogg. Of this unique institution the charity commissioners give the following account:

Mr. Quinton Hogg having remarked that at the Young Men's Christian Association only clerks were admitted, determined to found one for workmen and apprentices. As this is a poorer class, he gave up from the first the attempt to make it self-paying.

The first experiment was tried at Castle street, Long Acre, and the results having proved satisfactory, arrangements were made to secure the remainder of the lease of the Polytechnic in Regent street, which thus gave a name to the new institution.

As it was resolved to admit no boys as members under the age of 15, the Castle street premises were retained, to serve as an institute for younger boys, and there they still remain.

The remarkable feature of the Polytechnic is that it aims at improving boys from four different sides at once, viz: the religious, the social, the mental, and the physical. So comprehensive an attempt hardly exists elsewhere, and it is to this thoroughness and completeness that the success of the institution is in part due. The religion here is of an evangelical type, and after seeing the Sunday services, no doubt can be entertained that it is of great good, not merely from a Christian point of view, but in improving the general social tone. The institution may be divided into two sides, the club or recreational side, and the educational or school side. It is thus a club and a school fused together.

(1) *The club side.*—On this side there are 3,500 members, this being all that the rooms will hold; but the applications for admission are so numerous that this number could be largely augmented. The members belong chiefly to the artisan class. The subscription is 3 shillings per quarter, payable in advance, entitling members, amongst other advantages, to free use of the library, reading, social, chess, and draught rooms, the use of one of the finest gymnasiums in London, admission to the concerts, entertainments, lectures, etc., and the privilege of joining any of the classes at greatly reduced rates.

The gymnasium is fitted up with all necessary appliances, and is under the management of a color sergeant and sergeant who attend every evening to give instruction. Leaders are chosen from the members. The subjects taught are fencing, dumb-bell exercise, vaulting horse, parallel and horizontal bars, boxing, flying trapeze, hand rings, etc.

There are about 1,800 members paying for the use of lockers, with an average attendance of about 200 each evening.

The locker room contains 1,800 lockers, for which a charge is made of 1*s.* 6*d.* per half year.

Instruction is given every day to the school boys in gymnastics and drill.

The social room is a large room reserved for the use of members for social intercourse. Chess and draughts, papers, etc., are provided. There is also a refreshment bar where refreshments can be obtained at moderate prices.

The club room leads out of the social room, and is reserved for committee meetings, etc., of the various societies formed amongst the members.

The library contains about 8,000 volumes, and is open every evening for the loan of books to members without charge.

The reading room, reserved for members only, is supplied with most of the principal papers.

Entertainments, lectures, concerts, etc., are given during the season, and are held in the large hall and small lecture hall.

There are also several subsections and societies held in connection with the polytechnic. Each society is composed of members of the institute, and is managed by a committee elected by its own members.

Attached to the institute is one of the finest swimming baths in the kingdom; it is reserved for members and friends after 6 p. m., for which a charge of 3*d* is made. Lavatories, hot, and shower baths, and a hair cutting and shaving saloon are provided for members.

The recreation ground is situated at Merton Hall, Wimbledon, and consists of a house and about 27 acres of ground. Dressing, and all necessary, rooms are provided. The name of the athletic club is the Hanover United Athletic Club, which comprises the following sports:

	Members.
Cricket club, with about	100
Football club, with about	120
Lawn tennis club, with about	50
Rowing club, with about	80
Swimming club, with about	100
Pedestrianism club, with about	60

There is also a cycling club, a harrier's club, and a rambler's club.

The rambler's society is instituted for the purpose of providing regular Saturday afternoon cheap excursions to places of interest in the country around London, and to thus furnish a means of healthful enjoyment and social intercourse amongst members of the institute not otherwise engaged on the half holiday.

(2) *The educational side.*—The classes held are divided into the following groups:

A. A day middle-class school, 343 students.

B. Day classes, 200 students.

C. Evening classes, 3,000 students; (1) Technical (theoretical classes); (2) Practical workshop classes; (3) Science and art classes; (4) General and commercial classes; (5) Musical classes.

The numbers of students given are the present numbers December, 1886. This time of year is about the worst for attendance, which is about 15 per cent higher in the spring, that is to say, the yearly average is about 7½ per cent higher than the autumn numbers.

The annual expenditure for this polytechnic is about £6,500, of which about £3,000 is raised by fees and grants from the city guilds. The balance has heretofore been met by Mr. Quinton Hogg. This amount will be about covered by £3,500 from the charity commissioners.

The fear that the London council might fail to appropriate any portion of the fund coming to them from the liquor duties to technical instruction was relieved by the resolution of the council adopted April 12, 1892, "to appoint a committee empowered to draw up a scheme for technical education in London. At the same time by a majority of 64 to 39, the council carried £30,000 to a suspense account in order to provide the committee with the means to carry out its scheme for the current year."

The sum allowed, i. e., $145,800, is small in comparison with the total receipts of the council ($816,480) from the beer and spirits duties for the year. This first appropriation, however, is intended only for preliminary expenses, since grants can not be made until after the committee has submitted a definite report.

BRISTOL.

In the southwestern part of England (on the Avon). Population (census of 1891), 221,665.

A technical school has recently been established at Bristol which was intended to possess the features of similar schools on the continent and yet be adapted to the special requirements of its own nation and locality. The enterprise is due to the Society of Merchant Venturers, whose name the school bears. Prior to the opening of the technical school in 1885, the Bristol Diocesan Trade School had been established; this became the nucleus of the larger institution.

DEPARTMENTS.

There are three distinct branches of the institution: (*a*) the boys school; (*b*) the upper technical school; (*c*) the evening school.

(*a*) The boys' school is itself subdivided into a lower and a middle school. In the lower school, boys from 9 to 13 receive teaching in ordinary English subjects and also in the rudiments of foreign languages, art, drawing, and natural science. It is not intended to continue this part of the work, but to abandon it gradually as the present accommodation for higher work becomes more and more inadequate to meet the demand. The middle school (for boys from 12 to 16) has two sides—a

commercial side and an applied science side. The course of instruction is shown in the annexed time tables.

Number of hours in the week devoted to each subject—commercial side.

Subjects.	Forms.			
	VI, B.	V, B.	IV, B.	III, B.
English grammar, composition, and literature	3	3	3	3
French	4	4	4	4
German	3	4	3	3
Commercial geography	2	2	2	2
History	1	1	2	2
Mathematics, including arithmetic	6	6	6	6
Bookkeeping	2	2	2	2
Shorthand	2	2	2	2
Physiography				2
Chemistry	2			
Electricity		2	2	
Geometry	2	2	2	2
Art	2	2	2	2
Modeling in clay	1			
Total	30	30	30	30

Number of hours in the week devoted to each subject—applied science side.

Subjects.	Forms.*a*					
	VI, A1.	VI, A2.	VI, A3.	V. A.	IV, A.	III, A.
English	2	2	2	3	3	4
French	2	2	2	3	3	4
German	3	3	3	3	3	2
Mathematics	6	6	6	6	6	6
Art	1	1	1	3	2	4
Geometry	2	2	2	2	3	3
Theoretical mechanics				2		
Applied mechanics	2					
Magnetism and electricity					2	2
Theoretical chemistry				2	2	2
Chemical laboratory		2	6	3	3	
Physical laboratory		6	2			
Building construction	1					
Machine construction	4	3	3			
Workshops	4	2	2	2	2	2
Steam	2					
Modeling in clay	1	1	1	1	1	1
Total	30	30	30	30	30	30

a In form VI boys begin to specialize. There are three sections: VI, A1, for mechanical engineering; VI, A2, for electrical engineering; VI, A3, for chemistry.

The fees in the boys' school vary from £5 to £6 10*s.* a year.

(*b*) The upper (technical) school is for day students over 15 years of age, without distinction of sex. The school is divided into the following sections: Mechanical engineering, electrical engineering, chemical and metallurgical, applied art and building trades. There is also a special "university" section for students preparing for the degree of B. SC. of the University of London. Twenty-six per cent of the present students are women. The inclusive fee for the upper school is £10 10*s.* a year. The ages of the students vary from 15 to 62; the average age being 18½.

(*c*) The evening school is intended mainly for artisan and commer-

cial students of either sex. The classes are divided into the following departments:

I. Science, including mathematics, theoretical mechanics, applied mechanics, steam, building construction and drawing, machine construction and drawing, navigation, theoretical and practical chemistry (organic and inorganic), metallurgy, (theoretical and practical), sound, light, heat, magnetism, electricity, practical plane and solid geometry, hygiene, botany, and zoology.

II. Art, including drawing, painting, modelling in clay, wood carving, designing, etc.

III. Technology, including boot and shoe manufacture, carpentry and joinery, plumbing, metal working, photography, dressmaking, millinery, electric lighting, mechanical engineering, and telegraphy.

IV. Commerce, including French, German, Spanish, commercial arithmetic, and geography, bookkeeping, and shorthand.

V. Classes in preparation for the examinations of London University.

VI. Ambulance and nursing lectures are given as well as an annual series of popular penny lectures.

STAFF.

There are 48 teachers in the institution, of whom 12 are graduates. Two are specialists in engineering subjects, 4 in chemistry and metallurgy (1 B. SC., London; 1 PH. D., Munich; 1 PH. D., Erlangen); 3 in physics (1 M. A., Aberdeen; 1 B. SC., London); 4 in modern languages (1 M. A., Oxford; 1 M. A., London; 1 PH. D., Marburg); 2 in mathematics (1 B. A., Cambridge; 1 B. SC., Victoria); 2 in commercial subjects (1 B. A., London); 2 in biology (1 B. SC., London); 6 in art, and 15 in the various branches of technology.

FINANCE.

The school is not self-supporting. In recent years the excess of expenditure over income has amounted to about £1,900 a year, and this sum, therefore, represents the annual cost of the school to the Society of Merchant Venturers.

NUMBERS AND GROWTH.

The growth in the attendance of the school is proof of the value which the citizens of Bristol place upon its privileges. The enrollment in 1890 and 1892 was as follows:

	May, 1890.	May, 1892.
Boys' school:	*Students.*	*Students.*
Middle school	167	291
Lower school	201	154
Upper technical school	48	79
Evening school	666	920
Total	1,082	1,444

This increase has not been secured by admitting every applicant. There is an entrance examination for the boys' school, and during the

two years to which the above figures relate, 80 candidates have been rejected.

SCHOLARSHIPS.

Until September, 1891, the only scholarships tenable in this school were: 9 scholarships tenable for three years and covering tuition fees and cost of books; 4 scholarships in the upper school tenable for two years at an annual value of £25, and 1 of £20 annual value tenable also for two years.

The county councils now offer the following scholarships:

A.—*Scholarships tenable in the boys' school and restricted to pupils of public elementary schools.*

Name of scholarship.	Number of scholarships.		For boys under—	Years tenable.	Value.		
	Total.	Yearly.			First year.	Second year.	Third year.
Bristol junior	72	24	13	3	£12	£15	£18
Gloucester County scholarships	30	10	14	3	£15 to £25		
Somerset County scholarships	69	23	13	3	£15 to £25		
Bedminster and Clevedon district scholarships	12	6	14	2	15	15	.....

B.—*Scholarships tenable in the boys' school and not restricted to pupils of public elementary schools.*

Name of scholarship.	Number of scholarships.		For persons under—	Years tenable.	Value.		
	Total.	Yearly.			First year.	Second year.	Third year.
Bristol junior scholarships	18	6	13	3	£12	£15	£18

C.—*Scholarships tenable in the upper technical school.*

Bristol senior (boys only)	36	12	16	3	£25	£25	£30
Bristol senior (girls only)	9	3	16	3	15	15	15
Somerset senior *a*	.....	.....	.....	.....	.....	.....	.....

a Details not issued; will be awarded for the first time in 1893.

D.—*Evening class scholarships.*

Name of scholarship.	Number of scholarships.		Years. tenable.	Value.
	Total.	Yearly.		
Bristol evening scholarship	55	55	1	£2
Do	30	30	1	£3

All the above scholarships may be held in the Merchant Venturers' school, but the only ones restricted to that school are five of the Gloucester County scholarships and Bedminster and Clevedon district scholarships; the remainder may be held in any school approved by the county council which awards them. The number of such scholars at present in the schools is 113, of whom 41 are in the boys' school, 14 in the upper (technical) school, and 58 in the evening school.

The report from which the foregoing particulars have been derived states further that there is a larger demand for the pupils of the upper part of the school than it is possible to supply. Most of the leading manufacturers and merchants of Bristol recruit their staffs from pupils of the school.

The Record of July 1892, contains the following description of the building:

BUILDINGS AND EQUIPMENTS.

The erection of the building and the purchase of the fittings and apparatus have involved an outlay of £45,000. For this sum buildings have been provided which in themselves constitute an object lesson in construction, every part being built in a solid and serviceable manner. Nor is beauty overlooked; the main staircase is of marble throughout, while the woodwork is of the best pitch pine, except in the great hall, which has a carved oak ceiling, as well as artistic oak paneling. The school contains a great hall for popular lectures, examinations, etc., to accommodate 900 persons; nine ordinary class rooms, a large chemical lecture theater (for 108 students at a time), a smaller chemical theater, a physical lecture theater (for 108), an engineering lecture room (for 56), an engineering drawing office (for 48 at a time), two chemical laboratories (for 50 at a time), a balance room, combustion room, gas analysis room, physical, metallurgical and biological laboratories, boot and shoe workshop, metal workshop, carpenter's workshop, forge, plumber's workshop, two art rooms, dressmaking and millinery room, library, engine house, etc. Each department is fitted out with the latest appliances for teaching and for practical work.

BIRMINGHAM.

County Warwick, in the northwestern part of England. Population (1891), 429,171. Enrollment in elementary schools, 86,131 (board schools, 55,511; voluntary, 30,620). Average attendance, 72,491 (board schools, 47,628; voluntary, 24,863).

To the munificence of a private citizen, Sir Josiah Mason, Birmingham is indebted for Mason College, which was founded in 1880 as a college for instruction in practical science, but has since developed into a university college, with a special leaning towards science. The history of this institution proves conclusively the importance of suitable provision for the preparatory stages, if higher grades of scientific and technical training are to be maintained. Notwithstanding ample resources and a strong faculty, this institution has not accomplished the ends which its founder had most at heart. Its possession, however, has given Birmingham some advantage in entering upon the new movement. The city council was one of the first to adopt the technical instruction act of 1889, and, after some preliminary measures, appointed (January, 1891) a committee for practical work under the act. This committee advised the adoption of the science classes of the Birmingham Midland Institute, which, in accordance with the plans of the committee, have been developed into the Birmingham Municipal Technical School. The city council authorized the committee to spend $7,190 in apparatus and fittings, and $4,860 in additions and alterations to the building.

The school opened under the new auspices September 14, 1891, and so great was the number of students applying that in some cases twice, and even thrice, as many applied as there was space for. This unexpected difficulty was met in part by duplicating the classes, and it was found possible to fit up a few additional places in the laboratories. But with all this contriving some students had to be turned away for want of room. In this emergency an additional building was secured on a 3 year's lease, at the expiration of which it is hoped that the school will take permanent possession of a new building. The total number of students for the session 1891–'92 was 1,187. The committee being anxious to know to what extent their students come from outside the city, have made inquiry into the subject, and find the following results as regards 1,062 students:

Living and working in the city	612
Living outside and working in the city	207
Living in and working outside the city	52
Living and working outside the city	191

Both day and evening classes are held. The branches of instruction are as follows:

Biology, vegetable morphology and physiology, botany, brasswork (mechanical), bronzing and lacquering, building construction, chemical analysis (qualitative), chemistry (inorganic and organic), chemistry for trade groups, electro-metallurgy, engineering (electrical) and applied electricity, engineering (mechanical, elementary and advanced), geology, geometry, iron and steel manufacture, machine construction and drawing, magnetism and electricity, mechanics (theoretical and applied) metallurgy, metal plate work, mineralogy, petrology, plumbing (mechanical), sanitary science, sound, light, and heat; steam, telegraphy, and telephony, typography, white metals (mechanical)."

The annual session lasts about eight and a half months.

All the classes are open to both male and female students not under 12 years of age.

The preparatory courses and the elementary courses are open to all applicants. The advanced and honors courses are only open to those students who have previously gone through the elementary and the advanced courses, respectively, of those subjects for which they make application.

The tuition fee for each complete trade course is 10 shillings a session. Each course is for two years. In the preparatory and science classes the aim is to keep the fees as low as possible. The city council have also "decided that some proportion of the admissions (not exceeding one-fourth) shall be free, a competitive examination being held for these scholarships."

The following description of the laboratories and workshops of the school is taken from the report of the school for 1892–'93:

Chemical laboratory.—The chemical laboratory will accommodate 54 students working at one time, allowing 4 feet for each student, and is well provided with fume chambers, balances, and apparatus. Every facility is given to students who wish to pursue their studies beyond the ordinary courses, whether in the direction of pure or applied chemistry.

Physics laboratory.—The physics laboratory will accommodate 20 or 30 students working at a time, and is furnished with apparatus for experimental demonstrations

and measurements. While the best of instruments will be provided for exact work, the students will be encouraged to make themselves simple apparatus that will serve for general purposes.

Metallurgical laboratory.—The metallurgical laboratory is the largest in the kingdom and fitted with working tables especially designed for the work to be done on them. Each student is supplied with a locker, in which are provided all the tools and vessels he requires, the only obligation being that he should leave them in as good working order at the end of the course as he found them at the beginning.

Electro-metallurgical laboratory.—The electro-metallurgical laboratory has a large room, which will accommodate 25 students working at one time, and is furnished with work tables fitted with lockers, each containing suitable apparatus for individual use. The laboratory is also equipped with appliances for general use, consisting of reagents, plating vats, polishing and scratch-brush lathes, press, galvanometers, voltmeters, ameters, resistance-boards, dynamos, etc., so as to afford every facility for the student to make himself acquainted with the scientific principles involved in the art of electro-deposition. This laboratory is also lighted by electricity. The classes in metal coloring and bronzing are also conducted in this laboratory.

Machine shop.—The machine shop or engineering laboratory for manual instruction in the use of tools is designed to meet the requirements of those engaged in the iron and steel and engineering trades, and, as far as space will permit, is fitted with the most approved form of machinery and tools. Among other things there are a 12-horse-power gas engine, 5 screw-cutting lathes, drilling, planing, milling, and shaping machines, 2 ordinary slide rest lathes, work benches with leg and parallel vices, etc. The whole shop will accommodate upwards of 30 students working at one time.

Brass shop.—The brass shop is thoroughly provided with the lathes, tools, etc., required for the practical instruction of a brass founder or anyone engaged in a similar line of business. The student is instructed in the use of power and foot lathes, filing, screwing, pattern-making, core-making, casting, soldering, tool-making, and chasing. In connection with this shop is a well appointed casting shop, where the student is taught not only to make the mold with sand, but also to melt the brass or bronze, etc., in a full-sized furnace, and pour it into the mold. The castings thus made may be afterwards worked up in the shop. Upward of 30 students can work at one time.

Plumbing and metal-plate shops.—This shop is specially adapted for practical instruction in plumbing and metal-plate work. All tools, appliances, and materials required for elementary and advanced instruction are provided by the school. There is accommodation for about 40 students to work at one time. The same shop is used on alternate nights for metal-plate work, the student in this subject being equally well provided for, and every convenience is arranged for a complete practical study of the subject, all tools and materials being found by the school.

Carpenters' and pattern-makers' shop.—A large shop 75 feet long and 20 feet wide has been fitted up for giving practical instruction to carpenters and pattern-makers on alternate nights.

Machine drawing room.—The machine drawing room has been specially fitted with a view to giving every facility to students to acquire a complete knowledge of mechanical drawing. Drawing boards, T-squares, and set squares will be provided by the school, the student being required to find his own drawing pins, instruments, and paper. In order to enable each person to keep his board, utensils, etc., clean and free from the interference of others, a locker is provided, the key of which is held by the student for the session on the payment of 6 pence, which is returned at the end of the course on delivery of the key and drawing utensils in good order.

Geometry room.—The geometry room is fitted with lockers similar to the machine drawing room, and the same materials are provided for students' use on the same conditions.

SHEFFIELD.

Sheffield is in the northern part of England, county of York; population (1891), 324,243. Enrollment in elementary schools (1892), 61,122 (board schools, 34,814; voluntary, 26,308). Average attendance, 51,697 (board schools, 30,042; voluntary schools, 21,655).

The great center of iron and steel manufactures, Sheffield, has naturally a deep interest in technical instruction. The school board, fully alive to local demands, has been active in fostering science teaching, drawing, and manual training in the elementary schools. The Central Higher-Grade School is maintained as a free school, and admission open to all pupils who have passed the sixth grade in the three elementary branches. The scheme of instruction embraces a course in the essential branches of a general education, including foreign languages, with the opportunity for specialization in the higher classes. Those who are intended for the teaching profession or kindred work have facilities for preparation in all the subjects covered by the examinations they have in view; those who desire to enter, afterwards, the workshop or laboratory devote themselves more particularly to the sciences bearing upon Sheffield industries and to manual occupations; while those who aim at commercial pursuits give particular attention to German, shorthand, and bookkeeping.

In the evening classes large provision is made for science and technical subjects.

The needs of pupils who can not hope to pursue their studies beyond the elementary grades are not overlooked. They gain a certain familiarity with scientific subjects by means of lectures or experimental lessons in mechanics and domestic economy given by science demonstrators, once a fortnight, at nearly all the board schools.

The Sheffield Technical School, in connection with Firth College, is intended to provide thorough training in the sciences applicable to local industries. The work of the school is carried on in three sections: (1) the junior day department; (2) the senior day department, specialized into (*a*) the engineering section, and (*b*) the metallurgical section; (3) evening classes for general and technical instruction.

Courses of instruction.—The course in the junior day department includes arithmetic, algebra, Euclid, mechanics, heat, theoretical and practical chemistry, physiography, freehand, model, geometrical and mechanical drawing, use of tools in workshops, French, German, and shorthand.

The fees are 10 shillings per month of actual school work, payable in advance monthly.

The senior day department provides advanced courses of instruction for students who intend to specialize their studies in either of the following branches:

(*a*) Mechanical, mining, or electrical engineering.

(*b*) The metallurgy of iron and steel.

To students entering for the complete engineering or metallurgical course, a composition fee, making a reduction of about 20 per cent of the full fee, is made.

Students may join any one of the classes without entering for the whole course; they may also enter for instruction or research in any special branch of engineering or metallurgy other than that arranged for in the complete courses.

The aim of the committee is to provide courses of instruction for evening students which shall be as complete as possible, considering the time at disposal, and it is arranged that all the advantages of the institution in every department shall be extended to evening students who attend the classes regularly and continue their studies for a sufficiently long period to complete the course of study laid down.

The fees for the evening classes are 5 shillings for the session for one course of lectures, and 2*s.* 6*d.* for each additional course of lectures. A fee of 10 shillings admits to any or all the lectures. Special fees are charged for laboratory courses.

LIVERPOOL.

Liverpool is in the northwestern part of England, situated on the river Mersey, county of Lancaster. Population (1891), 517,951.

Prior to the passage of the technical instruction act, Liverpool had made extended provision for scientific and technical instruction. A report on the subject issued in 1890 contains the following statement as to resources for the work:

In the valuable series of educational institutions controlled by the city council are included a museum which, for completeness and scientific arrangement, is probably unequalled anywhere else in the provinces, and a gallery of art bearing a striking testimony to the enlightened interest long taken in this subject by the municipality; while, in that newer institution (University College) which has recently brought university culture within the reach of the general body of its residents, the interest felt by leading citizens of Liverpool in technological subjects has resulted in the erection of chemical and engineering laboratories fitted with all the most modern appliances. It is, however, not merely by these facilities for the higher forms of scientific and technical study that Liverpool has made liberal provision for the promotion and encouragement of that branch of knowledge.

Some thirty years ago a "town's meeting" held in the town hall, under the presidency of the mayor for the time being, founded the "Liverpool School of Science and Technology"; and the impetus since given to the study of science and art, by the classes established in connection with this school, by the "Liverpool science and art classes," and by similar classes more recently introduced by other bodies, has been so great that only in one or two localities, which exceptional industrial circumstances render specially favorable to such study, do the successful students under the science and art department exceed those of Liverpool in number. In connection, also, with the elementary schools of this city a system of science instruction has been in operation for some years, which was mentioned with approval in the report of the recent royal commission on technical instruction, and referred to as the model they would recommend for general adoption in schools of this class. Moreover, when some two or three years ago a national association was founded for the promotion of technical instruction, Liverpool was one of the earliest towns to establish a local association affiliated with that central body.

Such was the position at the end of August, 1889, when the technical instruction act was passed.

Immediately after the passage of the law the school board and the managers of voluntary schools united in an effort to promote its application to elementary schools.

A report submitted by a subcommittee of this conference gives the following summary of the provision for technical instruction at the time (1890):

In addition to the work carried on in public elementary day schools, instruction of the kind contemplated by the technical instruction act was given by some seventeen separate institutions, including about 5,500 individual students. Of these students not quite 2,000 were day scholars, the remainder attending exclusively in the evening.

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Eight of the institutions had classes connected with the science and art department, giving instruction in science to 310 day and 2,031 evening students, and in art to 1,004 day and 965 evening students. Four other institutions, whose classes were soon to be connected with South Kensington, gave instruction in science to 319 day and 145 evening students, and in art to 188 day and 36 evening students. These figures yield a total of 629 day and 2,176 evening (in all 2,805) students of science, and of 1,192 day and 1,001 evening (in all 2,193) students of art, representing probably less than 4,000 individuals out of a total population exceeding 600,000. As (without referring to those over 21 years of age) about 75,000 of this population are young persons between 14 and 21 years of age, it is clear that there is still ample room for a very considerable increase in the number of science and art students.

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In addition to the work carried on by the institutions included in these returns, evening classes for artisans have been held for the past two or three years in the engineering laboratories of the Liverpool University College, and also Saturday morning classes in wood-working for teachers in public elementary schools.

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In connection, however, with the day classes of its physical, chemical, and engineering departments, University College has made almost the only provision which exists in Liverpool for the higher forms of technical instruction. The two latter departments already possess lecture rooms, laboratories, appliances, and apparatus of the highest order, and it is intended, as soon as possible, to provide similar advantages for the physical department. The number of students under training is already considerable; but technical instruction proper can not be given without a comparatively small addition to the existing staff of teachers.

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In all the board, and in a large number of the voluntary, schools, kindergarten instruction for infants has been in operation for many years, and in most of these schools drawing has been systematically taught to all the boys. In all the board, and in several of the voluntary, schools, the system of science instruction, to which reference has been made previously, has been in operation for nearly fifteen years. At the present time some 2,500 boys and 1,500 girls are receiving instruction in this way in the specific subjects, "mechanics" and "domestic economy," respectively, under the education department, while in nearly a dozen of these schools classes, embracing in the aggregate some 400 scholars, have, during the past year, been established in connection with the science and art department for those boys who have passed the sixth standard. Provision, also, has for several years been made in connection with a considerable number of schools for the introduction of practical cookery, and from 1,500 to 2,000 girls are now receiving instruction in this subject.

Under the auspices of the Liverpool Association for the Promotion of Technical Instruction, classes in fretwork and wood carving have been carried on in connection with some ten elementary schools and were attended with very encouraging results. The number of scholars taught was limited to fifty in each school, but that number might, in most cases, have been considerably exceeded. As the instruction was given entirely out of school hours, the eagerness of the boys to attend these classes affords a strong indication of the attraction which manual instruction has for boys in elementary schools.

The school board and conference of school managers express the opinion that any general scheme of technical instruction for this city should embrace:

(*a*) Elementary schools proper;

(*b*) Continuation schools or classes, both day and evening, including organized science schools;

(*c*) Science and art and technological classes;

(*d*) Commercial classes;

(*e*) Special technical classes, either day or evening, to meet the particular requirements of individual industries;

(*f*) The science and engineering departments of Liverpool University College; and, possibly,

(*g*) A technical and commercial museum relating to the trade of the town and port.

The importance of laying a firm foundation for technical instruction in the elementary schools is emphasized by the following resolutions:

(*a*) The general introduction in elementary schools of manual and science instruction for boys in Standard V and upwards;

(*b*) The retention of scholars as long as possible in public elementary schools, and the adoption of a special curriculum, including subjects in connection with the science and art department for children in Standard VII and upwards;

(*c*) The provision made by the school board for manual and science instruction in connection with its own schools, being, as far as legally possible, rendered available for voluntary schools also; and

(*d*) The city council being requested to exercise their power under the technical instruction act, 1889, in aid of technical instruction, if, and when, given in elementary schools.

MANCHESTER.

Manchester is in the northern part of England, Lancaster County. Population (1891), 505,343.

Provision for technical instruction is a matter of deep interest to Manchester, and the school board has endeavored to include in the course of elementary schools the subjects, i. e., drawing and elementary science, which are the necessary preliminary to advanced technical courses.

Experiments in classes for tool work, in connection with the day schools, were made as early as 1882. The board has long maintained higher-grade schools in which the more advanced pupils from the lower grades are gathered for the continuance of their studies under favorable conditions. Advanced evening schools have also been maintained.

The Central Higher-Grade School has been particularly noted for its success in science teaching, and many of its pupils have obtained scholarships admitting them to higher institutions.

The efforts of the board in these directions have been stimulated by the influence of Owens College and of the Mather and Platt's School, which is, perhaps, the most celebrated workshop school in England. The Manchester Grammar School, an endowed school dating from the reign of Henry VIII, has also conduced to the same end, having been one of the first of the secondary schools to introduce laboratory instruction. These various efforts to meet new demands in education culminated in 1883 in the Manchester Technical School. This was developed from the Mechanics' Institute, which had made technical classes a feature of its work. Liberal donations from the legatees of Sir Joseph Whitworth subsequently increased the resources of the school, and finally, in 1890, the proposition was made to incorporate the school with the Whitworth Institute. The acceptance of this proposition has secured to the school a fine site, while its resources have been further enriched by money grants from the same estate and from the Manchester corporation.

A building is in process of erection and plans are being formed for the development of a school of high order. As a preliminary measure, two committees of investigation were sent to visit and report upon technical schools and instruction on the continent.

The able secretary of the Manchester school, Mr. J. H. Reynolds, furnished an account of the new building and the proposed plans of the school for the Record of November, 1892, from which the following particulars are taken:

The site for the school comprises upwards of 5,800 square yards net of building land, exceedingly convenient in respect of accessibility, shape, and light. The whole of the site will be covered, and it is intended to find accommodation in the new building for the work now carried on in the institution in Princess street, and in the branch schools in Peter street and Whitworth street, which include provision for mechanical, electrical, civil, and sanitary engineering; the chemical industries; spinning and weaving; the building trades; letterpress and lithographic printing, and other minor industries; industrial art and design; and commercial and domestic economy subjects.

The magnitude of the building elicited an important competition, no less than twenty-six sets of plans being submitted to the judgment of Mr. Alfred Waterhouse, R. A., who, in consultation with the technical instruction committee, awarded the first premium to Messrs. Spalding and Cross, of London.

The style of the building is renaissance of the early French period, and the treatment is such as to give a large amount of light. The material to be used for the front elevations will be red Ruabon bricks, relieved with terra cotta, which, it is expected, will best resist the unfavorable influences of the Manchester atmosphere. The building will be roofed with green Whitland Abbey slates, and the floors will be fireproof throughout and covered with wood blocks, except where impervious paving is required, as in the dyehouse and laboratories.

The ventilation will be arranged on the plenum or push principle, similar to that adopted in the chemical laboratories at Zurich.

The building comprises six floors, none of the rooms being less than 15 feet of clear internal height, and averaging 25 feet to 31 feet in depth. The general scheme embraces class, lecture, drawing, and designing rooms, laboratories, workshops, library, administrative and other offices, students' and lecturers' rooms, etc., all lighted from the face of the building, with wide continuous corridors all round each

floor, lit from the internal area, thus giving convenient access to the rooms, each department being kept, as far as possible, distinct and self-contained. It is intended to make these corridors a continual source of interest and instruction to the students by placing therein small exhibits, pictures, and diagrams bearing upon the subjects taught.

The total available floor space exceeds 150,000 square feet, exclusive of corridors.

The central space of the building between the large internal areas, and lit from them, is occupied by a block containing, on the ground floor, the main entrance hall, 83 feet by 50 feet, which will be utilized as an industrial museum at all times accessible, and through which the main double staircase, extending to the top of the building, is reached; on the first floor, a public lecture hall, 30 feet high, of similar area, to be devoted especially to brief courses of lectures by recognized authorities and specialists on the technology of the commerce and manufactures of the city and district, and to other lectures calculated to educate the public taste; above which, on the third floor, there will be placed a chemical laboratory for 80 students. Two additional independent staircases are provided, as well as a spacious passenger lift, and, though only one entrance will give access to the building for students, officials, and the public, suitable exits in case of alarm are provided.

The basement, which is sunk only 7 feet in the ground and is exceedingly well lighted, is devoted to the department requiring heavy machinery and other appliances needful to industrial operations on a considerable scale.

Here are placed the electrical engineering workshops and testing tables, dynamo house, electro-chemical and technical testing laboratories, secondary battery room, rooms for optical, photo-metric, magneto-metric, and spectroscopic operations, the mechanical engineering workshops and testing laboratory, with its experimental steam engine and large and small testing machines, the spinning and weaving rooms for cotton, silk, and other fibers; bleaching, dyeing, printing, and finishing rooms; plumbers', bricklayers', and masons' workshops; shop for repairs and construction of new appliances; wood-working machinery.

The whole of the main driving will be by means of the electric current from the corporation central station, which will also supply current by independent leads for the 2,000 incandescent lamps required for lighting the building.

The remaining stories will be occupied by laboratories, general and special, numerous class, lecture, drawing, and designing rooms, a large gymnasium, convenient rooms for the accommodation of scientific societies, and other means for developing the corporate life of the school.

The following is the space allotted on the various floors for the respective departments:

	Sq. ft.
Administration, including museum, lecture hall, reading room, gymnasium, and other offices	26,837
Mechanical engineering	18,266
Applied physics and electrical engineering	13,666
Textile trades	19,211
Applied chemistry, dyeing and finishing, metallurgy	29,232
Building trades	10,922
Letter-press and lithographic printing	2,798
Industrial design	13,453
Commercial subjects	11,844
Domestic economy subjects	6,461
Total	152,690

The estimated cost of the building, including fittings and the provision of appliances and machinery, is about £125,000, toward which the committee have available £14,000, balance of profit from the Royal Jubilee Exhibition; £5,000 promised by the Whitworth legatees; and the property in Princess street and Peter street, valued

at £31,000. The remainder of the sum required will be borrowed for a period of thirty years on the security of the 1 *d.* rate.

As its name implies, the school is now a municipal institution, governed by a committee consisting of 36 members, 24 of whom are members of the city council, and 12 are chosen from the general public interested in the progress of commerce and manufactures. The new school may be looked upon as amongst the first fruits of the technical instruction act of 1889, and of the local taxation (custom and excise) act of 1890, which placed so large a sum at the command of local authorities for the purpose of technical instruction.

It will be the aim of the authorities of the school to provide a practical scientific training of the highest kind in the chief industries of the district, so as to make it unnecessary for its youth to take advantage of foreign technical schools, leaving to the school board and other institutions the duty of providing for the subjects of a general education. Certainly no effort or expense will be spared to make the school efficient, alike in respect of its staff of lecturers and in the provision of the best appliances. The numerous technical schools which are springing up so rapidly in the smaller towns in southeast Lancashire will, it is to be hoped, create a liberal supply of students, able to take advantage of the splendid opportunities the new municipal technical school will offer for advanced instruction in the science and practice of its commerce and industries.

LEEDS.

Leeds is in the northwestern part of England, county of York, on the river Aire. Population (1891), 367,506; enrollment in elementary schools (1891), 69,432; (board schools, 45,844; voluntary, 23,173; board industrial schools, 415).

Yorkshire College, Leeds, affords provision for higher technical training; it includes an engineering school, chemical laboratory, and physical departments, an excellent dyeing school, and a weaving school. The Leeds Mechanics' Institution and Literary Society maintains art schools, a science school, and a school for theoretical instruction in mathematics, botany, iron and steel manufacture, mechanics, engineering, steam, physics, etc. Languages and shorthand are also taught. The school board for Leeds has shown a progressive and liberal spirit in respect to education. It has been active in urging the Government to do away with the policy of payments on the results of individual examinations, a policy abandoned in 1890. Its influence has been exerted in favor of the bill raising the age for the half-time employment of children to 11 years;[1] and it was one of the first school boards to take advantage of the free school act. Almost immediately after the passage of the act the board declared all of its schools free, excepting the higher grade school, in which the fee was reduced by the full amount of the fee grant, i. e., 10 shillings per capita yearly. The evening schools were also allowed the benefits of the act; all scholars who attend every session of a term having the whole of their fees returned, and others whose attendance is regular having a large portion returned. Provision has also been maintained in the schools for the subjects for which grants are made by the science and art department. In 1891 the amount secured from this source was about $9,000.

[1] The bill has just passed, and takes effect January 1, 1894.

Immediately upon the allotment of the surplus from the liquor duties to the county councils, the Leeds board took steps to secure funds (1) for the development of manual and technical instruction in day and night schools, and (2) for scholarships to enable promising pupils to continue their education in higher technical schools. The Leeds council accorded $15,000 for this purpose.

The Central Higher-Grade School for boys and girls was installed in a fine new building in 1889; here ample provision has been made for scientific and technical instruction suited to the grade. Accommodation is provided for about 2,500 pupils, and at the end of the second year (1891) the actual enrollment was 2,157.

The school prospectus sets forth the aim of the board as follows:

On a basis of elementary education, it is intended to superadd a system of higher education, which, at a moderate charge will train pupils for industrial, manufacturing and professional pursuits. This system of instruction will have its beginnings in the elementary school, but will be practically carried out in a three years' course beyond the standards (i. e., seven elementary years).

It will embrace such courses as—

I. The classical (or professional), in which Latin, mathematics, science, and drawing form the chief subjects.

II. The modern (or mercantile), in which French or German, commercial geography, mathematics, science, and drawing will receive most attention.

III. The scientific (or technical), in which mathematics, science, and drawing form the leading subjects.

Each course will in addition contain all the subjects of a sound general education in English. It is intended that pupils who have attended the full course shall be prepared for the matriculation examination of the London University, and the preliminary examination for arts, law, and medicine of the Yorkshire College, Victoria University; as well as for the preliminary examinations of the Law Society, Pharmaceutical Society, veterinary colleges, and for the Oxford and Cambridge senior local examinations. The work of the higher section will be found to embrace all the subjects for thoroughly preparing those who desire to become pupil teachers at the end of the first or second years' apprenticeship; and such a preparatory course, giving instruction in languages, science, and art, as well as in English subjects, should enable such students to pass well the pupil-teachers' examinations, and to take an honorable position in the examinations for admission to training colleges. Classes of boys and girls have already been formed for these examinations, and the text books used in the various courses are selected from those prescribed for such work.

It is the board's earnest wish that no promising child in the borough should be debarred from having a chance of securing a place in the higher-grade school, and therefore, 60 free scholarships, tenable for three years, making 180 in all, are open to competition each year to children of the public elementary schools of the borough, as an encouragement to continue the education of promising boys and girls, who might otherwise, from the circumstances of their parents, be removed from school. These free scholarships admit successful competitors to all the classes of the school, and text-books are provided for them free of charge.

The services of teachers having special qualifications have been secured for the school, and the teaching staff generally made as efficient as possible. With the school fees and Government grants, the working of the school will involve no cost to the rate payers. During the last financial year the school brought a "credit" to the rates on school maintenance account, amounting to £154 5*s.* 9*d.*, in addition to having provided free scholarships worth £2 each to 180 children.

The opening of the higher grade school has also, the board are pleased to observe, given an impetus to higher education in other public elementary schools in the borough, both board and voluntary. At Bewerley street, the board have felt it incumbent upon them to make supplementary provision for the south side of the river. A well-appointed laboratory, with 40 working benches, is provided, in order to make the study of chemistry practical as well as theoretical. There is an excellent workshop for manual instruction, containing benches for 60 students. The board have also in course of erection at Bewerley street, an assembly hall and school gymnasium, which they hope will be available for general use. The Bewerley street school will shortly be equipped with the necessary appliances for instruction in chemistry, practical geometry, machine construction and drawing, mathematics, etc., in accordance with the syllabus of the science and art department, and by means of the special accommodation now afforded, large advantages are expected to accrue to this important school, which has already 1,531 scholars on the rolls.

The report for 1888–1891 gives the following account of the new building of the Central Higher-Grade School:

The utmost attention has been bestowed on the lighting, warming, ventilation, and sanitary arrangements of the building. The fittings are of the most approved designs calculated to insure the comfort of the pupils and to secure the best educational methods. The chemical laboratory is one of the largest and best equipped in the Kingdom. The physical laboratory is fitted and furnished for enabling pupils practically to perform what the demonstrator has shown in the lecture theater. Commodious playgrounds are provided for recreation; and pupils coming from a distance can have their luncheons, warm if desired, in comfortable dining rooms.[1] The highest testimony as to the suitability of the buildings and the efficiency of the fittings was supplied by one who, from position and opportunities, may be regarded as the greatest English expert on school buildings and appliances, E. R. Robson, F. S. A., the consulting architect of the education department, to whom all the plans of schools in Britain have to be submitted for approval. As he has visited professionally the best European and American schools, special importance should be attached to his opinion: "I think this is the best and most completely organized I have seen."

Sir Lyon Playfair, K. C. B., M. P., formerly vice-president of the committee of council on education, on a visit to the school last year, pronounced it "the finest and best equipped school in this or in any country"—a testimony of the highest value from one who has visited the principal schools in Europe and America. On the occasion of the visit of the British Association to Leeds in September, 1890, the school was visited by many of the most eminent scientific and educational authorities, and it is a matter of gratification to know that the visitors were unanimous in lauding the school and its equipments. Sir Henry Roscoe, M. P., said: "I think that this is the best school I have yet seen in the Kingdom;" while Sir Philip Magnus expressed himself as "highly delighted with the structure and organization of the school; I have seen nothing better."

The gymnasium has been fitted with a great variety of apparatus, affording every gradation of exercise for young people of both sexes; and the greatest care is taken to prevent overstrain or accident, all the exercises being conducted under the personal supervision of a thoroughly qualified instructor and in the presence and with the assistance of the teacher of the class. The board, anxious to avail themselves of every opportunity for benefitting the scholars, have taken advantage of the recent circular on manual instruction issued by the science and art department, and have erected and equipped a commodious workshop, in which the training of hand and

[1]For a detailed description of the building see Record of Technical and Secondary Education, March, 1893, pp. 300-307.

eye will lead to that union so much to be desired in all industrial occupations—the union of drawing and practical handiwork.

The interest displayed by every boy in this practical workmanship will lead to that accurate perception of form and correct execution of hand which all manual and technical occupations require. It is the aim of the board to carry on in this school under the most healthful conditions the education of children to the fullest extent from elementary to secondary subjects, and yet without undue pressure. In order to give a practical training also to girls, cookery and needlework have always received attention in the elementary section; and arrangements have recently been made to secure efficient instruction for the pupils of the higher section in cookery and in the cutting-out of garments.

BRADFORD.

Bradford is in the northwestern part of England, County of York. Population (1891), 216,361. Enrollment in board schools, 23,305; average attendance, 19,981; (voluntary schools, no data).

THE BRADFORD TECHNICAL COLLEGE.

Bradford is the seat of a technical college which is the pioneer institution of its class in England. It was organized about fourteen years ago, and in 1880 was installed in a building built and equipped for its work at an expense of about $200,000. The institution comprises a day school, an art department, chemistry and dyeing department, textile department, engineering department, and evening science classes.

The day school is intended to prepare youths for industrial, manufacturing, and commercial pursuits, and for the examinations preliminary to professional studies. Boys are admitted at 12 years of age if they have passed the sixth grade of the elementary schools, or upon examination. The course combines modern languages, Latin, science, mathematics, and drawing, with technical instruction. The last named includes designing, weaving, manufacture of cloth, dyeing, engineering and metal work, building, woodwork, advanced drawing, modeling, and bookkeeping.

The attendance in 1890 was 261 students. The fees in the day schools range from £1 5*s.* to £4 4*s.* a term, or £3 15*s.* to £12 12*s.* per annum.

The school earns a large proportion of the grant from the science and art department on the results of examination, receiving in 1890 £1,156 16*s.* out of a total of £1,500 in the entire institution.

The art department, which is open to both men and women, is intended for students who contemplate art as a career, and also for designers, modelers, and art teachers. Three distinct courses are offered, i. e., a course of general art study; drawing and designing for textile students; architectural drawing. Instruction is given in both day and evening classes. The courses of the technical departments are conducted with special reference to the industries of which Bradford is a leading center, i. e., woolen manufactures and transportation.

The total number of students in 1890 was 1,100, of whom 400 were enrolled in the day classes.

The inclusive fee for all day classes in the general art course is £1 11*s.* 6*d.* a term; in the architectural £5; in the day classes of the textile department £2 10*s.*

In 1892 the Bradford County council created 90 day scholarships, and 60 evening scholarships, each tenable in this school for two years, and open to competition. Previous to this action between 80 and 100 scholarships were available in the different departments.

SCOTLAND.

The movement for technical instruction has not advanced so rapidly in Scotland as in England. In the northern division, Glasgow and Dundee are the chief centers of activity in this respect. The former is the seat of the Glasgow and West of Scotland Technical College, organized in 1886 by the union of several existing institutions. The Dundee and District Association has for its purpose the promotion of technical and commercial education in accordance with the recent laws. A great variety of classes, art, science, and technical, have been established under its auspices.

AGRICULTURAL EDUCATION.

The agricultural interests of the country have not been overlooked in the recent efforts to provide for the training of the industrial classes. The demand for graded and systematic instruction in the sciences applicable to agriculture as well as in its processes is widespread. At the same time the very nature of the districts in which this instruction is needed makes it difficult to meet the needs by local action. Prior to 1888 the work had been left wholly to private initiative, save that the principles of agriculture were recognized among the extra subjects for which grants might be allowed in elementary schools. In 1888 the proposition for an annual appropriation for agricultural education was passed, the same to be distributed by the board of agriculture. The fund distributed has increased each year, being £2,930 in 1888–'89; the following year £4,588, and rising to £6,705 in 1890–'91. Seventeen institutions in England and Wales, and 14 in Scotland, have shared in the grant. Of the former 8 and of the latter 7 are agricultural, including dairy associations. The remainder are distinctly educational. In their application of the funds recently placed at their disposal the county councils are doing much to foster this particular interest. University College of North Wales (Bangor), which was founded in 1883, and receives an annual grant of £4,000, has made extensive provisions for this subject.

The scheme of work at this institution includes "the establishment of three dairy schools at Welshpool, Denbigh, and Bangor; the delivery of 'extension' lectures on agricultural subjects over six northern counties of Wales; the conduct of field experiments; the establishment of classes for schoolmasters in agricultural subjects; and of a complete col-

lege course of instruction for agricultural students;" all of which has been inaugurated. The parliamentary report on the distribution of the grants for agricultural schools says of this work:

The college possesses exceptional advantages for carrying on the work it has undertaken in this connection, for it is situated in one of the most thickly populated agricultural districts in North Wales. Facilities are also claimed on its behalf for dealing with the bilingual difficulty, which is one of the great obstacles to the spread of agricultural education in the principality, while the governing body of the college is thoroughly representative of every district in North Wales.

It has been shown that a most complete system of agricultural education can be organized by this college; one which will not only fulfill its own proper duties in the six northern counties of Wales, but forms a type on the lines of which it may be feasible to organize systematic agricultural education throughout the kingdom.

Citations from second report of the royal commission on technical instruction appointed 1881, report issued 1884.

It will have been seen from the preceding pages of this report that we have attached considerable relative importance to that portion of our commission which directed us to inquire into the condition of industry in foreign countries; and it is our duty to state that, although the display of continental manufactures at the Paris International Exhibition in 1878 had led us to expect great progress, we were not prepared for so remarkable a development of their natural resources, nor for such perfection in their industrial establishments, as we actually found in France, in Germany, in Belgium, and in Switzerland. Much machinery of all kinds is now produced abroad, equal in finish and in efficiency to that of this country, and we found it in numerous instances applied to manufactures with as great skill and intelligence as with us.

In some branches of industry, more especially in those requiring an intimate acquaintance with organic chemistry—as, for instance, in the preparation of artificial colors from coal tar—Germany has unquestionably taken the lead.

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It may not be improper to mention here that, in whatever degree the technical instruction of our continental rivals may have trained them for competition with ourselves, in their own, in neutral, and to some extent in our own home markets, much of their success is due to more painstaking, more pliancy, and greater thrift; and also to the general cultivation, the knowledge of modern languages, and of economic geography usually possessed by continental manufacturers.

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In art manufactures proper, notably in porcelain, earthenware, and glass, as also in decorative furniture, our productions are of conspicuous excellence. It is possible that this may be due in a certain degree to the employment in some branches of skilled workers trained in foreign countries, and we can not do otherwise than acknowledge the preeminence in the main of our French neighbors in design as applied to decorative work, or disregard the efforts which they are making to maintain that preeminence and those made in Belgium and Italy to emulate them.

After reference to the superior industrial organization of Great Britain in the first quarter of this century, to the fact that her factories were then the chief industrial schools of the world, and the source of the impulse which led France, Germany, and Switzerland to create schools of technology, the commissioners add:

Technical high schools now exist in nearly every continental state, and are the recognized channel for the instruction of those who are intended to become the technical directors of industrial establishments. Many of the technical chemists have, however, been and are being trained in the German universities. Your com-

missioners believe that the success which has attended the foundation of extensive manufacturing establishments, engineering shops, and other works on the continent, could not have been achieved to its full extent in the face of many retarding influences had it not been for the system of high technical instruction in these schools, for the facilities for carrying on original scientific investigation, and for the general appreciation of the value of that instruction and of original research which is felt in those countries.

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Your commissioners can not repeat too often that they have been impressed with the general intelligence and technical knowledge of the masters and managers of industrial establishments on the continent. They have found that these persons, as a rule, possess a sound knowledge of the sciences upon which their industry depends. They are familiar with every new scientific discovery of importance, and appreciate its applicability to their special industry. They adopt not only the inventions and improvements made in their own country, but also those of the world at large, thanks to their knowledge of foreign languages and of the conditions of manufacture prevalent elsewhere.

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The commissioners assert, furthermore, the inferiority of Great Britain to continental countries with respect to the number of efficient secondary schools. The best preparation for technical study they observe "is a good modern secondary school of the types of the Manchester grammar school, the Bedford modern school, and the Allan Glen's institution at Glasgow." Unfortunately, our middle classes are at a great disadvantage, compared with those of the continent, for want of a sufficient number of such schools. The transfer of the functions of the endowed schools commissioners to the charity commissioners has not had the effect of increasing the rate of progress in the reorganization of our secondary schools. We consider it to be essential that steps should be taken to insure that this work shall be carried on with greater vigor in the future than it has been hitherto.

They dwell also upon the lack of science instruction in the elementary schools, and the need of drawing as an universal branch of instruction. With reference to this subject they say:

We can not too often call attention to the extraordinary efforts which are being made abroad for instruction in art, more especially as applied to industrial and decorative purposes, and to the important influence of this instruction in furnishing employment for artisans on the continent. Without depreciating what has been done in this direction by the schools and classes under the auspices of the science and art department in this country, and whilst fully alive to the importance of the organization which tends to the diffusion of art instruction over a wide area, your commissioners can not conceal from themselves the fact that their influence on industrial art in this country is far from being so great as that of similar schools abroad. This is due, no doubt, to some extent to the want of proper and sufficient preparation on the part of the students, owing to the inadequate instruction they have received in drawing in the elementary schools.

Citations from the report of a technical instruction committee appointed in 1891 by the council of the city of Manchester to visit and report on certain institutions and schools of the Continent "devoted mainly to technical and scientific instruction as applied to industry."

Your deputation was much impressed by the position given to technical education all over the Continent. It is not a subsidiary portion of educational work, nor yet an exotic, but is all-pervading, and is as much a part of the life of the people as is elementary education. As a matter of fact, it is an integral part of the educational system of the Continent, and being so, the lower schools are arranged to minister to

the technical schools and to send up a supply of prepared students. It is difficult to overestimate the value of this grading process in regard to education, securing as it does economy of work on the one hand and thoroughness of work on the other. If we take the rough division sometimes used, and speak of the modern or scientific side of education in contradistinction to the classical, then it must be acknowledged that the former has achieved a position of importance abroad not yet allowed it here, with the further result that provision is made at an early stage for specializing study with a view to future occupation and the kind of life a youth is destined for. Accepting the definition of the act of 1889, that "technical instruction shall mean instruction in the principles of science and art applicable to industries, and in the application of special branches of science and art to specific industries or employments," it may be said that such instruction is seriously regarded abroad, and is practically carried out on a scale implying a settled belief in its value and importance.

It may be of advantage to briefly summarize the general impressions left upon our minds by the visits we made.

Chemistry and physics.—The preeminence of continental schools in these subjects is admitted, and we only desire to express our sense of the extent and thoroughness of the teaching and of the costly character of the equipment.

Drawing.—Exceptional prominence is given to this subject, and the teaching of it is subdivided and specialized to a remarkable degree, it being hardly too much to say that, as the three R's are to general education, drawing is esteemed to be to all branches of technical knowledge.

Museums and libraries.—The provision of museums and libraries for educational work in schools is almost universal. Even at an ordinary primary school in Zurich we saw a museum of natural history, and other specimens, for use in teaching, of quite a superior kind; and so in the higher schools, where the libraries more especially are good; scientific books and periodicals, and also specifications of patents of all nations, as well as collections of fabrics, being amply supplied and commodiously disposed for the use of students.

Industrial technical schools. Weaving.—It is interesting to note that nearly all the schools of this class were begun by private enterprise. At Chemnitz, at Mulhausen, at Lyons, this was so, and the fine school at Roubaix had for its foundation schools of a similarly constituted kind. There can be no doubt that these schools have been of great value; possibly enough, the supremacy of Lyons in the silk trade may have been to some extent due to having such a school.

Commercial training.—Much attention is given to the teaching of modern languages and to the technique of commerce. For instance, at Lyons we saw a class at work in which a knowledge of languages, of the products of various countries, of the theory of exchange, of freights, of fiscal duties, and all the routine of a shipping business was being taught. The weaving and dyeing schools, too, over and above their use to those who are to engage in production, have a strictly commercial value, and may be used so as to equip the salesman and the commercial traveler.

State and municipal aid.—It may be taken that none of the schools are self-supporting. Aid is given to some by private persons, but in the main the state and the municipality supply the necessary means, usually in conjunction. Probably it is owing to the cooperation of these authorities that education is so completely systematized. The municipalities of Paris and Berlin are largely engaged in educational work, and so also are the Swiss communes. It is said that the educational rate of the canton of Zurich absorbs nearly one-third of the total expenses of the canton.

Aim and object of technical instruction abroad.—For whom is this large provision of scientific knowledge as applied to industrial pursuits intended? For the ordinary workman? Scarcely so, as such. In France there are schools which are meant to supplant the apprenticeship system, and in Germany and Switzerland there are also some minor attempts to do the same thing, but the principal aim is to give instruction

of a higher kind than could possibly be given all round and really to equip those who are to guide, direct, and by the use of special knowledge, develop industrial work. It is in this direction that our deficiency lies. No one doubts the relative value of the English workman in comparison with the foreign one, but wherever fresh adaptations and scientific knowledge are needed, we are, and have have been, deficient. That an amount of technical education of an elementary kind can be given in ordinary schools to large numbers in evening classes is perfectly true, and such teaching will be of great value, but the higher and more specialized teaching must of necessity be restricted. It will be the duty of those in charge of such higher classes and schools to see that due provision is made for, and scope given to, exceptional ability and exceptional application. Remission of fees and scholarships are general abroad, and the same means wisely used here will be the avenue by which every qualified person, however humble his or her circumstances, may find a ready entrance. Moreover, special provision should be made for aiding workmen who desire to acquire wider knowledge of their own work than their situations afford the opportunity of obtaining.

Position in Manchester.—There is reason to be proud of the educational institutions of Manchester. In our midst are all the elements of a perfect and orderly system of education, from the primary school to the degree-granting university. The weakest link of what may one day become a chain is the technical school. Up to two years ago, this school was maintained by voluntary effort, and the community should honor the men who have done this work. The school is now inadequate to the demands made upon it, and its further expansion under voluntary aid is impossible. The city council, by accepting the technical instruction act, may be said to have contributed to render it so. Whether, apart from the application of the rates in aid which have effectually cut off private donations, an adequate school or technical college could have been erected and maintained, it is hardly worth while to inquire; events have put it out of the question, and it is certain that considerable sums of money will yet be needed to adequately extend and worthily maintain the school.

Is such a school really needed?—Our answer is, yes. Times have changed and are changing rapidly. Are we or are we not to prepare our people for the industrial struggle in which they are already launched, and which will inevitably be more accentuated as time goes on? Many of the towns we visited possessing institutions in which commercial, scientific, and industrial training is given on a scale with which we have nothing to really compare, have but populations of from 80,000 to 120,000—no more than one-fifth the number of our city; and when we think of the position of Manchester as the commercial capital of Lancashire, any comparison becomes almost ludicrous, and the efforts as yet made by us appear utterly insignificant.

In my opinion a school or college for technical training should be founded on broad lines. Lancashire ministers largely to Manchester; our interests are one, and we shall be acting wisely if we foster the relationship and make yet another bond of interest. It is worthy of note that the authorities have decided to use the money allotted to them by the Lancashire County Council in establishing scholarships at the Manchester Technical School, and that two others are about to do the same. A school adequate to our needs should aim at fostering the smaller as well as the larger industries. The cotton trade has overshadowed every other in this district, and it may indeed have thus led, indirectly, to the neglect of other less important branches of business. In the north of Manchester forty years ago there was a considerable silk industry, and the important business of braid manufacturing, too, has languished, and follows in place of leading. Had there been a school in which the newest methods and the latest machinery could have been shown, efficient aid to these industries might have been given. These illustrations are but offered to enforce what your committee feel strongly, that industries trifling in size when compared with the enormous cotton industry do yet in the aggregate employ a large number of persons, and it will be found that the prosperity of this, and indeed of

any large urban community, is stable in proportion to the variety of occupations and industries carried on. It may fairly be argued that a good technical school would probably result in attracting certain industries to the district. If, for instance, electrical engineering were well and adequately taught, firms engaged in the making of electrical appliances would find it to their advantage to locate themselves here.

Classes for women.—With the exception of Paris, the recognition of the need of industrial training for women does not appear to be much more general and advanced abroad than with us, and as much of what has already been said in this report applies equally to both sexes, we need only add that if, among its other efforts, a school such as has been here indicated can effectually assist women to support themselves and to earn an independent position it will prove a boon to the community.

Training for teachers.—It may reasonably be doubted whether, considering the vital importance to the community of the teaching staff of our elementary schools, anything like sufficient care has been given to the training of teachers in matters relating to technical instruction. This branch of work may well engage the attention of the directors of such an institution.

Conclusion.—The field is wide enough—science and art as applied to engineering, spinning, weaving, dyeing, printing, and all the varied industries of which Manchester is the center. Already a good beginning has been made. The extent and success of the school-board work in the evening classes demand our acknowledgments and congratulations, and the technical school under all its difficulties has done great things. It remains for the Manchester corporation to press forward the work and to enlarge its scope, and we desire to express the opinion that in doing so we shall not only be accepting a duty but acting so as to stimulate the material prosperity of our city. Manchester was the first place to accept and put into force the free public libraries act, and there is now an opportunity of again taking a step forward in the direction of popular education.

The ideal school of Manchester would be one the analogue of which is found in the great art school of Vienna, which is designed to teach the application of art to industry, and in the Polytechnicum of Zurich, with the difference that, whereas at Zurich the science teaching aims at the highest theoretical training, such as the Owens College offers, ours should aim more especially at its practical application. In it also should be given commercial training of the highest order. Such a school might well call forth our best efforts, and, if made sufficiently comprehensive, might perhaps insure cooperation and aid from other county councils. Adequately carried out, with ample space and equipment, it would place our city in the most favored position in regard to the technical instruction of its people.

Citations from the report of a deputation appointed in 1891 by the council of the Manchester Technical School to visit and report upon certain technical schools and institutions on the continent and in England.

There is in every continental city we visit abundant and striking evidence of the interest taken in the education of the people of all classes. Schools abound everywhere, and all are so organized and graded that no gap exists between the lowest communal school and the highest educational institution. The importance of scientific instruction and training is exemplified in the numerous technical and industrial schools of every kind, which are accessible to the poorest, and especially to those who show capacity. So far as we could observe, there is no attempt to confine the benefits of these institutions, however advanced their character, to any particular class. They are open to the fit and capable of all ranks of industrial life. Nothing, for example, can more evidently manifest the importance attached to technical training by the German Government than the fact that, while the schools for general culture are under the supervision of the minister of instruction, those for technical teaching

are placed in the hands of the minister of commerce. The industries of the country and the means of educating those engaged in them in the principles which underlie their successful development are thus closely and officially associated and their interdependence clearly proclaimed. Measured by our standard, the fees are nominal; in some cases, like that of Roubaix (weaving and dyeing), not only are there no fees but all materials are gratuitously supplied. In every instance there are numerous free places for those unable to pay the fees. The abundant supply of preparatory schools, the extended school age, ranging up to fourteen years, and the ample provision for continued evening education, have created a large body of well-prepared students, who are therefore much more numerous than is the case in this country. There is, hence, no difficulty in providing recruits to the higher scientific and technical institutions. This has had two results: first, the supply of a large number of well-trained foremen, managers, and employers; secondly, the creation of a class of competent men as teachers of science and technology. The forethought of continental governments in this respect may be compared, in several very interesting and striking directions, with our own want of prevision. For instance, when this council has required the services of a competent instructor of the chemical, dyeing, and calico-printing classes, it has been found indispensable to engage one who has been trained in a foreign technological institution for that important section of its work; and it is well known that many of our leading firms experience almost insuperable difficulty in finding among our own countrymen that combination of scientific with practical knowledge by which alone they can hope to compete with their continental rivals.

There is no pretense that the fees in any of these institutions can be made to defray their expenses except in rare instances, and where they do so it will be found, as in the case of Muhlhausen, that the schools are in the hands of the manufacturers, and very high fees are charged. It is recognized as a duty by the municipality and the government that the amplest provision should be made and no expense spared to provide the best buildings, the most complete equipment, and the most efficient teaching. It is accepted as an axiom that industrial progress largely depends, and will more and more depend, upon scientific knowledge and artistic skill, and that the race is not so much to the strong as to the well informed and thoroughly trained. If this be true, there is little doubt that the efforts now being made by continental nations are deserving of our most serious attention.

We received information which shows that the danger to our industries by the better-instructed managers of continental manufacturing concerns is by no means imaginary. We are annually importing, principally from Germany and Switzerland, about three million pounds in value of chemical manufactures, coal-tar dyes, colors, and pigments, without reckoning medicinal preparations. There is no sound reason whatever, except the want of high technical training, why all these products might not be made in England, whence the greater portion of the raw material required for their manufacture is obtained. In like manner such branches of manufacture as braids, trimmings, and thread gloves, formerly a considerable business here, together with other articles of trade, have been latterly carried off to the continent, which now largely supplies these goods to our English market.

We were especially struck with the instance of Switzerland, a country laboring under many and great disadvantages. It is obliged to import all its raw materials and export its manufactures under great disabilities of cost of carriage and distance from its sources of supply and sale, yet it succeeds in carrying on a considerable foreign trade, especially in fine chemicals, the creation of which is due entirely to its splendid polytechnic school at Zurich. We were, moreover, impressed with the fact that Switzerland is engaged in a new industry, namely, the manufacture and export of highly educated scientific men. It is recognized that the country is too small to support its increasing population; that its sons must obtain their living elsewhere than in their own land, and that to enable them to do so with success the means of

obtaining the finest scientific training must accordingly be thrown open to every capable Swiss on nominal terms.

There is no district on the continent which can for a moment compare in industrial importance with that of which Manchester is the center. The engineering, textile, and dyeing and printing industries here immensely transcend in extent and value those carried on in a like area in any foreign country; and yet the means we possess of training those who are to have the management of our great industrial concerns, or those among our working classes who may rightly aspire to positions of trust by reason of natural fitness and aptitude, would certainly not compare with the provisions made in a second-rate German or Swiss manufacturing town.

It has been said that our workshops are the finest technical schools in the world; but to say this and expect it to be taken as a final and sufficient reply to all demands for additional means of technical instruction is to mistake the meaning and object of technical training. By this should properly be understood that education which enables a man to grasp and turn to account those scientific principles upon which our industries depend. Moreover, the conditions of workshop life do not permit of that combination of theoretical study with practical instruction which the technical school is intended to supply.

We do not suggest that the methods of continental countries should be followed in all respects. The conditions of industrial life are not the same here as there, and modifications to suit our own peculiar circumstances and needs are therefore necessary. We are convinced, however, that the advantages of industrial education there enjoyed ought to be placed within the reach of our own countrymen to an equal extent.

At Crefeld, for example, your deputation met three young Englishmen who had been students in the spinning and weaving branch of our technical school in Peter street, and who had come to Crefeld in order to obtain a thorough training in the spinning, weaving, and dyeing of silk. These youths had been detached from home influences, and, at great expense, been sent to a foreign country to learn what ought to have been accessible to them at their own doors—surely a potent argument for the extension of our work in a new and enlarged building.

We submit that Manchester requires the establishment of a technical school of the highest character; that is to say, a building adequate in space and accommodation to the needs of its important engineering, building, textile, and chemical trades, together with a complete staff of competent teachers and an ample equipment for effective practical instruction by means of laboratories, workshop appliances, apparatus, models, and examples.

The experience of foreign countries shows conclusively that such a school can not be made self-supporting; that, on the contrary, the lower its fees, if safeguarded by suitable entrance examinations, the more service it can render to the community.

With a view of bringing the school within the reach of the working classes, numerous competitive scholarships, extending over two or three years, are necessary, by which may be provided the outlay for fees and books, and, in some measure, the loss in wages.

An institution of such magnitude can not, with any security for its effective working and development, be left to depend on private resources or on uncertain means of income; and it would therefore, perhaps, be most suitably supported from public funds, such as those now available under the technical instruction act, 1889, and the customs and excise act, 1890. As a matter of course, adequate representation under such conditions would be provided.

J. H. REYNOLDS,
Secretary of Committee.

MANCHESTER, *July 18, 1891.*

CHAPTER VI.

TRAINING OF TEACHERS IN GERMANY, AUSTRIA, AND SWITZERLAND.[1]

CONTENTS.

TRAINING OF TEACHERS IN GERMANY, AUSTRIA, AND SWITZERLAND.

INTRODUCTION.

How to prepare the teachers for their profession, or (if the reader is disinclined to admit that there is a teaching profession) their occupation, is undoubtedly one of the most important educational questions. The elevation of the common school depends upon it; indeed, the degree of general and professional culture of teachers determines the degree of culture of the vast majority of the young, and even of the entire people. This causal connection between the general culture of a nation and the instructors of its children, stamps the question under discussion a state question, a question of policy as momentous as the establishment and maintenance of schools themselves.

True it is that the facilities for acquiring knowledge, after school age is passed, are abundant; all the agencies of modern life, the press,

[1] By Dr. L. R. Klemm, specialist in German education.

public business, and rapid communication make knowledge easily accessible; but the discipline which school alone gives, life can not furnish.

If, then, we bear in mind that the elementary school is not merely a "knowledge shop," an institution for the acquisition of the elements of knowledge, but a place where the young are to be trained to become "intellectually active, civilly useful, and morally good men and women,"[1] we shall see how important is the question of proper preparation of teachers. The value of a school is always in exact proportion to that of the teacher, hence the elevation of his intellectual and moral culture is necessarily the first step to be taken in reforming or improving the schools. To the recognition of this self-evident truth we owe the establishment of special institutions for the preparation of elementary school teachers.

Naturally, in looking about among the nations of the civilized world to ascertain what had been done in this direction, the attention of the French authorities was directed to Germany, or, properly speaking, to the German-speaking nations. During the administration of M. Guizot the French minister of public education, M. Cousin, visited several states of Germany, and reported to his superiors upon the condition and organization of schools in that country, particularly in Prussia. A large part of his report was devoted to the Prussian training schools for elementary teachers. He translated the name *Schullehrer-seminarien* by the term *Écoles normales primaires*. The fact that similar institutions in the States of New York and Massachusetts were called normal schools (literally model, or proper schools) proves that Cousin's report was read by the educational authorities in this country when they established such schools. Of Horace Mann, the secretary of the Massachusetts State Board of Education, the notable reformer of American schools, we know that he inspected the German schools, and held them up as models to be followed. Likewise, in England the German teachers' training schools were taken as models for similar institutions through the influence of Matthew Arnold and Joseph Payne; only here they were called "teachers' training colleges." Thus we see that the civilized nations assiduously studied and imitated the German system of professional training of teachers.

Says Dr. Ed. S. Joynes, professor of modern languages in the University of South Carolina:

> Germany has now become the schoolmistress of the world. The distinctive qualities of the German mind—industry, patience, microscopic precision, combined with high ideality, depth of insight, with height and breadth of view and thorough intellectual consciousness—have made the Germans first in every department of research and scholarship. As investigators and teachers they are unrivaled. Their schools, seminaries, and universities are the foremost in the world. In almost every department of pure or applied science they lead—in some without competitors. In the regions of abstract thought or of pure scholarship, their preëminence is still more decided. All the civilized world goes to school to Germany.

[1] School laws of several Swiss cantons.

The German teachers' seminaries are the pioneer institutions for professional training of teachers; hence a historical review of the normal-school movement in central Europe, accompanied by an exact statement of the present status, will give us a firm basis of comparison with our own institutions. "If thou wouldst know thyself, look at others; if others, look into thine own heart."

I.—HISTORICAL REVIEW.

Wherever a school degenerates, it does so because of its teachers; wherever a school advances, it is by means of better teachers. There is no other way. (Diesterweg.)

In Germany, where the "people's school" (elementary school) came into existence through the impetus which Martin Luther gave to general education, it was Duke Ernest (the Pious) of Saxe-Gotha, who, first among the numerous rulers of Germany, conceived the idea of establishing institutions for the practical preparation of teachers. This was during the second half of the seventeenth century. Death, however, prevented him from executing his plan, which was realized by his grandson, Duke Frederick II (1693–1732). He established in his small dominions ten normal schools (Lehrerbildungs-Anstalten), called "seminaria scholastica." It was done by inducing ten of the best schoolmasters to aid applicants for positions in preparing themselves for the vocation. Buildings were not erected for the purpose.

In connection with this historical fact, it may be well to show the origin of the word *Seminar*, or seminary, which is the technical term in Germany for normal schools, or professional schools for teachers. The word *seminarium*, from *semen* (seed), means seed-bed or nursery, and is very old. Livy used the word in a figurative sense when he called the Roman equites the nursery (*seminarium*) of the senate. Cicero called the forum the nursery of oratory. During the Middle Ages, convent schools in which the clergy were prepared were called *seminaria*, and later, after the revival of letters, the classical schools were termed *seminaria-humanitatis*. The technical term *seminar* (in German), applied to teachers' professional schools, came into use much later, since, previous to the seventeenth century, no one thought of professional preparation of teachers, but the close connection of school and church made the application of the technical name for priests' schools to teachers' schools a matter of self-evidence.

A. H. Francke (1663–1727), the founder of the great educational institutions in Halle, saw the absolute necessity of well-educated teachers, and founded his *seminarium præceptorum*, which was, however, more intended for secondary teachers.

The first real normal school or seminary for elementary school teachers in Germany was established in Berlin by J. J. Jecker, in 1747, who connected with his realschule (modern high school), a school for teachers where young men received professional training, so that they

could take positions in the parish of Trinity Church. To the capital of modern Germany, then, we may credit the beginning of that movement which has since been followed in all civilized nations. In rapid succession other normal schools or seminaries have since been established all over Germany, Austria, and Switzerland.

These normal schools were not independent institutions, but were connected with other schools, such as city schools, gymnasia, realschulen, and orphan asylums. The students participated in the common instruction, and besides received special lessons in pedagogy, catechetics, music, etc. At the same time, and from the very beginning of normal schools in Germany, it was made the rule that the students should get practical preparation by actual teaching in experimental or practice classes. Until the beginning of the nineteenth century the instruction offered in the normal schools was confined to the common-school branches and accomplishments.

Since then, and especially since the memorable rejuvenation of Prussia after 1806, normal schools have been greatly improved in their organization, aims, and results; but along with the great diffusion of knowledge, with the development of the science of pedagogy and the increased demands made upon the elementary schools an opposition to the normal schools planned merely as a continuation of the elementary schools, arose, which spread in ever-widening circles through Germany, Austria, and Switzerland. In the last-named country the agitation has not yet quite ceased.

"A glance into the history of our seminaries," says Dr. Rein,[1] "would show us that the development of the teacher's education has followed more in the wake of accidental needs—and hence often entered upon wrong roads—than a uniform plan, which, based upon principles, would have led on to a gradual completion of the proposed structure."

The first attack upon the normal schools in Germany was made at the beginning of this century. In 1809 an essay appeared in the Silesian Provincial Gazette, entitled, "Some obstacles in the way of progress of our country schools." The author complained about the unsatisfactory results of the elementary schools, and about the conceit of the teachers who had graduated from normal schools. Mr. Daniel Krüger, the principal of a normal school, replied to this attack, praising the practical skill of normal graduates and lessening the force of the reproach that they were trained to pride and refractoriness.

In 1824, Pustkuchen, in his book Criticism of the Schools, criticised the normal schools severely. He blamed them for trying to make of their students universally educated men, without the requisite of a thorough secondary (or preparatory) training, and, as he stated it, "for allowing them to taste all possible fruit of science, and failing to give opportunity for thorough digestion and assimilation." * * * "Even

[1] In Pädagogische Studien, No. 4, p. 1.

the most renowned seminaries," he said, "resemble those brilliant 'finishing schools,' in which pupils know everything so long as they are in school and the froth bubbles over the edge of the glass, but who really know nothing well when examined five years later."

In 1828 the Bavarian school inspector, Dr. H. Stephani (the reinventor of the phonetic method of teaching reading, now universally applied in Germany) was dissatisfied with the results of the normal schools as then conducted, and said in his book (On Gymnasia, their True Object, etc.) that the preparatory education of all who intend to devote their lives to teaching should be acquired in classical high schools (gymnasia); but in these schools three languages should be taught as obligatory studies: German, the mother tongue; Greek, the language of the most cultivated people in history, and a modern language (French, English, or Italian). He wrote:

> Our normal schools have hitherto not been able to do what they might have accomplished. They admit students who are insufficiently prepared, and fritter away valuable time in filling gaps in the student's education, which time might be more profitably employed in the real art and science of education. That, nevertheless, we find among elementary teachers so many well-educated men, is not to be credited to the efforts of normal schools, but to individual talents and love of culture. If the education of the whole nation is to be improved, it will be necessary first to educate the teachers better, and to give them a technical preparation commensurate with the duties they are to perform.

With still greater emphasis Dr. Weber, of Bremen, insisted upon a preparatory training of normal school students in secondary colleges, at least up to the senior class; but instead of a modern language, he favored Latin. During the decade from 1830 to 1840, the criticism of the normal schools became general all over Germany, and men of all grades of society demanded a better preparation, saying that the normal school should be a professional school, pure and simple. The teachers themselves raised their voices, claiming that the superficial training they had received in the normal school almost disqualified them from acquiring a better intellectual education after graduation. They claimed this to be based upon experience.

Wuntschli demanded, in his Pedagogical Letters from the Rhine (1845), that the teachers, like all other professional people, should receive their general education in secondary schools that lead up to the university, which should be the common vestibule of all the learned professions. The state should apply the appropriation, now used for maintaining normal schools, for the support of candidates in secondary and higher seats of learning; and it should appoint professors of pedagogy, didactics, and methodology in the latter. He, too, thought that the training of normal-school students was anything but advantageous for subsequent acquisition of intellectual culture, saying, "that there is so much beautiful order in normal schools, so much diligence and punctuality, that at first glance one is delighted, but it will not do to make a minute inspection, for soon the fact is revealed that most

of the work consists of soulless mechanical drill, and that the will of the students and their characteristic traits are stifled. Youths," he said, "who are ordered when to eat, pray, work, and sleep are scarcely able to move about in life with freedom and ease."

Harcort, in his Conditions of the People's School (1846), denounced the convent life of the normal-school students.

> Young men who are expected to educate children for life should learn to know life, so that they may utilize its educating momenta, counteract its degenerating influences, and thus meet the just demands of life. The feeling of independence and self-reliance underlying every manly character can only be acquired and fostered if the young men are frequently allowed to determine their own actions.

The powerful political movement of 1848 (commonly styled the revolution of 1848) made itself felt in the schools. Scarcely had the events of March, 1848, given to the Germans the right of free speech and unmolested meeting, when the teachers began to raise their voices and give expression to their wishes and opinions. Numerous teachers' meetings were held, and petitions sent to the Government. As early as March 31 of that year Dr. Friedrich Kopp, the principal of a gymnasium in Hamm, Prussia (province Westphalia), published an "Appeal for reform of German national education," the thirty paragraphs of which gave rise to frequent discussions in meetings and in print. The principles Dr. Kopp expressed were generally accepted by the teachers' fraternity.

The greatest success of all the many petitions prepared was the one composed by a deliberative assembly of 600 teachers in Berlin, and addressed to the deputies and representatives of the people of Prussia. The main points of this petition referring to the training of teachers were:

> (1) The professional school for teachers should be a branch of the university and should offer both a theoretical and a practical education. (2) He who intends to devote himself to the profession of teaching must have graduated from a secondary school that leads up to the university.

This example of public discussion of their own interests, given by the teachers in Berlin, was followed by others in the chief cities of the Kingdom of Prussia, and other parts of Germany. We quote some of the expressions of that period to show the divergence of opinion:

> (1) According to the bill of rights it must be left free to him who intends to devote himself to teaching to prepare himself for that purpose in the way he sees fit. (The teachers of Frankfort and Göttingen.)
>
> (2) The normal schools (*Seminarien*) are the only and hence necessary institutions of learning for elementary teachers. Every candidate for a position as teacher must have passed through a normal school. (Teachers in Pomerania.)
>
> (3) Normal schools should be established in university towns where candidates may have opportunities for hearing the lectures. (Teachers in the provinces of Silesia, Brandenburg, and Prussia.)
>
> (4) In all university towns, and, if advisable, in other large cities, institutions for theoretical and practical training of teachers shall be established. (Teachers in Prussia and Saxony.)

(5) The conditions for admission to a normal school should be the preparation offered in a secondary school, and should not be less than is required for graduation from a "higher citizens' school;" in addition to this, the necessary musical preparation should be required. (Teachers in Silesia, Saxony, Posen, Pomerania, and Westphalia.)

(6) Candidates for admission to the seminary must prove to be in possession of the necessary technical accomplishments, as well as the same degree of scientific training required of graduates of modern high schools (*Realschulen*), with the exception of the study of Latin and English. (Rhenish Prussia.)

(7) The state has the duty to organize the secondary schools in such a way that in them candidates for the profession of teaching may obtain a preparatory education which will entitle them to admission to higher seats of learning. (Frankfort.)

(8) The convent or barrack life of the students of normal schools must cease. (Silesia and Brandenburg.)

(9) The student must be freed from convent discipline. (Pomerania.)

(10) In future no dormitories shall be connected with normal schools, but the students may board in private families; they must have the liberty of university students. (Posen and Mecklenburg.)

Even in the national assembly at Frankfort the school reform problem was ventilated repeatedly. The following are some of the resolutions of that famous congress:

(1) Knowledge and the teaching of knowledge are free. (2) Supervision of educational institutions is reserved exclusively for the state, and is, except with respect to religious instruction, withdrawn from the clergy. (3) The establishment of educational institutions is free and the profession of teaching open to everyone who can prove to the satisfaction of the authorities that he is capable and sufficiently prepared. (4) Instruction in the people's and lower industrial schools is gratuitous. (5) Indigent pupils shall be admitted free in any public school of whatever description or degree. (6) It is left free to everyone to choose his own profession and to prepare himself for it as he thinks fit.

In Bavaria the reorganization of the training of teachers was commenced energetically. In October, 1848, a meeting of the circuit school inspectors of the Kingdom was held, Pres. v. Welden, a high government officer, in the chair. The subject of discussion was a new scheme of regulations prepared by Dr. Jacobi, expressing fundamental principles which found enthusiastic approval among the teachers of the Kingdom and other parts of Germany. Dr. Jacobi recommended the abolishment of the normal schools with their antiquated preparatory institutions and the establishment of new preparatory schools for teachers, the graduates of which would have to enter higher professional schools (*pedagogiums*) or the university. He thought that admission to these higher professional schools should be granted to all graduates of preparatory schools and to those who had passed the graduation examination without having attended the schools. He claimed that the young would-be teacher should be educated, like the candidates of any other profession, in the family and public life, "for the future teacher must grow up in liberty, and liberty is to make him worthy of its blessings." The professional course in the pedagogium was to be followed by a three years' course of practice in school. Those, however, who aimed at leading positions and reached a certain degree of

excellence in their studies were to be allowed to enter universities, there to attend pedagogical lectures and others which would promote general culture. After the completion of this course such candidates would have a first claim upon positions in secondary and normal schools.

A Congress of 900 teachers of the Kingdom of Saxony (August 3–6, 1848) adopted the following resolutions:

The teachers of the various public educational institutions should acquire the necessary knowledge and preparatory training in secondary schools (either classical or modern, Gymnasia or Realschulen), and after that obtain a professional training in normal schools (seminaries) which are equal to the advanced demands of the time, and in which graduates of universities act as teachers who have proved to be excellent theoretical and practical educators. To confine the students of normal schools to barracks should not be allowed.

All the beautiful hopes and expectations arising from the revolutionary movement in 1848 were shattered when the political reaction set in, and the conservative governments in Germany succeeded, at the point of the bayonet, in reestablishing the old order of things. After the waves of the eventful years 1848 and 1849 had calmed down everything was removed which recalled the attempts at liberating and elevating the profession of teaching.

Prussia, which after the calamitous year 1806–'7 had devoted itself to the promotion and elevation of elementary schools by establishing normal schools and directing the entire educational system of the Kingdom in the Pestalozzian spirit, thus giving a shining example to all the other states in Germany, this same Prussia now contemplated the abolition of all normal schools. According to the ideas of the conservative party then in power, the elementary school had not stood the test; had not proved an institution destined to preserve the state.

Had not [said Curtmann, in his Reform of the People's School] the years 1848 and 1849 which had opened so many "whited sepulchers" also torn away the veil of imaginary excellencies of the German school system and exposed to view its withered, distorted countenance? After the schools, through Dinter's successful work of supervision, had become a nursery of tame, flat, self-satisfied rationalism, they had, through Disterweg's agitation, since 1830 assumed a naturalistic-democratic air, and, next to the army of literary paupers, no profession worked so assiduously and so successfully in poisoning mind and heart of the German people as did the teachers of the people's schools.

Thus spoke the conservatives who honestly endeavored to reconstruct the schools upon the old basis, regardless of the progressive ideas of the age. They asked that the schools be supervised and the teachers be prepared by the clergy, and that the normal schools be abolished. Thus, they claimed, the candidates for teaching would be prepared "in school for the school." In the elementary school they could daily hear good lessons and profit partly by observation, partly by helping the teacher in his work. It was the old Lancasterian system of pupil-teachers which was recommended. If more knowledge was required than an elementary school offered, it might be acquired after school hours under guidance of the head teacher, or the clergyman, or by

means of private study. These were the guiding thoughts and the course advocated by the leading men of the conservative government.

But every extreme movement causes a countercurrent. Pamphlets advocating a reform appeared which advocated too high a degree of theoretical training of teachers. The work of Dr. J. Leutbecher (1850) belongs to this class of reform literature. His plan embraced two different grades of professional schools for teachers; the lower normal school should admit only graduates of classical or modern colleges, for "the state," he argued, "has the unquestioned duty to give to young men, who intend to devote themselves to teaching, a thorough and extensive preparation. Heretofore the state has been remiss in its duty, and the result has been a fragmentary professional culture which produced questionable results in school. So-called preparatory schools for future students of normal schools are not to my taste." Preparatory general training should consist in (1) religion, (2) language (mother-tongue above all, but also French, or English, and Latin), (3) mathematics and natural science,—upon these branches should be based an encyclopedical study of professions which rely upon the mathematical, physical, and chemical sciences,—(4) anthropology and history, (5) calligraphy, drawing, and modeling, (6) singing, (7) gymnastics.

The proper professional training, the author claimed, should be required in higher pedagogical seminaries and in the pedagogical faculty of a university, the course to be one of four years, with the following scheme of studies:

I year. Dogmatics and history of dogmas (of the various religions in the state); German grammar, composition, and rhetoric; history of the German language and literature; encyclopedia, mythology, literature, and history of mathematical-physical sciences; some of the anthropological-historical branches; general history of civilization.

II year. The course of this year would approach the object of a pedagogical school by opening before the eyes of the student the entire realm of knowledge necessary for his vocation in form of an encyclopedia and methodology of educational sciences and a presentation of a comprehensive picture of human knowledge in its various relations to one's fellow beings, to nature, and to God.

III year. During the third year of the course the student would have to familiarize himself with the fundamental science of education, that is, metaphysics or psychology, with the principles of the sciences of theology, ethics, and civil government, with the science of art, the philosophy of history,—in short, with the ideals of mankind.

IV year. After the candidate has thus stocked himself with the best obtainable information, he could during the last year of the course devote himself with enthusiasm to his own professional science.

This plan of study, which proposed to elevate the teachers' professional training to a hitherto unheard-of degree, found, strange to say, numerous enthusiastic adherents, and gave an impetus to similar plans with aims equally inaccessible. Opposition to normal schools, inaugurated by the reactionary party, soon lost strength, and with the beginning of the fifth decade a more liberal spirit began to exert itself.

Supported by public opinion, it was again the teachers themselves who emphatically demanded a better scientific preparation and professional training. In mass-meetings and the press the normal school problem was ventilated, and governmental authorities were petitioned to reform the entire system of normal schools. The Bavarian Teachers' Association demanded, in 1864, a radical reform of the preparatory institutions, from which the students went into the normal schools, saying that the students were too poorly prepared to take up the normal school studies. They claimed that the preparatory general culture should be obtained in modern secondary schools (Realgymnasia); the course pursued there was fully equivalent to that which normal schools required as a basis for professional work. A preparation less comprehensive in scope and extent than afforded in the Realgymnasia could not suffice. Normal schools proper should have a three years' course, and be situated in large cities. Dormitories or closed institutions should not be tolerated.

In 1871, the German National Teachers' Association meeting in Vienna adopted, by an overwhelming majority, the following resolutions:

Students (*Seminarists*) should receive their general preparation for admission to the normal schools in public secondary schools (*Gymnasia* or *Realschulen*). The German normal school (*Lehrerseminar*) should be a professional school for popular (*volsthümliche*) pedagogy, which builds upon the foundation of a thorough general human culture (*Allgemeine Menschenbildung*).

In 1872, the same association met in Hamburg, and again the professional training of teachers formed the chief topic of discussion. Prof. Kehr (principal of the normal school in Halberstadt) was the principal speaker. He pointed to the fact that a division into schools for general preparatory culture and for specific professional training had already become a settled policy everywhere for other professions, but not for teachers. The teachers' normal schools were in this, as well as in other regards, an exception to a policy accepted universally; they were hybrid forms, trying to accomplish too much, worrying their students through all branches of knowledge, and despite all this, or rather on account of it, they could not accomplish what under more favorable circumstances they might easily accomplish. So long as the demand is made that normal schools are to be schools for general culture and specific professional schools at the same time, so long as the professors have to maintain this double character, the results will remain fragmentary. The speaker said:

At present they can not be wholly professional schools, because they are obliged to occupy the largest part of their time in teaching religion, language, arithmetic, mathematics, geography, history, natural science and natural history, calligraphy, drawing, music, and gymnastics. And they can not promote a general preparatory education satisfactorily because the pedagogical training requires not only time but it necessitates limitations which prove obstacles to general culture. Our seminaries must sever these unnatural ties. It must come to this, that properly organized preparatory schools will furnish a sound, extensive secondary education, and the seminaries a professional pedagogic training exclusively.

Kehr also denounced the preparatory schools then in existence in Prussia, because they based their work solely on the results of the elementary school, and with equal emphasis he criticised the official order in force in Gotha, which makes a few years' attendance upon a classical college (gymnasium) a requirement of admission to the normal school. For this he advanced the following arguments: (1) A gymnasium education is too expensive for teachers; (2) pupils who study ancient or modern languages in a secondary school are apt to complete the course and aim higher, that is, enter the university, and hence are lost to the profession of teaching in elementary schools; (3) the education offered in a gymnasium is too fragmentary, and, owing to its one-sidedness, is not suitable for a thorough basis of a professional pedagogical training; (4) the education offered by German secondary schools is generally different from a normal school education. Hence, the speaker advocated the establishment of secondary preparatory schools, which would stand in the same relation to normal schools in which the gymnasium stands to the university. He declared the gymnasium with its course in ancient languages to be a preparatory school for the learned professions; the Real-schule, with its course in modern languages and natural sciences, to prepare for industrial pursuits, technical arts, and administrative offices; and there should be a third kind of preparatory schools which would properly prepare for the teaching profession. The best plan seemed to him to use the existing city continuation schools for that purpose, since they were organically, in matter and methods, connected with the people's or elementary schools, and could in their four year's course advance the students in knowledge and accomplishments; add a modern language and instrumental music, and they would then develop to a degree commensurate with the just demands of the German middle classes. It must be borne in mind that in Germany a common school for all classes of society does not exist, and that nearly all plans for reforming educational institutions are affected by considerations of class distinctions.

After several other noted speakers had indorsed Dr. Kehr's views, the meeting adopted the following resolutions:

(1) The German normal schools should be pedagogical professional schools. (2) The acquisition of a general culture should take place in the preparatory schools. (3) The preparatory school should have a course of four years, the professional school one of two years. (4) Whether the two institutions should be organically connected or whether a citizens' school should be made the preparatory school must depend upon local circumstances. (5) Admission to the normal school should be dependent upon an examination.

The sharp, and at times acrimonious, criticism of the German normal schools, sketched in the foregoing pages, has not resulted in their abolishment, but has led to their better and more rational organization. Above all, general and professional education have been more distinctly separated than formerly throughout the country, and much greater care has been bestowed upon preparatory training. The

special preparatory schools, formerly private schools, have been made state institutions. The course of study in the professional classes has been extended, both in scope and time, in accordance with the increased demands of modern life; the institutions have been generally improved, and scientific aids, museums, and other means of instruction, have been added, all of which has tended to silence opposition and disarm the critics of the normal schools. Complaints concerning deficiency of the normal schools for elementary teachers in Germany and criticism of their organization, object, scope and results have almost ceased. Competent judges, educational men of authority in Germany and other countries, men who have had opportunities to judge from observation, almost unanimously state that the level of professional training has been raised quite considerably in Germany during the last twenty years. They say that scarcely another country can be found in which the teachers are so enthusiastic in their work, so earnestly striving for the elevation of the school, and the promotion of popular education, and where they are so consistently prepared for such work, as in Germany. Nowhere is the educational literature so extensive and rich in progressive thought as in Germany. And with the gradual elevation of the German teachers the development of the schools has gone hand in hand. The peoples' or elementary school, which contains more than 90 per cent of all the children of school-going age, has become an institution upon which great consideration is bestowed by the state and its various organs; and the teachers have formed a national union that has nearly 60,000 members, and makes its wishes and just claims known to the legislative bodies, and its influence felt at the hearth-stone of nearly every family in the Empire.

The present status of the normal school question is sketched by Dr. H. Rein (see previous reference) in the following words: "There are, regardless of minor and insignificant differences, essentially two systems prevailing in Germany. Both build upon the results of the elementary school; both claim six years for the completion of their courses. The only essential difference existing is as to whether these six years should be spent in one institution or in two separate ones. In other words, whether the general and the professional training be organically connected in one school, or be kept apart internally and externally. The first of these systems prevails in the Kingdom of Saxony, the other in Prussia, Bavaria, and Würtemberg, and other German states. Austria has so long been part and parcel of Germany that the discussion of this question there has taken almost the same course it took in Germany."

In Switzerland professional training of teachers has also been a subject of much discussion, and at times a bone of contention, especially in the cantons (states) of Graubünden, Luzerne, Aargau, Thurgau, Zürich, Berne, Soleure, and Vaud. Indeed, it can be said that the question is not yet quite settled. The first normal school for

teachers in Switzerland was established in the canton of Luzerne. Abbot Benedict, of St. Urban (1768–1781), established in his abbey two educational institutions, one for the youths of the upper class of society of Luzerne, in order to prepare them for positions in the Government service; the other, which he called normal school, for the purpose of training young teachers for rural districts. The work begun by Abbot Benedict was continued by his successors, Martin Balthasar, of Luzerne, and Karl Ambrosius Gentz, of Soleure.

The honor of having founded the first state normal school belongs to the canton Aargau; it was opened in 1822. The development of the entire Swiss educational system has been essentially aided by the Swiss Society for the Common Weal, and particularly did the professional training of teachers receive the society's attention and care. As early as 1825, Rev. Mr. Wirz reported upon the results of the different cantons in public instruction and preparation of teachers. In 1826, the society received two reports, one of Rector Hanhart and one of Father Girard. The former advocated separate teachers' seminaries after the German plan, the latter normal (or model) schools. Hanhart being a German, and searching for suggestions among German sources, naturally leaned toward German models. Girard, of French origin, looked for French models and French institutions, and adopted French technical terms, the term for institutions of professional training in France being normal, which means model, schools. The people were disinclined to adopt the term seminary, because it was coupled with the idea of its being a professional school for the clergy. The term generally used in German cantons is *Lehrerbildungs–Anstalt* (Institution for the Training of Teachers). In French cantons the term *École–Normale* (normal school) is used.

In a subsequent chapter we shall describe the present status of the systems of preparing teachers in Germany, Austria, and Switzerland. In looking back upon the historical development of the normal schools in these countries, it must be admitted that most of the criticism uttered was aimed at faults and deficiencies which have for the most part disappeared in the course of the last twenty years, but, with a view at our own diversified systems of normal schools, it is of interest to see how they have become what they are, so as to fortify the position taken by all friends of popular education. Essential changes have been made in the normal schools of German-speaking nations, the course of study has been enriched, the length of the course extended; more rigid requirements for admission as regards the quantity of knowledge and a later age for admission have been fixed; new branches of study have been introduced, suitable buildings erected, and the means of rational instruction, such as museums, laboratories, libraries, etc., have been increased or improved; above all, the practice or experimental school has been generally accepted as an essential requisite of the normal school. All this has raised the normal school in central Europe to a degree of perfection never known before.

Much of the criticism uttered in years past, and even now, is owing to the fact that the normal schools have always been, and will forever be, subjected to the minute inspection and careful observation of the authorities and the people. "He who builds on the roadside has many critics," and no school is so open and comes in such close contact with the people as the normal school. The task of normal schools to train young men and women for the purpose of teaching is most difficult, as they are often poorly prepared, and it is especially difficult, as it has to be done in a comparatively short time. As regards the extent of knowledge and skill to be acquired, it may safely be said that they are greater than any other secondary and superior school would attempt to offer during the same period. And then we must consider that the graduates of normal schools enter at once into positions in which every misstep in their official capacity, every *faux pas* in their moral conduct, is subjected to public criticism, because the consequences may be most harmful. Such things happen while the candidates are still young, scarcely twenty years old, an age at which candidates of medicine, law, and theology, or other professions are still students, or are serving a probationary term of practical work without responsibility save such as may be imposed by superior officers. The normal schools influence the life of the people more directly than other schools do. They are the leaven of the lower schools, and reforms in the lower schools necessarily emanate from them; hence they are apt to wound deep-seated prejudices, and disturb time-honored modes of procedure. Dr. Kehr, of Gotha and Halberstadt (see page 148), says that the normal school, of all the many kinds of schools in existence, is the least known and often the most misjudged. Complaints concerning faulty or insufficient professional training come very frequently from former normal-school students, and from the most aspiring ones at that, from men who had high ideals and who have failed to realize them. In these plaints of dissatisfaction others chime in, men of more pretense than talent, simply because in our age of absolute publicity it has become one of the characteristics of the public man to criticise existing institutions.

However, the fight against the normal schools in central Europe is part and parcel of a greater question. It is the dissatisfaction which the people feel in being obliged to select a profession for their boys before they can in any way have showed predilections or special talents. The gymnasium, the vestibule of the university for the learned professions; the *Realschule* or *Realgymnasium*, intended to prepare for other liberal professions; the industrial schools, aiming at preparing skilled labor; the normal schools for teachers, all presuppose an early decision with regard to the choice of a future occupation or profession. Hence the efforts at inducing the governments in central Europe to establish a common elementary and secondary school system, which would not require a differentiation until a later age than is now fixed, say the fifteenth or sixteenth year. The prevailing caste distinctions will, however, prevent this for some time, until the leveling influence of universal

franchise and other influences have sufficiently prepared the soil for a common school. There will always be a need for different professional schools, but it is thought that a common basis of elementary and secondary education could be found for all or nearly all of them.

II.—STATISTICS OF NORMAL SCHOOLS IN GERMANY, AUSTRIA, HUNGARY, AND SWITZERLAND.

A. Germany, being a confederation of states, has no imperial schools except military and naval schools. Each state manages its own schools, hence we are obliged to treat each state separately in this chapter.

Prussia had, in 1891, 120 state normal schools, 112 of which were for men, 8 for women. These state schools have an average of 90 to 100 students, about 30 graduates per year, and 7 or 8 professors or instructors each. Their course of study is one of three years, except in 7, in which it is four years. The state paid in 1892–'93 for their maintenance the sum of 5,841,823 marks, or $1,390,354, of which $664,324 is paid for salaries, $526,626 for boarding the students, and $200,404 for incidentals. The foregoing sums do not include cost of erecting new buildings. The cost per capita is $150, which is paid by the state. Beside these state institutions there are 65 private normal schools, chiefly for female and for Jewish teachers, but no statistics concerning them are available. The state maintains 35 preparatory schools in which the students are prepared for admission to the normal schools. There are 20 private schools of that kind. This is not the sum total of the efforts in behalf of teachers' training, for the state subsidizes a number of secondary schools in which university graduates may acquire technical skill in teaching, and also a few university seminaries; but since these institutions are designed to prepare secondary teachers, we may leave them out of consideration, and confine ourselves to normal schools for elementary teachers.

Bavaria had 14 state normal schools in 1891, of which 11 were for men, 3 for women. Ten of the schools had a two-years' course, 4 a five-years' course. The first 10 get their students from preparatory schools, 31 in number, specially established to prepare their graduates for admission to the normal schools. These preparatory schools have a three-years' course. The Bavarian normal schools have an average of 11 professors, 90 to 100 students, 35 graduates per year each. The cost of maintenance varies slightly between 40,000 and 70,000 marks ($10,000 to $17,500). There are beside the aforementioned state schools several private institutions for the training of teachers connected with secondary schools, but no detailed statistics are available.

Saxony had 15 state and 5 private normal schools, 18 for men, 2 for women. All have a six-years' course, which includes preparatory work of three years. These normal schools have an average of 130 students and 12 to 14 professors and instructors. The average cost of maintenance is 56,000 marks ($14,000) each.

Würtemberg had 7 state and 2 private normal schools, 6 for men and 3 for women. They all have a three-years' course, about 80 students and 10 professors each, and their cost of maintenance amounts to about 40,000 marks ($10,000) each. Würtemberg maintains 4 preparatory schools, which, however, do not furnish all the students admitted to the normal schools. Other students come from classical and modern secondary schools.

Baden had 5 normal schools, each having a three-years' course, with an average attendance of 100 students, 10 professors, and 30 graduates per year each. One preparatory school prepares students for admission to the normal schools. Other students prefer to obtain their preparation in secondary schools.

Hessia had 4 normal schools, 1 of which is for women. They have a three-years' course, and about the same number of students and professors as found in Prussian, Bavarian, and other normal schools.

Mecklenburg-Schwerin had 2 normal schools for men.

Mecklenburg-Strelitz had 1 normal school for men.

Thuringia.—The 12 principalities commonly called the Thuringian states had 17 normal schools, 14 of which were for men, 3 for women.

Oldenburg had 2 normal schools.

Brunswick had 4 normal schools, 2 for men, 2 for women.

Lubeck (free city) has no normal school, but draws its supply of teachers from other states of the Empire.

Bremen (free city) had 3 normal schools, 1 for men and 2 for women.

Hamburg (free city) had 3 normal schools, 1 for men and 2 for women.

Alsace-Lorraine had 9 normal schools, 6 for men and 3 for women; also 2 private normal schools and 4 preparatory schools.

B. Austria in 1891 had 70 state normal schools, 42 of which were for men, 28 for women. They had 993 professors and 9,854 students, with 2,128 graduates in 1891. Forty of the Austrian normal schools were German, 12 Bohemian, 6 Polish, 2 Italian, 2 Servian, and 8 mixed. The course of study in the Austrian normal schools is one of four years. For admission a preparation is required, such as a four years' attendance in a secondary school secures. Few of the Austrian normal schools have preparatory classes. The state subsidies for normal schools amounted to only 82,700 florins, or $29,524; the provincial governments (those of the separate crownlands) pay the bulk of the expenses.

C. Hungary in 1891 had 25 state (18 for women and 7 for men) and 47 parochial normal schools (37 for men and 10 for women). These 72 institutions had 4,346 students and 709 professors. Fifty-eight of these normal schools were Hungarian, 5 German, 4 Roumanian, 1 Servian, 4 mixed. The law prescribes a three-years' course for them, but the minister of education has decreed the establishment of a post-graduate course which is made obligatory in most of these normal schools. In

34 parochial schools the course is also one of four years; in 13 it is shorter. The number of graduates in 1891 was 1,093 and the expenditures 894,478 florins, or $319,328.

D. Switzerland had 37 normal schools, 23 for men, 13 for women, 1 for both sexes; 22 are German, 13 French, and 2 Italian; 25 of these 37 schools are state institutions maintained by the cantons, 4 are city, and 8 private schools. In 1890 the number of students was 2,002, taught by 358 professors. The entire cost of maintenance was 1,119,000 francs, or $215,967. The course of study is one of four years. Some of these schools get their students from secondary schools, but most of them from special preparatory schools.

SUMMARY OF STATISTICS AND COMPARISONS.

Germany has 283 normal schools, 200 for men, 83 for women. Of these 283 institutions, 202 are state schools, 81 are private but under state supervision. The aggregate number of students can not be stated with accuracy, but a judicious estimate places it at 18,860 in public and 4,600 in private institutions, a total of 23,460 students.

Austria has 70 normal schools, 42 for men, 28 for women, all state institutions, with 9,854 students.

Hungary has 25 public (18 for men, 7 for women) and 47 parochial normal schools (37 for men, 10 for women), a total of 72 normal schools, with 4,346 students.

Switzerland has 37 normal schools (state, city, and private), 23 of which are for men, 13 for women, and 1 mixed, with a total of 2,002 students.

Germany has one normal school student to every 2,110 inhabitants. Austria one to every 2,425, Hungary one to every 4,018, and Switzerland one to every 1,457 inhabitants.

In the United States we find the sum total of students in normal schools (public and private), that is, in all institutions which offer, or lay claims to offering, professional training of teachers, to be 34,484 (in 1890), or one student to every 1,816 inhabitants. While this would seem a good showing, another comparison makes the United States appear in a less favorable light.

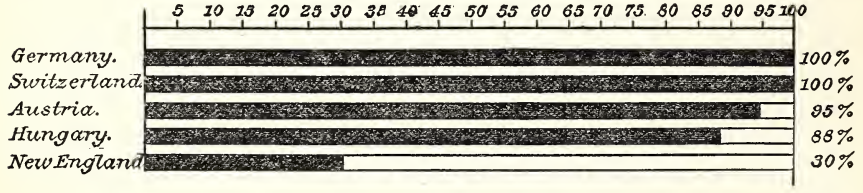
Germany has about 112,000 teachers in elementary schools and 23,460 normal-school students, which is about equal to 1 student to every 5 teachers. The United States has 363,935 teachers in common schools and 34,484 normal-school students, which is 1 student to every 10 teachers. Now, if we would eliminate from the total number of students in this country all who attend normal schools only for the purpose of getting a secondary education, and never acquire or desire a teacher's professional training, the ratio might safely be put at 1 to 20. But that is mere guesswork. If, however, we consider the other fact, that almost all normal schools in Germany have a full three years' course and compare with that the normal schools of the United States (some of which

have a one year's course), we find a greater difference than appears on the surface.

The foregoing induces us to still further comparisons. Assuming that Germany is, as regards professional training of teachers, a normal state well adapted to be used as a basis for comparison, let us see what proportion of the number of teachers have normal-school or professional training. It would be unfair, though, to compare our whole country with central Europe, because the conditions in the West and South are still in a transitory state of development. New England, however, claims to be at the head of educational affairs of this country. Mr. G. A. Walton, agent of the board of education in Massachusetts, says:

> New England employs 30,000 teachers. Of these, 6,623 have attended normal schools and about 2,352 have had some training and practice in city training schools or classes; the latter item we estimate from somewhat imperfect data. Thus 30 per cent have had some training and practice before assuming the entire care of a school. Some of the others have had the advantage of special instruction while attending academies and high schools. The first-named class of instruction may be termed professional; the second, useful; the third, somewhat better than nothing.

Thirty per cent, then, is the proportion in New England. In Germany it is 100 per cent, in Switzerland 100 per cent, in Austria 95 per cent, in Hungary 88 per cent. (See diagram:)



Another side of the question is this: Germany has about 112,000 teachers and about 23,500 students in normal schools, or about 20 per cent. Of these, about a little less than 30 per cent, or 7,000, graduate annually; and since these graduates are assigned or appointed to positions as soon as they graduate, that number may be taken as the number of new teachers needed every year. In other words, it expresses the number of changes occurring in teachers' positions, owing to death, resignation, or removal for cause, and also the annual increase caused by opening new schools.

Some interesting items.—Later official publications from Germany (of 1892) concerning the state normal schools of Prussia only, contain a few additional items of information that will be found worthy of attention. Prussia had 121 state normal schools in 1892, of which 20 were located in towns of less than 2,000 inhabitants, 17 in towns of more than 2,000 and less than 5,000; 36 in towns of more than 5,000 and less than 10,000; 13 in cities between 10,000 and 20,000; 2 in cities between 20,000 and 30,000, and 13 in cities over 30,000.

In regard to the religious confessions these schools are classified as follows: 77 are Protestant, 40 Catholic, and 4 mixed schools.

Ten of the state normal schools of Prussia are for women, 111 for men. Coeducation is not recognized in any secondary or higher institution of learning in Prussia.

The corps of teachers employed in these normal schools consisted of 121 principals (directors), 120 head teachers (Hauptlehrer), 470 teachers, 128 assistants, and 31 women teachers.

The Prussian Diet has recently fixed their salaries as follows: Principals of normal schools receive from $960 to $1,296 per annum, the maximum to be reached after 16 years of service; increase of $90 every 4 years. Head teachers receive from $720 to $960, the maximum to be reached in 12 years; increase of $60 every 3 years. Teachers receive from $432 to $768, the maximum to be reached in 24 years; increase of $48 every 3 years. Assistant teachers receive from $288 to $432, the maximum to be reached in 9 years, increase of $48 every three years. These salaries are for provincial schools only; for the normal schools in cities, and particularly for those in the capital, the salaries are much higher.

To all the amounts stated should be added an average of 20 per cent for rent, since these teachers either live in the school buildings or receive commutation for rent in form of cash. If we further consider that the purchasing power of money is greater in Germany than in America we conclude that the salaries are not materally different from those paid in this country.

III.—RULES AND REGULATIONS OF PRUSSIAN NORMAL SCHOOLS.

I. REQUIREMENTS FOR ADMISSION. DECREE ISSUED OCTOBER 15, 1872.

The following rules were issued by Dr. Falk, minister of education, worship, and medical affairs, in 1872:

SECTION 1. In every State normal school an examination for admission shall be held annually, some time previous to the beginning of the new term. The date is to be fixed by the provincial school council and published in the provincial official Government organ.

SEC. 2. Admitted to this examination are all candidates who can prove by documentary evidence, that they are of the required age, of moral character, in good health and in the possession of sufficient means for support during the course of attendance in the normal school. It is immaterial where the candidate has acquired his preparatory training, whether in higher elementary, intermediate, or secondary schools, or in special normal preparatory schools.

SEC. 3. Application for admission to this examination must be made to the principal of the normal school at least three weeks before the date fixed for the examination, and the application must be accompanied by the required documents (*see* Sec. 4). The principal examines the documents to see whether the legal requirements are met, and decides whether a candidate is to be admitted to the examination. Any candidate who has failed three times in examination for admission is to be rejected.

SEC. 4. The application must be accompanied by a certificate of baptism, one of vaccination and revaccination, also by a certificate of good health, signed by a phy-

sician intrusted with the official seal. Candidates coming from other schools must furnish a written report concerning their conduct; others a certificate of good conduct signed by the mayor of the place in which they live. Lastly, a declaration of the father or guardian to the effect that the means for support during the course of attendance in the normal school, are at the disposal of the candidate. This declaration must be verified officially by the administrative office of the place in which the candidates reside. Candidates must have completed their seventeenth year of life, and not have passed their twenty-fourth; but admission may be granted to older candidates, by the provincial school council, if objections can not be raised to their personality or previous condition of life.

SEC. 5. Candidates who have been found intellectually qualified for admission to a normal school are subjected to a medical examination conducted by the institute physician, whose decision is final.

SEC. 6. The scholastic examination for admission is conducted by the faculty of the normal school as a board over which a provincial school councillor presides. School inspectors and instructors in preparatory schools are permitted to be present.

SEC. 7. The examination is partly oral and partly written. The written part consists of an essay on a subject taken from the candidate's own horizon of observation, and answers to questions in the various subjects of study. The questions shall be so framed as to require no more than two or three minutes to answer them in writing. The examiners are empowered to exclude from further examination all whose immaturity is clearly proven by their written work. The oral examination extends over all obligatory subjects of study in the normal school with the exception of pedagogy. Each member of the faculty examines the candidates in the subjects which he teaches, but it is advisable to conduct the examination in the presence of the entire board of examiners. If this be impracticable, it is suggested to divide the candidates into as many groups as there are examiners; but in cases where a difference of opinion prevails concerning the intellectual maturity of any candidate he is to be examined before the whole board in subjects that gave rise to the difference of opinion.

SEC. 8. In estimating the results in religion, language, arithmetic and mathematics, music, natural history and science, geography and history, the different grades or marks are to be united into one statement or word, such as good, very good, etc. Candidates who have been marked inefficient are to be rejected, unless it is reasonable to suppose that they are weak in only one or two branches and may with proper care and diligence make up the deficiency. If insufficient results in music are caused by want of musical ear, it shall not debar the candidate from admission, nor shall want of musical training in playing the organ prove a hindrance to admission.

SEC. 9. The examination for admission shall disclose whether the candidate has the knowledge prescribed in the following paragraphs:

(*A*) *Religion.*—For Protestants, an acquaintance with the sacred history of the Old and New Testaments, including the geography necessary for its comprehension. The candidate must be able to narrate the best known biblical stories in the language of Luther's Bible, and be able to give information concerning their religious and moral contents. The catechism used in the normal school, together with explanations of terms and contents, must be known, especially the importance of certain expressions. He must also be able to give biblical references to the commandments, the articles of faith and the Lord's Prayer; must have memorized suitable stanzas of hymns, and give analogous examples from biblical history. He must be familiar with the various books of Holy Writ, and very well acquainted with Genesis, the Psalms, the four Gospels, and the Acts. He must be acquainted with the main facts of the history of the Reformation, and have memorized about twenty hymns, which he is expected to recite with good expression, and must give some account of their authors.

For Catholics, the candidate must be able to narrate the sacred facts of the Old and the New Testaments in the form presented by a good biblical school history, must have knowledge of biblical geography necessary for the comprehension of the sacred history, have some practice in finding the truths of faith and moral principles contained in the narrations, and must know the number, divisions, and chief contents of the Holy Books. The diocesan catechism must have been memorized, and a comprehension of both terms and contents must be proved by repetition of the various thoughts in the candidates' own words. He must have memorized twenty hymns, the contents of which he must understand thoroughly and recite with good emphasis. He is expected to be familiar with the lives and works of the most important saints of the church and the diocese, as well as with the prayers prescribed for Catholic Christians.

(*B*) *German Language.*—Knowledge of etymology and syntax, also of derivatives and compounds. Grammatical rules must be proved and exemplified by means of proverbs or model sentences from the writings of German poets and popular authors. Candidates must be able to read correctly as to enunciation and emphasis without previous preparation, and be able to give an account of that which is read. They must be able to determine to what parts of speech words belong, to determine the class and kind of sentences, and be able to analyze sentences. They must have become familiar with the most important kinds of poetry by studying the German classics, and must have memorized a few epic poems of Schiller, Uhland, Rückert, and understand them, recite them with expression, and give an account of their contents. They must be able to write correctly, that is, without errors in spelling and grammar, and make a composition on a subject lying within their circle of observation and experience.

(*C*) *Arithmetic.*—Skill in mental arithmetic, familiarity with approved methods of written arithmetic. Matter: The four fundamental rules with abstract and denominate numbers, with whole numbers, common and decimal fractions, simple proportion and the common business rules, including equation of payments and alligation. Elementary solution of algebraic problems: The candidate must show ability for independent, correct, and quick solution of problems, and prove that he has an insight into the reasons for his method of procedure.

(*D*) *Geometry.*—Elements of planimetry and mensuration.

(*E*) *Geography.*—General acquaintance with the continents and oceans, more minutely with the geography of Europe, and thorough acquaintance with that of Germany; the fundamental principles of mathematical geography, commonly called elementary astronomy.

(*F*) *History.*—Chief events of ancient history (such as the Trojan war, the Persian wars, the golden era of Greece, Alexander the Great, foundation of Rome, the kings, the expulsion of Tarquin, Camillus, the Gauls, the Punic wars, and other events), the origin and spread of Christianity, the great migrations, familiarity with the chief personages and events of the German and the Brandenburg-Prussian history to the present time. A comprehension of the *causal nexus* in history should not be expected, neither a complete knowledge of historical dates; it is sufficient when the candidate has learned history from good biographies, but it is absolutely required of him to be sure of his knowledge and of his dates.

(*G*) *Natural history and science.*—The natural history of the three kingdoms must have been studied in their types and families; acquaintance with important agricultural plants, poisonous plants, and with fauna and flora of his native place is required. In physics he must have studied the most important principles, and of chemistry, the bare elements will suffice. It is most desirable that the candidate have acquired scientific truths by experimenting in the laboratory.

(*H*) *Calligraphy.*—Skill in rapid penmanship and in writing with crayon on the blackboard. In all his writing he must show legible, clean, and elegant penmanship.

(*I*) *Drawing*: Freehand and mechanical drawing; some exercise in rapid sketching, and drawing on the blackboard.

(*K*) *Music.*—The candidate must be able to sing twenty of the most familiar hymns and popular airs. The singing must be free of gross errors in intonation, measure, accent, and expression. Likewise he must possess some skill in reading music, such as easy hymns or melodies. On the piano he must have well studied the scales in major and minor, be able to execute some studies and sonatas, likewise read music, that is, easy pieces on the piano. On the violin the candidate must be able to play the most important major and minor scales in slow tempo, but in good tone and in the first position of the hand; he must be able to play on the violin any hymn or popular air which he can sing from memory; likewise read music, that is, execute melodies fairly well which he has not played before. Correct knowledge of the principles of the technique of instrumental music should be duly required. Of the theory of music it is sufficient for him to know the different signs, measures, and scales; the common technical terms, the theory of intervals, and the relation of scales. In harmony the candidate must be able to name and play the major and minor triad as well as the seventh chord in any key and render its relations to other chords. On the organ the candidate must have played elementary manual and pedal exercises; be able to play at sight a four-part hymn and easy compositions from memory.

(*L*) *Gymnastics.*—The candidate is required to perform all the exercises contained in the new guide for gymnastics in the Prussian peoples' schools.

These regulations were issued in 1872 by the then minister of public instruction, Dr. Falk, and they have not been changed since. Following we give an account of the course of study in the normal school itself; after that we shall see what the requirements for admission are in other States of the Empire.

In the Kingdom of Saxony the normal schools have a course of six years—three for preparatory and three for professional study. The students are admitted at the completion of the fourteenth year of age with an education such as a good elementary school offers to pupils between the ages of 6 and 14, but in addition to that the rudiments of the French (or the English) language are required. The result of an examination—not a diploma or a certificate—determines the admission.

2. PRESENT MANAGEMENT OF PRUSSIAN NORMAL SCHOOLS AND COURSE OF STUDY.

Management.

SECTION 1. Every State normal school must have one graded and one ungraded practice school in organic connection with it, to be used as experimental schools.

SEC. 2. The work of these practice schools is to be carried on, under supervision of the normal school principal, by a special class teacher who is to be one of the faculty of the normal school.

SEC. 3. The course of study of the normal school is of three years.

SEC. 4. It must be the aim of the first year's work to promote uniformity in the students' accomplishments, coming as they do from various preparatory and secondary schools. The students should be taught to arrange their knowledge logically; to supplement it and learn to reproduce and apply it independently. During the first year of the course the normal students are not brought into contact with the work in the practice school. During the second year, the students receive those additions to their academic knowledge which are necessary for their future voca-

tion; but all new knowledge offered is to be rendered in a manner that will aid its reproduction and application in teaching. In the practice school, the students of this grade merely listen and make notes during lessons given by the members of the faculty, but may be called upon to aid in keeping order during recess, and give lessons occasionally. During the senior year the academic studies are completed in such a manner that constant reference to sources of information will enable the graduates to continue their studies alone. In the practice school the seniors share the practical work with the members of the faculty, and try to cover the whole ground of the elementary course by giving lessons in every branch of study.

No senior student shall teach less than 6 or more than 10 hours per week in the practice school, and no one may graduate who has not had the requisite practice in teaching religion, grammar, arithmetic, singing, and in one of the other branches prescribed. Hence a change of daily programme is to be made at least three times during the year. At the close of such terms (determined by a change in the programme) a practical examination in teaching is to be held for those seniors who have completed their part of the work. This examination is attended by the students, in the capacity of visitors, who have been designated as the successors of those examined.

SEC. 5. The academic work done is carefully recorded in the journal of progress, which record serves as a guide in examinations at the close of the term and year. All annual examinations are conducted by the faculty and extend over all the branches of the course.

SEC. 6. At the close of a year's work all the members are promoted to the next higher course. If any student fails in annual examination, the faculty moves his dismissal, and the provincial school council acts upon the recommendation. Permission to repeat the year's course is given only when the deficiency was caused by severe and protracted illness.

SEC. 7. The two lower grades have each twenty-four hours' and the third fourteen hours' academic instruction each week, exclusive of the several technical and optional studies, such as music, drawing, calligraphy, gymnastics, laboratory work, foreign languages, and the like.

SEC. 8. The study of all branches of the elementary school course and of pedagogy is obligatory. The extent to which students may be excused from instruction in organ-playing depends partly upon the degree of proficiency acquired prior to admission, partly upon local circumstances, but each case must be decided by the faculty in a body.

SEC. 9. French, English, and Latin are optional studies. Students who have never studied any of these languages prior to their admission to the normal school shall not be allowed to take up studies in foreign languages unless they show that they possess exceptional linguistic talent. French is to be given the preference.

SEC. 10. The instruction given to normal students shall be in its form a model of that which the teacher himself afterward is expected to give. He is to consider, equally, correctness on the part of the teacher in offering new material and oral as well as written reproduction on the part of the pupil.

Dictating and writing from dictation during lectures are strictly prohibited. Each branch of study, however, should be represented by a brief sketch in form of a guide as a text-book.

All instruction given should offer the method together with the subject matter, and should lead toward independent treatment. The students should be exercised in continuous speech and free delivery not only in language lessons, but in every lesson.

SEC. 11. In order to promote instruction and study, each normal school must have a good library, a laboratory for study in physics, where possible one for chemistry, and a practical collection of approved objects for objective teaching.

SEC. 12. Where the separate institution of a students' library, though it be but a section of the general school library, is impracticable, it should be the aim of the

faculty to pay attention to the literary needs of the students in the purchase of new books. The new acquisitions should be selected with a view to offering the students suitable matter for entertainment as well as proper supplement and aids to instruction; but, above all, model or classic representation is to be aimed at. To this class of books may be counted the complete works of our classical poets; also the most noted poets and popular authors of modern time, so far as they are comprehensible to the students; always provided they promote the educational object of the institution. There should also be books on the history of education; that is to say, beside the most noted works of great pedagogues of the last three centuries, as found in collections such as The Pedagogical Library of Karl Richter, models of good juvenile books, beginning with the first efforts during the time of the philanthropists. The students' library should also contain models of popular representation of the world's and home geography, universal history, and the history of civilization; also the writings of Schleiden, Tschudi, Masius, Brehm, Werner Hahn, Ferd. Schmidt, Wildenhahn, W. Baur, Gustav Freitag, Riehl, and collections like Grubes, etc.

SEC. 13. The use of books for private reading on the part of the students must be regulated and controlled during lessons. It must be so arranged that the students have the choice between books of like character, and only the reading of such works should be made obligatory the use of which appears necessary, such as Lessing's Minna von Barnhelm, Schiller's Wallenstein, Goethe's Hermann and Dorothea, Pestalozzi's Lienhard and Gertrud.

SEC. 14. The students must be given opportunities for private association, such as mutual reading hours, musical entertainments, botanical excursions for the purpose of cultivating a desire for higher studies.

SEC. 15. At least once a month all instruction must be suspended for an entire day. The time thus gained is to be employed in independent occupations, and no school exercises shall encumber the freedom of the day.

SEC. 16. In making out the daily programme care must be taken that the student's own instruction is not in any way abridged by his occupation in the practice school; hence the academic instruction in the senior class must be arranged so that it will not interfere with the time devoted to practical teaching in the practice school; in the junior class some of the lessons should be given after school hours in the practice school. (NOTE.—Many practice schools in these training colleges have only one session, from 8 a. m. till 1 p. m.)

SEC. 17. The instruction in normal schools must follow a course of study the details of which are to be determined upon by the faculty, but the course is subject to the approval of the minister of education. He also sanctions or rejects the selection of text-books. As far as the local circumstances of the institution will permit, the course of study must embrace the following subjects and be based upon the principles hereafter set forth:

3. COURSE OF STUDY.

Pedagogy.

SEC. 18. *Grade first.*—Two hours per week. The essentials of the history of education and instruction in vivid pictures of the most noted reformers, the great educational epochs, the most interesting and successful improvements in public education. To supplement these summaries the chief works of pedagogical literature since the great church reformation are to be used as books of reference. The selection of these books is to be guided by the topics discussed in class, and the work should be so treated that the student must comprehend the character and contents of the entire works.

Grade second.—Two hours per week. A general theory of education and instruction, with the essential parts of logic and psychology. (*a*) The matter of instruction. (*b*) The form of instruction. (*c*) Training (or education through instruction).

Grade third.—Five hours per week. Special theories of education and instruction. Methods of instruction. The office of the teacher. Management and organization of school. Supplementary work of the teacher. Outside duties. The students to be made acquainted with governmental regulations. One hour is to be used by the principal of the practice school for discussion of the practical work of the students and an exchange of observation and criticism.

Religion.

SEC. 19. *Grade first.*—Four hours. Biblical history of the Old Testament. The different biblical stories are to be developed and made useful from a religious and a moral standpoint, and the students be trained in narrating these stories in proper language and style. Psalms and other poetical portions of the Old Testament. The church hymn and its development. The hymns prescribed by the course of study should be treated in form and contents and in chronological order, thus illustrating the history of church poetry. Memorizing hymns is prescribed only for grades first and second.

Grade second.—Four hours. Biblical history of the New Testament with special reference to the gospels and selections from the epistles of the apostles. Explanation of the church calendar and the arrangement of divine service. The catechisms of the respective confessions, with constant reference to biblical history and suggestions for the practical treatment of the matter in school. During the second part of the year at least one hour a week must be applied to model or trial lessons in the practice school.

Grade third.—Two hours. Knowledge of the Bible (in Protestant normal schools reading of the Bible, to wit, the Acts, the epistles of St. Paul, the book of Job, and portions of Isaiah). The essentials of church history. The method of religious instruction is to be shown by test lessons that illustrate all the various forms; that is, biblical history, application of biblical references, study of the gospels, catechism, hymns, and church history. Suggestions for the further study of the subject. The religious text-books, such as catechism and school Bible, should be read in such a manner that the student may afterward use and explain them independently, but the instruction should by no means be confined to the limits drawn by these books; hence the application and frequent use of other similar books is strongly recommended. The course of study for Catholic normal schools should contain also memorizing and explanation of prayers, the use of which the church declares a religious duty.

German language.

SEC. 20. *Grade first.*—Five hours. (*a*) Grammar: simple, compound, and complex sentences in easy combinations. The parts of speech, declension, comparison, conjugation. Rules of orthography and punctuation. (*b*) Reading: in connection with exercises in oral expression and written composition, source of information concerning the essence and form of poetry; the elements of metric, the most important facts concerning rhyme. Kinds of poetry: lyric poetry, the song, epic poetry, poetic narration, legends, sagas, fairy stories, ballads; didactic poetry, fable, and parable.

Grade second.—Five hours. (*a*) Grammar: more minute knowledge of complex and abbreviated sentences; etymology, the rection of verbs, adjectives, and prepositions; formation of words and punctuation. (*b*) Reading as in first grade. Poetry and prose selected for reading should be more difficult in extent, form, and contents than those treated in grade first. Lyric, epic, and dramatic poetry in general, popular airs, ode, ballad, romance, epos, and drama. (*c*) Rhetoric and practical instruction in language lessons and model lessons in the schoolroom.

Grade third.—Two hours. Review of the course in grades first and second; extension of the course of reading. Methods of language instruction in connection with trial lessons.

The following principles are to be considered in teaching language: (*a*) Fluent and correct speech is to be a matter of supreme importance; it is, however, not to be attained by memorizing and reciting certain prose pieces, but by inducing the students in every lesson, especially in language lessons, to express their thoughts in complete and connected sentences. (*b*) With regard to compositions, correctness of form, clearness of expression, distinct arrangement of matter, should be demanded. The aim of this branch is always to enable the student to express, comprehensively, any matter that he thoroughly understands. The tasks set for the different classes should be well graded, and the subjects treated taken from all the various branches of study. (*c*) The reading of the students should be partly private, partly public, in class. For private reading, books from the school library are to be chosen. It should comprehend chiefly the master-works of German poets and prose writers, past and present. Especially gifted students may be furnished more plentifully than others. Matter read in class is to be explained with regard to form and contents. Poetry and prose are to be chosen from the different eras of German literature since Luther, especially the classics. The selection must be made so that the peculiarities of the various writers, and the different aspects of the language are illustrated. A number of the poems thus explained are to be memorized. The readers prescribed for the practice school of the institution should be diligently used; also, the matter contained in the readers used in the schools of the province should be worked over, and suggestions for the further acquisition of literary knowledge offered. Side by side with the readers of the practice school, in the proper use of which the students are to be instructed, the academic instruction in reading in the normal school grades is to be based upon a special reader.

History.

SEC. 21. *Grade first.*—Two hours. Pictures from the life of the most important civilized nations of antiquity; more extensively the history of the Greeks, (1) the heroic age, (2) the age of the legislators, (3) from the Persian wars to Alexander the Great; the history of the Romans, (1) stories from the time of the Kings, (2) the history of the Republic in biographies, (3) the downfall of the Republic and the first century of imperial Rome.

Grade second.—Two hours. Germany and the ancient Germans; their contests with the Romans; the great migration; the age of the Carlovingians (more extensively the spread of christianity and Charlemagne); history of the great imperial dynasties; the age of the crusades; the period from the Crusades to the Reformation.

Grade third.—Two hours. Brandenburg-Prussian history up to the present time. In connection with specially fitting events, the history of other European states is to be considered.

The instruction in methods of teaching begins in grade first with exercises in connected narration, is continued in the second grade in connection with trial lessons, and concluded in grade third with the criticism of such lessons.

Arithmetic.

SEC. 22. *Grade First.*—Three hours. Numeration and notation. The four fundamental rules in abstract and denominate numbers. Decimal fractions. Common fractions. Simple and compound proportion. Business rules, such as percentage and interest, profit and loss, etc., square and cube root.

Grade second.—Three hours. In connection with algebra, proportion. Positive and negative quantities. Simple equations.

The method to be illustrated by model lessons on the subjects taken from the course prescribed for the elementary school. Opportunity should be given to handle the abacus, and other devices used in the lower schools.

Grade third.—One hour. The greatest attention to be given to the teaching of arithmetic. In algebra, equations are continued and logarithms taught. Suggestions for independent study. Aim: Comprehension of the method, accuracy in solution, and independence of thought and action at all times.

Geometry.

SEC. 23. *Grade first.*—Two hours. Lines, angles, triangles, parallelograms, and circles. Constructive geometry.

Grade second.—Two hours. Equality and similarity of figures. Measuring. Stereometry.

Grade third.—Review of the entire subject and instruction in methodical treatment in the lower schools.

In all three grades the students are exercised in the drawing of geometrical figures on the blackboard. The instruction starts with object teaching, and is to follow a text book. Aim: Clear comprehension of the subject and the method of teaching it. Suggestions for independent study and ability to teach the subjects successfully.

Natural history, physics, and chemistry.

SEC. 24. *Grade first.*—Four hours. (*a*) Natural history. Knowledge of selected home plants representing the most common families. Knowledge of systems (Linné) and the most important parts of botanical morphology. In winter, zoology. (*b*) Physics. Mechanical, magnetic, and electric phenomena. (*c*) Chemistry. The simplest elements and their combinations. The mineralogical side of the subject (inorganic chemistry) to be treated with special attention.

Grade second.—Four hours. (*a*) Natural history: Knowledge of the chief forms of seed and spore-plants; the natural system; construction, life, and spread of plants. In winter, continuation of the work in zoology, especially anatomy and physiology of the human body. (*b*) Physics: The phenomena of light, heat, and sound. (*c*) Chemistry: Continuation of the course in grade first, with the addition of organic chemistry.

Grade third.—Two hours. A general extension of the work of the first two grades with particular attention to the method of instruction, in addition the elements of geology; suggestions for independent study.

In all three branches of study the method of teaching is considered of supreme importance; hence, model lessons are to be prepared on paper and given in the class room. It must be the special object of this instruction to find methods for the presentation of natural science, which would, even in the lower schools, have an educative influence. Hence, in every case, the instruction should start with object lessons. In physics and chemistry no lessons should be given without experiments, and in natural history none without the object, or its pictorial presentation. Pure memory work is to be rigorously excluded. Aim: To enable the students to find their way independently through the three kingdoms of nature, to continue the study of nature, with the aid of good books, and to give objective instruction in natural history and science in the elementary school.

Geography.

SEC. 25. *Grade first.*—Two hours. The essentials of home and foreign geography. Systematic knowledge of the earth's surface. The continents. Reading maps.

Grade second.—Two hours. Europe, Germany; mathematical geography. Instruction with regard to the method of geographical teaching by means of model lessons on paper and trial lessons in school.

Grade third.—One hour. Continued study of methods of teaching, especially those having reference to the application in school of atlases, wall maps, globes, tellurions, and other means and devices.

Drawing.

SEC. 26. *Grade first.*—Two hours. Free-hand drawing: Division of lines and angles. Drawing of geometrical plane figures. Complex symmetrical figures within the square (conventionalized natural forms). Drawing of rectangular and curved bodies from the front. Symmetrical figures and ornaments after models. Instrumental drawing; exercises in ornamental and blackboard drawing.

Grade second.—Two hours. Elements of perspective. Free-hand drawing from wooden models and casts, also from natural objects with crayon, India ink, sepia, and other colors, according to the talent of the students. Exercises in blackboard drawing.

Grade third.—One hour. Continued practice (especially on the blackboard) in drawing from nature, also objects used for illustration in other lessons. The methods of drawing to be discussed and illustrated. Suggestion for further study.

Aim: To enable the students to readily and accurately draw on the blackboard the figures necessary in the various branches of study (geometry, geography, object and language lessons), and to give good instruction in drawing in the lower schools.

Penmanship.

SEC. 27. *Grade first.*—Two hours.

Grade second.—One hour. Aim: (1) Students shall acquire a fluent, good penmanship, and use it in all written exercises. No negligent writing to be allowed. (2) To enable the students to set a good copy, not only on paper but also on the blackboard, and (3) to give good, methodical instruction in penmanship in the lower schools.

Gymnastics.

SEC. 28. The instruction in gymnastics is to follow the new guide prescribed for Prussian elementary schools, but this does not prohibit considerable extension of the course when local circumstances will permit it. Under any circumstances the aim must remain—the ability of the student to give good instruction and training in gymnastics in the public schools according to the published guide.

The first and second grades have each two hours per week; the third grade, one hour of practical gymnastics. The latter grade has, in addition, one hour for the necessary instruction concerning anatomy and functions of the human body. The first necessary aids in case of accident, historical development, aim, organization and management of gymnastic training, as well as the arrangement of gymnastic grounds and apparatus in elementary schools.

The students of the third grade must be given opportunity under supervision of the teachers of gymnastics to give lessons in gymnastics in the lower schools.

Music.

SEC. 29. (*a*) *Piano.*—In the first grade purely technical exercises in touch and fluency; some études according to a well-reputed text-book; independent musical pieces in successive order (beginning with easy sonatas, by Clementi) of modern as well as classic composers.

In the second grade études are continued; by specially gifted students Cramer's work may be used; sonatas of classical composers like Mozart, Beethoven, Haydn, and others. In grade first piano playing is reserved for private practice.

(*b*) *Church organ.*—The students follow the prescribed book according to the measure of their musical talent and training. Class instruction can not well be given except in regard to a certain number of hymns in the first grade. Analysis and transposition of preludes and interludes, as well as practice in reading at sight and preparation for the functions of an organist in church. For the third grade transposition of hymns, practice in modulation, and composition of simple preludes and interludes.

(*c*) *Harmony.*—Students who do not intend to prepare themselves for the position of organist must nevertheless take part in the instruction in harmony prescribed for grade first and in the historical part of the study.

Grade first.—Position and practice of the triad in major and minor, seventh and ninth chords, according to their principal forms and combinations.

Grade second.—Confirming knowledge gained in harmony, and constant application of the same in transcribing church hymns, and in analyzing, transposing, and practicing brief organ pieces. Also first course in modulation.

Grade third.—Harmonizing hymns and popular airs. Composition of simple preludes, composition of interludes worthy of being applied in divine service. Second course in modulation. The scales of the ancients. Knowledge of the most essential forms of instrumental music. Explanation of the construction of organ and its care. A little of the history of music.

(*d*) *Violin.*—The students are not divided into annual classes, but arranged according to their talent and training in music. Each division is to follow the prescribed text-book for violin playing. Besides the formal exercises found in text-books the following points are to be gained: (1) Simple and memorized exercises for beginners; popular airs and school songs prescribed for the lower schools; (2) acceptable performance of duets in systematic arrangement; (3) introduction into the higher positions on the violin.

(*e*) *Singing.*—Grade first in class lessons, elementary exercises in cultivating the voice, and for the purposes of independent presentation of melodic, rhythmic, and dynamic conditions of music. Hymns and popular airs; the former of one part, the latter of one, two, and three parts. Besides mixed choir of combined classes; exercises in vocalization and solfeggios, a more extensive treatment of intervals, especially of the chords in their different forms. Memorizing of popular hymns in two and three part music. Liturgical music: liturgical hymns in which the students must be able to lead; other religious choruses, such as motets and psalms of classical composers; secular choruses, with particular attention to patriotic songs.

Grade third, in a class by itself, is to receive instruction concerning the teaching of singing in the lower schools combined with practical exercises. Mixed choirs are to be combined of the students of the normal school and the pupils of the practice school.

The instruction in music aims to make good singing teachers, organists, and choir leaders. This aim should not be lost sight of by undue training of a few students as virtuosos. The students should be trained in the comprehension of classical compositions, and thus be prevented from amateurish performances in composing. In grades first and second, each, five hours per week is to be devoted to music; the seniors have three hours. These hours are to be so divided that each of the subjects previously mentioned shall find a place on the daily programme.

SEC. 30. Instruction in foreign languages may be offered in three classes with three or two hours per week to students who desire such instruction; the lowest grade to begin with elementary grammar of the language studied.

SEC. 31. Horticulture, arboriculture, culture of the silkworm shall, as hitherto, find attention in the normal schools of the Kingdom, and be, in a measure, supplemented by instruction in natural history. The institutions hitherto maintained for instruction in horticulture and arboriculture shall be continued (school gardens and nurseries).

The foregoing is the course of study in the normal schools in Prussia as prescribed by the Government. Of course each school has its own course of study framed and carried out by the faculty of that school, but these separate courses must be in accord with the principles expressed in the foregoing course. In order to show what the detailed course of a normal school is, we insert here a small portion of

the course of study prescribed for the normal school in Halberstadt, the institution of which the famous Dr. Kehr was principal for many years. We choose the chapter "History and literature" to show how the two subjects are taught so as to supplement one another. Titles in parentheses are those of literary masterpieces.

DETAILED COURSE IN HISTORY AND LITERATURE.

Grade first.

(Selections from literary masterpieces are inclosed in parentheses.)

Definition and division of history; First beginnings of states; Oriental life; The Egyptians; (An Egyptian funeral; The Nile). Geography of Asia Minor and adjoining countries in antiquity; The Assyrians; Babylonians; Medes; Cyrus; (Belshazzar; Nineveh; Grave of Cyrus). The Persian Empire; The Phœnicians; The people of Israel; (Tyrus). Geography of Ancient Greece; Greek islands and colonies; Primitive people; The heroic age; Greek mythology; Homer; The Dorian invasion; Codrus; (Capture and destruction of Troy; Mythological stories of Ancient Greece; The ring of Polycrates; Cassandra; The festival of victory; Combat between Hector and Ajax).

The laws of Lycurgus and Solon; Pisistratus; (Athenian education according to the laws of Solon); The Persian wars; Miltiades; Leonidas; Themistocles; Aristides; Pausanias; Cimon; (The Persian wars and their consequences; Xerxes and the battle at Thermopylæ; Themistocles). The Age of Pericles; The Peloponnesian war; Alcibiades; Socrates; Lysander; (Socrates); The city of Athens during the age of Pericles; Sparta's predominance; The Corinthian war; Agesilaus; Thebes' predominance; Pelopidas; Epaminondas; Philip of Macedonia; Demosthenes; (Demosthenes). The Empire of Alexander the Great; Culture and civilization of the Greeks; Youth and education of Alexander; (Alexander the Great with the Amaliers).

Geography of ancient Italy; Tribes; Founding of Rome; Rome under the kings; (Romulus and the founding of Rome). Wars for the preservation of the Republic; Brutus; Horatius Cocles; Mucius Scævola; Internal wars; Menenius Agrippa; Coriolanus; The Decemvirs; The Gauls in Rome; Camillus; The Licinian laws. Wars for the possession of middle and lower Italy; Causes of the Punic wars; (Pyrrhus). The Punic wars; Regulus; Hannibal. The Scipios; (Scipio). The wars of the Romans in the East; The disturbances of the Gracchi; The Cimbrians and Teutons; (Agriculture among the Romans).

Marius and Sulla; Pompey and Cæsar; Brutus; Octavius; (Julius Cæsar; Roman scenes; Degeneration of morals in Rome); Imperial Rome up to Diocletian; Culture and civilization of the Romans; (Condition of morals of the Roman Empire; Character of Augustus; The destruction of Herculanum and Pompeii; The death of Tiberius). Christ; Christianity during the first three centuries. The Roman Empire from Diocletian to Romulus Augustulus; Constantine the Great; Theodosius the Great; General Review.

Grade second.

Ancient Germany; Land and people; German tribes; Contests between the Romans and the Germans; Arminius; Germanicus; Union of tribes; Beginning of the great migration; (The religion of the ancient Germans; Hermann, Germany's deliverer; death of Drusus; The battle in the Teutoburger forest). The great migration; The Goths; Alaric; Genseric; Attila; Odoacer, (Theodoric the Great; Belisarius and Narses; The Longobards; The grave in the Busento River; Eudoxia; Attila; The battle on the Catalaunian fields). Founding of the empire of the Franks; Clovis; The Merovingians; The major domo; Pepin the Little; Extension of Christianity among Germanic people; Establishment of monasteries; The Feudal system; Justinian;

Mohammed and the Arabian conquests; (Mohammed and the Islam; Omar). Charlemagne; Louis the Pious; Division of the empire; The Carlovingians in Germany; (Charles the Great; How Emperor Charles visited schools; Wittekind's end and grave in Eger; King Karl's voyage; The Paladine's battles and fall at Ronncesvalles). Conrad I and the Saxon Emperors; (The coronation of Otto I; Emperor Otto I; Henry the Fowler; Battle with the Huns; Battle on the Lechfield).

The Salic-Frankish Kings; (Election of an emperor). Lothair of Saxony and the Hohenstaufen emperors; (Barbarossa; Frederick the Red-beard; Stories of Emperor Frederick I in the Kyffhäuser mountain; Barbarossa and Henry the Lion-hearted; death of Frederick I); The end of the Hohenstaufens; The interregnum; The first crusade; (The last of the Hohenstaufens; The holy lance of Antiochia; The execution of Conrad III). The other crusades; Time of the greatest power of the popes; The religious orders; (The time of chivalry). German civilization from the ninth to the thirteenth century; (A picture of cities in the thirteenth century; Pictures from the Middle Ages).

Methods of teaching history; Rudolf of Hapsburg; Adolf of Nassau; Albrecht I; (Rudolf of Hapsburg; Emperor Rudolf's ride to the grave; The count of Hapsburg.) Model and test lessons; Henry VII; Louis the Bavarian and Frederick the Beautiful. Charles IV; Wenzel; Ruprecht of the Palatinate; Sigismund; John Huss; The war of the Hussites. Albrecht II; Frederick III; Matthias Corvinus; Charles the Bold; The war of independence of the Swiss; Maximilian; Civilization of the Germans in the fourteenth and fifteenth centuries; (Maximilian; The Martin's Wall; William Tell; The battle at Sempach.) Italy and Spain during the fourteenth and fifteenth centuries; Introduction to the study of the new era; Discoveries and inventions; Columbus; Gutenberg; Conquests; Cortez and Pizarro; Conquest of Constantinople by the Moslems; (Columbus; The last supper by Leonardo da Vinci.)

The church reformation in Germany; Martin Luther; Philip Melanchthon; Zwingli; Calvin; (Luther's circular letter to the Burgomasters.) Charles V and his wars; The Schmalkaldian war; Wars of independence of the Dutch; (Duke of Alba at breakfast in the castle of Rudolstadt; The pilgrim of St. Just; Charles V.) Brief history of France up to Henry IV; Brief history of England up to Elizabeth; Introduction of the reformation in Scandinavia. Ferdinand I; Maximilian II; Rudolf II; Matthias; The thirty years' war; Wallenstein; Gustavus Adolphus; (Wallenstein.) Conditions of civilization and culture during the reformation and the century following it; (German city life at the beginning of the seventeenth century.)

Grade Third.

Louis XIV; The Stuarts in England and the two revolutions; Oliver Cromwell; The ascension of the house of Hanover: The Turkish wars; Leopold I; (Prince Eugene before Belgrade). The Spanish war of succession; Poland, Sweden, and Russia before the Northern war; Peter the Great; The Northern war; Charles XII of Sweden; August the Strong of Saxony; The Polish war of succession; The American war of independence; The French revolution; Liberation of Greece; (Alexander Ypsilanti upon Munkacs; The little Hydriot); Review.

The people of the Margraviate of Brandenburg; The oldest times; Founding of the North Mark; The eras of Charles the Great, Henry I, and Otto I; Margrave Gero; The rulers of the Ascanian dynasty; (The Court of the Ballenstædter); The Margraves of the Bavarian dynasty; The electors of the Luxemburg dynasty; The history of the Hohenzollerns from their ascension; Frederick I; (The fall of the Quitzows). The electors; Frederick II; Albrecht Achilles; John Cicero; Joachim I. The introduction of the reformation into Brandenburg; Joachim II; The history of the Prussians up to the year 1525; John George. Joachim Frederick; John Sigismund; George William; Review of the history of Brandenburg up to 1640. (The old Berlin.)

Frederick William the great elector; Frederick III; (Frederick William the great elector; Fehrbellin.) King Frederick I; Frederick William I; Youth of Frederick II; (Frederick William I to his son). Frederick the Great; (Frederick II and his valet; From the life of Frederick; Frederick II surnamed the Great; Ziethen; The hymn at Leuthen; From letters of Frederick; Speech of Frederick II before the battle of Leuthen; Hymn upon Frederick the Great; How Frederick Germanized the Netze district.) Frederick William II; The coalition wars of Frederick William III; The battle of Jena. Prussia's regeneration; The wars of independence from the rule of Napoleon; Queen Louise; Later period of Frederick William III; (The bugler at the Katzbach; Lützow's wild chase; Before Blücher's statue; Queen Louise in Tilsit; The Prussian people in 1813; The battle of Nations at Leipzig; From the life of Frederick William III; Andreas Hofer; The Song of the Field Marshal).

Review of Prussian history from 1640 to 1840; Frederick William IV; (A word from old Blücher; Prussian generals; Prussian heroes of 1813 and 1815; Frederick William's last will; Queen Louise's letter to her father; King Frederick William's appeal to his people; The song of Schill; Baron von Stein; Waterloo). King William; The Schleswig-Holstein war; The war with Austria; Causes of the war with France; (The song of Düppel. The French pretensions of 1870). The Franco-German war; Reëstablishment of the German empire; Emperor William as regent, king, and emperor; Historical literature, especially juvenile books. (From a letter of July 9, 1866; The capitulation of Sedan; The new German empire; The nineteenth of July, 1870; The trumpet of Gravelotte; Strasburg; The watch on the Rhine; On the third of September; The hymn of Kaiserslautern; The flag of the Sixty-first regiment; Two anecdotes from the French war; King William to the Queen about the battle of Sedan); Review of the entire course of the year in form of lectures by the students.

This is the detailed course in history, coupled with a course in historical and literary reading, followed by the students in the normal school of Halberstadt.

IV.—PROFESSIONAL STUDY OF GERMAN TEACHERS.

The course of study pursued in Prussian normal schools (see pp. 162–667) shows that among the branches taught pedagogy is mentioned. To an American reader this term may possibly convey an erroneous meaning. Hence it is desirable to define it by giving a synopsis of the course in pedagogy prescribed. We see from it that pedagogy is a collective term, embracing the history, science, and practice of teaching, or, to use a more comprehensive term, education. The synopsis is taken from a text-book on pedagogy now in use in the majority of Prussian normal schools. Its title is *Lehrbuch der Pädagogik*, by Dr. W. Ostermann and L. Wegner (Osnabrück, 1891), 2 volumes.

Synopsis of the Course in Pedagogy.

Introduction; definition and classification of pedagogy.

First part.—History of Christian education.

(1) Importance of Christianity for the development of education.
(2) Christ a model of the Christian educator.
(3) Education during the first centuries of the Christian era.
(4) Christian pedagogy on German soil.

(5) The first Christian educational institutions in Germany: (*a*) Convent schools; (*b*) endowed schools (*Stiftsschulen*).

(6) School reform of Charlemagne.

(7) Education during the age of chivalry.

(8) German city schools at the close of the Middle Ages.

(9) Revival of letters.

(10) Pedagogical science during the Middle Ages.

(11) Education during the era of Reformation: (*a*) Pedagogical importance of the Reformation; (*b*) pedagogical activity of the great reformers, (*aa*) Luther, (*bb*) Philip Melanchthon, (*cc*) Johann Bugenhagen.

(12) Educational reformers of the Seventeenth century: (*a*) Wolfgang Ratichius, (*b*) Amos Comenius.

(13) The Era of Pietism: (*a*) Philip Jacob Spener: (*b*) Aug. Herm. Francke.

(14) Jean Jacques Rousseau.

(15) The Philanthropists: Basedow.

(16) Friedr. Eberhard *v.* Rochow.

(17) Johann Heinr. Pestalozzi, his biography, personality, and activity.

(18) Other noted educators of the Nineteenth century.

(19) Brief systematic survey of the historical development of German popular education: (*a*) Before the Reformation: (*b*) during the Reformation, (*c*) during the Seventeenth, (*d*) Eighteenth, and (*e*) Nineteenth centuries.

Appendix: Special schools and institutions.

SECOND PART.—PSYCHOLOGY AND LOGIC.

Introduction; definition and classification.

A. Intellect (Die vorstellende Seele).

(1) Perceptions (*Emfinden und Wahrnehmen*): (*a*) The nervous system as physical organ of perception; (*b*) origin and essence of perception; (*aa*) the different kinds of perception; (*bb*) general theory; (*c*) representation and objectivity; (*d*) perception and apperception.

(2) Conceptions (*Vorstellungen*): (*a*) Origin, essence, and differences of concepts; (*b*) reproduction, consciousness, and unconsciousness of concepts; (*c*) change and combination of concepts; (*aa*) mechanical procedure; (*bb*) logical procedure (logical thought, understanding, intelligence); (*cc*) logical forms of thought, idea, judgment, conclusion; (*dd*) the understanding as original faculty of the soul, and training of the intellect; (*d*) attention; (*e*) memory; (*f*) imagination.

B. Emotion (Die fühlende Seele).

(1) Kinds of emotions: (*a*) Emotions of pleasure and displeasure, mixed emotions; (*b*) sensual and spiritual emotions, (*aa*) intellectual and (*bb*) æsthetic emotions; (*c*) Sympathy; (*d*) Ethical emotions; (*e*) Religious emotions. (*f*) Emotional disturbances ("Die Affecte").

(2) General remarks concerning origin and importance of emotions.

C. Volition (Die begehrende und wollende Seele).

(1) Desires (impulses, affections, passions).

(2) The will: (*a*) Difference between desire and will, (*b*) freedom of the will; (*c*) kinds of volition; (*d*) character.

(3) The relation of desires and will to intellect and emotions.

Individual differences in psychical life. Existence and essence of the soul: (*a*) Human individuality; (*b*) existence and essence of the soul.

THIRD PART.—THEORY OF EDUCATION.

A. Physical education.

Chief rules of dietetics. (*a*) Nourishment of the body; (*b*) air and breathing; (*c*) circulation and cleanliness; (*d*) heat; (*e*) motion and rest. Dietetic treatment of the nervous system and sense organs.

B. Mental and moral education; theory of religious and moral education.

I. Direct training of the will.

II. Indirect training of the will by means of (*a*) habit; (*b*) discipline and government (school regulations; rules and punishments); (*c*) by means of instruction and appeals to the emotions; (precept and example).

III. The ideal Christian educator.

C.—Practice of teaching; general practice.

(1) General object of popular education.

(2) Selection and arrangement of matter: (*a*) Courses of study, (*b*) time tables.

(3) Forms of instruction: (*a*) Method of presentation, (*b*) of imitation, (*c*) of communication, and (*d*) dialogic method, (*aa*) question, (*bb*) answer.

(4) Concerning the conditions of procedure which will develop the mind.

(5) Exercises: (*a*) repetition, (*b*) application, (*c*) memorizing, (*d*) home lessons.

I. Appendix. School management.

(1) The schoolhouse; its environment; the schoolroom.

(2) Time, school terms, vacations, etc.

(3) School furniture and apparatus. Appliances for instruction.

(4) Order and regulation of school life. Discipline.

(5) Classification and grading. Location.

(6) Lists of attendants and other registers.

(7) School administration, authorities, supervision, and revision.

II. Appendix.

Subsequent education of teachers. Extended circle of duties. The life and social status of teachers.

V.—TEACHERS' TRAINING IN SWITZERLAND.

Switzerland shows some special features in its system of normal schools which may be worthy of mention. The Year Book of C. Grob furnishes very well sifted material for that purpose.

The buildings of the Swiss normal schools are partly sequestered convents or ancient manor houses, partly convents and schoolhouses still in use and serving other purposes besides those of normal schools. One was formerly a hotel. Eight of these schools have large areas of land for the purpose of agriculture; some, a spacious park or garden for the practical study of botany and for recreation.

Switzerland has 37 normal schools; of these 22 are in German, 13 in French, and 2 in Italian Switzerland. Twenty-three are attended exclusively by men, 13 by women, and 1 (since 1873 in Küssnach) by both sexes. Of the 23 schools for men, 6 are independent institutions—

that is to say, not exclusively normal schools, because the students are prepared in them for other pursuits also. It may be mentioned that in Basel the principle has been followed according to which general education is separated from strictly professional training. The teachers in Basel "must acquire a scientific education on a level with the other learned professions." "We demand of elementary teachers," says the report of the commission of public education, "as well as of teachers of secondary schools, that they graduate from a secondary school which leads up to the university. The pedagogical education is restricted to a seminary affiliated with the university. Its course lasts one year and a half. Owing to the necessary practical exercises in teaching, the purely professional training of teachers could not be entirely given over to the university proper." Since May, 1892, the council of education of Basel has authorized an extension of this course to two years.

The cantons maintain 25, certain communities 4 of the Swiss normal schools, 8 are private. The number of students in 1890 was 2,002 (1,294 men and 708 women). They were instructed by 288 men and 70 women, whose salaries were comparatively low; for instance, in Zürich and St. Gallen between $600 and $1,000; in Vaud between $600 and $800; in Thurgau between $480 and $760 (with some benefices), and in Berne between $400 and $600. The entire expenditure for teachers' training in Switzerland in 1890 amounted to $223,800, which is $112 per capita.

Twenty-four Swiss normal schools offer their students the economical advantages of dormitories. In some of these the students have to clean rooms and keep house, attend to the garden, serve at table, and to some extent also in the kitchen, split wood, and do similar domestic work. These duties are performed to lessen the expenses of the students. This convent discipline is very severely commented upon in the educational press, but it may be explained by the prevailing poverty in certain strata of society in Switzerland. The students are allowed to form societies for mutual improvement. The report referred to notes 9 gymnastic, 7 shorthand, 4 singing societies, and 3 for general purposes. This is to afford students some experience in parliamentary rules, a very essential element of education in a republic. With the exception of Basel, mentioned before, the requirement for admission is that the student shall have attended a grammar school, the graduates of which must be 15 years of age; then follows in 11 normal schools a course of four years, while in the remainder the course is one of three or two years. In the latter the minimum age for admission is sixteen years. The authority quoted remarks that with few exceptions, such as Zürich and Basel, the normal schools offer too little in the way of intellectual culture and professional training.

The lessons prescribed require 38 hours' work, to which must be added a considerable number of hours of work for optional studies. A revision of the course of study is frequently called for by the teachers.

The course of study varies in the different cantons. Instruction in language receives 5 to 10 hours per week. The mother tongue receives a larger share of time in French and Italian schools than in the the German, where natural sciences and the mathematical branches are treated more extensively. On the other hand, in German Switzerland the foreign tongues are generally considered of greater importance than in the French and Italian schools. In all Swiss normal schools, with the exception of four, one other language is taught beside the mother tongue, as an obligatory study. In German schools it is either the French or Italian, in the French it is the German language. To geography only 2 hours are given uniformly, but as regards mathematics and natural sciences, the courses vary considerably. While in Zürich these branches are considered of great importance, they are almost neglected in Wallis. Arithmetic and book-keeping are separate branches in 9 institutions, hygiene in 4, and civics in all the normal schools of western Switzerland. Civics is understood in Switzerland to embrace knowledge of the constitution, laws, and political economy. Agriculture is taught in 11, and manual training given in 7 institutions.

The professional preparation of the common school teachers is not treated with the importance it deserves. The time is too short to apply, in the practice school, principles and methods learned in the class rooms. The students are much too young to comprehend and assimilate much of psychology and other branches of pedagogy. Nor are the teachers well enough prepared to give scientific instruction in pedagogy. Besides all this the opportunities for practical work in school are, in many institutions, insufficient. A peculiar feature of the professional part of the course is, that pedagogy and method are represented by two different teachers. (C. Grob.)

There is a general unwritten law in Switzerland derived from experience, that no candidate for a teacher's position may be elected before he is of age (20 years). The diploma of graduation of a normal school is based upon the accomplishments of the students in every branch of study pursued during the course. Though a branch may have been finished during the first year, the result of the final examination in that branch held during the first year has its bearing upon the diploma.

A minute study of the entire system of teachers' training in Switzerland will evince the fact, that the connection between the great national common school system of the Republic and the normal schools is not as organic as it might be, the general supervision being wanting. The teachers of the Swiss normal schools have not formed a society as have those of the secondary schools. There is even wanting a connection of the normal schools of each canton with the other advanced seats of learning; but if we consider the fact, that public education is not a federal concern, but of the different cantons or states that constitute the Federation as it is with us, we can easily see why it is that in school matters Switzerland shows such a remarkable variety of objects and means.

VI.—SYMPOSIUM.

In order to shed light on the present status of the training of teachers in central Europe, this chapter is inserted. It contains opinions concerning the training of teachers, expressed by normal-school men in reply to a circular letter submitted by the executive committee of the German Teachers' Union. The gentlemen to whom the letter was addressed were all men of great reputation and long experience in normal-school work in Germany, Austria, and Switzerland. Of 42 to whom the circular letter was sent, 17 replied to every one of the 8 questions submitted. They were Dr. Andrae, inspector of normal schools in Kaiserslautern, Bavaria; Dr. Bliedner, principal of a secondary school (formerly of a normal school), in Eisenach, Saxe-Weimar; Mr. Böhm, normal-school teacher in Altdorf, Bavaria; Mr. Brossmann, principal of a normal-school in Schleiz, Thuringia; Dr. Hannak, principal of a Pädagogium in Vienna, Austria; Mr. Helm, inspector of normal schools in Schwabach, Bavaria; Mr. Israel, school councilor and principal of a normal school in Zschoppau, Saxony; Dr. Just, principal of a secondary school (formerly normal-school teacher), in Altenburg, Thuringia; Dr. Lange, principal of a secondary school (formerly normal-school teacher), in Plauen, Saxony; Mr. Leutz, principal of a normal school in Karlsruhe, Baden; Mr. Mahraun, superintendent of city schools (formerly principal of normal school), in Hamburg; Mr. Martig, principal of a normal school in Hofwyl, Switzerland; Dr. Rein, professor in the university (formerly principal of a normal school), in Jena, Thuringia; Dr. v. Sallwürk, chief school councilor in Carlsruhe, Baden; Mr. Schultze, school councilor and principal of normal college, Potsdam, near Berlin, Prussia; Rev. Mr. Seyffarth, superintendent of schools in Liegnitz, Silesia, Prussia; Dr. Staude, principal normal school in Coburg, Thuringia; Dr. Keferstein, principal of a normal school in Hamburg; Dr. Wohlrabe, rector in Halle, Prussia; Prof. Rauitzsch, principal normal school in Weimar, Thuringia; Mr. Schöppa, principal normal school in Delizsch, Prussia.

Other gentlemen explained their failure to respond to the queries submitted, on account of the position they are holding, since it might appear as though they criticized the government.

The first question asked was:

Is it advisable to organize the normal schools in such a way that they can offer professional—that is, pedagogical—training exclusively, or should they also offer academic instruction and general education which must be the basis of professional work?

Thirteen replies were in favor of the first, three in favor of the latter organization. For the principle of separation of general education and purely professional training, the following reasons were advanced:

Without doubt the true object of a teacher's training school is to prepare its students for their profession. The science it has to teach

is therefore pedagogy and its supplementary sciences; the art it has to develop is the art of teaching. The school can accomplish this task satisfactorily only if the general education of its students has to a certain extent been completed before they are admitted. This seems necessary also because without previous thorough training of the mind a scientific treatment of pedagogical questions, as well as pedagogical thinking, is impossible. If a separation between general preparation and professional training is made, the work in the normal school would be more unified, hence its effect upon mind and heart more intense. The mixture now prevailing is the chief obstacle to progress in the field of teachers' training. It necessitates a low degree of requirements for the general education as well as for special professional training, lower at least, than is desirable in the interest of popular education. The lowering of requirements of both objects will prevent doing justice to either, and is the chief cause of the specific type which is popularly styled "schoolmaster's wisdom."

In the field of teachers' training for secondary schools the State has recognized the imperative necessity of separating general culture and professional training, by requiring the former to be gained in the universities, the latter in special seminaries connected with secondary schools. A similar separation in the preparation of teachers for the common schools would not only be beneficial for the entire system of training, but equally benefit the profession, since the latter would rise in public opinion very perceptibly.

Of the three opponents, one bases his objection to the proposed separation upon the fact that it presupposes two educational institutions, hence would greatly enhance the cost of teachers' training. The other two gentlemen seem to presuppose that by the term *Fachbildung* or professional training is meant the study of the science of pedagogy and supplementary sciences only. If this were the case, their objection would be justified, for instruction confined to those limits would scarcely fill out the time or engage the interest of the student sufficiently. But that presupposition is erroneous.

During the national teachers' convention at Halle in 1892 it was plainly stated:

> The *Fachbildung* or professional training should consist in the study of the science of pedagogy and its supplementary sciences, together with practice in teaching and the complete elaboration with reference to its didactic treatment and formation of the matter of instruction prescribed for common schools. It is true, in this practical work, the matter of instruction is below the level of the student, but it is treated from a different point of view so that the dominating interest is enlisted and strongly expressed. Beside these studies a few branches of study for general culture must find a place in the curriculum of the professional normal school, such as history of civilization, literature, foreign languages, etc. However, they must be so taught that they become serviceable to the professional training. In the history of culture and civilization, for instance, the development of education and school systems must come in for a good share of attention; the treatment of literary masterpieces must emphasize their psychological and pedagogical importance; the reading of works in foreign languages must chiefly touch upon educational questions, etc. From this it

is plain that though the professional instruction in the normal school (by subjecting it to the pedagogical interest) maintains its unity of character and purpose, yet it acts suggestively and fructifying upon all parts of the student's horizon of thought.

The author of the seventeenth reply holds a singular point of view. He desires a university education for all teachers, elementary as well as secondary, with the exception of special teachers of music and organists, as well as teachers of ungraded schools who are obliged to teach music also. This class of teachers, he thinks, should be trained in seminaries, where a general education is offered, besides professional training. For the other teachers he proposes to require them to obtain their preparatory education in some of the numerous secondary schools; and in the university a new faculty, the "pedagogical," should offer the required professional training.

The second question submitted was:

In what manner, in case the first question be answered in the affirmative, shall the general preparatory education be obtained? Is it desirable to (*a*) establish special preparatory schools for teachers, or (*b*) should the existing normal schools be extended downward by establishing preparatory courses, or (*c*) is attendance of secondary schools to be recommended? If so, which one, the classical (Gymnasium), or the modern (Realgymnasium), or the citizens' high school (without Latin)?

The replies to this question exhibit the greatest diversity. Three of them plead for perfect liberty of preparation.

Says one gentleman:

I lay little stress upon the form of the institutions for that purpose, since they always more or less adapt themselves to given local circumstances; but the contents of such schools, *i. e.*, their course of study, is the thing to be considered. My view is that a preparatory institution of a normal school should most resemble the Realgymnasium, yet show individual features.

Another writes:

Uniformity in preparation I consider neither practicable nor to the purpose. It is no disadvantage to have students of a normal school who come from different preparatory or secondary schools, provided always, that these institutions have given them true intellectual culture and not merely dead, undigested knowledge. At any rate, a student applying for admission to a normal school should have passed the final examination in a secondary school. The torso education of a junior or sophomore can not suffice as a preparation for a normal-school student.

In three replies special preparatory schools for normal schools are recommended, because none of the existing secondary schools sufficiently prepares its students in those branches which are essential for the practice of teaching, like the German language and literature, religion, home natural history, arithmetic, penmanship, and music. Special preparatory schools are recommended, also, because they will make possible a more uniform training of the students in the normal schools through their having received a like preparation. But in these three replies it is expressly stated that graduates of classical or modern high schools may be admitted to the normal school. One gentleman of the three pleads for separation of preparatory and normal school; another for close organic connection under the same management and roof.

One thinks the preparatory school should also admit students who do not intend to devote themselves to teaching.

In five replies the organic connection between preparatory and normal school is urged as the most practical and successful arrangement, and an imitation of the plan followed in Saxony is recommended, where the normal-school course is one of six years, three of which are devoted to preparatory, three to professional study. Only in this way the preparation could be had in a proper manner, and carried through with the necessary comprehension on the part of the teachers.

In six replies now-existing secondary schools are considered the most suitable preparatory institutions, and all choose that type of a school known as the citizen's high school, without Latin.

> For [so it is said] the special preparatory schools precipitate professional training, which in consequence narrows the horizon of thought of the student instead of extending it. A school for general culture that does not deal with special professions is not apt to contract the horizon of the student, and is therefore to be preferred. All kinds of classical schools estrange the teacher from those classes of society in which he is expected to act as educator. The "six-grade high school" proposed unites, however, in its present organization all the requirements of the general culture of common-school teachers, and offers the teacher a position in the higher—that is, cultured—class of citizens in which he is to act as educator.

It may be remarked here that in one of the replies this high school is considered suitable as a preparatory institution only because the present circumstances make it appear so; otherwise the gymnasium or classical high school would be preferable owing to the more thorough culture it offers. In still another reply the citizens' high school is rejected, because the scientific and mathematical branches are pressed into the foreground, while in the preparation of teachers who will have to educate, as well as instruct, the linguistic and historical branches should predominate.

The authors of all these replies stand with regard to the present question exclusively upon the standpoint of the normal-school teacher. But for elementary-school teachers other considerations are of weight. Thus, a speaker in Halle points to the fact that a close connection between the preparatory and normal schools, however suitable it may be otherwise, would yet carry with it the unavoidable disadvantage that the various external considerations (political, clerical, and economical) which influence teachers' training in the State would necessarily also influence the management, organization, and course of study of the preparatory schools; while the secondary schools of general culture, conservative as they are and have been, will not be touched by that influence to any great extent. To this is added the other weighty consideration that it must be in the interest of the profession to see its members conjointly share in the general culture with the members of other professions. This would prevent the unpleasantness arising from undervaluation and disparagement so frequently met in connection with the profession of teaching.

The third query submitted was:

Shall the normal schools be denominational schools or shall they receive students of all religious confessions?

Six of the replies declare in favor of denominational institutions; ten in favor of schools in which all confessions are represented. One gentleman writes:

This is, in my judgment, not an educational but a political question. The aims of popular education and culture may be attained in either case. I have taught for many years in a denominational seminary, and even longer in a mixed institution, but have not found that a mixture or combination of confessions in any appreciable degree influenced the work or secured greater success.

One reply contains a decided preference for separation of the religious confessions, claiming "that if the normal school is to act in the service of character-building, and is to imitate the family, especially where it is a boarding school, the students of different confessions must be separated lest the most annoying occurrences might endanger the peace of the institution." Another gentleman, also an objector to mixed schools, says:

In a mixed normal school neither the mother tongue and its literature, nor history can be taught in a manner which would allow the future teachers to recognize the various momenta and factors of culture in Germany since the Reformation; nor could the historical importance and mission of the Protestant Prussian State, through which the German individual has become a political citizen, be discussed before students of both Christian confessions.

On the other hand, weighty arguments are advanced in favor of a combination. It is said the normal schools are State institutions, and since the State is neither Protestant nor Catholic, no educational institution belonging to the State should have a denominational character. He who trains the teacher denominationally makes him impracticable for the German common school, a school that is to promote unity of national education. Finally, denominational normal schools endanger one of the most essential qualities of good instruction, i. e., objective truth.

In one reply it is said:

However deeply convinced the undersigned is of the fact that educational institutions must be built upon a common basis only when they are to propagate a specific spirit, I must yet plead for the common character of the professional normal schools. The teachers' training school is not to be an educational institution, pure and simple, designed for character-building. It is to be supposed that the character of a young man when he enters a professional school, though that character may not be quite developed, is fixed to such extent that he will not tolerate external influence upon it. Inner development and self-assertion in religious conviction must be left to the individual. On the other hand, the professional training is a matter of common concern. There is no specific Catholic multiplication table, or Protestant grammar, or Jewish geography.

The fourth question was:

Is it desirable to organize teachers' training schools in the form of boarding schools?

In two replies to this query a decision is declined, since a judgment concerning the value or worthlessness of dormitories connected with normal schools is entirely dependent upon the condition of the institution. It depends upon the principal and professors entirely. Dinter and Diesterweg, it is said, had boarding schools against which no objections were raised.

Only *one* gentleman expresses himself in favor of boarding arrangements. He says:

If the boarding school is neither a military barrack nor a convent it has great advantages over the other arrangements according to which the students live in private families or other lodgings. The advantages are found in the necessary intensity of the work which is demanded by the modern training of teachers.

In seven replies the authors declare themselves in opposition to the compulsory boarding schools, but are not quite willing to give up the institutions entirely, since they enable many a poor but capable boy to live cheaply and prepare himself for the profession. It is said that the boarding-school arrangement would lose all its dangers if, as is done in Saxony, admission to it is left to the choice of the students.

One gentleman writes:

The dormitories should be considered a benefit, but charity forced upon a person is no charity, and therefore ethically not justified.

"The right to punish an evil-minded boy by expelling him temporarily or for good from the benefits of the dormitories," writes a Saxon author, "gives us a most effective means of discipline." We have had no case as yet where that punishment was necessary, hence conclude as aforestated.

Another author replies:

Dormitories belong to the provisions of pathological pedagogy, provided they are conducted well and arranged according to hygienic principles. Delicate cases are known to me that needed careful treatment, and the dormitory has proved a moral hospital. Of course only in this sense it should be made use of in normal schools.

With much more decision the last seven replies reject the boarding arrangement and plead for liberty, so to speak. Only in cases of great need, and then only temporarily, should the students be allowed to live in the institution, "since experience teaches that the faculty have little influence over the spirit and conduct of boys assembled in dormitories. The rule should be to make the normal school a day school."

There have been cases where the dormitories proved to be beneficial, but the general experience is that they are not. It is much more difficult for a faculty to govern a boarding than a day school, and everything depends upon the character and executive ability of the principal. Moreover, the principal of a boarding school is hampered by and burdened with many household cares which infringe upon his pedagogical activity. The life in a family exercises a much better influence upon a student than convent life. Of course, as in the other, so in this case, much will depend upon the proper choice.

The fifth question has reference to the selection of the locality of the

normal school. Three authors declined a decision on principle regarding this point. One says:

The normal schools should be equitably divided according to the population. This will locate some in large and some in small cities, according to the character and needs of the province. As there are renowned universities in large as well as in small cities, so it may be the case with normal schools. It is a matter of self-evidence that the schools should be located in county centers for obvious reasons.

In four replies small towns are preferred. The following reasons are advanced:

In our modern time larger cities give too much opportunity for dissipation. The period of training needs quietude; the teacher after graduation may look about himself in the world.

Generally small towns are preferable because the students can then be supervised better, and the circumstances prevailing in those towns are similar to those in which the teachers have to live afterward. Moreover, the rural environments offer opportunities and ample material for home geography and natural history as they will have to be taught later.

The use of collections, museums, etc., of a metropolis, or a capital, is not commensurate with the greater familiarity with country and people that can be gained in smaller towns. The students of normal schools in large cities can not study in museums any more than the students from other places who may visit them.

As far as the members of the faculty are concerned it must be granted that they have more social and scientific intercourse in a large city, but literary and scientific work on their part is much better performed in quiet, rural surroundings.

Naturally it will be unavoidable that cities of the size of Berlin and Vienna, having thousands of teachers, must have normal schools of their own. A metropolis has a highly developed life and so many peculiar elements of culture that the children need city-bred teachers. A country teacher can not well enter at once into the circle of thought of city children.

Ten replies are in favor of large cities.

It is said that very small towns are apt to countrify the students. On the other hand, a metropolis is apt to dissipate and endanger the morals of students not kept in dormitories but choosing their own lodgings. The best choice would seem to be cities of medium size, as these have been found to be the best locations for universities. The normal-school student should not be reared so as to estrange him from the world. He must feel the incessant throbbing and pulsating of the world, but be equally guarded against the danger of moral depravation and intellectual dissipation.

I consider it very necessary in the selection of the location that intercourse with nature be facilitated. This point I consider most important. The morbid longing of country teachers for positions in the city I attribute to the lack of a well-developed love and sense of nature.

The best plan would seem to be to place the normal schools in suburbs of larger cities, since both requisites mentioned may be satisfactorily met there—the vicinity of ample sources of culture and the solitude necessary for intellectual labor.

In very small towns the teacher loses connection with the scientific movements of the time; hence the interest of the faculty as well as the students point toward cities in which a high degree of intellectual life is found.

The sixth question was:

Is the professional training at present offered in normal schools considered to be sufficient, or do the present status of the science of pedagogy and the increased demands which modern times make with respect to popular education, justify an extension of the course in professional training?

Not one of the replies received answers the first part of the question in the affirmative. On the contrary, all express the opinion more or less distinctly and emphatically that the present status of German normal-school training is insufficient. Only in one reply is an extension of the course considered inadvisable, owing to the fact that the students are already overburdened with matter and method. The fact mentioned may be true, yet it must be considered whether a different preparation for the normal school and a more practical organization of the teachers' entire training may not remove the difficulty.

Although the question had reference to the professional training alone, several replies include the general culture. In one of them it is emphasized that the greatest weakness of the students is found in the lack of the thorough general culture. It is said, "Here the lever should be applied. Only with better prepared students can higher demands be made in professional training." Thus again we see that the question of preliminary work is the keynote of the whole subject. How insufficient is the present preparation for normal schools is exemplified in some of the replies. One author says:

> It is ridiculous to expect of young people to solve difficult psychological and pedagogical problems when they still wrestle with grammatical and rhetorical rules.

With regard to the strictly pedagogical professional training the necessity of reading educational sources, as well as an extension of the instruction in sciences supplementary to pedagogy, such as psychology and ethics, are recommended. This latter instruction should, it is said, be so conducted that pedagogical theories are derived from it. In the practice school instruction should be given in such a manner that the students become convinced of the fact that teaching is an art. Several replies object to the dogmatic manner in which professional instruction is offered.

> Where the system of pedagogy does not grow out of the practice in school, where the practice teacher is not the most experienced, but the youngest of the faculty, one may, during the lessons in pedagogical theory, speak with the tongue of an angel—the students will after all not profit much by them, but acquire futile examination knowledge.

The seventh question proposed was:

> Are the requirements for the preparation of normal-school professors generally considered sufficient?

In one reply the author declines to give a definite answer, owing to the difference of the conditions in the various countries. Four authors reply in the affirmative, twelve in the negative. Says one of the latter:

> These requirements may be regarded sufficient as far as the general education offered by professors is considered; but quite insufficient with respect to pedagogical qualifications. This is particularly true of the principals of the normal schools, who are quite frequently insufficiently prepared for their positions. Until better men are put at the head of those institutions, progress in the training of teachers can not be expected.

In the second reply we read:

This is the weakest point and reform is most needed here. The present practice, according to which shipwrecked candidates for higher schools are considered good enough for the normal schools, and ambitious theologians are placed at the head of normal schools, assisted by young men just graduated, must be considered a grave error which may be explained by the want of financial means, but can never be excused. Whether the principal or teachers in the normal schools have received their preparation in the theological or philosophical faculty of a university, or only in the normal school, is immaterial; but it is not immaterial by any means whether they are highly cultivated and experienced educators, or whether they first intend to gain their experience in the normal school, according to the popular saying: To him whom God gives an office, He also gives the requisite understanding.

In another reply the author demands that all normal-school teachers should possess a university education.

The normal-school teacher should, with regard to scientific knowledge, stand on the same level with the teachers of secondary schools who must have received an academic education. Not only the work they are to perform requires that, but also the position, reputation, and importance of the institutions in which they work; in various ways this will reflect upon those who are to gain their professional education there. This is the cardinal point of all reforms in the training of teachers. Care should be taken to enable those who have made their way through normal schools to enter such positions by special preparation and study.

In another reply university education is required only for the principal and a portion of the faculty.

Most of the authors who advocate reform in this point think it advisable that all normal-school teachers should attend, for several years, a pedagogical university seminary. In order to make this possible "the conviction that pedagogy is a science, and that it is necessary to represent it properly in the faculty of the university, must first be awakened in Prussian universities." "This demand," writes another, "will be unattainable so long as the present indifference for real national education continues. This indifference is found where the common-school teacher is considered the servant of the pastor, and where a professor in the gymnasium is considered a shipwrecked university professor."

The last question proposed was:

Are you of the opinion that the education gained in a German normal school, if supplemented by continued private study and acknowledged practical results in school, is sufficient and will enable a teacher to fulfill the duties of supervisor, either as principal of a building or superintendent of a system of schools? Do you consider it necessary to establish special institutions for the preparation of such officers?

In most of the replies received the necessity of special institutions of this kind is denied; of course, provided that the training of teachers should be reformed in the light of the advice stated in the foregoing replies. One author says:

Our present system of training teachers for the common school is entirely insufficient for the purpose of preparing supervising officers.

In most of the replies a special examination for principals and superintendents is urged, "so that all arbitrary promotions be made impos-

sible." With reference to the examining board for this purpose, it is recommended to appoint only educators of acknowledged high culture, who are not suffering from the prevailing disease of the age, i. e., are not specialists of some kind, so that the entire education of the candidate may be judged fairly.

A few writers oppose this measure and recommend the custom in vogue in Saxony, which is, that candidates for supervisory offices are required to attend the university after they have graduated from the normal school. In one reply a similar custom in vogue in the canton of Berne is pointed out. Here graduates of normal schools have the right to attend the lectures of cert in professors of the philosophical faculty of the university called the *Lehramts-schule* (university seminary). This gives the candidates a claim upon positions in secondary schools, and it is from among these teachers that most of the school inspectors and normal-school teachers are selected.

These opinions, rendered as they are by the foremost normal-school educators of Germany, Austria, and Switzerland, have made a profound sensation among teachers and government authorities. The educational press has reproduced them and commented upon them; even the political press in Germany has considered them the most authoritative and important contribution to the question of teachers' training of late years, and expressed the hope that the provincial as well as the central Government will base future reforms on the advice of these gentlemen.

The further fact that this symposium was called for and published by the National Union of Teachers, a union that has nearly 60,000 members, is most significant, and proves that the teachers themselves are not satisfied with the professional education the state offers them. From the historical review on previous pages, it has been seen that it was always the teachers themselves in central Europe who recognized the prevailing inadequacy, and urged reforms. The Government has not always been willing to acknowledge the force of the teachers' criticism, but in the course of time it has always acknowledged its justice.

VII.—PERSONAL OBSERVATIONS.

During the months of January and February, 1893, the writer of this report was detailed to inspect German normal schools, and to gather material that would be useful in giving an accurate picture of the present status of professional training of teachers in central Europe. To the foregoing historical review and statement of the statistics and present condition of the normal schools in central Europe, therefore, are added here some personal observations made during several visits of inspection in teachers' preparatory and normal schools. The nature of this report requires that these observations be general, leaving personalities and localities out of consideration.

Buildings.—In comparison with State normal school buildings in New York, Pennsylvania, Illinois, and other States, the German normal

school buildings are very inferior. It has a depressing effect to see the most vital rules of hygiene set at naught in these schools, from which are to come the teachers of the present and future generations. It is the common experience that a teacher will teach "as he is taught," that he will conduct a school as he has seen it done. Hence it is to be supposed that the graduates of normal schools in poorly ventilated and wretchedly arranged buildings will have no very exalted idea of how a school building should be built, or how it should be kept to comply with hygienic rules. Circumstances, such as poverty of the state, existing local conditions, old buildings which must be utilized, may explain, but can never excuse the present insufficient provision for a system of schools of equal importance with the proud system of universities in central Europe.

Even new normal school buildings in Prussia do not come up to the standard of American school architecture, having flat, expressionless fronts, unbroken rows of windows, and a box-like shape. They betoken a want of provision for æsthetic culture, serious if one considers the consequences of such a want. The students of such schools can not obtain ideals of æsthetic culture, if trained in surroundings that seem to poorly fit the purpose they are designed for.

This observation regarding style and poor arrangement of buildings is not meant to include a few buildings erected later in large cities, but refers to most of those inspected by the writer. It is, perhaps, not too much to say that the lack of cleanliness frequently found, the excessively foul air, the crowded condition and general want of comfort and beauty noticed in German elementary schools, are chiefly owing to the lack of high ideals in school architecture and æsthetic education on the part of the teachers and inspectors, who would exert their influence toward an improvement in this matter if they had been differently trained.

A visit to a preparatory school.—The State of Prussia maintains a number of preparatory institutions in which the candidates for admission to the normal schools are specially prepared. Many other schools for the same purpose are private, especially in the western provinces. Since the candidates for normal schools rarely come from secondary schools (*see* Hist. Review, p. 149) special preparatory institutions seem a necessity. The writer inspected two of them, one very closely. Here he noticed a fact well known, but rarely heeded by school authorities, namely, that the most logical arrangement of matter of instruction, the most carefully devised courses of study, the most skillfully prepared appliances for teaching, the most devoted attention to study and love of knowledge on the part of students, are as nothing compared with the skill of the teacher who knows how to prepare the matter and also to prepare the mind for receiving it. A simile may illustrate this. The prevalence of indigestion in the United States is not owing to the want of good meat and vegetables, for they are as

good, if not better here than in other countries, but to bad preparation of our food in many kitchens over which ignorant cooks preside, and also to the unduly hurried mode of eating prevalent all over the country. Just so with the teacher in school. If he work like the proverbial cheap restaurant cook, the best course of study (bill of fare), the finest appliances (condiments and spices), the greatest attention (hunger), will not make the knowledge offered (sole-leather beefsteak) palatable or digestive.

The school visited offered striking examples of good and bad teaching. The instructors were selected from among the best teachers of the city, men who are specially well qualified in certain branches of study. Several lessons were offered, most of which were excellent examples of pedagogic art and skill; but two were marred by errors such as will seriously endanger the future usefulness of the students in the profession of teaching, unless they see themselves the glaring contrast between good and bad teaching and profit by it.

The boys (80 in number) sang three and four part music remarkably well and proved that they possessed commendable theoretical knowledge of music.

Then followed a lesson in mental arithmetic, which would have been a revelation to many teachers who can not conceive the idea that arithmetical problems with numbers of more than two places can be solved mentally. The students in this school had such a familiarity with the structure and value of the numbers they worked with that they could apply them in innumerable ways, analyzing them for the purpose of dividing and multiplying. Each problem was pronounced by the teacher and repeated verbally by the pupil slowly and deliberately. When he had finished this repetition he was usually ready to announce the result. At times an analysis was called for, and then it was seen what a splendid command of the language the students had, for each of the explanations was an almost faultless oral composition. The teacher explained that he still followed the Pestalozzian rules: (1) "Offer objects at first for the purpose of conceiving the numbers in the concrete, and illustrating all numerical operations." (2) "Create a profound and clear idea of the structure and value of each number, and train the student in swift and correct mathematical application." (3) "Rely not on mechanical work, such as memorizing of rules and working problems by means of them, but insist upon a procedure, the first and main object of which is to train the mind to find and make rules itself." (4) "Arrange your course so as to afford a procedure from the easy to the more difficult, or a step by step arrangement which will not leave gaps." This continuity of instruction was Pestalozzi's chief excellence in teaching arithmetic.

Another lesson given was in history. The teacher demonstrated the irrationality of teaching history backward, by beginning with the present ruler of Prussia and going into the past. Since this afforded

no chance of seeing the cause first and the effect afterward, but presupposed a great amount of historical knowledge in order to judge by means of analogous cases from effect to cause, the teacher showed an example of how not to proceed. Having clearly established this fallacy he took up another period of history and proceeded to illustrate the contrary mode of teaching history by proving an evolutionary tendency, teaching history biologically, so to speak. This lesson would have been an excellent one had it not been marred by an overbearing conduct on the part of the teacher, who, regardless of the sensibilities of his students and of the presence of guests, scolded and used epithets that were out of place in the school room.

The fourth lesson was in grammar. A finely inflected language, such as the German, affords better and much more logical treatment than the English; hence good instruction could be expected, but that which was offered far surpassed the observer's expectations. The subject of copulative verbs was treated in a masterly way.

Then followed a lesson in geography, the treatment of which was so antiquated that it called to mind the period of common-school teaching in which such tidbits of information were committed to memory, *verbatim et literatim*, as "Zenith and Nadir are two Arabic terms imparting their own signification." The teacher conducted a veritable recitation (A verbal repetition of something committed to memory.—Webster.) The items asked for were so irrelevant, so disconnected, so illogical, that it seemed as though the minds of his students could not possibly profit by learning them. Now, if there is any branch of study in the curriculum of the common school calculated to develop the idea of cause and effect, it is geography. But what causal connection is there between the exact length of the river Elbe and the equally exact statement of the elevation of the "Hohe Tatra" in Hungary? The school inspector of the city, who had invited the visitor to this school, was so fully aware of the unsatisfactory teaching exhibited that he suggested to the teacher to take up one country, say Hungary, with respect to (*a*) topography, (*b*) climate, (*c*) soil, (*d*) inhabitants, (*e*) occupations, and to show that there exists a causal connection between them.

However, the attempt made was futile, because it was evident that either the teacher himself did not know it or that he refrained from making the connection seen.

Then followed two lessons so ideally excellent that they overshadowed all the foregoing. The one was in zoölogy, the other in physics. Reptiles were considered in the former, magnetism was the subject of the latter. Zoölogy was taught with a true scientific spirit. The teacher did not presume to give information; but he led the boys by skillful questioning to find the knowledge themselves, and then express it in good language. For instance: "What makes our chest expand? Could it be done if all the ribs were grown to the breast bone, or all

the so-called false ribs were bone and not partly cartilage? What enables the snake to swallow animals thicker than its own body?" The structure of the snake's skeleton was then hinted at, and the boys discovered the peculiarity of its ribs. The teacher of physics proceeded with great tact and admirable skill in making facts the basis of theories, and leading the boys to use the theories in turn for the purpose of discovering facts. No text-book was used.

Most of the teachers exhibited the delicate tact of the true gentleman. They did not disregard the dignity of the young men, yet maintained their own authority in a masterly manner. From the conduct of the students it was plainly seen whom of their teachers they respected and loved.

A brief conference of teachers followed the day's work and the work was discussed. One of the speakers laid much stress upon the point that it would seem a waste of energy to indulge the students who have a definite aim in view in doing anything that could in the least dissipate their attention from their future profession. It would lift them out of their grooves, etc.,—the song is quite old and well known. Other speakers dwelled on the indisputable requirement of modern education, that *all* instruction should be directed, first, at the development of the natural talents, and, secondly, at special aims in life. Man is a human being before he is an officer, engineer, teacher, etc., and the more the human being is considered the better it will be for the state, society, and the individual.

A visit to Ad. Diesterweg's former seat of activity (Moers, in Rhenish Prussia) caused disappointment. The school was not in session. The director of the institution informed the reporter of the course of study and methods generally pursued in Prussian normal schools. One fact gleaned from him is, that the managers of the Prussian normal schools are prohibited from reporting publicly upon the status and progress of their schools. Their written reports are examined by the provincial governments and filed away. Publications are issued only when a school celebrates an anniversary, and in that case a historical review is offered. From these publications little can be gleaned of the trends of normal-school education in Prussia. The best information concerning the currents of educational thought in normal schools is found in the educational press, which discusses timely questions with candor and much freedom.

Another fact gleaned from the interview was, that Herbart's Philosophy and Theory of Education is looked upon with little favor by the managers and teachers of normal schools; that the great majority of professors of "pedagogy" appear to lean toward Lotze, and hence, that the text-book on pedagogy used in more than 90 per cent of the Prussian normal schools clearly and distinctly disapproves of Herbart. The text-book is that of Ostermann and Wegner. (*See* IV, Professional Study.

In another normal school the reporter chanced to witness a senior student give a composition lesson in the practice department to boys of 12 years of age. The lesson was very similar to one of which Dr. M. Heidingsfeld (Liegnitz, province Silesia) gives an account in *Lehrproben und Lehrgaenge*. It is here reproduced in English in order to illustrate a method of teaching language and composition worthy of note and imitation.

The dying old lion. (A composition lesson.)

Lessing recommends the invention of Æsopian fables as very fruitful composition work for pupils of 11 to 13 years of age "not that I should try to make poets of our boys, but because it is incontrovertible that the medium by which fables are invented is the same which is applied by all inventors. This medium is the principle of reduction. But the application of this principle offers great difficulties. It demands extended knowledge of the particulars and of all the individual things upon which the reduction is to take place. Even though this knowledge be not wanting it will be the wiser plan in the beginning to lead the pupils to find, or reinvent, rather than to invent the fable."

Such a trial—namely, to let my pupils find a fable—I made in a class of boys of 12 years, for the purpose of framing a narrative in composition work. It was a very successful effort. Lessing's fable, "The Dying Lion," appeared to me the most suitable subject. If I had read this fable to the boys their interest would soon have lagged during the subsequent conversation. This I prevented by the procedure hereafter set forth. When—after this preliminary discussion, during which the pupils found the fable, almost identically in words and expression—I read it as the poet had written it, it gave them great pleasure. With bated breath they compared their own production with that of a master mind. And now the lesson:

Teacher. We will prepare a composition to-day. I have selected a fable for that purpose. What is a fable?

Pupil. A fable is a narrative in which the active persons are animals.

Q. What animal often plays a rôle in fables?—A. The lion.

Q. What is the lion usually called?—A. King of the animals.

Q. Why is he thus called?—A. Because he is the strongest and most beautiful animal.

Q. How do other animals look upon the lion?—A. They fear him.

Q. Why?—A. Because he makes his superiority over them felt in a cruel manner.

Q. Our fable tells us that an old lion, who had always been very cruel, lay powerless in front of his den, and expected death. The news of this spread rapidly among the other animals. Now, if they had loved him, what would have been the consequence?—A. They would have been sorry and have mourned his loss.

Q. Do you think they had reason to do this?—A. No; indeed not.

Q. Tell in a general way the reason of their want of sorrow.—A. No one regrets the death of an enemy.

Q. Give this thought in form of a question, introducing it with the word for. They did not pity him, for ——— ———.—A. They did not pity him, for who feels sorrow for the death of an enemy?

Q. Another pupil may try it.—A. ——— ———, for who would feel sorrow for the death of a peacebreaker in whose presence no one can feel secure?

The thoughts brought out are repeated.

Q. Now, if the animals did not pity the old, dying lion, what do you think they felt?—A. Joy, to be sure; they felt uncommonly glad.

Q. Why?—A. Because they hoped soon to be free of their cruel enemy.

Q. State it differently.—A. They felt glad that they would soon get rid of him.

Q. Do you think they hid their joy from the lion?—A. No.

Q. Why not?—A. Because he could not punish them any more.

Q. In what way do you suppose they expressed their joy?—A. By vexing, nettling, and teasing him.

Q. Mention some animals that often appear in fables, and which, it is reasonable to suppose, were there.—A. The fox.

Q. Another?—A. The raven.

Q. Well, yes; but we will leave the birds out of the play this time. Why?—A. Because they were not likely to feel a grudge against the lion, never having been injured by him.

Q. Name other animals.—A. The donkey.

Q. Others.—A. The wolf, the horse.

Q. Good; I will mention two more who happened to be there, the ox and the boar. How do you think the fox vexed the dying lion?—A. He said: "See, there lies our king, who so cruelly pursued us. A nice king he is, to be sure; he can't even raise his head any more."

Q. And the donkey?—A. He kicked him with his foot.

Q. With his hoof, you mean, do you not? And the wolf?—A. He bit the poor, dying fellow.

Q. That is possible, but in other ways he may have expressed his malicious joy.—A. Yes; he may have called him names.

Q. Very well, and the ox?—A. Oh, he poked him in the ribs with his horns.

Q. And the boar?—A. He gave him a kick.

Q. No; I differ from you there. What weapon does the boar use in fighting?—A. His tusks.

Q. Then we will say the boar dug his tusks into the lion's sides. What would you term such an act? Was it noble and generous?—A. No; it was the act of a coward. Now that they were sure the lion could not defend himself they vented their spite.

Q. You are aware that a fable always contains a precept or moral. What moral do you see in this one?—A. One should not revenge one's self on an enemy who can not defend himself.

Q. Will some one express it differently?—A. It is wrong to revenge yourself on an enemy who is no longer able to injure you.

Q. Does the poet always himself express in words the moral of the fable?—A. No; sometimes it has to be guessed from what the actors do in the fable.

Q. What do you say?—A. I think sometimes one of the animals expresses the moral.

Q. Which one of the animals surrounding the dying lion do you think expressed it?—A. I believe it was the horse.

Q. Why?—A. Because it is always called a noble animal.

Q. How did the horse come to express that moral?—A. It did not like to see the other animals treat the dying king so badly.

Q. Yes, my son, the noble horse alone stood by and did not wound the lion with his hoofs any more than he pained him with biting words. What impression did this make upon the other animals?—A. It astonished them, and they asked the horse to show the king his contempt and punish him for his cruel treatment of former days.

Q. What animal may have thus asked the horse?—A. The fox.

Q. Possibly. What other animal?—A. The donkey.

Q. Why?—A. Because he is a relative of the horse.

Q. Who can give a better reason?—A. Because horse and donkey have the same mode of defense; they use their hoofs.

Q. Well, yes, it was the donkey who asked the horse whether he would not also punish the lion for having once cruelly torn to pieces the horse's mother. At what place in a fable is the moral usually found?—A. At the end.

Q. Then who was it that spoke last?—A. The horse.

Q. Then there remains to be stated the order in which the animals are to be mentioned in the fable. How shall we arrange them?—A. According to their mode of revenge.

Q. What difference do you perceive in their modes of revenge?—A. Some revenged themselves with words; others by using violence.

Q. Which ones used words?—A. The fox and the wolf.

Q. Which ones violence?—A. Donkey, ox, and boar.

Q. But, as we have seen, the donkey is the one to address the horse, so it will be better to mention ox and boar before the donkey. Which animal's revenge seems to you the meanest of all?—A. That of the donkey.

Q. Why?—A. Because he hits the lion from behind.

Q. Yes; the stupid ass does not even think the king worthy of a look. Now, state what order we shall adopt.—A. We ought to begin with the most refined kind of revenge and end with the coarsest.

Q. Why will this be the best arrangement?—A. It will bring out the generosity of the horse the more forcibly.

The order observed by the poet was observed also by the pupils, to wit: "The wily fox revenged himself by sarcastic remarks and biting speeches; the wolf advanced with coarser ammunition; ox and boar applied violence; but the donkey revenged himself in the meanest way—he expressed his contempt without looking at the lion, and only giving him a kick from behind."

Q. Now let us select a fitting heading for our fable. What do you propose?—A. The Lion and the Animals.

Q. What! all the animals?—A. No; the lion, the fox, the wolf, the ox, the boar, the donkey, and the horse.

Q. But that would be too long a heading. Let us suggest another.—A. The Generosity of the Horse.

Q. Very good; but is not the lion the principal figure?—A. Well, we might say the Sick Lion.

Q. I am afraid that is too narrow; it does not cover enough. The lion was not only sick.—A. He was also old.

Q. If the lion had only been sick, I suspect the animals would not have dared to treat him as they did.—A. No; he might have gotten well again, and then have punished them.

Q. Precisely; for that reason it seems best to select the heading, "The Dying Old Lion." Now, I will read you the fable as Lessing wrote it. Listen:

"An old lion, who had always been very cruel, lay powerless in front of his den, and awaited death. The animals who had feared him greatly did not pity him, for who would feel sorry for the death of a peace disturber, before whom no one can feel secure? The animals were glad to get rid of him. Some of them, who were still smarting under the wrongs he had done them in former days, now gave vent to their hatred. The wily fox vexed him with sarcastic remarks; the wolf used coarser expressions; the ox poked his horns into the lion's sides, and the boar wounded him with his tusks; even the lazy donkey gave him a kick with his hoof. The noble horse alone stood by calmly, and did nothing, although this lion had killed the horse's mother. 'Are you not going to give him a kick, too?' asked the donkey. Solemnly the horse replied: 'No, for I consider it villainous to revenge myself upon an enemy who can not injure me any longer.'"

Q. Into how many parts may we divide the story?—A. In two—the revenge of the animals and the generosity of the horse.

Q. Is not the revenge to be introduced by some statement which can explain it?—A. The condition of the lion.

Q. So, then, we may count three parts. Which are they?—A. Condition of the lion; revenge of fox, wolf, ox, boar, and donkey; conduct of the horse.

Q. Now repeat the fable in your own words. Fred tell the first, Paul the second, Max the third part. (It is done.) Now I will read it once more. Some one will narrate it again.

After this the boys were told to write out the fable, and I need not assure my readers that it was done very well.

A VISIT TO ANOTHER PRUSSIAN NORMAL SCHOOL.

The building.—In a quiet, sleepy little town, connected by railways with large industrial centers, the Government has erected a large building with two spacious wings for the special purpose of giving the normal school of the district a suitable home. The structure is very fine, and reminds one of true American school architecture. It is large, handsome, commodious, well ventilated, and surrounded by extensive yards and gardens. The stairs and halls are covered with linoleum, the windows are large, the walls delicately tinted, and the general session room (used as a chapel) decorated with beautiful fresco borders and other ornaments. Altogether the building is one of the few worthy habitations of a teacher's training school, particularly because it impresses the students with a correct idea of what a good school building is or ought to be.

Biblical history.—The writer passed a day in this school, and was well repaid for getting up at 6 o'clock a. m. on a raw winter day, traveling an hour on the railway, and calling on the rector before 8 o'clock—that is, in time for opening school. The first lesson he heard was one in biblical history. The rector had announced on the previous day that he would give a model lesson to young pupils, in presence of the senior class of students. Indeed, it was a model lesson in more senses than he understood that technical term. The subject of the lesson was: "The wise men from the East following the star, and coming to Jerusalem to inquire of King Herod where the new-born King of the Jews might be found; then being told to go to Bethlehem, and there finding Jesus, giving Him their presents and worshiping Him."

The rector told the whole story in plain, unassuming words, such as the little pupils could understand. By such simple means as describing the mode of traveling in the East; the poor, modest dwelling of the Holy Family, etc., he succeeded in creating vivid mental pictures. Then he questioned the little ones on a part of the story, namely, on the journey to Jerusalem and the inquiries of Herod. The rector's skill in the art of questioning could not be adequately conveyed except by a stenographic report. After this part of the story was well worked over, and every incident explained, or called forth by leading questions, two pupils had to repeat the part, and they did it with singular faithfulness as regards facts and expression. Errors of speech were corrected on the spot, but never in a humiliating way, nor so that the thread of the conversation was broken or tangled.

Then the second part—Herod's inquiries, the mention of the prophet Micah, the journey to Bethlehem, and the finding of Jesus—followed. In this part of the story the insincerity of Herod, and his evil intentions were dwelt upon, and a distress could be noticed on the faces of the youngsters when they heard that a king should so debase himself as to say one thing and mean another. Again, all the minute details of this part of the narrative were brought out by skillful questioning, and the answers were very faithful, both in regard to facts and expression. Again, as before, a review was had in connected repetition.

The third part was treated likewise, and here the presents, gold, incense, and myrrh, gave rise to a pretty explanation, childlike but all-sufficient. After this part was repeated, a general review followed. One little boy told one part, another the second, a third the last; and the singular faithfulness with which they repeated whole sentences in almost identically the same words could only be attributed to the consistency with which the rector had clung to these expressions all through the lesson. Then he concluded by showing a handsome illustration in which the Holy Family, the wise men, the servants, the camels, the star, the presents, etc., were shown. This fixed every item of the whole story in the memory of the little ones.

All through the masterly lesson the seniors sat apparently with bated breath, making notes now and then. When the little ones were dismissed, the students were questioned as to what they had heard. Object of the lesson, means employed, psychological references, methods, principles of method, I know not what words to use to give my readers an adequate idea of how that model lesson was analyzed. The rector gave the students free scope to express their judgment. It seemed that if any of these young men did not take away treasures of knowledge, of skill in handling a class, and methodical treatment of matter, it certainly was not the fault of the rector and his pupils.

Literature.—The second lesson heard was a lesson in German literature. It began with the reading of a composition upon Lessing's "*Minna von Barnhelm*," the first distinctly German drama. Though the diction of the student was faulty at times the composition was unquestionably an original effort of rare merit. The professor (not the rector) proceeded in his criticism with that delicacy which is the distinctive sign of a thoroughbred gentleman. It was obvious that the most friendly relations existed between him and the students. Nevertheless he spoke very much to the point, and the students assisted him in correcting with praiseworthy zeal.

The vistas which were opened to the students in the realm of German literature were wide and pleasant. There was nothing of that gnawing at the shell, or of that splitting of hairs, which is sometimes observed in the teaching of literature, where the students never get to see the forest on account of the multitude of trees. In short, the lesson was characteristic, inasmuch as it was free from that petty,

annoying criticism indulged in where conformity with the exact text of the book is the criterion of successful study. This professor was a master in the art of questioning such as is rarely met. Altogether the lesson left a pleasant impression, and the conclusion was that the students would, later in life, do very well to copy their teacher.

Natural history.—The next lesson heard was one in zoölogy. And here again, as so often in Germany, the principle illustrated was that observation is the foundation of cognition. Birds were studied like that proverbial fish of Agassiz. Stuffed birds were available in large numbers. Colored pictures assisted where objects were wanting; and the lesson proceeded as one would wish every lesson in zoölogy to proceed: (1) Actual observation established percepts; (2) several of these formed concepts; (3) these then were grouped by collecting the essentials and dropping minor items to establish clear-cut ideas. The latter were well expressed. When a number of them were available conclusions were drawn from them. Thus the process of gathering knowledge and strengthening the thinking power was successfully exemplified. Some of the steps taken were superfluous, it seemed, in a class of adults, but it was the evident desire of the professor to make these young men learn in precisely the way in which they are to cause young children to learn afterward.

It was with much curiosity that I heard the students state their observations of domestic birds. We are very apt to think that we know all about them, and that in zoölogy the attention should be directed to the birds which the children are never likely to see. This lesson converted one to the opinion that we know much less of domestic birds than we think we do. It was with much curiosity that the writer heard the students state the difference in the mode of drinking between pigeons and chickens, to wit, that the pigeon sucks water by keeping its beak almost closed and causing a vacuum in the throat, while the hen dips or ladles water with the lower part of the beak and then raises its head to let the water run down into the craw. The causes were looked for and found in the peculiar build of the beaks of the different birds. Monogamy among the pigeons, polygamy among the fowls, the peculiar flight of pigeons, swallows, and other birds which was traced to the form of the wings and feathers, and various other things of great interest were brought out, all of which gave opportunity for tracing effect back to cause, and to judge from cause to effect.

This kind of instruction is very interesting, and as different from the old-time zoölogy lessons as day is from night. No text-book in zoölogy, botany, or mineralogy was used, but each pupil had an atlas which contained at least several thousands of exquisite illustrations of natural objects, accompanied by a few pages of print containing a table of contents and a key to pronunciation.

Drawing.—The drawing lesson seen was poor and the results meager. This department was evidently the weakest point in the institution.

Music.—A lesson on the church organ gave a fair sample of the thoroughness with which the students are prepared for organist's service in church. Each student, as his turn came to play a hymn, was told to play a prelude of his own composition. Thus, for instance, if the hymn was written in D major, he would start in E major and, by way of seventh chords, try to reach D through A. Or, beginning at C major, he would go upward through D into G, and then through A into D. These were some of the easiest preludes. This practice made the young men free and easy at the instrument. But the pedal proved full of pitfalls, as it naturally will to beginners. After three years of daily practice, good results are obtained.

Geography.—Then followed a lesson in geography, in which a professor illustrated the principle of concentric instruction, by drawing into this lesson history, physics, meteorology, etc., and thus making the lesson have connection with many other branches of study. Through all his visits in German schools the writer had not had the chance of hearing a lesson in the geography of the United States. Here fortune favored him, and the readers may imagine his pleasure when he heard Washington pronounced Uâshington, and not *Vashington;* New York, not *Noy York;* Maine, not *Mine*, etc. It was a very pleasant surprise to him. He inquired whether the teacher spoke English, and, upon receiving a negative answer, inquired how it came that he pronounced the English and American geographical names correctly. The answer was:

> We are careful in looking up the pronounciation, for we insist upon pronouncing each name correctly. As there can be but one correct pronunciation of the name of the river Spree, namely, *Spray* (else Berlin would be constantly "on a spree"), so there can be but one correct pronunciation of Ohio, namely, Ohīo, not *Oheeo*, as we Germans might be tempted to pronounce it. We are aware of the fact that English-speaking nations Anglicize all geographical names. This we consider wrong. We follow the golden rule, "Do as you would be done by." Of course, ignorance may excuse a man's mispronunciation, but a teacher who excused himself by claiming not to know how Frenchmen pronounce their geographical names, or Americans theirs, deserves to be dismissed.

A review of the political geography of the Union led to an historical outlook upon its rapid growth, and there teacher and pupils revealed a familiarity with American history which brought the lamentable ignorance of the average American teacher regarding German history into bold relief. Our remoteness makes us rather exclusive, and it is well to call attention to it, and make us measure ourselves by the standards of others. As a rule, we find less ignorance concerning America among teachers in Germany than among French teachers—a statement which, it is hoped, is readily believed. The teacher in this grade was a gentleman of the highest type, who treated his students like gentlemen, and never intentionally or otherwise wounded their sensibilities.

Arithmetic.—Then followed a lesson in arithmetic. Percentage was the subject of discussion. Problems were solved orally with a rapidity which fairly left the visitor behind. He asked permission to put a few

questions to the students, and among other things asked them to tell how they would begin the study of percentage, and at what age in the course? The answer was very gratifying, to wit, expressions couched in the term "per cent" might be taught in connection with reduction of fractions. Thus, for instance, the children might be taught that one-fourth is equal to twenty-five hundredths, or twenty-five parts of one hundred. The subsequent practice of percentage would thus receive an early foundation.

Daily programme.—Passing through the hall the writer copied the characteristic items of the daily programme to give his readers a fair sample of how to get sixteen hours' work out of twenty-four:

6 to 6:30.—Rising, dressing, washing.
6:30 to 7:30.—Preparing lessons under supervision.
7:30 to 7:50.—Breakfast.
7:50 to 8.—Opening exercises in chapel.
8 to 1.—Lessons and experimental teaching.
1 to 1:30.—Dinner.
1:30 to 2.—Playing and walking in the grounds.
2 to 5.—Lessons in academic department.
5 to 6.—Practice in instrumental music.
6 to 7.—Outdoor exercises.
7 to 7:30.—Supper.
7:30 to 9:30.—Working in class-rooms under supervision.
9:50 to 10.—Evening prayer.
10.—Retiring.

CHAPTER VII.

THE SWISS SCHOOL SYSTEM—AN HISTORICAL AND STATISTICAL REVIEW.[1]

(After Dr. O. Hunziker's Exposé for the Columbian World's Fair.)

CONTENTS.

INTRODUCTION.

Switzerland is a democratic federal republic, consisting of twenty-two states or cantons, each of which manages its own local affairs, while the Federal Government attends, as with us, to those affairs that pertain to the whole country.

Area, 15,976 square miles; population, according to census of 1888, 2,933,334 (183 to the square mile), of which, however, only 2,917,740 were residents. The cantons are named in German and French, as follows:

1.	Zürich	Zurich.	
2.	Bern	Berne.	
3.	Luzern	Lucerne.	
4.	Uri	Uri.	
5.	Schwyz	Schwyz.	
6	Obwalden	le Haut.	
	Nidwalden	le Bas.	
7.	St. Gallen	St. Gall.	
8.	Aargau	Argovie.	
9.	Tessin	Tessin.	
10.	Wallis	Valais.	
11.	Genf	Genève.	
12.	Glarus	Glaris.	
13.	Zug	Zoug.	
14.	Freiburg	Fribourg.	
15.	Solothurn	Soleure.	
16	Basel-Stadt	Bâle-V.	
	Basel-Land	Bâle-C.	
17.	Schaffhausen	Schaffhouse.	
18	Appenzell a. Rh	Appenzell ext.	
	Appenzell i. Rh	Appenzell int.	
19.	Graubünden	Grisons.	
20.	Thurgau	Thurgovie.	
21.	Waadt	Vaud.	
22.	Neuenburg	Neufchâtel.	

From this list we see that the political division of Switzerland into 22 cantons is not congruent with the number of school cantons, for three of the cantons (*see* Nos. 6, 16, and 18) are divided into two semi-cantons each, which makes the number of school cantons 25.

The German language is spoken by the majority of inhabitants in 15 cantons, the French in 5 cantons, the Italian in one, and the Romansch

[1] By Dr. L. R. Klemm, Specialist in German Education.

in one; or 2,092,530 inhabitants of Switzerland speak German, 637,972 speak French, 156,606 Italian, and 38,375 Romansch. The number of those who speak two, or even three languages is very great, but can not be ascertained from the census.

GENERAL VIEW.

Switzerland has no national school system; that is, a system of elementary and secondary schools established and maintained by the Federal Government; neither has it a federal school law. The constitution of the Federation, however, prescribes that—

(1) The Federal Government has the right to establish a polytechnicum, a federal university, and other institutions of higher instruction, or to subsidize institutions of such character.

(2) The separate states or cantons must provide for sufficient elementary instruction under exclusive state supervision. This instruction is obligatory, and in public schools gratuitous. The public schools must be open for all religious denominations without restriction to their liberty of faith and conscience.

(3) The Federal Government is empowered to take the proper measures to enforce this provision in cantons that fail to fulfill their duty.

(4) Liberty of faith and conscience is inviolable. No one may be coerced to become a member of a religious body, attend any religious instruction, or participate in religious exercises. According to the foregoing principle, parental authority or that of the guardian provides for or directs the religious education of children up to the sixteenth year of age.

Within these limits fixed by the Federal Constitution, each of the cantons and semicantons established and arranged a public school system according to its own laws and special needs or intentions. Hence it is plain that the little country, having a smaller area than the two States, Vermont and Massachusetts, taken together, and a population almost equal to that of Vermont, Massachusetts, and Rhode Island taken together, has a great variety of school systems no two of which are identical, yet all of which are similar, for nearly all the various systems follow essentially the same principles, especially in the reformed cantons Schaffhausen, St. Gallen, Thurgau, Zürich, Aargau, Solothurn, Berne, Waadt, Basel, and others. Perhaps the greatest differences to be observed are found to exist between the French and the German cantons, but these differences chiefly refer to secondary and higher institutions of learning, scarcely to elementary schools.

A state of affairs such as this is not new to us, since the same conditions prevail in our country, where every State is left to establish, maintain, and regulate its own school system. Yet the absolute publicity in matters of public interest causes a similarity in efforts and results which prevents confusion. It is thus in all governmental relations and public affairs. We see a reform in balloting, for instance, begun in one

State and continued in others whose legislative bodies imitate the measure taken elsewhere. It is reasonable to suppose that the various laws that make the application of the Australian ballot system mandatory show slight variations, yet the essential features of that system are secured by all these laws. Movements that are likely to prove of general benefit to the public are supported by the people of the whole Union without regard to State boundaries. A similar procedure is witnessed in the schools. Though no two State school laws of the Union are identically alike, and though with regard to their organization even vital differences may be perpetuated by these laws, yet it is not difficult to state in general lines the objects, methods, and results of the American public school which is thus spoken of as though it were a homogeneous institution or a uniform system.

Mr. Morf, a well-known Swiss writer on educational questions, says in Der Lehrer Leumund:

One of the most splendid results of popular education is the awakening and fostering of the beautiful and grand idea of humanity, the importance of the human being as such. It is not so very long ago that the people were left ignorant of their powers in the State. History knew nothing of the existence of the mass, except when it was assembled on the battlefield to fight for the interest and the glory of its lords. The aim and object of the State have changed; they are not now the pomp, glory, or pleasure of a few, but the welfare and rights of all. Formerly the Government was in Switzerland, as it is still in other countries, an inherited monopoly, protected by the theory of the divine right. At present in Switzerland offices and honors are open to competition; they fall to him in whose hands the people consider their rights most securely protected.

Formerly the activity of our Government had no higher object than to secure and preserve the privileges and property of a few. Now it aims at granting everyone the means to make his life worth living, and to secure to him the undisturbed enjoyment of human rights. Our modern codes do not contain the word privileges (private rights). This is the stream of modern life, and the common school has aided essentially in clearing away its obstructions. Some people who view this broad stream look upon it as a wild flood that causes vast destruction; *we* see in it a blessing, a river that waters the desert and changes it to fertile land.

But in whatever way we may consider it, as a destructive flood or a beneficent current, the powerful current is there; it can not be stemmed or dammed; no human power can turn it back. The wealth of aptitudes and creative power latent in the mass of humanity is without limit. Popular education is bound to free them. It not only seeks to do so but does it. It purposes to make the intellect and the deep, glowing love for all that is good, noble, and beautiful the rulers and the foremost great powers of the world.

The great importance of the present rational elementary school instruction lies in the fact that it exercises and strengthens the powers of the mind. The so-called old school offered a quantity of knowledge and a certain degree of skill, but it left the mind undeveloped. Formerly the acquisition of knowledge was the aim; now it is regarded as a means. Knowledge is now acquired incidentally, as it were, in the effort at awakening and strengthening the mind and fostering the inborn faculties. This school is young with us, as it is in all other countries; it is scarcely sixty years old. Let it grow to be a hundred or two hundred years, and it will give to the people what the highest pedagogical authorities have promised—a new heaven and a new earth. That our people (I am speaking here of the canton of Zürich) have recognized the importance of the common school, may be seen from the fact that the maintenance of the schools costs 18 francs, or $3.70, per inhabitant.

I.—Historical Development of the Swiss School System.

A.—During the Middle Ages.

The Swiss school system has had the same beginnings that the systems in other central European countries have had—that is, first, convent, cathedral, and parochial schools, founded by the clergy, followed in later centuries by secular schools in cities, established by municipal authority. In preserving and nurturing science after the ravages of the great migration the order of St. Benedict was specially meritorious. Later orders followed ascetic methods, hence do not deserve attention in this connection. During the time of the Carlovingians it was the school of the monastery in Reichenau which added materially to the preservation of culture. Walafried Strabo (died 849 A. D.) left us a vivid and interesting description of this school. During the tenth and eleventh centuries the abbey of St. Gallen was a center of culture for the whole of southern Germany.

In Burgundian, now French Switzerland, the abbey of St. Maurice (founded in the fifth century) was an ancient seat of monastic culture. In the seventh century Romainmotiers in Vaud, St. Ursanne and Montier-Grandval in Berne were famous. In Allemannian, now German Switzerland, besides St. Gallen and Reichenau, which were foundations of the eighth century, the abbeys of Beromünster, Einsiedeln (tenth century), and Engelberg (twelfth century) must be mentioned. In Rätia, or Italian Switzerland, the abbeys Disentis (seventh century), St. Luci, near Chur (seventh century), and Münster (eighth century) are worthy of note. The cathedral schools of Geneva, Lausanne, Constance, and Chur at times promoted the education of the clergy with great zeal and success.

This era of flourishing ecclesiastical culture, lasting as it did far into the time of the crusades, was followed by the fierce contests between emperors and popes and similar struggles between the ecclesiastical and secular principalities, and in consequence the education of the priests degenerated. Even in St. Gallen, in 1298, the abbot and the majority of the monks were unable to write, likewise, in 1335, all the canons of St. Felix and Regula in Zürich, except one. The Latin school in this institution was no longer taught by Brother Scholasticus of the order, but by a nonresident teacher, who received a salary.

Many cities had such Latin schools, mostly supported by the cathedrals and monastic orders. Besides these there arose during the latter part of the Middle Ages a number of schools in which the vernacular of the place was the medium of instruction; they were called writing schools and were taught by traveling schoolmasters. The calendar of Zürich of 1508 calls it a laudable and desirable custom to teach writing and reading to children from 6 to 12 years of age before they begin to learn trades. Outside of the walls of the cities and abbeys school education was not to be found.

During the second half of the fifteenth century the liberal wave of humanistic study had entered Switzerland, and at the same time the art of printing opened new channels for the diffusion of knowledge. Basel began to be a shining light of learning owing to the university founded in 1460 and the efforts of the famous learned printers, Froben and Amerbach. Such industrial and intellectually striving cities as Zürich did not have a printing office for thirty years after Basel had set the example. Geneva, however, followed Basel at once by establishing a printing office, and the remote abbey of Beromünster claimed to have published the first printed book in Switzerland in 1470. The claim has subsequently proved erroneous.

B.—THE PERIOD OF THE 13 CANTONS, 1513–1798.

A few years after Appenzell had been admitted into the confederation of sovereign cantons, and thus the confederation had reached the extent it preserved up to the time in which it was demolished, Switzerland began to make efforts in behalf of church reformation, which efforts were strongly supported by Zürich and in fact emanated from there. The cantons divided sharply on religious questions, and contests and competition arising from these questions essentially influenced the further development of Swiss civilization. In the schools the religious or ecclesiastical interest became much more prominent than it had been in previous centuries. The great church reformers estimated the schools according to their value, for the church took them into its service and reorganized them, as well as the whole State, according to religious ideas.

Hence the higher schools established or remodeled by the reformers (the "Lectorium" of Zwingli in Zürich, the "Academy" of Calvin in Geneva, 1559) were at first theological seminaries exclusively. But as early as 1541 the Zürich institution opened its doors for a professor of natural sciences, and that in Geneva reserved three hours a week for mathematics and physics, and temporarily a chair for medical science was occupied. One of the results of the Reformation consisted in attracting renowned teachers to the universities, also in building up a complete system of higher education from the Latin or preparatory school to the university (or academy as it was called), and lastly, in making higher studies accessible to the poor strata of society. Zwingli's liberal conception of a broad basis of education that prompted him to extend the system of preparatory or Latin schools to the country (he founded schools at Kappel, Rüti, and Stein) did not find much favor in a subsequent generation, for during the middle of the century these schools fell victims to the current of the time which leaned toward founding and maintaining German schools.

Higher education became and remained for a long time "an ornament of the cities." The narrowmindedness of the Protestant population, expressed in the cantonal governments, allowed higher educa-

tion to become a city monopoly. This exclusiveness was not found in Catholic cantons, where the free entrance to the ecclesiastical profession was promoted by the monasteries. The colleges of the Jesuits, which sprang into existence with an almost elementary force about the same time, led to a beneficial competition between Catholic and Protestant seats of higher education.

While the great reformers bestowed much care upon the Latin schools and higher education, the documents in the city archives give no evidence whatever that they also favored and promoted popular education on the basis of the mother tongue. Yet it is plainly noticeable that popular education received the strongest impetus through the Reformation in Switzerland as well as in other countries. "The contrasts arising in matters of faith created intellectual life, and the desire to confirm the teachings of the new faith in the growing generation." The sermons from the pulpit were soon supplemented by regular instruction in catechism, especially to children. The services in church were fashioned to meet their understanding, hence divine services were conducted for children separate from those for adults. These juvenile services were obligatory, and extended to young people of 18 to 20 years of age, in some cases even to all unmarried. The Bible became a domestic reading book; a large part of the Psalms, Proverbs, and Biblical stories became common property.

The principle of the Reformation which did away with priestly mediation between man and divinity required that each one be responsible to himself concerning the truth of his faith, i. e., its conformity with Holy Writ. This requirement became more powerful as the constant controversies between Protestant and Catholic theologians, as well as the contests between church tenets and dissenting views that arose in opposition to the clergy, kept the people in suspense and turmoil. Thus the desire to spread the arts of reading and writing grew rapidly. The importance of the church reformation for popular education lies in the fact that it not only promoted the establishment of elementary schools in cities, improved their condition, their course of study and methods of instruction, but also that it carried school education beyond the city walls into the open country and created a desire among the peasants to learn reading and writing.

In the cities the beginnings of vernacular schools had everywhere been made, but now these schools were made to serve ecclesiastical purposes. It was done by subjecting them to church supervision, or at least by allowing the ministers of the church to participate in their supervision. In the open country and villages elementary schools developed from the Sunday instruction in church. The synod of Zürich in a circular letter to the clergy of Berne in 1562 closed with the advice "not to spare time or efforts in behalf of the young." This proves how earnestly the pastors considered the care for elementary instruction to be an essential part of their duties.

The great start popular education made in the Protestant cantons induced the Catholic Church to similar efforts. The resolutions of the Council of Trent with reference to the establishment of schools for the young were brought nearer their execution by Episcopal orders in 1564. Thus in the democratic cantons of original Switzerland (Urschweiz) a system of rural elementary schools was established in a comparatively short time. Much less favorable were the prospects in the rural districts of the so-called Catholic city cantons. Solothurn (or Soleure) was the only canton whose government bestowed attention upon education in the open country and granted financial aid to good teachers. In the districts belonging to Freiburg, Luzerne, and other towns, over which Zürich and Berne had no influence, the rural school system was either left undeveloped or was totally neglected. This state of affairs continued till the ancient confederation broke to pieces in 1798.

The reaction caused by the devastation of the terrible thirty-years' war in central European culture was spared to Switzerland. But the social turmoil caused by the cruel peasants' war had a partial reaction upon the rural schools. Thus the government of the Catholic canton Solothurn, that had done much for the maintenance of schools, resolved as follows: "It is left free to the peasants to keep schoolmasters, but the lords of the manors will no longer contribute to their support." In the Protestant city cantons the school regulations of the first half of the eighteenth century are, with exception of unessential variations, copies of those in vogue during the seventeenth century.

Under such circumstances it can scarcely be called an advantage that the clergy in the rural districts and villages withdrew from the actual business of teaching and left it to secular teachers. The school did not gain in reputation thereby, and it was moreover removed from the good will of the ruling powers, since the latter were essentially religious. But as a foundation of subsequent development of the schools this change was of the most vital importance. The profession of teaching, and the people's school, became thus a subject of independent interest, and the intellectual movement (the era of enlightenment) that characterized the second half of the eighteenth century did not hesitate to take hold of the problem of popular education with enthusiasm and persistence, a thing that would have been impossible if the schools had still been appendages of the church and teaching a function of the pastors.

Indeed, the last few decades of the eighteenth century manifested great efforts in behalf of popular education. We notice in all the cantons beginnings of school reform borne by popular will and proving to be spontaneous. The reform of the whole school system of Zürich, during the years from 1765 to 1774, is remarkable, not so much for its results and immediate improvements, as by the zeal and enthusiasm with which the clergy and statesmen studied the existing conditions

and the means of improvement, in order to create a system that should be a model for other cantons. The Helvetian Society (founded in 1761) offered its hall and moral aid to the school reformers. The seminary Holdenstein-Marschlins (founded 1761 by Martin Planta), gave a shining example of natural education for higher classes, several years previous to the opening of the Philanthropin in Dessau, Germany.

It is well known how much sympathetic interest Pestalozzi found among the Bernese mayors (Landvögte) of the vicinity, when he made his educational attempts at Neuhof. In the convents of Kreuzlingen and St. Urban, Felbiger's methods were introduced, and the publication of text-books and appliances in accordance with them was pushed zealously. Suitable candidates and teachers were prepared by special courses of instruction. Yet, despite all these laudable attempts, the result consisted more in lamentations over the inadequacy of existing institutions than in tangible results. The people had become painfully conscious of the low condition of education, and groped vainly for remedies that would improve the entire system.

For, generally speaking, the Swiss school system at the close of the eighteenth century, even in the most progressive cantons, stood on a lower plane of development than that of many a principality in Germany at that time. The rural schools were open in winter only; here and there school was kept a few half days per week in summer. The teachers were frequently not in possession of the most scanty elementary knowledge; they were dependent upon the pastor of the place, poorly paid, supported chiefly by tuition fees which they had to collect themselves. They were often obliged to ply a trade, or serve as sacristan in church to increase their scanty income. Their election was nearly always determined by exterior causes (such as being a resident, in needy circumstances, and having a suitable room that could be used for school purposes) than by their professional preparation and moral character. Few localities had their own schoolhouses; the rooms used for school purposes often served as workshops and as a part of the family dwelling. Here and there the school was an ambulatory one, hence the necessity arose to board the schoolmaster, who spent one week at each house or settlement. To institute general attendance at school of all the children of a district was impossible, owing to inadequate provision for seating all. There were scarcely beginnings made in methodical treatment of the matter of instruction, or the grading of pupils, in providing for proper seats and suitable appliances for teaching. This is the picture of the Swiss rural school system, as it appeared in 1799, in the replies to queries sent out by the minister of state, Mr. Stapfer. In small towns the circumstances were not much better.

The cause of such a disproportion between conception and execution lay in the prevailing idea concerning the relation of the state to the

schools in Switzerland as well as in other countries. The eighteenth century generally considered the state's duty to consist essentially in organizing public order and securing safety; civilizing agencies such as public education, were thought to lie outside the pale of the state, and given over into the hands of the church, securing only the state's natural right of supervision. The state's budget was in no wise adapted to maintain and promote education. The conviction that it was the moral duty of the state to provide means for schools, was lacking entirely; and we have eloquent proofs of the fact, that the imperial decree, dated Vienna, October 13, 1770, which characterized the school system to be a "politicum," was considered novel and revolutionary.

The idea of using public lands for school purposes and for raising means for their support, was considered wrong, "one which no well-wishing citizen would ever entertain" (words of Antistes Ulrich of Zürich in his memorial on improving the rural schools, 1776). Hence voluntary contributions for the purchase of urgent necessities were called for and liberally spent, but of course were inadequate for a thorough reform of the whole system. This patchwork with insufficient means, attempted with the best of intentions and good will, was going on when the great revolution took place that shattered the ancient confederation and erected in its place a unified State, "The Helvetian Republic, one and indivisible."

c.—THE PERIOD OF CENTRALIZED GOVERNMENT, 1798–1803.

The French revolution abruptly changed the conception of the relation between state and school. It was a natural consequence of its current, directed as it was, against the church, and wherever the revolutionary ideas entered, the school became a subject of governmental concern. To this was added another consideration: The revolution felt in the very beginning the need of giving expression to the humane principles of the era of enlightenment in which it had its origin, and of replacing the traditional and historically developed, but always inadequate social and political institutions, with finished, systematic constitutions. It would have been a disavowal of its most ideal aspirations, if it had not recognized the duty of enlightening the citizens, and hence caring for public education of the young.

Switzerland also, which was remodeled in 1798 into a unified state according to the French model, adopted a constitution which expressed the principles mentioned, that is, that the state assumed the duty of enlightenment and public education. The first draft of the constitution (an imitation of the French directorial constitution) written by Peter Ochs in 1798, sounded rather theoretical and abstract:

ARTICLE 4. The two bases of the public weal are security and enlightenment. Enlightenment is preferable to wealth.

But the constitution opened a chance for the appointment of a minister of arts and sciences, and how abidingly this man has impressed

public consciousness with the state's duty toward education, may be seen from the fact, that all subsequent constitutions and drafts of constitutions (for they were changed frequently) during the time of centralized government, touch upon education strongly.

Under the most difficult circumstances, at a time when Switzerland was the seat of wars carried on by foreign powers, and face to face with destitution and misery, and at a time, moreover, when fierce internal political contests made abiding order impossible, the foundation of a national Swiss school system was to be established. And it was done. The "directorium" (executive) appointed, May, 1798, a minister of arts and sciences, Mr. Phillip Albrecht Stapfer, of Brugg. When he in 1800 was sent to Paris as ambassador of Switzerland his successor, Mr. Melchior Mohr, of Lucerne, continued Stapfer's work in the direction in which it was begun. Stapfer's leading idea was: "We must prove to the world that from our revolution arises a gain for true human culture."

As early as November 18, 1798, the Government (directorium) submitted to the legislative council a bill concerning the lower city schools, which bill had been prepared by Stapfer, who aimed at a uniform system of elementary people's schools for the whole country. These elementary schools he intended to lead up to a system of intermediate or citizens' schools, over which should be placed the reorganized classical secondary schools, and as apex to the pyramid he designed a national central school for higher education. The bill was read and discussed for the first time in the spring of 1799, was then referred to a committee, and there was neglected.

Nevertheless, Stapfer began the work of reorganization with a will. He was empowered by the executive to take the most necessary measures toward reform, hence elections were ordered for cantonal educational councilors (state commissioners) and school inspectors, and Stapfer, with the permission of the executive, issued instructions for these officials. These instructions are a beautiful monument not only of his enthusiasm and pedagogical insight, but also of his honest endeavors to win over public opinion in favor of school reform, without regard to politics, by perfect candor in reference to his own ideas and by a sympathetic consideration of every suggestion arising from interest in public education. His instructions are conspicuous by an utter absence of bureaucratic flavor. They have reference to things the importance of which only the present time has learned to value, as, for instance, control of hygienic measures.

In order to obtain a clear statement of the conditions of the Swiss schools he had printed a circular letter, in 1799, containing a number of plain questions. The letter was sent to every school-teacher in Switzerland. During the year 1800 the replies arrived with few exceptions. They form an invaluable source of information concerning the condition of the schools at that time. Stapfer made repeated endeavors

to establish professional courses for teachers, and supported and aided his secretary, Fischer, in Castle Burgdorf in his efforts at elevating the teachers. He it was, also, who by constant reminders induced the central Government to aid Pestalozzi in his enterprises.

It is one of the best features of the Helvetian Government that, though it at times failed to know where to get the money for the most pressing needs, it backed Pestalozzi with firm confidence. The appropriations for the orphan asylum in Stans were ample. For his attempts in the elementary school at Burgdorf the Government paid Pestalozzi a small salary; he owed to this same Government the security with which he could pursue his educational experiments, by having the free use of the castle at Burgdorf. The Government aided him further financially in preparing candidates for the teacher's profession, that is, with a sum quite considerable in comparison with other appropriations. This same Helvetian central Government, during the last few months of its existence in 1803 enabled Pestalozzi to publish his schoolbooks by paying him a handsome subsidy. It acted as a godfather to Pestalozzi's work, and whatever was free from the dross of political confusion during this Helvetian period, its genuine ideal aspiration has been saved for future generations by Pestalozzi; it has subsequently become a positive gain for Switzerland and the whole of humanity.

The Helvetian Government laid at least certain foundations upon which the future could build. Its resolutions of December 4–6, 1800, prescribed that every community should be obliged to furnish a schoolroom and the proper amount of fuel to keep school open during the winter, and to pay a teacher a salary of at least 80 francs per annum. Compulsory education was decreed, making it the duty of every father to send his children and wards to school during the winter.

D.—THE NAPOLEONIC ERA, 1803–1813. THE TIME OF MEDIATION.

The seed planted by the Helvetian centralized Government began to germinate during the quiet decade following the overthrow of that Government and the adoption of a constitution March 10, 1803, which decentralized the union and made of it what it formerly was, a confederation of states. Now that the form of unity was broken, the men who had served Stapfer as lieutenants began to agitate the school question in the separate states or cantons. Most of the school laws passed by the legislative bodies of the cantons, and the regulations decreed by the various executive authorities, all are characterized by the idea that the care for the education of the young is "indispensable and one of the highest objects of the state," "a holy duty of the government." It had become obvious that the idea of the state's neutrality in matters of public education, prevalent before 1798, was untenable.

However, the amounts that the states thought themselves able to spend for the school system were measured out very economically. All the greater was the enthusiasm of private citizens. A great number of institutions arose in cities and in the country for the purpose of affording the sons of well to-do families a better education than hitherto. Pestalozzi's educational enterprise at Yverdun became popular and very successful. It soon became the place of pilgrimage for native and foreign

educators. In Hofwyl Fellenberg established that system of institutions in which he hoped to conjure the threatening social crisis by means of better education of all classes of society. In Freiburg Pater Girard succeeded, through the charm of his personality and the clearness of his method, in elevating the city schools to a degree of perfection which enabled them to compete with Yverdun.

Rural pastors, prompted by the supreme need of well-prepared teachers, established professional courses for them; these courses proved to be remarkably beneficial if the circumstances of the time are considered. Higher education also took part in this patriotic revival, partly by the foundation of vigorous state (cantonal) schools (such as in Aarau and Chur). Finally, Pestalozzi succeeded in founding the Swiss Educational Association. It met first in 1808 in Lenzburg, and brought together many men who had hitherto worked single-handed in their respective localities, and this society became the central source of educational enthusiasm for Switzerland. When in 1812 its fifth annual meeting adjourned the members were filled with the joyous hope of a blessed time of peace and progress, and had no foreboding of the terrific events that were to take place in Europe in 1813, events which not only overthrew Napoleon and readjusted the map of Europe, but ended abruptly the activity of the Swiss Educational Association as well as the blessed time of mediation in Switzerland.

E.—THE TIME OF RESTORATION, 1813–1830.

The downfall of Napoleon led to a reorganization of the political institutions of Switzerland, which reorganization found approval very slowly. The sovereignty of the cantons was reestablished in almost absolute form. The Federation was now a powerless union of states, though Wallis, Neuenburg, and Geneva were added permanently. After all the efforts and restless activity exhibited during the Napoleonic era, the desire for rest made itself felt very strongly, and characterized the following years as a period of conservative standstill and occasional retrogression that met no opposition in public opinion. However, the plans for reforming the school system had too well matured and taken root in public consciousness during the previous period to check a gradual development along the whole line or undo the work already accomplished. Only in one point an unquestionable step backward was taken in some cantons by withdrawing the State's centralized maintenance of the school and by giving into the hands of the clergy the work of supervision. Moreover, the famine years of 1816 and 1817 pressed material interests into the foreground.

The year 1819 witnessed a shifting of scenery, and the revolution of the Greeks, for whom much sympathy was manifested in Switzerland, strengthened the liberal spirit of a great part of the Swiss people.

Most of the veterans of the time of the Helvetian union and the Napoleonic era were still alive. The Swiss Society for the Common Weal, founded in 1810, accepted the inheritance of the defunct Swiss

Educational Association, and became the debating club of all who aimed at a liberal development in public education. With great interest and the far-reaching approval of public opinion, the question of better professional preparation of teachers was discussed. By adopting, upon the advice of P. Girard, the Bell-Lancasterian method of mutual instruction, it was hoped that a temporary solution had been found of the problem of how to extend general elementary education, with very limited means, into the poorer cantons and country places. In a few cantons the efforts toward school reform crystallized into laws. Nidwalden passed a new school law in 1829 and Luzern in 1830. Zürich had been occupied for several years with a careful revision of its school system and had completed the draft of a new law in its essential features when the July revolution in France (1830) created an entirely new situation.

F.—THE PERIOD OF REGENERATION, 1830–1848.

It was a peculiar turn the revolutionary movement of 1830 took in the land of its origin, by being checked by the educated and cultured classes of the citizens and prevented from degenerating into anarchism. This spectacle of victory of culture over wild excesses was repeated in Switzerland. Revolution became reform. The more or less patriarchal organization of the State was replaced by a conscious formation of the State based upon law (Rechtstaat). This influenced the school in two directions. First, the State claimed the exclusive right to organize the school, and hence assumed the unlimited duty to maintain it. By taxing the people directly for school purposes the possibility for radical reforms was opened, and the makeshift resorted to during the twenties, i. e., to accomplish a general popular education by means of mutual instruction and the use of pupil teachers, was now discontinued. It soon disappeared completely from the Swiss schools. Secondly, the efforts in behalf of carrying into effect the principle of equality before the law resulted in doing away with the differences between city and rural schools, citizens' schools, and schools for the poor. The division line between classical (or secondary) and elementary schools, also, was felt very acutely, and the desire to connect organically all institutions of learning became the leading motive of the reformers. Upon this basis the third decade created the modern unified common school, an organism which begins with the primary school and leads the child up through intermediate and secondary schools to the university or polytechnicum. The entire system is one organism, managed and supervised by the different cantons, but essentially the same all over Switzerland, a system fashioned very much like our American common school, the graduate of which may enter college and subsequently the university.

This development took place within cantonal jurisdiction. The school was, and is now, considered strictly a state or cantonal concern. The

federal government had no jurisdiction in school matters, for the obstacles in the way of replacing the federal agreement of 1815 by a constitution that provided for closer centralization, were still too formidable. The draft of a new constitution drawn up between 1832 and 1834, for instance, was rejected. It did not mention the schools at all. The movement during this time in behalf of granting the federal government power to establish a federal university, failed signally, and ended in the establishment of several universities by cantonal governments (Zürich in 1833, Berne in 1834). Partial reactions, long continued confusion and conflict, even civil war, had to be overcome before the possibility was opened of changing the loose aggregation of sovereign states into a federation of states with a strong federal or central government, which was enabled to act as the determinative power in matters concerning institutions for the development of culture and public education.

As a matter of self-evidence, each canton has its own history of public education during this period of regeneration. In some cantons the political waves were soon smoothed, and the united efforts of the better educated classes succeeded in creating a well-planned school system that was able to withstand attacks. In other cantons party differences prevented a similar establishment for many years, and the rivalry of the leading persons constantly hindered or checked the development of the school system upon a modern basis. In other cantons, again, the ideals at first accepted remained on paper and failed to be incorporated in actual institutions; only gradually measures were taken which proved the growth of the seeds planted. In still other cantons the reactionary opposition against the spirit of modern times succeeded in opposing all liberal movements. One school organization only, that of Zürich, became important as an example for other cantons and was imitated by several.

Switzerland possessed in the works of Pestalozzi, Fellenberg, and P. Girard a most significant pedagogical past of its own. All the more astonishing it is to notice that the Zürich school system, inaugurated during the thirties, which system was partly copied by other cantons, is not constructed upon the lines laid down by these men. When an educational leader was to be chosen a candidate from among the disciples of Pestalozzi was rejected, and a man from Würtemberg, Thomas Scherr, was selected to direct the professional training of teachers. He had been principal of a blind asylum, and now became the principal of the cantonal normal school in Zürich; as such he exerted his influence most beneficially over the whole school system of the canton, which to this day bears the characteristic features this admirable man imprinted upon it.

The Catholic cantons did not call upon P. Girard, but upon Scherr, to ask for advice in the reconstruction of their school systems, while in Berne, Fellenberg, whose institution in Hofwyl was then flourishing,

but who was engaged in bitter controversies with members of the cantonal government, lost all influence upon the reorganization of the school system of this canton. Thus we see Pestalozzi, Fellenberg, and P. Girard disregarded. It is true the ideas of Fellenberg found practical realization through his coworker Wehrli, who was called to the head of the normal school in Kreuzlingen, in Thurgau, and whose work was very beneficial to the schools of the whole canton; but twenty years later Thomas Scherr, as president of the board of education in Thurgau, succeeded in removing this last opponent also (1853). The French part of Switzerland does not exhibit a single example of personal influence upon the schools such as Scherr's. His influence exerted itself over entire German Switzerland, and the Swiss schools of to-day are still exhibiting Scherr's ground plan.

And, indeed, Scherr's common school was a masterpiece of its time. The main features that characterized it were, the simplicity of its organization; consistent restriction of its programme to intellectual education; excellent, methodical skill displayed, especially in the primary grades; a lavish equipment with a complete and carefully graded set of appliances; the fact that it vigorously maintained its independence from the clergy; care for the rights, social position, and material interests of the teaching profession, as well as consideration for its corporative self-respect; above all, in everything it undertook it wisely limited itself to that which was possible and attainable.

Of course the system was not without its defects. Subsequent years have changed, supplemented, and improved it. The length of school age has been extended, the methods of instruction have been improved, new branches of instruction introduced; yet, essentially, the fundamental lines laid down by Scherr have remained the same, although to-day other conceptions of the object and method of school education are advocated, Fröbel's kindergarten, manual training, and school games are claiming admission, and demands for concentration of the matter of instruction are heard; thus the foundation of Scherr's plan is put in question, and we stand in the midst of a contest that may take many years before it will be definitely decided.

G.—FROM 1848 TILL THE PRESENT TIME.

The federal constitution of 1848 was framed in accordance with the principle that centralization should be restricted to absolutely necessary measures, hence the organization of the school system was left, as heretofore, to the separate cantons. The constitution does not even claim a general supervision over the schools, and in article 22 it restricts the Government's functions solely to the establishment of a university and a polytechnic school. During the debates from 1852 to 1854, with reference to certain amendments, the word *and* was changed to *or*, and the question then decided in favor of a polytechnicum. In 1854 the Federal Polytechnic University in Zürich was opened.

The cantons or separate states, on the other hand, progressed in developing their school systems in proportion to their political and intellectual progress. The most conservative of the cantons, induced by the great strides the liberal cantons made in popular education, hastened to replace the regulations and school laws that dated from the period of mediation (1803–1813) and shunned no sacrifices or efforts to regain their rank. New laws were enacted that expressed the views of modern times. When at the beginning of the seventies a revision of the constitution for the purpose of strengthening the central government was called for, the soil for such a procedure was much better prepared than in 1848; indeed, federal provision for school education was now a thing which seemed quite plausible. The revised constitution of 1872 did not find the sanction of the majority of the people, but the one of 1874 did. It contains a number of articles referring to public education which were adopted by a large majority of the population April 19, 1874. These articles are worth quoting:

(1) The Federal Government is empowered to establish or subsidize, beside the federal polytechnic school, a university, and other higher institutions of learning.

(2) The separate cantons are obliged to offer children of school age sufficient elementary instruction, which shall remain exclusively under cantonal supervision. It is to be obligatory and gratuitous in public schools.

(3) The public schools shall be open to the members of any religious denomination without detriment to their liberty of faith and conscience.

(4) The Federal Government shall institute the necessary proceedings against any canton that fails to conform to the foregoing requirements.

The wording of these articles allowed several interpretations. One point was left undecided, namely, whether the Federal Government has the duty, or only the right, to regulate by law the relations instituted by the constitution between it and the school system. In 1882 the Federal Council (the legislative body) determined upon the creation of the position of permanent secretary of education (state or federal commissioner). However, when the law was submitted to a popular vote, as all laws have to be in Switzerland, it was rejected by a majority of more than two-thirds. Hence the Federal Government was obliged to restrict its influence and aid in behalf of popular education to institutions that are not in any way infringing upon the established cantonal institutions. At present it subsidizes the school museums existing since 1876; and in late years it also aids materially, by subsidies and control, the industrial and agricultural (since 1884) and the commercial schools (since 1889).

The present Swiss military organization has afforded the Federal Government an opportunity (since 1875) for arranging examinations for army recruits; it also has issued regulations with regard to gymnastic institutions for the male youth, and the preparation of gymnastic teachers. In accordance with article 33 of the constitution the medical examinations are uniformly regulated by the Federal Government, and inspection of secondary schools leading up to the study of

medicine has been assumed by the Government as a consequence of the former duty. In accordance with article 34 a law has been passed forbidding the employment in factories of children below 14 years of age (1877). This law also provides that for young people between 14 and 16 years the necessary attendance in continuation schools or courses is to be included in the normal work-day, which is restricted to eleven hours.

The organization of the entire system of secondary schools and higher education (exclusive of the Federal polytechnic university, medical examinations, which influence the preparatory schools, and subsidies, which affect industrial, agricultural, and commercial schools) is left to the cantons, as is also that of the elementary-school system (exclusive of gymnastics for boys) in accordance with article 27. Since 1880, all the cantons have inserted into their constitutions provisions referring to public education and have passed laws to execute these provisions, which, though in every case specific, are by no means uniform.

II.—Present Condition of the Swiss Schools.

A.—SCHOOL ORGANIZATION.

I.—THE ELEMENTARY SCHOOL.

Purpose and extent.—In expressing the object of the elementary or people's school, the various cantonal school laws exhibit two distinct currents: Some say it is the object of the school to educate the whole child, while others claim that the school has the sole purpose of giving instruction.

The first definition was adopted by Scherr. The Zürich school law of 1832 says:

> The people's school shall train the children of all classes of society, according to uniform principles, to become intellectually active, civilly useful, and morally good men and women.

Partly in verbal repetition of the foregoing, partly in different words, but essentially the same in meaning, the laws of Baselland (1835), Zug (1850), Graubünden (1853), Bern (1856), Aargau (1865), Wallis (1873), Innerrhoden (1875), Schwyz (1877), Nidwalden (1879), and Schaffhausen (1879) express the object of school education.

Very much differently sounds the law in Oberwalden (1876), to wit:

> Every community shall see to it that all its children of school age attend an elementary school that offers the knowledge necessary for common life.

The law in Luzern (1879) says:

> The primary and continuation schools are designed to give, in connection with the parental home, a training such as is generally considered essential for life.

The law in Baselstadt (1880) defines the object of the elementary school to be, "To make its pupils familiar with elementary knowledge." The other cantons do not define the purpose of the school at all, hence are indirectly allied with the second group. Oberwalden and Freiburg state in their constitutions that "school education shall be conducted

in a religious and patriotic spirit;" they also secure to the clergy a legal influence upon school education.

The length of school age is not uniform in Switzerland. The uniform part is the medium age between 6 and 15 years, embracing six to nine courses. In the cantons Freiburg, Aargau, Tessin, Vaud, Neuenburg, and Geneva a prescholastic course, kindergarten or maternal school, is part of the legal organization of the elementary school, but attendance in these prescholastic institutions is not obligatory, except in Neuenburg and Geneva, where the upper grade of the infant school is also the lowest grade of the obligatory elementary school. At the close of the elementary school everywhere in Switzerland efforts are made to keep the boys and girls at their studies, by means of voluntary or obligatory continuation schools, review courses for army recruits, etc. Thus an extension of school work to the eighteenth or twentieth year of age is aimed at and successfully secured.

The schools for children of customary school age (6 to 15) are organized as follows:

(*a*) The elementary or primary school (6 to 11), attendance in which is obligatory; and it is everywhere open all the year round.

(*b*) The intermediate or grammar school, for pupils who do not intend to enter secondary schools. As a rule this intermediate department has two branches. (1) An advanced elementary school, attendance being voluntary and the course extending over four years. It is variously called district, real, and secondary school (not to be mistaken for American secondary schools). (2) A simple continuation of the elementary school, commonly open only half-day and in most places organized in form of obligatory continuation schools.

The duty of attending school begins at the close of the sixth year of age, or as near that age as is convenient, in Zürich, Berne, Glarus, Zug, Baselstadt, Baselland, Schaffhausen, both Appenzells, St. Gall, Thurgau, Tessin, Neuenburg, and Geneva. In all other cantons the limit is the completed seventh year of age. Admission takes place in spring in most cantons; in Appenzell and Geneva in August; in Uri, Graubünden, Tessin, and Wallis in the fall, because in these cantons schools are almost exclusively winter schools. For schools of six grades in Luzerne, pupils are admitted at 7 years also.

The duty of attending school extends over six to nine years, namely: Six years in Zürich, Uri, Obwalden, Nidwalden, Zug, Baselland, Appenzell i. Rh.; six to seven years in Luzern; seven years in Schwyz, Glarus, Appenzell a. Rh., St. Gall, Neuenburg and Geneva; eight years in Baselstadt, Schaffhausen, Aargau, Tessin, and Wallis; eight to nine years in Freiburg, Solothurn, Graubünden, and Thurgau; nine years in Berne and Vaud.

Counting the half years of required attendance, we range the cantons as follows: 6, Uri; 8, Tessin and Wallis; 8 to 9, Graubünden; 10 to 12, Luzern; 12, Zürich, Obwalden, Nidwalden, Zug, Solothurn,

Baselland; 14, Schwyz, Glarus, Appenzell a. Rh., Neuenburg, Geneva; 15, Thurgau; 14 to 16, Schaffhausen and Aargau; 16, Baselstadt; 16 to 18, Freiburg; 18, Berne and Vaud. The cantons Appenzell i. Rh. and St. Gall can not well be placed in this scale. Appenzell i. Rh. has in different communities, in schools of six grades, forty-two, thirty-six, and twenty-six school weeks, and should be credited with six to twelve half years. St. Gall requires seven school years, but some of its schools are half, others three-fourths, and still others whole-year schools. Hence it should be credited with seven to fourteen half years.

Attempts have been made to classify the cantons with reference to the number of school weeks and hours, adding the amount of time required by obligatory attendance in continuation schools or courses.

(*a*) Calculations of the secretary of education, Mr. Grob, in his year book for 1887, group the cantons with reference to the number of hours spent in school:

Group I. Uri, 3,760; Appenzell i. Rh., 4,072.
II. Wallis, 5,440; Graubünden, 5,600; Nidwalden, 5,784; Tessin, 5,808; Obwalden, 5,824; Zug, 5,919; Luzern, 5,952; Appenzell a. Rh., 5,952.
III. Aargau, 6,372; Schwyz, 6,548.
IV. Solothurn, 7,458; St. Gall, 7,644; Baselland, 7,704; Zürich, 7,788.
V. Schaffhausen, 8,274; Glarus, 8,418; Berne, 8,424; Freiburg, 8,466; Neuenburg, 8,640.
VI. Thurgau, 9,148; Vaud, 9,291; Baselstadt, 9,416; Geneva, 10,136.

(*b*) Calculation found in the statistical atlas prepared for the World's Exposition in Paris 1889, with reference to the number of school weeks in the different cantons:

Group I. Appenzell i. Rh., 178; Wallis, 202; Uri, 206; Graubünden, 208; Luzern, 211.
II. Nidwalden, 247; Appenzell a. Rh., 251; Obwalden, 258; Tessin, 260; Zug, 266.
III. Solothurn, 281; Schwyz, 293; Zürich, 302; St. Gall, 309; Berne, 310; Baselland, 312.
IV. Schaffhausen, 322; Thurgau, 325; Neuenburg, 332; Glarus, 335; Freiburg, 339.
V. Baselstadt and Geneva, 352; Aargau, 360; Vaud, 377.

It is well to state explicitly that these groupings have but a very relative value, and are subject to local and personal exceptions which for certain schools and groups of pupils cause considerable modification, but which can not be considered in calculating averages.

If we take into the scope of the elementary school the so-called secondary schools, which in Switzerland mean grammar schools, and attendance in which is not obligatory, we have to make this brief explanation: these schools have as a rule the double object of giving a more general education, and likewise serve as foundation for the advanced schools which in America are called secondary or classical schools. The one branch of this bifurcated school, that which intends to complete a common school education, scarcely advances beyond the scope of an elementary school. If, however, we consider the great number of

pupils it has, it becomes plain why the greater attention and care is bestowed upon it, according to the saying, "the greatest good to the greatest number." Since the fall of 1888 it has become obvious that this branch (the advanced common school branch) has had much to do with the recent intellectual high standing of the army recruits.

This advanced grade of common schools (called upper schools in Berne, *écoles régionales* in Freiburg, continuation schools in Aargau, middle schools in Appenzell a. Rh., and secondary schools in Vaud) is a mixture of secondary and primary schools, just as the advanced schools of the other cantons are mixtures of secondary schools, in the American sense of the word, and advanced elementary schools. There is no division line possible, since the differences are too numerous. As a rule the upper grades of the common school of nearly all cities and towns have a mixed character, and it simply depends upon the personal leaning of the pupil or the inclination of his parents to decide in what direction he is to progress.

(*b*) *Classification of schools.*—The limits of the different grades, as well as their definition, is different in the various cantons; just so the age at which the advanced common schools and real secondary schools branch off from the simple elementary schools. Still they may be grouped for purposes of classification in three distinct types:

(1) The general common school with a course of six to seven years followed by an advanced school, one branch of which leads into the secondary and preparatory school for universities: Zürich, Luzern, Uri, Schwyz, Obwalden, Nidwalden, Glarus, Zug, Freiburg, Solothurn, Baselland, both the Appenzells, St. Gall, Graubünden, Thurgau, Wallis, Neuenburg, Geneva.

(2) Unified organization of the entire elementary school with the longest possible course, but with an early bifurcation of the upper grades into advanced elementary and real secondary schools: Berne, Schaffhausen, Aargau, Tessin, Vaud.

(3) Bifurcation of the simple and advanced common school in the middle of the course, that is, after four or five years' study: Baselstadt.

The primary grades are everywhere taught by class teachers.

Sometimes all the children of school age in a small place are taught by one teacher (ungraded school). In more populous places they are graded and taught by several teachers (graded schools), or the children of a community are separated according to location and sex (parallel schools).

Most cantons have legal enactments concerning the maximum number of pupils. When that is exceeded a parallelizing takes place in the primary grades. The following maxima are observed: Baselland, 120; Zürich, 100; resp., 80; Solothurn, St. Gall, Aargau, and Thurgau, 80; Berne, Luzern, and Schwyz, 80 in graded, 70 in ungraded schools; Freiburg, 70; Glarus, 70 in all day, 50 in half-day schools; Uri, 70 under one teacher; Schaffhausen, 70 under several teachers, 60 under

one teacher; Zug, Tessin, Nidwalden, 60 under one teacher; Wallis, 60 (when 50 pupils the girls must be separated); Baselstadt, 52 in primary grades, 45 in advanced grades; Neuenburg, Vaud, and Geneva, 50. Some cantons also state the maximum for advanced common schools. When that is reached or exceeded a division is considered necessary. Thus, Zürich, 50 (provisionally 35); Luzern, 45; Baselstadt, 45; Berne, 30.

In grading the schools some cantons, especially in Catholic Switzerland, exhibit a decided tendency toward separation of the sexes, notably in larger cities. The proportion of schools containing both sexes in 1881 was as follows: In Appenzell i. Rh., 66·6 per cent; Nidwalden, 61 per cent; Uri, 57·1 per cent; Neuenburg, 56·4 per cent; Freiburg, 54·1 per cent; Schwyz, 50·9 per cent; Tessin, 43 per cent; Zug, 38·6 per cent; Geneva, 36·6 per cent; Wallis, 35·3 per cent; Obwalden, 28·9 per cent; Baselstadt, 9·4 per cent; while all or nearly all primary schools were mixed in Glarus, 100 per cent; Thurgau, 100 per cent; Appenzell a. Rh., 99 per cent; Baselland, 98·4 per cent.

In the advanced common schools both the system of class teachers and special teachers are found. The tendency toward dividing the instruction among special teachers is the result of the peculiar special examinations for teachers (Zürich and Berne); partly also of legal requirements that such schools should have, at least two or three teachers (Freiburg, Solothurn, Baselland, and Aargau.)

(*c*) *Course of study.*—The branches of study in the primary and continuation schools (primary and grammar grades, as we are accustomed to term them) are as follows:

(1) Reading and writing of the mother tongue with the aid of object and colloquial lessons.

(2) Arithmetic and geometry.—The latter is not taught in Uri, Schwyz, Obwalden, Nidwalden, Zug, Appenzell a. Rh., Neuenburg, Wallis (as to girls), and it is optional with the teachers in Freiburg and Tessin.

(3) History and geography, of Switzerland only, in Luzern, Uri, Schwyz, Nidwalden, Solothurn, Appenzell i. Rh., Graubünden, Tessin, Geneva; restricted thus only in the minimum requirements in Berne and Freiburg; history alone restricted to Swiss history in Obwalden, Glarus, Zug, Appenzell a. Rh., Aargau (exclusive of continuation schools), Wallis and Neuenburg; general geography optional for schools of Tessin.

(4) Natural history is not taught in Luzern, Uri, Obwalden, Nidwalden, Appenzell a. Rh., Wallis, Neuenburg, and is left to the discretion of the teacher in the schools of Freiburg and Tessin.

(5) Penmanship.

(6) Singing, optional in the schools of Uri.

(7) Drawing, optional in the schools of Uri, while it is restricted to free-hand drawing in Freiburg, and restricted to instrumental drawing

in Tessin. Drawing is not taught in Obwalden, Nidwalden, Appenzell a Rh., and Wallis; while in the schools of Tessin and Nidwalden drawing is taught to the pupils of school age in separate voluntary drawing schools.

(8) Female handiwork is optional in Uri.

(9) Gymnastics, only for boys in Uri, Schwyz, Nidwalden, Freiburg, Appenzell a. Rh., Tessin; optional for girls in Berne and Luzern. No legal enactments concerning gymnastics are in existence in Appenzell i. Rh., and Graubünden; but federal laws prescribe gymnastics for all the male youth over 10 years of age in every canton.

(10) Religion is a study optional with the parents according to the federal constitution. It is placed entirely outside of the pale of the public school organization in Neuenburg and Geneva, while in Luzern, Uri, Obwalden, Nidwalden, Catholic Freiburg, and Vaud, the responsibility is shared with the church and the clergy. In the cantons of Solothurn and Appenzell i. Rh., religion is taught without reference to denominational distinctions.

To the foregoing regular branches must be added some special branches:

(1) Bookkeeping in Berne, Schwyz, Obwalden, Nidwalden, Glarus, Solothurn, Graubünden, Aargau, Thurgau, Wallis, but only optional in the schools of Freiburg and Tessin.

(2) Hygiene in Solothurn, in the girls' industrial schools of Neuenburg, and optional in Tessin.

(3) Science of government in Freiburg, Vaud, Wallis, Neuenburg, and Geneva; optional in Tessin.

(4) Arboriculture in Obwalden, elements of political economy in Neuenburg, agriculture in Geneva; also in some communities in Vaud.

5) Domestic economy for girls in Freiburg, Solothurn, St. Gall, Vaud, Neuenburg, and Geneva.

(6) Manual training for boys in Vaud, Neuenburg, and Geneva.

(7) A foreign language in Graubünden (German for Romanic children), Baselstadt (French), Geneva (German); optional in Berne, Luzern, Aargau, and Neuenburg.

In the cantons of Berne, Freiburg, and Tessin, a double course is in operation, carried through by every school, and resulting later on in the bifurcation spoken of heretofore.

The advanced elementary school differs principally from the simple elementary school in its obligatory teaching of a foreign tongue. The branches of study in this kind of schools are:

Mother tongue, one or two foreign languages and arithmetic, mostly in connection with bookkeeping; geometry, optional only in Tessin and Wallis; in Luzern also for girls; geography and history; some cantons restrict these branches to geography and history of Switzerland exclusively, with science of government, natural history, and science, singing, drawing (in Wallis only for boys), penmanship (in Tessin only for

boys), gymnastics (obligatory for all boys between 10 and 15; in Aargau the use of arms is obligatory); religion, as above stated.

To these regular branches the following are added as obligatory branches: Manual training for boys in Geneva; female handiwork for girls in Luzern, Schwyz, Tessin, Zug, Solothurn, Baselstadt, Schaffhausen, St. Gall, Graubünden, Aargau, Tessin, Vaud, Wallis, Neuenburg, Geneva; domestic economy in Luzern, Schwyz, Tessin, Vaud, Neuenburg, and Geneva; horticulture in Tessin; pedagogics in Neuenburg and Geneva.

Optional studies are: Ancient and modern languages in Zürich; exercises under arms in Berne, Vaud, and Neuenburg; elements of physics and chemistry and free-hand drawing in Freiburg; commercial branches in Baselstadt and Geneva; instrumental music in Aargau; agriculture and hygiene in Wallis.

As a rule these advanced elementary schools have the double purpose of offering a more complete general education, and also of acting as a foundation for the higher institutions, such as classical schools; they are considered decentralizing parallel institutions for the lower classes of the real secondary, or centralized cantonal schools. It is plain, therefore, that these advanced elementary schools fashion their courses of study in some cantons after those of the lower grades of secondary schools.

In some cantons the study of vocal music is carried beyond school age and taught in separate singing schools (Zürich, Baselland, and Thurgau).

Schools for Female Handiwork.—Female handiwork is taught either as a branch of the course in elementary schools, or treated in separate institutions, intimately related to the elementary schools. The more populous cantons arrange from time to time courses for the training of teachers for that branch.

Manual Training for Boys.—This is an integral part of the programme of normal school education in the cantons of Berne, Tessin, Vaud, Neuenburg, and Geneva; in the last three cantons it is introduced in the elementary school and is obligatory in Geneva. In Vaud and Neuenburg the introduction of manual training is left to the local school authorities, who receive a cantonal subsidy if they introduce it. In all the other cantons, it is left to the initiative of private persons and societies; in Thurgau it is subsidized by the government, but not directed. In 1891 manual training was given to boys in the cantons of Zürich (9 schools), Berne (15), Nidwalden (1), Glarus (2), Freiburg (4), Solothurn (3), Baselstadt (2, of which one has 29 classes and 538 pupils), Schaffhausen (7), St. Gall (6), Graubünden (3), Aargau (3), Thurgau (4), Vaud (2), and Neuenburg (4). The Swiss Society for the Promotion of Manual Training arranges annual courses for the training of teachers and issues regulations for their examination.

Continuation Schools.—The pupil's age at which these schools begin

their work is not uniformly fixed, since the term, continuation school, is used for obligatory supplementary schools for children past school age, as well as for advanced elementary schools for children within school age (7 to 15). Besides these obligatory and voluntary schools there are many other institutions under different names, as industrial, drawing, trade, Sunday, evening, repetition, supplementary, and technical schools, all of which deserve to be classed among the continuation schools. Prof. Hunziker takes the term to mean, all schools which young people of both sexes attend for a certain number of hours per week or day, after completing an elementary course, either for the purpose of retaining or improving their general education, or of gaining knowledge and skill necessary for the occupation or trade they have chosen.

For the boys the Swiss continuation schools may be grouped in three classes, which are rarely found in their original state:

(*a*) Schools for the purpose of technical, industrial, or agricultural training. These schools have, in the nature of the case, voluntary attendance. They are organized to fit special technical needs; hence we see them provided with special institutions, such as workshops, etc., in order to facilitate practical skill in trades or occupations.

(*b*) Schools for the purpose of supplementing general education between the ages of 15 and 20. Their character and management favor obligatory attendance which, in some cases, is decreed by local authorities.

(*c*) Schools for those who have not become proficient in the branches taught in the regular elementary schools. These schools aim at securing the minimum of education necessary for civil life. In order to gain their end it is necessary that instruction in them be obligatory.

A review of the entire system of continuation schools of Switzerland gives the following results:

(1) No canton is without continuation schools.

(2) One canton only (Appenzell i. Rh.) is without a legal enactment concerning continuation schools upon which the school authorities could base the institution.

(3) Voluntary continuation schools only are found in Zürich, Berne, Glarus, Baselstadt, Graubünden, Geneva, Appenzell a. Rh., St. Gall, and Aargau. In the last three cantons some communities have insisted upon obligatory attendance.

(4) In some cantons obligatory attendance has been carried through conditionally—that is to say, in Schaffhausen for all who have not completed a full eight years' course in an elementary school; in Luzern for all who have not spent at least one year in the advanced elementary school. In Schwyz, Freiburg, Tessin, and Neuenburg the obligatory attendance depends upon the failure in examination for admission.

(5) The obligatory continuation schools of the cantons Uri, Schwyz, Obwalden, Nidwalden, Zug, Freiburg, Appenzell i. Rh., Tessin, and

Wallis are only review courses for army recruits; in Tessin and Wallis these courses are combined with the general repetition school, while Luzern, side by side with its obligatory continuation schools, has, in a number of communities, special obligatory review courses for army recruits insufficiently prepared. Berne possesses the latter institution also, but attendance here is optional.

(6) The cantons of Solothurn, Baselland, and Thurgau have obligatory continuation schools for more or less organic continuation of the instruction in the lower schools.

(7) The system of continuation schools for the girls (which includes cooking, domestic practice, and schools for servants, etc.) has begun to develop during the last few decades (*a*) by connecting special continuation courses with girls' secondary schools in Zug, Freiburg, Baselstadt, and St. Gall, or to the cantonal review schools in Zürich; (*b*) in connection with women's industrial schools in Zürich, Baselstadt, and St. Gall; (*c*) in connection with continuation schools for boys in Zürich, Glarus, Baselstadt, Neuenburg; (*d*) by means of special schools established by communities or societies and subsidized by the cantons in Zürich, Berne, Luzern, Glarus, Solothurn, Appenzell a. Rh., St. Gall, Graubünden, Aargau, Neuenburg, and Geneva.

(8) Industrial continuation schools are under the supervision of the Federal Government and receive regular subsidies. During the scholastic year 1891 the Federal Government of Switzerland subsidized 61 industrial schools, in which drawing and theoretical instruction was given; 13 in Zürich, 10 in Berne, 2 in Schwyz, 5 in Glarus, 1 in Zug, 1 in Freiburg, 3 in Solothurn, 1 in Baselstadt, 1 in Schaffhausen, 2 in Appenzell a. Rh., 2 in St. Gall, 2 in Graubüden, 10 in Aargau, 5 in Thurgau, 2 in Neuenburg, 1 in Geneva.

During the same year the Government subsidized 35 drawing schools—4 in Berne, 1 in Uri, 3 in Obwalden, 2 in Nidwalden, 2 in Freiburg, 3 in Baselland, 3 in St. Gall, 15 in Tessin, 1 in Vaud, 1 in Neuenburg.

(9) Parallel with industrial continuation schools are the agricultural institutions; they are mostly connected with schools for the purpose of supplementing general education. In Wallis agriculture is taught in connection with elementary schools (some communities make them obligatory), and the promotion of arboriculture is left to the initiative of teachers.

Private schools.—Side by side with public schools there are scattered all over Switzerland a number of private elementary and secondary schools, the right to teach and to open schools being granted by the Federal constitution and the school laws of the cantons; but the cantonal authorities have everywhere reserved the right of supervision.

II.—SECONDARY, TECHNICAL, AND HIGHER INSTITUTIONS OF LEARNING.

(*A*) *Secondary schools.*—As was said before, the so-called secondary or middle schools in Switzerland are advanced elementary schools,

"grammar" schools in the American acceptation of the term; the real secondary schools—that is, those which lead up to higher seats of learning and correspond to our high schools and academies—are variously called cantonal schools, complete secondary schools, progymnasia, and gymnasia; again, at other places they are called higher schools for girls and lyceums. In this group of schools there is much less uniformity than in the previous group—that of elementary schools. They have but one point in common, namely, that their character of secondary schools begins at the pupil's age of 15—that is, the time when obligatory attendance ceases.

However, their courses vary in extent and duration almost as much as do the private secondary schools of America. Some of them lead up to the university, others to the polytechnicum, still others to other professional schools; hence the latter complete their courses sooner. In some cantons these institutions are communal or private. Many of them are State or cantonal schools, and the latter are frequently brought into competition with the former, hence are stimulated to more vigorous activity than they might otherwise exhibit. A review of the statistics of the secondary system will be found in section F.

(*B*) *Technical schools.*—These institutions may be divided into those that, according to age of the pupils and conditions of admission, are parallel with secondary schools mentioned before, and those that bear the character of higher institutions of learning. To the first category belong, above all, the teachers' normal and training schools, which will be more minutely described in section E. To the same category belong the industrial, agricultural, and commercial schools. The list in 1891 contained—

(*a*) Trade and industrial schools: Three technical schools, in Winterthur, Biel, Burgdorf. These institutions give technical education for the pursuit of trades and industries. The school at Winterthur is famous all over Europe.

Two weaving schools, at Zürich and Wattwil; 8 watchmakers' schools, at Biel, St. Immer, Pruntrut, Solothurn, Neuenburg, Chaux-de-Fonds, Locle, Geneva; 3 mechanics' schools, at Chaux-de-Fonds, Locle, Geneva; 1 carving school at Brienz; 7 schools for woman's work, at Berne, Basel, St. Gall, Chaux-de-Fonds, Chur, Geneva, and Zürich.

Seven workshops, for woodwork in Zürich; metal-workers in Winterthur; joiners and shoemakers in Berne; bookbinding, basket-braiding, and stone-cutting in Freiburg.

Nine art schools and institutions, for industrial art in Zürich, connected with industrial museums; in Winterthur, connected with the technical school; in Berne and Biel, connected with technical schools; Luzern, Basel, connected with industrial schools; St. Gall, connected with the industrial museum; Chaux-de-Fonds, connected with the school of design and engraving; Geneva, connected with the cantonal school of industrial art.

One school for the construction of railroads in Biel, connected with the technical school.

The foregoing list does not quite cover the actual condition, since several other institutions are maintained which are not subsidized and controlled by the Federal Government, as, for instance, the municipal art school in Geneva, the watchmakers' school at Fleurier, and the woman's industrial school in Zürich. The principle that where the Government does not subsidize it has no right to control is strictly adhered to.

(*b*) Agricultural schools: Five theoretical and practical agricultural schools, in Zürich, Berne, Neuenburg; the horticultural school in Geneva; the school for wine and fruit growers and gardeners at Waedensweil; 3 agricultural winter schools at Sursee, Brugg, and Lausanne; 4 dairy and cheese-making schools at Rütti, Freiburg, Sornthal, and Meudon-Lausanne.

(*c*) Commercial schools: The Government subsidized, in 1892–'93, 5 commercial schools, at Geneva, Neuenburg, Chaux-de-Fonds, Berne, and Winterthur, and gave to 34 commercial societies small subsidies to cover the costs of commercial courses of instruction.

(C) *Universities.*—The apex of the Swiss system of education is formed by the universities, scientific faculties, and higher professional schools. Of such Switzerland has 1 federal polytechnic school in Zürich, founded in 1854; 6 cantonal or higher universities, Basel, 1460; Zürich, 1833; Berne, 1834; Geneva, 1873; Freiburg, 1889, and Lausanne, 1891; 1 academy in Neuenburg; 2 law schools in Freiburg and Sitten; 2 Catholic theological schools in Luzern and Solothurn, and 5 Catholic priests' seminaries; 2 veterinary schools at Zürich and Berne; 1 school for dentistry in Geneva.

More minute information concerning the status of secondary, professional, and higher institutions are found in Grob's *Jahrbuch des Unterrichtswesens* of 1891.

B.—EXPENDITURE FOR SCHOOL PURPOSES.

The income of public education in Switzerland is derived from irreducible funds, state school taxes, and funds from the federal exchequer distributed pro rata of the population.

I. Some cantons, notably Obwalden, Nidwalden, Zug, Appenzell i. Rh., and Thurgau, have cantonal or general school funds; but in the majority of the cantons the constitution, or the school law, decrees the formation of communal school funds. The advanced elementary schools are maintained in the same way, by either communal or state funds. The statistics published by Secretary C. Grob concerning public education in Switzerland show for the year 1881 the following totals of school property: Real estate, 82,614,327 francs; furniture, 4,017,226 francs; funds, 50,903,044 francs, or a total of 137,534,597

francs for primary schools only; 9,077,720 francs for advanced elementary schools, which is a total of 146,612,317 francs (or $29,322,463).

The following itemized list of cantonal school funds and property, which list we owe to Secretary Grob, exhibits the same variety noticeable in the school funds of American States:

Cantons.	Primary school funds and property.	Per capita of population.		Advanced elementary school funds and property.
	Francs.	*Francs.*		*Francs.*
Thurgau	8,491,043	85	$17.00	242,160
Schaffhausen	2,925,159	76	15.20	20,805
Appenzell a. Rh	3,449,961	66	13.20	676,527
Baselstadt	4,231,835	65	13.00	444,105
Glarus	2,196,173	64	12.80	420,734
Solothurn	5,165,910	64	12.80	176,411
Zürich	20,103,508	63	12.60	1,286,869
Neuenburg	6,575,556	63	12.60	1,266,900
St. Gall	13,043,726	62	12.40	2,418,130
Aargau	11,138,884	56	11.20	320,834
Freiburg	6,030,715	52	10.40	5,256
Graubünden	4,901,221	52	10.40	29,579
Baselland	2,900,235	49	9.80	699,751
Zug	1,097,493	48	9.60	1,000
Geneva	4,856,920	48	9.20	122,540
Berne	21,317,253	41	8.20	663,479
Vaud	9,654,600	40	8.00	10,720
Schwyz	1,795,175	35	7.00	131,524
Nidwalden	383,524	32	6.40	17,680
Obwalden	444,714	29	5.80	.....
Luzern	3,061,084	23	4.60	47,823
Appenzell i. Rh	250,884	20	4.00	.....
Wallis	1,887,765	19	3.80	38,030
Uri	407,903	17	3.40	150
Tessin	1,223,356	9	1.80	36,713
Total and average	137,534,597	48	$9.60	9,077,720

II. In comparison with the expenditures for public school purposes (in 1890 they amounted to about 20,000,000 francs for primary and 31,000,000 francs for all the public educational institutions) the amount of annual interest from funds is not very considerable and by no means the chief source of income. By far the greatest part of the expenditures has to be met by taxation. The manner in which this school tax is levied and raised varies considerably in the different cantons. Besides, the children attending schools pay a small tuition fee. This custom, however, is gradually disappearing.

Instruction in the primary grades of the public schools is gratuitous according to the requirements of the federal constitution. Some cantons have extended the principle of gratuity to the advanced elementary schools (grammar schools); Zürich to secondary schools, Solothurn to the county central schools, Baselstadt to every kind of secondary and preparatory schools.

In late years some states have begun to publish text-books and prepare other supplies, and to sell them at cost of production (Zürich, Luzern, Appenzell a. Rh.). Other cantons have adopted the custom of furnishing pupils with free text-books and supplies in the primary schools (Glarus, Solothurn, Baselland, Vaud, Neuenburg, and Geneva). In one canton this principle is carried out in all the grades of the elementary schools,

primary and advanced (Baselstadt). The cantons St. Gall and Zug furnish only the printed text-books. In other cantons individual communities have adopted the principle of free text-books, though the canton in which they are situated may not have adopted it.

III. We have seen that the sources of the income for public education in Switzerland vary considerably. A like variation is noticeable in the distribution of the expenditures in the several cantons. The Year Book of 1891 offers a summary which we here append. It shows that for elementary and grammar school purposes the canton Baselstadt pays all expenses, the canton Geneva pays more than three-fourths, and the following cantons pay between one-half and one-fourth: Zürich, Berne, Luzern, Uri, Freiburg, Solothurn, Schaffhausen, Appenzell i Rh., Graubünden, Aargau, Tessin, Vaud, and Neuenburg. Less than one-fourth is paid by the cantonal governments of Schwyz, Obwalden, Nidwalden, Glarus, Zug, Baselland, Appenzell a. Rh., St. Gall, Thurgau, and Wallis.

Distribution of expenditures in 1890.

Cantons.	Elementary and continuation schools.		Secondary and higher education.		Total.
	Cantonal government.	Communal governments.	Cantonal government.	Communal governments.	
	Francs.	*Francs.*	*Francs.*	*Francs.*	*Francs.*
Baselstadt	979,306	.....	641,689	.....	1,620,995
Geneva	441,782	175,985	660,576	8,000	1,286,343
Zürich	1,381,770	3,718,295	1,154,211	.....	6,254,276
Berne	1,292,774	2,885,869	1,435,834	921,971	6,536,448
Luzern	296,570	391,295	162,136	7,200	857,201
Uri	14,369	40,000	9,054	.....	63,423
Freiburg	143.147	350,000	93,984	.....	587,131
Solothurn	208,541	400,000	118,126	.....	726,667
Schaffhausen	166,945	275,000	57,123	.....	499,068
Appenzell i. Rh	22,016	31,000	450	.....	53,466
Graubünden	145,527	262,300	131,643	.....	539,470
Aargau	440,121	1,307,000	150,075	22,250	1,919,446
Tessin	141,550	327,950	105,200	.....	574,700
Vaud	515,598	1,011,500	542,171	290,000	2,359,269
Neuenburg	306,200	650,000	164,130	50.000	1,170,330
Schwyz	8,594	186,294	5,928	.....	200,816
Obwalden	5,300	29,550	5,700	7,500	48,050
Nidwalden	11,467	41,674	40	.....	53,181
Glarus	70,232	303,790	3,000	.....	377,022
Zug	24,954	98,220	15,902	14,605	153,681
Baselland	48,729	251,468	7,217	.....	310,414
Appenzell a. Rh	31,440	303,428	11,503	15,679	362,050
St. Gall	256,089	2,353,367	247,268	15,000	2,871,724
Thurgau	198,296	1,284,270	96,377	.....	1,578,943
Wallis	14,049	260,000	79,319	.....	353,368
Total Switzerland	7,165,366	16,941,255	5,898,656	1,352,205	31,357,482
Expressed in dollars	$1,433,073	$3,388,251	$1,179,731	$270,441	$6,271,496

IV. Adding to these totals the sums spent for technical and higher education by the Federal Government, to wit, 341,542 francs for industrial schools in 1890; 145,500 francs for agricultural schools in 1890; 38,886 francs for commercial schools in 1891; 627,376 francs for the federal polytechnic school in 1890 (total from Federal Government 1,853,304 francs, or $370,661), we find a grand total of 32,510,786 francs, or $6,502,157.

V. The per capita of the population of the sum total of cantonal and

communal expenses for school purposes in 1891 was as follows (average for Switzerland 10·8 francs, or $2.16):

	Francs.			Francs.	
1. Baselstadt	21.9	$4.38	14. Zug	6.6	$1.32
2. Zürich	18.5	3.70	15. Luzerne	6.3	1.26
3. Thurgau	15.1	3.02	16. Graubünden	5.7	1.14
4. Berne	12.2	2.44	17. Baselland	5.0	1.00
5. St. Gall	12.1	2.42	18. Freiburg	4.9	.98
6. Glarus	11.2	2.24	19. Tessin	4.5	.90
7. Schaffhausen	10.3	2.06	20. Appenzell i. Rh	4.2	.84
8. Geneva	10.2	2.04	21. Nidwalden	4.2	.84
9. Neuenburg	10.1	2.02	22. Schwyz	4.0	.80
10. Aargau	9.9	1.98	23. Uri	3.7	.74
11. Vaud	9.6	1.92	24. Wallis	3.5	.70
12. Solothurn	8.5	1.70	25. Obwalden	3.2	.64
13. Appenzell a. Rh	6.7	1.34			

C.—SCHOOL SUPERVISION.

Each canton has a number of supervisory officers, elected for a definite number of years and bearing various titles. Yet, great as the differences in titles, length of service, and sphere of authority may be, there is a uniform scheme followed, i. e., a cantonal supreme school authority, local supervisory, and intermediate supervisory authorities. In Appenzell i. Rh. and Zug the functions of both cantonal and middle authorities are in the same hands.

Local supervision of primary and grammar schools is exercised throughout Switzerland by commissions, or boards, whose number of members is not uniform. The boards are not identical with the political city, or town councils, but are more or less independent of the political authorities, being either elected directly by popular vote, or in a few cases appointed by the city council, and managing the schools independent of direct interference. Usually the school boards are essentially coördinate with, not subordinate to, the city councils.

The intermediate school authorities are elected in Zürich by popular vote, but in other cantons they are appointed by the supreme cantonal authority. They are considered executive officers as well as inspectors. In two cantons, Aargau and Solothurn, these functions are separated and given into the hands of different men. In nearly all the cantons professional and authoritative supervision is exercised by these intermediate school officers and the cantonal or state inspector. In more complicated school systems a superintendent or inspector for each kind of schools is appointed, namely, for the primary, advanced elementary, secondary, etc.

The cantonal or state authorities are constituted with even less uniformity than the lower ones. In Graubünden and in the smaller democratic original cantons (such as Uri, Obwalden, and Zug) the highest educational authority is separated from the executive branch of the government, and perfectly independent, except that it is legally obliged to report annually. In the other cantons the school authorities are connected with the political authorities in as much as the presiding officer must be a member of the government. Two methods are noticeable in this: Either the weight of decision is placed in the hands of the gov-

ernment representatives and the professional members only act as superintendents and inspectors (as is done in Berne, Glarus, Baselland, Thurgau, and Vaud), or the educational department has the duty of management and the government officers merely reserve a nominal control (as is done in Zürich, Luzern, Schwyz, Nidwalden, Freiburg, Solothurn, Baselstadt, Schaffhausen, both the Appenzells, St. Gall, Aargau, Tessin, Wallis, Neuenburg, Geneva).

In some cantons the teachers' association, or its representatives (as in Zürich, Berne, Neuenburg, and Geneva), or the school inspectors (as in Schwyz and other cantons), or the faculty of the normal school (as in Solothurn) has a legal influence upon the central management of the schools. In the cantons of Berne, Freiburg, and Vaud the political authorities enter upon the management of the lower schools by supervising the discipline and attendance.

D.—SCHOOL HYGIENE AND SPECIAL PROVISION.

For the purpose of regulating the hygienic conditions of the schools, with reference to architecture, furniture, and sanitary control, a number of cantons have made thorough legal provision. The Swiss *Zeitschrift* für Statistik for 1884 gives a complete list of all the regulations and laws in force. Generally speaking, honest efforts are made to come up to legal requirements and to the results of recent investigations as far as possible under existing circumstances. In some cities the school authorities are more vigorous in this respect than in the country, and in consequence the latest progress in hygiene is considered; thus bath-rooms are put into the schools of Basel. The cities of Berne and Winterthur have introduced instruction in swimming as part of the gymnastic exercises; open air games are organized in Zürich, Winterthur, Waedensweil, Berne, Freiburg, Basel, Schaffhausen, St. Gall, Aarau, Weinfelden, in the college of Mariahilf in Schwyz, and other places. Skating, too, is frequently encouraged by the school authorities, who arrange for skating vacations, and by preparing icefields for this sport; excursions on foot and on the railroads are arranged during the summer. The introduction of hygienic school furniture is an object of great solicitude everywhere in Switzerland. The so-called perpendicular writing in preference to slanting writing is at present the subject of most animated controversies. Several cities have arranged for regular examinations of the pupils' eyes at stated intervals, others have made the ears and the organs of speech subjects of special investigation.

In several cantons, especially in large cities, the school authorities furnish warm dinners and clothes to indigent pupils, and afford opportunity for changing and drying wet clothing of children who come from a distance. During summer vacation colonies and "milk cures" are arranged for poor and sickly children; also asylums where children may be kept after school hours and employed with manual work. Zürich, Basel, St. Gall, Geneva and a few other cities have special classes for weak-

minded children (*écoles gardiennes*). In some cities and villages savings banks are connected with the schools. A number of blind asylums, deaf-mute schools, and institutions for imbeciles attend to the physically abnormal; other institutions of refuge and reformatories attend to the morally neglected and depraved youth. Music schools are found in Zürich, Winterthur, Berne, Luzerne, Schaffhausen, Aarau, and Lausanne. Well-managed school gardens are maintained in the cities of Berne, in Langnau, and Feldbach (Zürich), in Pratteln (Baselland), in Lichtensteig and Buchs (St. Gall) and in Lustorf (Thurgau).

E.—TEACHERS.

Teachers are licensed by the cantonal governments. Licenses are granted only if the required proof of moral character is furnished and a certain age has been reached. A cantonal examination of the candidate's scholarship is generally required, except in a few cantons where the certificate of graduation from a normal school is accepted in lieu of an examination.

The teachers of advanced elementary schools are required to pass an additional examination. In recent years the license to teach female handiwork is made dependent upon attendance on a special course of preparation and an examination.

Throughout the greater part of Switzerland women find employment in the primary school, but their remuneration is, as a rule, smaller than that of men. In advanced (or grammar) schools women are employed as class teachers only in the cantons of Berne, Luzern, Schwyz, Uri, Obwalden, Nidwalden, Freiburg, Baselstadt, Baselland, St. Gall, Tessin, Wallis, Neuenburg, and Geneva.

It is interesting to note the percentages of women teachers in the different cantons:

	Per cent.
Glarus	0·
Baselland	0·8
Appenzell a Rh	1·
Thurgau	2·7
St. Gall	3·4
Solothurn	4·5
Schaffhausen	8·4
Zürich	8·4
Graubünden	12·2
Aargau	13·5
Luzern	13·8
Baselstadt	28·6
Appenzell i. Rh	29·2
Vaud	37·6
Berne	38·6
Freiburg	39·7
Wallis	45·4
Zug	49·2
Uri	50·0
Schwyz	55·0
Geneva	56·3
Tessin	59·5
Neuenburg	65·3
Nidwalden	72·2
Obwalden	73·7
Average	30·2

This table was prepared by Mr. C. Grob in 1881. A comparison with statistics of 1891 from other sources reveals the fact that the average has since risen to 33·3 per cent, though the cantons of Schaffhausen and Appenzell a. Rh. have entirely abandoned the practice of employing women as teachers in elementary schools.

The regular training of teachers is given in secondary schools in the cantons of Neuenburg, Geneva, and Basel, while in all other cantons special normal schools are established for that purpose, but in Graubünden and Solothurn these normal schools are departments of the cantonal central school. Only one normal school is open to both sexes. Switzerland has 37 normal schools altogether. Of these 23 are open exclusively to men, 13 only to women, and 1 to both sexes. Of the 37 Swiss normal schools, 22 are German, 13 French, and 2 Italian. The cantons or states maintain 25 of these schools; 4 are maintained by communities; 8 are private institutions. For further statistics see p. 172.

In some cantons the definite appointment of a teacher is preceded by a period of probation of two years. The appointment of teachers is decided by general election or by a school board, or, as in Geneva, by the city council. Usually the teacher is elected for life. In some cantons the right to call for a teachers' resignation is reserved. In a few cantons the teachers are elected or appointed for a definite number of years (three to eight). Reëlection is permissible.

In Catholic cantons certain ecclesiastical positions are connected with educational work in advanced elementary schools.

As a rule, the teacher is by law and contract obliged to give instruction a certain number of hours per week, to attend certain courses of instruction for his own benefit, to become a member of an aid society in order to secure a pension for himself, widow, and orphans. He is also obliged to arrange continuation and evening schools for boys and girls past school age, and not infrequently the care of the school building devolves upon him. Occupations that would interfere with his vocation are prohibited. He is free from certain duties that other citizens have to perform, as for instance, watch duty, statute service. In Wallis the teacher is exempted from income taxes. These privileges give him a high position in the community.

Salaries.—The teachers' salaries are higher in advanced elementary (or grammar) than in primary schools. They vary considerably in the different cantons. Some cantons have no legally fixed minimum salary. The following table was compiled in 1881; later information is wanting:

The minimum salary of primary teachers is below 1,000 francs ($200) in the cantons, Wallis, 187 francs; Nidwalden, 448; Uri, 451; Tessin, 572; Obwalden, 597; Graubünden, 669; Schwyz, 758; Zug, 778; Appenzell i. Rh. 882; Freiburg, 898.

The minimum varies between 1,000 and 1,500 francs in the cantons, Aargau, 1,207 francs; Berne, 1,249; Luzern, 1,289; Solothurn, 1,283; Neuenburg, 1,356; Baselland, 1,446.

The minimum varies between 1,500 and 2,000 francs in the cantons: Vaud, 1,514 francs; Thurgau, 1,552; St. Gall, 1,554; Glarus, 1,610; Schaffhausen, 1,623; Geneva, 1,647; Appenzell a. Rh., 1,821.

In Zürich and Baselstadt it exceeds 2,000 francs, to wit: Zürich, 2,192; Baselstadt, 2,778.

It is plain, though, that these figures are only of relative value, since they do not represent the actual salaries paid, but only the lowest.

Switzerland has 23 pension funds and aid societies for teachers, widows, and orphans. Most cantons provide for pensions; others only aid the voluntary pension funds of the teachers, but all recognize the duty of the state to pension teachers after a certain number of years, which varies between 30 and 45 years.

F.—STATISTICS. [1]

A.—PRIMARY SCHOOLS.

The number of school districts in 1891 was 3,847 with 8,239 schools. The number of pupils in 1891 was 467,596 (234,618 boys and 232,978 girls). The number of teachers was 9,332 (6,224 men and 3,108 women). In 1891 the number of pupils to one teacher was 50. The average attendance in 1890–'91 was 84·97 per cent (an improvement of 4·05 per cent over 1881). These and the following numbers do not include private schools.

B.—ADVANCED ELEMENTARY SCHOOLS.

The number of pupils in 1891 in 477 schools was 28,537 (16,346 boys and 12,191 girls). Teachers, 1,370 (1,178 men and 192 women).

C.—CONTINUATION SCHOOLS.

The number of pupils in 1891 was 40,575 (37,292 boys, 3,283 girls). In these schools recruits prepare for entering the army by reviewing their elementary studies.

D.—SECONDARY SCHOOLS.

The number of secondary and technical (such as normal) schools is not stated, but the number of students in 1891 was 19,299, nearly all boys.

E.—HIGHER EDUCATION.

In the universities and the federal polytechnicum the number of students in 1891 was 3,073, (2,847 young men and 226 young ladies).

Dr. Huber, an educational authority in Switzerland, having access to reports of private schools, makes this statement, which certainly comes nearer the true figures than the total of the foregoing.

The total number of pupils in elementary schools in 1891 was 549,067, to wit:

Schools.	Pupils.	Per cent.
Primary	467,596	85
Advanced elementary	28,537	6
Continuation	40,575	7
Private	12,359	2
Total	549,067	100
Secondary	19,299	3·5
Elementary	549,067	96·5
Total	568,366	100·0

[1] According to Grob's yearbook.

CHAPTER VIII.

THE RESULTS OF HOME TRAINING AND INFLUENCE.

(From the German of Franz Schöberle, Vienna.)

[The following presentation may seem very fragmentary and the figures too inadequate for use as a basis for generalizations such as the author indulges in. The inquiries may have, in some cases, resulted in erroneous statements. The facts themselves may be considered dubious; at least the place in which they are gathered (the city of Vienna) may not be the proper standard of comparison for other localities. The grouping of facts may be defective, inasmuch as it is done by what the author himself considers social standards—not by any standard generally agreed upon. In many cases potent educational influences may have escaped the author's observation; hence his conclusions may be faulty. Yet, after making all due allowances, after admitting all this and more, there remains a residue of suggestive thought in the little table, the author or compiler of which was a man who, for several years, patiently plodded in the service of science without hope of reward, except such as warm-hearted appreciation can offer.

The author presents only the first table, which shows each item as compared with the sum total of all cases observed. Two more tables are inserted, showing the same items, first, compared with the sum of each column; secondly, compared with the sum of each line. In other words, inquiry has been made into the relation one number bears to the total number of the social class of which it forms a part, and then into the relation the same number bears to the total number of children under similar educational influences.—*The Translator.*]

TABLE 1.—*Classification of 9,000 Viennese school children, in different classes of society, according to their home training.*

Home training.	I. Children of the upper class.		II. Children of the middle class.		III. Children of the poor and ignorant.		Totals.	
	No.	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*
a. According to moral principles	135	1·5	360	4	588	6·5	1,080	12
b. Mostly passive	225	2·5	855	5·5	3,420	38	4,500	50
c. One-sided	180	2·1	1,125	12·5	945	10·5	2,250	25
d. Bad	135	1·5	135	1·5	900	10	1,170	13
Totals	675	7·5	2,475	27·5	5,850	65	9,000	100

TABLE 2.—*Ratio of the several items to the sum of the column.*

Educational influence.	I. Children of culture and wealth.		II. Children of the middle class.		III. Children of the poor and ignorant.		Totals.	
	No.	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*
a. According to moral principles ..	135	20	360	15	588	10	1,080	12
b. Mostly passive.....	225	33	855	35	3,420	59	4,500	50
c. One-sided	180	27	1,125	45	945	16	2,250	25
d. Bad	135	20	135	5	900	15	1,170	13
Totals	675	100	2,475	100	5,860	100	9,000	100

TABLE 3.—*Ratio of the several items to the totals in the margin.*

Educational influence.	I. Children of culture and wealth.		II. Children of the middle class.		III. Children of the poor and ignorant.		Totals.	
	No.	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*
a. According to moral principles ..	135	12·5	360	33	588	54·4	1,080	100
b. Mostly passive	225	5	855	19	3,420	76	4,500	100
c. One-sided.....	180	8	1,125	50	945	42	2,250	100
d. Bad	135	11·5	135	11·5	900	77	1,170	100
Totals	675	7·5	2,475	27·5	5,850	65	9,000	100

This table (table 1, the author's) is the result of five years' study and observation in three ward schools of the city of Vienna, Austria. The observations were made by a teacher in fifteen class rooms and embrace 9,000 children of various ages between 10 and 14 years. Both sexes were observed, but from the explanatory remarks of the author we see that it was chiefly boys whom he studied. A comparatively large portion of the children belong to the lower strata of society. Though the tables might speak for themselves the explanations of the author may be helpful.

Line *a* (horizontal) contains the number of children, grouped in three classes, whose parents try to educate them, consciously and with a purpose in view, according to ethical principles or maxims, as, for instance, simplicity in appearance, word, and action, respect for others, sense of order and law, honesty, truthfulness, and uprightness. These children possess ideals of right, are ambitious, but not at the expense of others, and they are generally trained well in obedience and imbued with the sense of firmness and justice.

Line *b* contains the number of children whose parents are chiefly passive in their duties toward education. All they do is confined to a prevention of degeneracy on the one hand and a development of those impulses and actions which are presupposed and implied by society. These groups represent the "mechanical virtues." It is the discipline of formalism that we find here.

Line *c* contains the number of children who are educated in a one-sided manner; that is, some important factor of education is neglected. For instance, respect of one's own person or respect for others; or sense

of honor and ambition are repressed; hypocrisy, vaunting, or mendacity are systematically, though not in all cases consciously, taught.

Line *d* contains the number of children found to be badly educated. Their training violates, either with or without intention, ethical principles. In these groups we find souls brutalized by bad examples; contempt for others because of their poverty or some natural defect; intentional negation of the ideas of rights such as "mine and thine;" also absence of repression of sensuality.

Column I contains the numbers representing the offspring of wealthy or cultured parents, such as people living on the proceeds of invested funds, owners of manufactories, noblemen, high army officers, physicians, lawyers, teachers, and high civil officers.

Column II contains the number of children coming from the middle class of society, people who have a secure income, either a fixed salary or an established business, tradespeople and mechanics who own their shops; also persons in positions of responsibility in factories and offices, such as foremen, supervisors, and subaltern officers.

Column III contains the number of children of the laboring and serving class, people who earn wages as "hands" in factories and shops, and those who have no fixed or steady income, such as servants, coachmen, men and charwomen; also all who live directly or indirectly upon charity.

Minute inquiries and investigations with regard to the parents, have resulted as follows:

I *a*. Father and mother are earnest, well educated, and observant at home. In II *a*, we find almost the same qualities in the parents, only that the pecuniary means are so much less abundant that the influence and authority of the parent is somewhat lessened. III *a*. The father works in the factory or at home, but is represented by a well inclined, strong mother, whose authority he reinforces.

I *b* and II *b*. The father is away from home during the day, the mother is weak both physically and educationally. III *b*. Father and mother have no comprehension of education.

I *c* and II *c*. The father has no comprehension of education, no higher ideas, lives chiefly in the pursuit of pleasure; the mother is fond of dress, vain and without ethical strength. III *c*. The father and mother can only be driven to work by dire necessity or compulsion.

I *d* and II *d*. The parents are either purse-proud or proud of descent and position. III *d*. The father is as a rule, unknown. The mother represents a very low grade of intellectual development.

Observations among these various children in the schoolroom have shown the following characteristics and indications pointing towards their future career:

I *a*. The children are earnest, aspiring from habit, sometimes precocious and conceited, have sympathy with others, study diligently, but avoid publicity. They are apt to become silent benefactors, travelers,

investigators, scientists, etc. II *a*. These children are also earnest and aspiring, but the latter from foresight; remain without intercourse with their schoolmates, have no pronounced inclinations, and a character difficult to define. If they pursue higher studies they do so for bread, but are not prompted by the love of study. In public life they are mostly patient listeners; they are apt to be "yea, yea," and "nay, nay" persons. III *a*. Children enumerated in this column are also earnest and ambitious, but from necessity. They possess little experience, their intellectual horizon is limited, owing to poverty; they are bashful, but have very vivid imaginations; they are apt to drift into channels of study which can be pursued without a great outlay of money. Future idealists, explorers, collectors, and poets are likely to spring from this group.

I *b*. The children of this group are superficial, have much experience, but need incentives for study constantly. They generally follow the professions of their fathers; participate in public life; but never have any original ideas that open new ways. Sportsmen and the officers of social clubs and societies are recruited from this group.

II *b*. Incentives for learning and working in this group are spontaneous; hence self-consciousness is developed to a high degree. These children will be found to become pronounced characters, and furnish the leaders in public life.

III *b*. These children have some sense of honor which incites them to action; but they are easily approached, hence easily tempted and led astray. If they reach manhood without coming into conflict with the law, life's experiences improve them, and they become foremen, section-leaders and the like.

I *c*. The girls are poor in intellect, love appearances and finery, are frivolous and void of good manners. The boys are distinguished by despotic and domineering conduct toward their schoolmates; they are apt to become sensual, void of sympathy for misfortune and poverty. They squander their inheritance or easily gained fortunes, and will be egotists or spendthrifts.

II *c*. In this group we meet with imitators, the so-called universal genius, the jack of all trades and master of none, people who are never satisfied with whatever profession they may choose. The profession of gamblers recruits itself from this class.

III *c*. These are children who simulate misery and claim sympathy, who have no self-confidence or self-respect. A good teacher will often train them to become trustworthy workmen, and he will awaken self-respect in them.

I *d*. Here we find the children who have contempt for all who rank below them. They do not think it necessary to study hard, knowing that their parents are wealthy. Sympathy for others is rarely found among them; hence egotists, usurers, and many who take advantage of others, are recruited from this group.

II *d*. These children feel no desire to learn or to work, attend school very irregularly, and when they do so, it is to amuse themselves. The boys are apt to become dandies, forgers, and defrauders.

III *d*. The children of this class are frequently withheld from school, or attend only by compulsion. The girls are morally bad and apt to sink low while the boys grow up to be candidates for the reform school and penitentiary.

For the work in school, some remarkable conclusions may be drawn from the foregoing tables.

The children of line *a*, columns I, II, and III, have home training. Those of I *a* have much recreation in the open air, but always under surveillance of parents, or other reliable persons. The summer is spent in the country. Physical development is cared for assiduously. Their health is normal, but sometimes they are a little delicate, and hence are kept from school in bad weather. Those of II *a* are also under supervision at all hours of the day, and spend much time in the open air. Their mode of life is natural, effeminacy is not found in this group; hence, the health of these children is always good and attendance at school regular. Those of III *c* find their only recreation and bodily exercise by walking to and from school. Everything is wanting to aid physical training. The parents fear bad influence and example among the schoolmates and watch over their children too anxiously. Often food is insufficient, and the children of this group furnish the greatest number of sickly pupils; hence, the greatest percentage of mortality.

The whole group I *a*, II *a*, III *a* seems destined to act as examples of good conduct for others, but owing to their exclusiveness, this beneficent influence is lost as far as school is concerned. During lessons the children of the first three groups (I *a*, II *a*, III *a*), are quiet workers, slow in thinking, exact and prompt in doing their tasks, but without pronounced vivacity. They never give cause for complaint, are satisfying all reasonable demands, yet are not a source of real joy to a teacher, because everything such children do betokens outer compulsion. Spontaneity is rarely found among them.

The whole group, I *b*, II *b*, III *b*, prefers the streets and parks after school hours, and can not be kept at home. The children distinguish themselves by great practical experience. They observe and comprehend quickly, are quick and skillful in motion, have a fresh complexion, cheerful looks, are attentive when interested, and quick in repartee. In their work they are frequently negligent in form, but generally correct in the solution of problems, mathematical and otherwise. Their vivacity and adroitness are a constant source of pleasure to the teacher; they enliven the whole school, and not unfrequently engage in mischief and playfulness, but rarely, if ever, in wicked acts. Innate interest in what is taught makes them noisy and pert, but they are easily called to order. Teachers remember such children with much pleasure.

The whole group I *c*, II *c*, and III *c* tends toward hypocrisy. These

children are quiet—in fact, the least noisy of all—but where they can play a trick unseen and with the presumption of not being found out they do so, and often do very wicked things. Characteristic qualities of these children are deceit, treachery, malignity, and conceit. During recitations they rely upon being prompted, boast of work obtained by deceit, always have a good excuse for whatever infraction of rules they cause, and are quick in shifting their guilt upon the shoulders of others.

Outside of school the children grouped under I *c* keep aloof from those of other groups and associate only with children of their own "set." Those of group II *c* seek intercourse with others, but their friendship is not lasting; they are apt to quarrel, to pry into the affairs of others, and to spoil play. Those of III *c* may be imposed upon, and can be ruled by presenting them with some little thing, as an apple, a toy, or a piece of bread. For a consideration like that, they accept even positions in a game which no other child would take.

The children of the three groups *d* (I *d*, II *d*, III *d*), are not often found in school; those of I *d* because they do not need to learn much (so they and their parents think) and because "the teachers keep school merely for the sake of the salary attached to their positions." Those of II *d* are often absent from school, because regular attendance and hard study are inconvenient, hence they are frequently "quite ill" at the beginning of a school session, but quite lively after the session progresses, and they see that the teacher takes no notice of their fancied indisposition. Those of III *d* are rarely found in school because they dislike study. Those of I *d* walk alone on the street and look with contempt upon the others as a "beggarly pack;" the boys learn to smoke early and like to play the rôle of grandees. Those of II *d* roam about the streets and spend for candy and toys the pennies given them for school requisites. They are not very scrupulous as to where they get their pennies. Those of III *d* are the poison of juvenile society.

The health of the children in groups II *d* and III *d* is indestructible. The children withstand all influences of the weather, are insufficiently clad in winter, and seem not to be susceptible to infectious diseases. As has been said before, the entire three groups *a* shrink from exercising an influence upon public education, the children of the three groups *b* are the tormenting spirits on the streets, whose play and noise is harmless but annoying to adults. The children of the three groups *c* are, for purposes of public education, of no appreciable consequence; those of group *d* are even dangerous, noticeably those of III *d*. They frequent remote streets, dark alleys, field and wood paths, caves, canals, and appear in crowded streets only like hostile enemies to make sallies and inroads upon civilization. Here they meet children of groups II *b* and III *b*, and impress themselves forcibly upon them by expressions of brutality and immorality, and by descriptions of the enjoyment they have secured for themselves by defying law and order. Thus they enlist others who, without contact with vice, might become good citizens.

These 900 (III *d*) tempt the 885 of II *b* and the 3,420 of III *b*, and draw astray into the slums many who, under other circumstances, might remain good through habit, if not from principle. The children of this group, III *d*, are dangerous companions at all times.

Reviewing the whole matter, we see that the parents of group *a* of all three classes withhold their children from contact with schoolmates chiefly on account of the 900 of group III *d*, and that parental influence in group *b* is often too weak to prevent evil influences from outside. The Government must do something to allay the apprehension of parents of the three groups *a*, and to protect the children of the three groups *b*. *Home training needs a reinforcement in form of supervision on the streets and play grounds. Public play grounds, well conducted by skilled and experienced teachers, should be established and maintained by the city authorities, and patronized and attended as regularly as the schools.*

[The statistical matter offered in this article may, as has been said, seem defective by reason of its fragmentary nature, but it may induce others to follow up the idea, and make similar studies and submit the results to the light of criticism, as this is submitted, with all due deference to the opinion of others.—*The Translator.*]

CHAPTER IX.

SCHOOL MUSEUMS, EDUCATIONAL LIBRARIES, AND PERMANENT EXHIBITIONS OF APPLIANCES FOR TEACHING.

A Historical and Statistical Review.

The following is a summary of a book, entitled The Pedagogical Libraries, School Museums, and Permanent Exhibition of School Appliances, with special regard to the Pedagogical Central Library (Comenius-Foundation) at Leipzig, by Julius Beeger, director of the Pedagogical Central Library at Leipzig (pp. 84, 1892). This work may be considered the most reliable and most comprehensive report on educational collections.

I.—HISTORY OF EDUCATIONAL COLLECTIONS.

School libraries are quite an old institution; they originated at the time when schools were established within, or in connection with convents. But these libraries served exclusively the purposes of the school to which they belonged. Educational or teachers' libraries for entire school or governmental districts, which came into existence during the first half of the Nineteenth Century, were made serviceable to wider circles. Some schoolmen, like Dr. Ed. Dürre in Weinheim, conceived quite early the necessity of large libraries for far-reaching purposes in educational centers, but such plans found no realization.

The beginnings of school museums may be traced back to the exhibitions of school appliances connected with national teachers' associations, and industrial state or world's expositions. With them they appeared, and with them they vanished. The result of minute inquiries establishes the fact that the oldest school museum in the world is the Educational Museum at Toronto (Canada); it was founded in 1853. Then followed in 1857 the Educational Division of the South Kensington Museum. In 1864 the Pedagogical Museum at Petersburg, and in 1865 the Permanent Exhibition of School Appliances at Leipzig were founded. The last-named institution came to an untimely end in consequence of lack of interest on the part of the managers; the objects remaining intact were given over to the Comenius Foundation at Leipzig, which organization had meanwhile assumed large proportions. In 1867–8 the Bureau of Education in Washington began to collect

educational works and objects for school use, with the intention of establishing a museum and a library. In 1870 the *Pedagogische Bibliotheek van het Nederlandsch Onderwijzers Genootschap* (the Pedagogical Library of the Dutch Teachers' Association), and the following year the Pedagogical Central Library (Comenius Foundation), at Leipzig, were founded.

The Permanent Exhibition of School Appliances in Vienna was created by a resolution of the city council July 30, 1872, but since 1891 it has been abandoned, appropriations for its maintenance having been refused. In 1873 the Hungarian School Appliance Museum (*Országos tanszer múzeum*) at Budapest was founded, but not opened until 1878. In Rome, after the model of the institution in Vienna, a museum for instruction and education (*Museo d' istruzione e d' educazione*) was opened in 1874, which, however, was soon abandoned. The Cassianeum, at Donauwörth (founded 1875, in Neuberg on the Danube), may be considered the most flourishing institution of this kind at that period. In 1875 the Swiss Permanent School Exposition in Zürich was founded. Since 1890 it bears the name Pestalozzianum. In 1876 the pedagogical library of the *Nederlandsch Onderwijzers' Genootschap* was reorganized into the Netherlandish School Museum at Amsterdam. In the same year the German School Museum at Berlin was opened; also a city school Museum, on February 10, 1877, created by resolution of the school board. The year 1877 also witnessed the establishment of the great Pedagogical Museum at Tokio, in Japan. In 1878 the establishment of one of the most noted institutions of this kind, the State school museum at Brussels was suggested, and in 1880 it was opened under the name National School Museum. Equal in importance with that in Belgium is the Pedagogical Museum and Central Library for Elementary Instruction, established in Paris in 1879. In the same year a School exhibition at Berne and the school museum at Königsberg were opened, the latter established and maintained by the city teachers. The year 1881 saw the opening of the Provincial School Exhibition at Magdeburg and the Permanent Exhibition of School Appliances at Graz, in Austria. One year later, 1882, a pedagogical museum was opened in Madrid, and likewise a municipal pedagogical museum at Lisbon. On December 3, 1883, the National School Museum at Rio de Janeiro was opened, and at about the same date the Freiburg Educational Society induced the cantonal government to establish a permanent school exhibition in Freiburg. The Pedagogical Library at Stockholm, founded by teachers, dates from the same year. In the year 1886 the Permanent School Exhibition at Neuenburg, in Switzerland, in 1887 the Museum for Elementary Schools at Rostock, and in 1888 the Thuringian School Museum at Jena came into existence. The year 1889 saw the birth of three such institutions, the School Museum at Hildesheim, the Permanent School Exhibition of the German Teachers' Union at Innsbruck, and the School Museum at Cassel. In 1890 a school museum was opened at Kiel, and lastly, in 1891, a school museum in Braunschweig.

Several institutions of this kind are planned and will probably be opened in the near future in Genoa, Basel, and Bozen. In Hannover a similar plan crystallized into establishing a special department of pedagogy in the city library, which contains a reading room for teachers. In Australia, also, the idea seems to take root. The Colony Victoria will open a school museum at Melbourne, the Legislature having passed a resolution to that effect in 1891.

II. EDUCATIONAL COLLECTIONS OF THE PRESENT TIME.

A. Germany.

1. German school museum at Berlin.—This institution is a private enterprise on the part of the teachers' association in Berlin. It contains an exhibition of school appliances and an educational library of over 14,000 volumes. A specialty of the German school museum is the collection of literary and other works of some distinguished educators in separate alcoves. Thus, the Diesterweg, Pestalozzi, and Harcort collections are very complete. In 1891 the income was about $300. The institution is situated in Blumen Str., No. 63 a. Custodian, A. Rebhuhn.

2. City school museum at Berlin.—Belongs to the city, which maintains it. Annual appropriation in 1888, about $1,000. The institution has a building of its own in Stallschreiber Str., No. 54. Custodian, Rector A. Baeblich.

3. Cassianeum at Donauwörth (Bavaria).—This institution is private. It was established by a teacher, Ludwig Auer, who is still its custodian. The library has the purpose of collecting material for scientific work in pedagogy, and offers it for use to men engaged in such work. In 1891 the library had 40,000 volumes and pamphlets and 150 appliances for teaching. In connection with the museum Mr. Auer maintains a boy's academy and a "pædagogium," in which educational literary production is carried on. Eight periodicals, several calendars and juvenile journals are published in the institution. It is situated in the former Benedictine monastery of the Holy Cross. The library has an annual income of $500 from the publications of the pædagogium. A special librarian is engaged.

4. Thuringian School Museum at Jena.—This institution was founded, December 8, 1888, by Teacher Ernst Piltz, who had been the prime mover of the formation of the Thuringian school museum society. This society manages the institution, which was opened March 31, 1889. Its purpose is to furnish principals and teachers in schools of all kinds with appliances and other means of instruction, facilitate the study of candidates for highest positions, and instruct parents and friends of popular education in becoming acquainted with the science and practice of teaching, and lastly, to enable manufacturers of appliances, as well as publishers, to exhibit their objects and books without cost. The income of the institution is limited to the dues of the society (25

cents per annum for each member). This museum is located in a hotel (Weimarischer Hof) in Jena and occupies the entire upper story and several other rooms. Custodian, Ernst Piltz.

5. School Museum at Hildesheim.—This institution was founded in 1891 by the teachers of the city, aided by the city council. It is located in the new school building on Lützel Str. Custodian, A. Kreipe.

6. Schleswig-Holstein School Museum at Kiel.—This was founded, upon motion of Teacher Wolgast, by the teachers' society of Kiel. Five members are entrusted with the management. Custodian, Mr. Doormann, Stern Str.

7. School Museum of Königsberg.—This consists of a city library for elementary teachers and a collection of appliances. The library contains 5,000 volumes, the museum a number of appliances for teaching and drawing models. A special feature of this institution is the collection of literature concerning Dinter, a noted Prussian educator. The income of the institution is derived from dues of society members and annual appropriations from the city council. It is located in the annex of the gymnasium. Bahnhofs Str., No. 2. Custodian, E. Danziger.

8. Pedagogical Central Library at Leipzig (formerly Comenius Stiftung).—The prime mover in founding this institution was its present director, Julius Beeger, who suggested it in an oration delivered on the two hundredth anniversary of Comenius' death, November 15, 1871. The purpose of this institution is to make available to all educators and educational authors in Germany and Austria the entire literary material that has reference to education in kindergarten, elementary, secondary, higher, and special schools, German as well as foreign. This library is intended to promote pedagogical science—hence to serve all persons who are engaged in that pursuit. At present the library contains 60,000 volumes and pamphlets. The funds of the institution are scanty—hence it is impossible to keep the library abreast of the times. It is located in the teachers' house, Kramer-Strasse No. 4, and occupies a large hall and a reading and waiting room. Teachers and authors, as well as students of pedagogy and normal schools, are entitled to the free use of the library. Teachers in Leipzig may keep books for four weeks, nonresidents for eight weeks. Custodian, Julius Beeger.

9. Permanent School Exhibit of the Teachers' Association of the Province of Saxony at Magdeburg.—Was founded in 1881. It is intended strictly to be confined to an exhibition of appliances, models, and illustrations. Books are excluded. It is located in a schoolroom, Schul-Strasse No. 1. The management is in the hands of a committee. Present custodian, Teacher Weber.

10. Permanent Exhibition of School Furniture and School Appliances at Munich.—This institution belongs to the government of Upper Bavaria, and is intended to be a collection of the best appliances for teaching, school furniture, and supplies for elementary and continuation

schools. It is also to aid teachers in procuring supplies at low prices. The institution is located on Heumarket No. 2; it has a board of managers.

11. People's School Museum at Rostock (Mecklenburg).—It was founded in 1887, and is the property of the museum society. Its catalogue has 2,200 numbers. Librarian, Teacher O. Obenhaus.

B. Switzerland.

12. School Exhibition in Berne.—A private enterprise subsidized by the state and the city. The institution is located in the cavalry barracks. The members of a society for the maintenance of this institution tax themselves in order to secure the state subsidy. Teacher Lüthi is custodian.

13. Exposition scolaire permanente in Fribourg.—A private enterprise enjoying state subsidy. It was founded in 1883. This institution being situated near the border line of German Switzerland has assumed great importance, since it objectively displays German and French methods of teaching, besides promoting school education in general. The expenses are nearly covered by the income from admission tickets and State subsidies. Founder and custodian is Teacher Genoud, of Fribourg.

14. Exposition scolaire permanente in Neuchatel.—This institution is the property of the canton and was founded in 1887. Its purpose is to exhibit a collection of school furniture and supplies and offer advice to teachers and school officers for procuring them. It is located in the academy building. President, Ami Guebhart.

15. Pestalozzianum in Zürich.—It was founded in 1875, receives subsidies from the federal and the cantonal government, and enjoys special care from the Society of the Pestalozzianum at Zürich. Purpose of the institution is the development of the Swiss school system. This is aimed at by showing the present condition of the schools and suggesting comparison. The museum is located in a hotel, "The Rüden," in Zürich; it will soon have its own home. Surplus, 4,000 francs ($800). The property of the museum is estimated at 55,922 francs ($11,000); the objects on exhibition alone have an estimated value of 42,415 francs. Director, Dr. Hunziker.

C. Austria-Hungary.

16. Permanent School Exhibition in Graz.—This is a private enterprise of Messrs. Nickl, Lochbihler, and Kmetisch, three teachers. The exhibition contains 6,842 objects and collections; the library contains 2,000 volumes; 75 periodicals are taken. This institution is not confined to appliances for elementary teaching, but a great number of objects are intended to illustrate and aid teaching in secondary schools, universities, and professional schools. An insufficient income is derived from subsidies on the part of the Empire, the state, the city

council, and the Styrian savings bank. The institution has seven large rooms on the second floor of a city school (Schul-Strasse No. 5). A committee manages it. Custodian, Teacher Nickl; its organ, First Austrian-Hungarian Teaching Appliance Magazine.

17. Permanent Exhibition of the German Teachers' Association at Innsbruck, Tirol.—This is not opened yet, being still in process of construction. The German teachers of the crownland Tirol are the owners. Custodian, Teacher Fleisch, in Innsbruck.

18. State Exhibition of School Appliances at Buda-Pesth.—This is a state institution and confines itself almost entirely to elementary schools. The catalogue contains 5,000 numbers, valued at 9,000–10,000 florins ($3,213–$3,570). This museum has an annual income of $393. It is located in the Pædagogium. Custodian, Franz. Girokuthy.

D. Netherlands.

19. Netherland School Museum at Amsterdam.—It originated in 1876 from a pedagogical library and is now located at Keisersgracht No. 121. Custodian, Editor Lalleman.

20. School Museum at Rotterdam.—This institution is similar to the aforementioned, but younger.

E. Belgium.

21. National School Museum at Brussels.—This institution is a state concern. It has three large halls used for purposes of exhibition, an educational library, and several work and reading rooms. The museum halls contain models of a kindergarten, schoolrooms, Froebel collections. etc. The state granted an appropriation of 16,200 francs (or $3,240), The originator of the institution is A. J. Germain, who is at present its general director.

F. France.

22. Pedagogical Museum and Central Library of Elementary Instruction at Paris.—It was founded in 1878 and is a state institution. Its purpose is to collect, arrange, and make available everything which will shed light on the history and the present status of school and education in France and foreign countries. Its income during 1886–1888 was $8,000 a year. The institution is located in the manual training school, Rue Gay-Lussac No. 41, and occupies 30 rooms. Under the name central library nine separate libraries are managed: The Rapet library, the general library, the reserve, the circulating library, the library of fiction, the collection of French and foreign educational documents, the library of duplicates, and that of pupils' work. The museum contains atlases and illustrated works on school architecture, art collections, results of manual skill, the most varied appliances for teaching, a collection of school buildings "en miniature," etc. The present director is Jules Steeg.

G. Great Britain and Ireland.

23. Educational Division of South Kensington Museum at London.—This is a state institution. Object of the library is to offer to teachers and other educators opportunities to examine and compare the different publications on schools and theory and practice of education. It has a scientific collection designed to meet the demands of students and those who prepare themselves for examinations. The library at present contains 45,099 volumes without counting duplicates. The management lies in the hands of a committee of the council of education.

H. Portugal.

24. Municipal Pedagogical Museum at Lisbon.—It was founded in 1882, and is managed by Ad. Coelho, but seems to languish from want of interest.

I. Russia.

25. Pedagogical Museum of the Military Schools at St. Petersburg.—This is a state institution and belongs to the department of war, hence has a different purpose from other school museums. The collections occupy 3,200 square meters floor space, 6,400 square meters wall space, and 5,300 square meters space on shelves.

J. Sweden and Norway.

26. Pedagogical Library at Stockholm.—This is an institution of the city teachers. It was opened in 1885. The library is designed to aid principals, teachers, candidates, and authors in their work. The state pays a subsidy of 1,500 crowns (or $393). Number of volumes, 10,600. Director, Dr. Lagerstedt; librarian, Dr. Planck.

K. Denmark.

27. Danish School Museum at Copenhagen.—This has been opened quite recently. It is located on Gl. Kongevej, No. 15. Librarian, Emil Sáuter.

L. Spain.

28. Pedagogical Museum at Madrid.—It was established by the state in 1882 and is under supervision of the general director of public instruction. It confines itself to illustrating education at home, in kindergarten, and the elementary school. Annual appropriation, about $1,000. Director, Manuel B. Cossio.

M. United States.

29. Division of Library and Museum of the Bureau of Education at Washington.—This institution was founded in 1869. Purpose of the museum is to enable teachers and all who are interested in education

to examine and study appliances and illustrations for teaching in use in America and foreign countries, and to utilize the knowledge thus gained for the improvement of American education. The library in 1891 contained 43,500 volumes and 120,000 pamphlets. The museum contained in that year about 20,000 articles and collections. The appropriations vary, being determined by the U. S. Congress annually. During the last ten years the cost of maintenance and new purchases were about $10,000 annually.

N. Canada.

30. Educational Museum at Toronto.—This is a governmental institution founded in 1853. It is located in one of the schools.

O. Brazil.

31. National School Museum at Rio de Janeiro.—This is a private enterprise consisting of teaching appliances and an educational library.

P. Japan.

32. Pedagogical Museum at Tokio.—This is a state institution. In 1885 the library contained 26,282 volumes. The museum consists of school furniture, school appliances, zoological, botanical, and mineralogical collections. Director, M. S. Tegima.

Q. Australia.

33. School Museum at Melbourne.—This was temporarily established in connection with the World's Exposition. At present a plan is being matured to establish it on a firm basis after the example of the museum in Paris.

CHAPTER X.

GERMAN UNIVERSITIES.

[From a work prepared for the German educational exhibit in Chicago by Prof. W. Lexis.[1]]

CONTENTS.

PART I.

CHARACTER AND HISTORICAL DEVELOPMENT OF THE GERMAN UNIVERSITIES.

[Written for the Columbian World's Exposition by Prof. F. Paulsen, Berlin.]

INTRODUCTION.

GENERAL CHARACTER OF THE GERMAN UNIVERSITIES.

The many varied forms of universities of the present day may be traced back to or grouped around three types: the English, French, and German types.

[1] Translated by Dr. L. R. Klemm, specialist in German education.

The English type, represented by the two old and venerable universities Oxford and Cambridge, is the oldest. We find represented in it the original form of the Middle Age university, because England is the most conservative country in Europe, a country in which ancient customs are most faithfully preserved. The university in England is a free corporation resting upon a church basis; it has its own government and maintains itself from funds and estates derived from bequests; the state government has nothing to do with the routine of the management. The regulations of life and conduct are in fundamental principles similar to those of the university of the Middle Ages: teachers and scholars live together in colleges and halls in a kind of monastic community. The instruction also resembles both in matter and form the instruction of an ancient university, and its chief faculty is the *facultas artium*. Its aim is essentially an extensive and profound general education suitable for a gentleman; scientific investigation as well as scientific preparation for the learned professions lie outside the pale of English university instruction. The chief branches of study are those that promote general education, such as languages, history, mathematics, natural sciences, and philosophy. The mode of teaching is that of a school; in many cases it is purely private instruction.

The French type of a university has departed farthest from the ancient form. The great revolution swept away with one stroke the ancient universities like many other institutions, intending to make room for a new structure to be erected according to geometrical lines. Not until the imperial throne was set up did the new university plan assume shape and form. The place of the ancient universities was taken by independent faculties for the several learned professions that necessitate scientific preparation: *facultés de droit*, *de médecine*, *des sciences*, *des lettres*. The ancient combination of the faculties to the unity of a university was abandoned, even the term university would have vanished had it not been preserved in a changed significance in the *Université de France*. Here it means the great centralized body of administration of public instruction that embraces every public educational institution of the land, from the elementary to the scientific professional school. The *facultés* are now state institutions for certain professions; the instructors are state officers and as such they conduct state examinations. Scientific investigation and general scientific education are not, properly speaking, their object in view; the former is a matter of the Academy of Science, the latter that of preparatory schools.

The German type, as it is found in Germany and in neighboring countries, the institutions of which have had a similar development (Austria, Switzerland, the Netherlands, Norway, Sweden and partly, also, Russia) represents, as far as the outer form is concerned, a type between the English and the French. This type has preserved more of the original than the French; on the other hand it has yielded more to the demands of modern times than the English. The German university is, like the

French *faculté*, a state institution; it is established and maintained by the state and subject to state administration and supervision. Yet, it has preserved some important features of the ancient constitution of a corporation: It possesses a certain measure of self-government; it elects its own officers, rector, senate, and deans; it exercises an important influence upon the selection of the professors, first, by defining the circle from which the professors may be chosen through granting the degree of doctor, and deciding the question of admission of private lecturers (*Privat-Docenten*); secondly, by submitting to the government the names of candidates for vacant chairs. In its character as an educational institution the German university has preserved the original form in its purest type; the four faculties have remained actual institutions of learning, while in England instruction and student life have withdrawn to a great extent into the colleges; on the other hand, the combination of the faculties to a living unity in the university, the centralized institution for all the learned professions, in contradistinction to the French plan, has also been preserved.

Viewing the inner character of the German university its special feature becomes apparent at once, namely, that it is both a laboratory of scientific investigation and an institution for the highest scientific instruction, general as well as professional. Like the English universities it offers an extensive and profound general scientific education; this is the special aim of the philosophic faculty. Like the French *facultés* the German university offers professional instruction for the learned professions, for the clergymen, the judges, the higher administrative officers, the physicians, and teachers of secondary schools. Besides this, the German universities are something which the English and French universities are not, namely, the principal seats of scientific labor—and likewise the nurseries of scientific investigation. According to the German acceptation of the term a university professor is both a teacher and a scientific investigator, and the latter is considered the more important, so that the true statement should read: In Germany the scientific investigators are at the same time the teachers of the academic youth. From this it follows that academic instruction is thoroughly scientific; above the technical preparation for a profession stands the introduction into scientific truth and investigation.

This unity of investigation and instruction characterizes the German university. There certainly are excellent scholars in Oxford and Cambridge, but no one will say that the English universities are the representatives of scientific labor in England. Many of the most noted scholars of England, men like Darwin, Herbert Spencer, Grote, the two Mills, Macaulay, Gibbon, Bentham, Ricardo, stand or stood outside of the university, and of many of them it may be said that they are impossible in an English university. Even the great learned men of such a university are not really the teachers of the academic youth; they may deliver a few dozen lectures a year, but the real instruction

lies in the hands of the fellows and tutors. A similar state of affairs is found in France—the scientific investigator, the great learned man, belongs to the *Académie*, to the *Institut de France;* he is, perhaps, also a member of the *Collège de France*, or the *Sorbonne*, and, as such, he may read a few public lectures, to which everybody is admitted, but he is not, like the German professors, the actual daily teacher of the academic youth. Of course it can not well be expected of all the teachers of the *facultés*, notably in the provinces, that they shall be independent scientific investigators.

In contradistinction to this, the presumption is raised in Germany that all university teachers are scientific investigators, really learned men, or that all really learned men are university professors. Naturally, there are some exceptions. Germany has had, and has now, very distinguished scholars who are not university professors; it suffices to mention Wilhelm and Alexander von Humboldt; likewise among the professors of secondary schools there are many who have gained fame and distinction as learned men. Similarly there are among the university professors some who do not accomplish much as scholars, who lay all their stress upon being successful teachers; but that is not the rule. The rule is the congruency of the two terms, learned man and professor. When in Germany a great scholar is mentioned the question is asked at once: In what university is he active? And if he is not in a university, it may be confidently expected that he feels this official disregard. Again, when a professor is mentioned the question is asked: What has he written? what are his scientific achievements? The consequences of this relation have been most significant for the formation of the entire German intellectual and scientific life.

The German scholar is also an *academic* teacher; upon that rests his position in the life of our people. Our thinkers and investigators have been known to the people not only as authors, but as personal teachers with whom they have sat face to face. Men like Fichte, Schelling, Hegel, Schleiermacher, have influenced their time as *academic* teachers; a large part of their works was not published until after their death, either from their own notes or from memoranda made by the students. Just so Kant and Chr. Wolff were university professors. The same is true of the great philologists, of Heyne, F. A. Wolf, and G. Hermann; they have accomplished much by their personal activity as teachers; their students, afterward as teachers in secondary schools, carried the spirit and method of these men into the youth of the nation. Or think of the activity that historians like Ranke and Waitz displayed in their seminaries; and it deserves special mention that among the most distinguished poets of the German nation more than one was a university professor; thus, Uhland, Rückert, Bürger, and Schiller. The one fact, that Luther and Melanchthon were university professors, speaks volumes.

This is undoubtedly a most fortunate circumstance. The young

generation in Germany being brought into immediate contact in the university with the intellectual leaders of the nation, receives the strongest and most abiding impulses. In German biographies the period spent in the university plays an important rôle; not unfrequently the instruction received by one academic teacher determines the direction of the student's subsequent efforts. On the other hand, the relation stated is a delightful and fruitful one for our men of erudition and investigation; they remain young in their intercourse with youth. Personal transmission of ideas has a stirring and revivifying influence through the quiet, yet appreciable counter-effect among the students, an influence which the lonely author misses. The presence of an audience directs the attention of the instructor constantly upon essential and general ideas. Inclination towards philosophy, a direction toward leading ideas and generalization, which are said to be characteristics of the German intellect, may be explained by the fact that knowledge is here, more than elsewhere, acquired and generated for the purpose of ingenuous communication in oral instruction.

Of course this has its disadvantages. Certain disagreeable features of our scientific life are directly traceable to the "university cut" which science in Germany receives; thus we notice a literary overproduction; an inclination toward forming schools and science sects; a disregard for all efforts not emanating from the university, a slight which is felt keenly and resented violently, as is shown by Schopenhauer's disquisition upon the learned guild. It is true that a learned man not connected with a university can not secure appreciation in Germany as readily as he can in France or England; and it is also true that it would prove a useful corrective of our university education if independent scientific labor could flourish better, for it might in some questions furnish less prejudiced minds and more reliable standards of judgment.

Nevertheless the German nation has no cause to be dissatisfied with existing conditions that have historically developed. If in Germany science stands closer to the heart of the people than in other countries it is owing to the fortunate circumstance that its great men of science have also been the teachers of the academic youth. At any rate the universities must wish the continuance of this relation. The secret of their power consists in attracting the leading minds and being able to hold them; as long as that power is preserved the universities will succeed in holding the position they have gained in the life of the nation.

Certain modifications may subsequently take place. The position the universities held during the first half of our century was based upon the fact that the national life had no other center than science and literature. The fact that participation in political life was denied, activity in industrial life greatly hampered, and competition in the world's market checked by almost insurmountable obstacles, prompted

all higher activity to direct its attention to the inner life, and seek in the intellectual world compensation for the neglect it experienced in the outer world. Thus it happened that in the European community of nations the German people played the rôle of "a people of thinkers and dreamers;" there was no other rôle left it in the cast. Germany and France seemed to have exchanged parts, for during the Middle Ages it was said that Italy had the Papacy (Papstthum), Germany the Empire (Kaiserthum), and France Science (Studium).

Much of this has changed within the present generation. The German people, which had long been an object in European politics, has again become a subject. The unity of Germany now rests upon other foundations than its universities. This change has made itself felt in more than one direction. The universities can not in the new Empire remain what they were, in a certain sense, during the time of the Federal Congress, namely, the real center of national life (the attention this exalted body bestowed upon them gave testimony to the fact). At present other ways are opened for talent to reach prominent positions; in the national parliament, in the army, in administrative offices, in the industrial world, in the colonies—everywhere a talent that puts itself forward will find room for application, and a prospect of influence and gain; the prerogatives of birth have also vanished.

Yet under these changed social conditions the universities have maintained themselves in their prominent position among our national institutions. They still are important pillars of German unity. The customary exchange of teachers and students between the various universities and the most diverse tribes and provinces, taking place almost daily, contributes not a little toward keeping alive the consciousness of national unity among the component parts of the Empire that are clearly defined by state boundaries. It is to be expected that the German universities will preserve the well-earned fame of being the main support of German science. This fame will remain theirs as long as they preserve, like a precious inheritance of the past, a spirit of objectivity, a quiet joy in the subject of study, faithfulness to work, and love of truth that deprecates evil intentions and personal considerations.

At present the German universities may enjoy the appreciation offered them in foreign countries where attempts are made to imitate their institutions and forms. France has just begun to again collect its separated "facultés" to real universities, and in England it is attempted to raise the dissipated work of the colleges to real university instruction. In these attempts at carrying into effect the German idea of unity of scientific investigation and instruction, some of the most prominent American universities have been very successful.

I.—SKETCH OF HISTORICAL DEVELOPMENT.

A. In the Middle Ages.

Origin.—The universities had their origin in France and Italy. This origin is cotemporaneous with the beginning of the second half of the Middle Ages. During the first half the eyes of the world were turned toward the past, toward Christianity and antiquity; at the close of the eleventh century people began to look forward into the future. Powerful impulses stirred the intellectual life; the crusades brought the occidental nations into close contact with one another and with the oriental world; the religion and culture of Islam entered the field of vision. In chivalry arose a promoter of secular literature and education, and the new orders of the Franciscans and Dominicans formed a kind of religio-clerical chivalry. The great names that represented the new and flourishing theology and philosophy of that age belonged to a great extent to these two orders. Everywhere was noticeable a longing for knowledge. Attempts were made to master and penetrate by means of reason the faith which had at first been accepted by the new nations as something given. At the same time the chief works of the Aristotelian philosophy became known. Thus arose the problem of harmonizing and combining faith and science, theology and philosophy. This problem found its solution in the great formation of systems of the thirteenth century.

This new intellectual world developed the universities as its organs and bearers. Paris, the first great university of the occident, was the seat of the new theologic-philosophic speculation. From this university (*ex diluvio scientiarum studii Parisiensis*) the German universities may be said to have derived their origin. However, the universities of Italy that had an independent origin, especially Bologna, which developed from a law school, were not without influence upon the German institutions.

While the oldest universities of Italy, France, Spain, and England reach with their roots into the twelfth and thirteenth centuries, the German universities date their beginning from the second half of the fourteenth century. Prague and Vienna were the first foundations; the former established by the house of Luxemburg in 1348, the latter by the house of Hapsburg in 1365; both were situated near the eastern border of German culture, evidently because Paris was near enough to western Germany, and the ancient clerical schools on the Rhine, especially that of Cologne, were in intimate contact with Paris. Toward the end of the century western Germany began with the establishment of universities at Heidelberg (1385) and Cologne (1388); central Germany followed with Erfurt (1392); the two last named were municipal institutions. The temporary dispersion of the professors of the University of Paris consequent upon the notable church schism contributed a large share toward the necessity of establishing these three

German universities. Cologne had long been one of the most prominent seats of scientific clerical education. Here in the school of the Dominicans Albertus Magnus and Thomas of Aquinas, and in the school of the Menorites Duns Scotus, had taught. As a recompense for the loss of the University of Prague, Germany received Leipzig (1409) and the Baltic countries Rostock (1419). The confusion caused by the changed constitution of the University of Prague, suggested by John Huss, gave rise to the establishment of the universities of Leipzig and Rostock.

Of all these seven institutions only two have ceased to be. Cologne and Erfurt, which during the fifteenth and sixteenth centuries stood in the front rank, went down with the clerical governments to which they belonged, giving way before the storms that swept Europe in the wake of the French Revolution, a movement that was fatal to many ancient universities. Cologne succumbed in 1794, Erfurt in 1816.

A second epoch of university foundations dates from the beginning of the humanistic movement. This epoch has called into existence nine German universities: Greifswald (1456); Freiburg (1457); Basel (1460); Ingolstadt (1472); Trier (Treves, 1473); Mayence (1477); Tübingen (1477); Wittenberg (1502), and Frankfurt-on-the-Oder (1506). Four of these are still flourishing in their ancient localities, namely, Greifswald, Freiburg, Basel, and Tübingen. Trier and Mayence, the universities of the two archbishoprics, never having gained great importance, ceased to be when toward the close of the last century the ecclesiastical states went down. The remaining three at the beginning of the century either changed their locality or lost their independence. Ingolstadt was first moved to Landshut (1802), then to Munich (1826); Wittenberg was combined with Halle (1817), Frankfurt with Breslau (1811).

Before I show the organization and work of teaching of the universities in the Middle Ages, I insert a word concerning the term university. The real title of the educational institution was *Studium generale*, in contradistinction to *Studium particulare*, which was a local school. The university was called general school, because it was intended for entire Christendom without regard for national or territorial boundaries. Degrees acquired here were recognized all over the Christian world. The term "universitas" did not at first signify the institution, but the political corporation of teachers and scholars that had acquired, through various exemptions and privileges, the character and position of a legal public body. Hence we see them mentioned as *universitas magistrorum et scolarium Parisiis existentium*, as *universitas studii Pragensis*, *Viennensis*. Gradually the term "universitas" displaced the other, and was modified in *universitas literarum*, and, as such, meant both the corporation of persons and the institution.

Foundation.—The German universities have not, like the first French and Italian, grown gradually, but were founded according to matured plans. State and clerical powers worked together in founding them.

The Pope established the educational institution by means of a bull, granting it the privilege of conferring degrees whereby it received the character of *studium generale* or *privilegiatum*. According to the views held during the Middle Ages, the ability and right to teach emanated from the church. But gradually the Emperor assumed the right of establishment in competition with the Pope. It was derived from the Imperial or Roman law, the representative of which was the German Emperor, upon whom, as was supposed, had descended the prerogatives of the Roman Emperors. The head of the separate state, the local prince, on the other hand, furnished to the *studium generale* the substantial means for existence; he appeared in every case as the real founder; he secured from the clergy or the Emperor a bull of establishment (a charter); he furnished an income by land grants or real estate; this income he secured by investing it in church prebends already existing and founded for this purpose; he equipped teachers and students with corporative rights, granted exemptions from secular judiciary, self-government, exemption from taxes, and other privileges.

Organization.—The first German universities exhibited a twofold organization; the educational institution was divided into four faculties, the political corporation into four nations, following in this the Parisian example; the former organization having reference to the curriculum of studies and order of examinations, the other to jurisdiction and management. At the head of the faculties stood the deans; at the head of the entire *universitas* stood the concilium or the senate; at the head of the nations the procurators. The universities of later date have dropped the division into nations; the faculties displaced the nations, and in a measure compensated for their loss. But the remembrance of the old constitution has remained alive in the fact that the rector could be elected by the scholars; princes and patrons were sometimes distinguished by this honor which thereby reflected upon the corporation.

Attendance.—Tradition in this case, as in every other, is generous with large numbers. It tells of thousands and tens of thousands that studied at one time in Prague and Vienna as well as Paris and Oxford. These reports seem to be upheld in a great degree by the rolls of matriculation that have been preserved and recently published. If the annual number of matriculates amounted to five hundred or a thousand, the sum total of students, taking a four or six years' course into consideration, would seem to come near the traditional statement. Careful consideration of possibilities and a critical use of documentary resources, has led to the assumption of much more modest figures. This is not the place to enter into details; it is reasonable to assume, that the greatest German universities never counted more than two thousand *supposita* (the technical term for matriculated members), and the smaller ones a few hundred or less. The great majority of the students belonged to the faculty of arts and letters, which has been called the

philosophical faculty ever since the sixteenth century. Of the three higher faculties which had comparatively a small attendance, the faculty of law, as a rule, was best frequented; after that followed the theological; the medical faculty was generally the most insignificant.

Regulations of life and conduct.—The university of the Middle Ages had little similarity to the German university of to-day. It can be best characterized by saying it was a big boarding school. Teachers and students, at least those of the faculty of arts, lived together in the buildings of the university. Every university had *collegia* (the colleges of the Englishman, in Germany the term *colleg* now means lecture) and often a *pædagogium* (a preparatory school) for younger students in Latin.

When, in consequence of increased attendance, the halls and dormitories of the university proved insufficient for all the students, private houses of professors were included in the university. These private boarding houses were termed *burses* (this term also stood for colleges; the German *Bursch*, meaning the inmates of a *burse*, has led to the application *Bursch* for student.) The life in these halls was regulated according to the plan of a convent. A great number of ancient university statutes make this very plain. We find in such a house rooms for common use, such as sleeping apartments, dining halls, study and lecture rooms, and a conference room for the faculty, besides rooms for individuals, for the professors, cells and chambers for the students, which could not be heated. Presuppositions for these institutions are, on the one hand, celibacy on the part of the professor; on the other, juvenile age of the scholars, about 15 to 20 years on an average. The whole life was regulated in the minutest details by rules established and maintained by the university: time for rising and retiring, the two meals (*prandium* and *cœna*, at about 10 a. m. and 5 p. m.), dress (naturally it was of a clerical cut), instruction, hours for repetition (*resumptiones*), everything was regulated. There were also a number of prohibitory rules, against making noise, strolling, carrying arms, bringing women into the building, etc. It is natural to suppose, and if necessary, could be proven from numerous documents, that in those times, as is done to-day, various ways were invented for the purpose of circumventing the law.

The teachers.—In the higher faculties the number of lecturers was not large; three to six theologians, about as many jurists, and one or two professors of medicine made quite a stately university. The professors of theology and law enjoyed, as a rule, the benefices of a clerical prebendary incorporated in the university; the medical lecturers devoted themselves to the profession of medicine, and were considered of the least importance in the university. The activity of the regular professors was supplemented by reading tutors or baccalaureates. The number of lecturers in the faculty of arts and letters like that of the students was very much greater than in the other three faculties; it

may have risen to twenty or thirty in large universities. The older professors held positions in the colleges, sometimes also small prebendaries, but the majority were without fixed income, hence dependent upon examination and tuition fees, the proceeds of boarding, private pupils and other sources. To act as professor in this faculty of arts was not considered a lasting profession, but a transitional period, a stepping stone, as it were. Very often the lecturers in the faculty of arts were at the same time students in one of the higher faculties studying for a degree. They either succeeded in gaining a professorship for life, or entered the church which provided for their maintenance.

The curricula of studies.—When the boy of 15 or 16 years left the particular or preparatory school, where he had acquired the learned language, Latin, to enter the *studium generale*, his first business was to be enrolled by the rector in the *matricula* of the university, for which he had to pay a fee, which fee was frequently remitted *propter paupertatem*, or *ob reverentiam* (this was done with well-known scholars, or with students recommended by them). Then he applied to a lecturer in the faculty of arts for admission to the number of his students. With the aid of older students, the professors and the dean, he went through the formalities of the "*beanium*" (act of initiation consisting of symbolic actions that signified to him the entrance into the world of academic culture); thus he became a student. Now he began to participate in the prescribed lectures and exercises of the faculty of arts, unless he was too far behind in age or in knowledge of Latin; in this case he was assigned to the *pædagogium*, or given over to a tutor in order to acquire knowledge of the learned language.

The course in arts was one of three or four years; it consisted of two parts, which were separated by the first examination. After about two years' study, which consisted chiefly of logic and physics, the student applied for admission to the first examination. Having proved that he had attended the prescribed lectures, participated in the required discussions, and acquired the amount of knowledge necessary, he received in public the first academic degree, that of *baccalarius* (afterwards called *baccalaureus*). Examinations and promotions took place at stated times; an entire group of students was promoted together, so that to each one could be assigned a place according to the result of the examination. After another two years' successful study, consisting of the whole range of philosophical sciences, physics, and mathematics, with astronomy, metaphysics and psychology, ethics, and political economy, he was examined again, and received his second promotion, the degree *magister artium* being conferred upon him. Similar to this was the course in the higher faculties.

It is worthy of note that the new master of arts was, as a rule, required to spend a few years in reading in the faculty of arts (*biennium complere*). It appears that the authorities had a double object in view; first, the preservation of the institution; without such obligatory duties

as teacher, the number of teachers in the faculty of arts would have been inadequate, salaries being scanty and well-endowed chairs very few. But there must have been this other weighty consideration, that the young masters of arts were thus obliged to keep fresh the knowledge gained; with Aristotle, the leaders of the universities of the Middle Ages believed that no one can know anything unless he be able to communicate it to others. According to this the *baccalarius* was called upon to participate actively, and not only passively, in the instruction, both in lectures and disputations. The gradation, *scolaris*, *baccalarius*, and *magister*, is evidently the same that we find in the handicrafts of the Middle Ages, apprentice, journeyman, and master. The apprentice learned; the journeyman learned, produced, and if occasion offered, taught; the master produced and taught. In the particular or lower schools of those times we find the same steps; scholar, assistant (*socius*, also called *baccalarius*), and schoolmaster.

We must, however, guard against the impression that completing the entire course of the faculty of arts and a course in one of the higher faculties was the rule. Most of the students left the university before even obtaining the lowest degree, that of bachelor of arts. Such cases are very rare at present; the rule now is to complete the course. The cause is obvious; it is that no office in the gift of the Government or municipalties can be obtained without the completion of a university course, and each office presupposes a certain well-defined course of preparation. That was not the case in the Middle Ages; not even attendance upon a university seems to have been the condition for filling an office. The absolutely necessary condition of an office in the gift of the church was priestly ordination, and, in fact, there were scarcely any secular offices. Previous to the ordination the bishop examined the candidates; he required barely more than some knowledge in Latin. As late as at the end of the fifteenth century a great number of clergymen had never attended a university, but it may be supposed that such attendance had become a duty of decorum for the higher clergy. In the cathedral chapters a certain number of positions were frequently reserved for graduates in theology. Also, knowledge of law proved more and more necessary for the higher clergy; for the lower positions, however, the degree of master or bachelor of arts was an important recommendation, and the mere certificate of matriculation from a university secured to the owner a preference over other candidates. As proof of this fact may be regarded the *rotuli* which the oldest university sent from time to time to the clergy; they were lists of all the members of the university, arranged according to their academic rank, down to the simplest student, and they all appear as applicants for benefices.

Contents and form of instruction.—The contents of instruction appeared to the Middle Ages as given and final; the object was to transmit the fixed inventory of scientific knowedge; for theology deriving its

knowledge in the last instance from the revelation, the Holy Scriptures (*sacra pagina*) were the supreme source of decisive authority. To be sure, for their comprehension, the interpretation of the church was determinative, and, from the fact that the contents of faith had to be arranged and systematized by means of human reason, the great theological systems of the Middle Ages arose, which became the real objects of theological instruction. In the law faculty the great collections of Roman and canonic laws formed both sources and substance of instruction; commentaries and glossaries were called in for aid. The medical faculty, likewise, derived the substance of its instruction essentially from some authors of canonic reputation; above all, the writings of Hippocrates and Galenus, with a few of their Arabic commentators. Finally, the faculty of arts taught the philosophic, that is, all purely theoretic sciences, as far as they could be derived from human reason. Here, too, the substance of instruction was found in canonic text books, especially the writings of Aristotle, mathematics in Euclid, astronomy in Ptolemæus; besides these, a few more modern text-books were used, such as the *Summula Petri Hispani* and the *Sphæra* of Johannes de Sacro Basco.

As far as the form of instruction is concerned, we find everywhere during the Middle Ages two organically combined parts, lecture and disputation.

The object of the lecture was the transmission of scientific knowledge. A canonic text, for instance, some passage of Aristotle (naturally in Latin translation) was read and explained, not dictated. A text-book was supposed to be in the hands of the students. At times the professor read from the text, in order to insert the proper punctuation and correction, but the main point always was the explanation. The *versus memoriales*, in which the explanation of law text was arranged, may be considered to have been in vogue for other texts also, perhaps with slight adaptations. Here is an example:

Praemitto, scindo, summo, casumque figuro,
Perlego, do causas, connoto, objicio.

The object of the disputations was exercise in the application of scientific knowledge, above all the solution of mooted questions. The disputations appear to have been as important as the lectures. When at stated times public disputations took place, the whole faculty, masters and students, appeared in gowns. One of the masters, acting as chairman, proposed a series of theses; the other masters in turn attacked his deductions with syllogistically arranged arguments. The bachelors as respondents defended the theses, by analyzing the arguments, aided by the chairman when necessary. Beside these formal disputations at which the students remained silent listeners, there were preparatory disputations conducted by masters and bachelors for the practice of the students. The Middle Ages laid much weight upon these learned disputations. Their number was determined beforehand, and attendance

at them was obligatory; masters who were lax in arranging them were threatened with fines. In fact the real power of university instruction emanated from these public discussions. There is no doubt that this was well understood; these discussions were a splendid means for securing acquisition of knowledge, as well as for practice in its application. They were well adapted to prove the presence of original knowledge, as well as skill in comprehending the thoughts of others and their relation to one's own thoughts. It may be presumed that in these two things the learned men of the Middle Ages had a mastery not easily found now-a days. The scholar of to-day depends for many things upon reference books, while a man in the Middle Ages had to charge his memory with them. Again, the ability to logically present and defend one's views face to face with an opponent who supports his own, and in his defense tries to dissipate the discussion and lead one astray, this ability is not developed much now, hence is rarely found.

Of course, such public disputations are not possible any longer in our universities. They presuppose two things that do not exist any more: (1) living together of teachers and students in colleges and halls, and (2) a certain inventory of generally acknowledged philosophic principles, or in other words, an authoritative school philosophy, such as the Middle Ages had in Aristotle for their faculty of arts. It was seen clearly enough that "*contra principia negantem non est disputandum.*" Since the sixteenth century these two conditions gradually dwindled in importance, and, finally, during the nineteenth century disappeared entirely. The once famous university disputations were first discredited, then abandoned; only a rudimentary fragment has been preserved as a reminder of the past, in the formal disputations on the occasion of granting the degree of doctor.

B.—In Modern Times.

The modern time began in that grand revolutionary era which is filled with the Renaissance and the Reformation. These two powerful movements cut deep into the life of the universities.

The conquest of the German universities by the humanities took place during the first two decades of the sixteenth century. An exasperating conflict between the old and the new raged during that time. The entire customary management of the universities, especially the instruction in the faculties of arts and theology, was rejected with the utmost contempt by the new culture and its representatives, the poets and orators, who, as may be said in passing, had here and there raised their voices similarly during the second half of the fifteenth century. Form and contents of that instruction appeared to them as the most disgraceful barbarism that could not be enough abhorred. Hatred and horror on the part of the humanities against the ancient character of the universities have created for themselves a lasting monument in the *Epistolæ obscurorum virorum* which were issued at about 1516, by a

group of young poets in Erfurt whose head was *Mutian*. Among the men who represented the scientific power of the humanities, Desiderius Erasmus and Reuchlin deserve to be mentioned first. The latter introduced the study of Hebrew into Germany, and gave fruitful suggestions for the study of Greek. Erasmus, a man of astonishing talent and power of work, taught the Germans a simple, natural, and elegant Latin, awakened among them a susceptibility for higher culture, planned the way for philologic-historic investigation everywhere, and finally, by means of his studies of the New Testament, brought the humanities into contact with theology. That the systems of scholastic theology were led back to the original sources and the ancient fathers, is preeminently his work. It is noteworthy that Erasmus declined repeatedly a chair in a university that was frequently and urgently offered him.

The new education was victorious upon the whole line. It had permeated all the great universities as early as 1520. New courses of study afforded room for the new branches, both in instruction and examination. Two points are particularly prominent. (1) The ancient Church Latin was replaced by classic Latin; Roman authors, especially the poets, were made the subject of the lectures with the intention of inducing imitation; the ancient translations of Aristotelian texts were replaced by humanistic translations. (2) The Greek language was introduced into the course of the faculty of arts; in all universities chairs for Greek language and literature were established. Among the first professors of Greek in German universities the most prominent were Reuchlin, who taught in Tübingen and Ingolstadt, Melanchthon in Wittenberg, P. Mosellanus in Leipzig; among the professors of Latin, Conrad Celtes in Vienna, Eobanus Hessus in Erfurt, and H. Bebel in Tübingen, deserve to be mentioned first.

But after 1520 the humanistic, that is, the aristocratic secular movement, was overtaken and replaced by an infinitely more powerful and deeper movement, namely, the popular religious movement of the Reformation. For a moment the Reformation appeared as a reinforcement of the humanities; both movements agreed in their hatred of scholastic philosophy and of Rome. Hutten's and Luther's pictures were printed side by side in pamphlets of the year 1520 and termed the great champions of liberty. But really they were very different men, and very different were the aims to which they intended to guide the German people—Luther, the man of intense anti-rationalistic and anti-Church religiosity; Hutten, the man of rationalistic libertinistic humanism. Hutten did not live to see this great contrast revealed; during the years 1522–3 the eyes of the humanists were opened concerning the aims of the Reformation and nearly all of them turned away from it, because it was more hostile to the higher studies than even the ancient Church, and, indeed, it appeared at first as though the Reformation, in its effect, would become essentially hostile to the higher education. The

universities and schools declined and almost entirely vanished during the frightful storms of the third decade. Wherever the Church fell the institutions of learning it had developed fell with it, so that Erasmus could say: "*Ubi regnat Lutheranismus, ibi interitus literarum.*"

But the last word had not been spoken in this cause. In some manner the federation between the Reformation and humanism remained intact, namely, in the person of Melanchthon. Through long, noiseless activity and joyful labor this man planted and nursed the humanistic studies in German universities and schools, despite the unpropitious times. For more than forty years (1518–1560) he lectured at Wittenberg upon all philosophic and philologic-historic branches as they were then understood. Almost alone he represented an entire philosophic faculty. During the fourth decade Wittenberg became the most popular university. From all parts of Germany and all the countries of Europe young men came together there. When Melanchthon died there was scarcely a town in Protestant Germany in which there was not a grateful pupil of his who lamented the death of the *Præceptor Germaniæ*. His grammatical and philosophic text-books remained in use in schools and universities long after his death.

The development of the German universities, as it took place subsequently under the influence of humanism and the Reformation, may be divided into three sections:

(1) The era of confessional universities, maintained by the churches of the petty states. It extended from the time of Luther to the end of the seventeenth century, and was characterized by the preponderance of theologic-confessional interests. The faculty of theology stood in the foreground.

(2) The era of development of modern philosophy and culture in the universities. It may be said to have covered the eighteenth century and was characterized by the rising importance of philosophy and the philosophic and law faculties. Halle and Göttingen were the leading institutions.

(3) The era of the greatest influence of German universities upon the thoughts and life of the nation. It embraces the nineteenth century, and was characterized at first by the predominance of philosophy; later by the progressive development of minute scientific investigation in nature and history. The philosophic faculty stands in the foreground; besides the medical faculty assumes greater importance than ever before.

The first epoch—the confessional universities.—With the close of the peasants' war (1525) the first act of the great religious conflict had terminated. The second act began with the establishment of new churches upon a Protestant basis. Each petty state having its own church organization, it followed that the universities were closely connected with the church during the next two centuries. The ancient institutions of learning were restored in accordance with the new church consti-

tution both on the Protestant and Catholic side; also a great number of new ones were founded.

The first of the new Protestant institutions was the Hessian University of Marburg (1527). This was followed by Königsberg (1544) in the Grand Duchy of Prussia, which had just been changed from a clerical to a secular possession. Then came Jena (1556) in the remaining portion of the possessions of the Saxon house of Ernest, after Wittenberg had fallen to the Saxon house of Albert. Despite the smallness of the state it served and the scarcity of its means, this institution has maintained an honorable place among the German universities to the present day. In 1576 a university was founded at Helmstädt in Brunswick. This institution was equipped well, and was, during the seventeenth century, one of the most noted Protestant seats of learning. Especially noteworthy were the theologian Calixtus and the polyhistorian H. Conring, who may justly be called the founder of the science of history of German law. The two institutions founded by the imperial municipalities, Altdorf and Strassburg, belonged to the most noted universities of the seventeenth century. The former arose from a gymnasium, which was transferred from Nuremberg in 1573 and made a university in 1622; the latter grew out of a similar school belonging to the city of Strassburg (in 1621). Of less importance was Giessen (1607), founded to represent the Lutheran faith in Hesse-Darmstadt, having branched off from Marburg; likewise Rinteln in Schaumburg (1621). The same may be said of the university of Duisburg (1655), which represented the Reformed Church. More important was the university of Kiel, founded in 1665 for the duchies Schleswig-Holstein. Besides the aforementioned real universities, quite a number of so-called academic gymnasia existed during that time. They were institutions of secondary education which maintained post-graduate courses of philosophic and theologic lectures. These institutions partly continued their existence into our present century, as in Hamburg. The school of the Reformed Church at Herborn had a great reputation during the seventeenth century.

This era shows numerous new establishments also in the Catholic countries. The first was at Dillingen, founded by the bishop of Augsburg in 1549. For a time this university was the center of scientific study of Catholic Germany. Then followed Würzburg (1582), splendidly equipped by Prince Bishop Julius; then Paderborn (1615), Salzburg (1623), Osnabrück (1630), Bamberg (1648), all of which were founded by bishops. Lastly we must mention the universities established in the countries belonging to the house of Hapsburg: Olmütz (1581), Graz (1586), Linz (1636), and Innsbruck (1672). However, many of these Catholic institutions never became complete universities, but were privileged philosophic-theological schools, mostly conducted by Jesuits. Few had law faculties.

Generally speaking, it may be said that the institutions established

during this first epoch of the modern era did not show the vitality exhibited by the old universities of the Middle Ages. Of the ten newly founded Protestant universities only five are still active: Marburg, Jena, Königsberg, Giessen, and Kiel, to which must be added the reopened university of Strassburg (1871). Helmstädt, Rinteln, Duisburg, and Altdorf were suspended during the great Napoleonic revolution that overthrew the German states at the beginning of our century. Likewise the universities established by the bishops were suspended after the fall of clerical government, except Würzburg, which has been preserved as a royal Bavarian university. Of the others only certain parts are preserved in form of theological seminaries. Of the Austrian universities only Graz and Innsbruck remain alive.

The chief impulse for the numerous new foundations mentioned was the importance which the idea of state assumed, both in religious and political affairs. Each state endeavored to have its own university; first, in order to secure the preservation of the faith represented by the church of the state; secondly, to save the citizens the trouble of attending the university in what was then considered a foreign country, and to keep the money at home. When the means of maintaining the institution were insufficient (we must not think them to have been very extravagant; a few thousand florins or thalers sufficed to pay the salaries of ten or twelve professors, a sequestered cloister offered the required rooms, and other university institutions were not known), post-graduate courses of lectures were added to existing secondary schools, thereby changing them to *gymnasia academica* or *illustre*. For such institutions the privileges of a university could be secured afterward from the Emperor, and were not very difficult to obtain.

This then explains why the universities of this first epoch lacked the universality of those of the Middle Ages. Interterritorial and international right of changing one's domicil, which had characterized the *studium generale*, was lost. If not the boundaries of the state, then certainly those of the confession became synonymous with the boundaries of the university dominion. However, even at that time the inborn migratory desire of the German student would not be fettered. The control of what was taught in that epoch was more rigid than in any previous or subsequent age. The dread of heresy, the painful rigidity with which the orthodoxy of the faith was preserved, was found in the Protestant as well as in the Catholic world, perhaps greater among the Protestants, since a departure was possible in two directions, to the right toward Catholicism, to the left toward Calvinism.

Imprisonment of the intellectual life within confessionalism stamped this epoch as the one that farthest departed from the real inner life of the nation in the entire course of its history.

If we cast a glance at the inner arrangement and management of the universities of the epoch mentioned, we shall see that, generally speaking, the ancient forms had been preserved. The four faculties had

remained, and with them the fundamental plan of the curriculum and order of examination. The degree of bachelor of arts gradually disappeared during the sixteenth century, and the magister was replaced in the higher faculties by the more aristocratic doctor. Only the degree of master of arts was retained until the beginning of the nineteenth century.

The theological faculty was the most prominent of all, and had gained in real importance, for at that time the study of theology had become a requisite for the entire clergy, which was not the case in the Middle Ages. A consequence of this was that doctrines and dogmas became more important than divine worship, at first in the Protestant, later also in the Catholic world. While thus Protestantism influenced Catholicism, it was subject to a counter effect, that is, it was drawn back to scholastic dogmatism from its original tendency of Bible study. The Bible is not a structure of doctrines, the formulas and definitions of which are suitable for controversy and the exclusion of heretics.

The law faculty also gained in importance and extension in exact proportion to the development of the modern state and the increase of its army of officers. The learned judge gradually displaced the ignorant lay judge, and the state officer who had a university education replaced the feudal knight. The form of instruction also changed in this way, the systematic presentation of science repelled the interpretation of canonic texts; the "*mos Gallicus*" replaced the "*mos Italicus*."

The medical faculty remained the weakest of all up to the nineteenth century; however its mode of teaching and its curriculum began quite early to exhibit remarkable changes. Astronomy and physiology began to be freed from traditions and ancient texts and be based upon individual observation.

The philosophic faculty, formerly called "*facultas artium*," generally kept its old position. It remained the link between the preparatory schools that taught the languages and the higher faculties that offered scientific professional education. Its main object was to supplement the previous school instruction by a course in the general or philosophical sciences. The substance of this instruction consisted, as heretofore, in the writings of Aristotle upon logic, physics, psychology, metaphysics, ethics, and political economy, sometimes in Latin (during the sixteenth century it was the aim, attained only in a limited measure, to apply the Greek original text), or in translations and texts for which Melanchthon had given the example. Side by side with the philosophic course ran a course in the humanities consisting in lectures on the classics and exercises in elocution and poetry; but this course lost power and importance the more the age of humanism receded. From the middle of the seventeenth century the making of Latin verses was gradually abandoned. French language and literature began to predominate in the courts, where for more than a hundred years it ruled supreme. The

classic humanistic education now suffered the same reverse which it had caused to scholastic education in the Middle Ages at the beginning of the sixteenth century, and became old-fashioned and ridiculous. The professors of rhetoric, elocution, and poetry were profuse in their complaints concerning the contempt for fine arts and the returning barbarism of the Middle Ages.

The former order of life and conduct was abandoned also, when the power of the Church was broken. The living together in colleges as in monasteries presupposed celibacy on the part of the masters. Besides, the average age of the students had increased perceptibly; for the unprecedented development of the lower schools, especially the court and state schools in the Protestant countries and in Jesuit colleges in the Catholic countries, led to an extension of the school courses. The abandonment of monastic life was also urged by the higher faculties which had never quite submitted to its rigid rules, and which now increased in importance perceptibly.

During the eighteenth century it was customary for professors to give students board and lodging in their houses. But it must not be left unnoticed that in most universities a sort of dormitory was established in which a number of indigent students were kept at public expense, and where their studies were supervised. As a recompense such students had to agree to serve their country either in secular offices or in the service of church and school. This dormitory was called "convict." Similar to this arrangement certain state schools were established in which talented boys were prepared for the university at public expense. The means for both the convicts and these preparatory schools were derived from sequestered church property. These institutions existed essentially unchanged until the beginning of the seventeenth century.

At the close of this epoch, the universities in Germany had fallen to the lowest degree of influence and fame. They appeared as superannuated and almost degenerated institutions in comparison with the progressive culture that had its center at the princely courts. A man like Leibniz refused to accept a position in a university; he preferred the princely courts, where he was sure to find comprehension and promotion of his ideas and extensive plans. The universities were almost without any perceptible influence upon the life and thoughts of the people. The number of university teachers during the seventeenth century whose names have been perpetuated in the memory of the learned world is insignificant in comparison with that of the sixteenth and eighteenth centuries. It is well known, also, that the greatest degeneracy in student life occurred during this epoch. Drinking and quarrelling (Saufen and Raufen) were not only related to each other in ryhme, but flourished to such an extent in the middle of the seventeeth century that serious steps had to be taken on the part of the state authorities to gradually reestablish some semblance of order.

The second epoch; the eighteenth century.—This epoch began with two new foundations: Halle (1694) and Göttingen (1737), to which was added Erlangen (1743) for the Frankish principalities Ansbach-Baireuth. These three universities are still flourishing. The Catholics provided Breslau and Münster. In Breslau (1702) a philosophic-theologic seminary of the Jesuits was furnished with university privileges, but it did not develop into a complete university until its reorganization in 1811, when the university of Frankfort on the Oder was transferred to Breslau and connected with the institution at that place. Münster, founded in 1780 as a university for the archbishopric of Cologne, exists since 1818 as an academy of two faculties, philosophy and theology.

Halle, the university of the rising Brandenburg-Prussian state, owes its fame, above all, to three men, to wit, the jurist, Chr. Thomasius, the first who urged the modern study of law; the theologian, A. H. Francke, and the philosopher, Chr. Wolff. Thomasius, a pupil of Samuel Pufendorff, the first teacher of natural law in a German university (in Heidelberg, 1626, the first chair for the new treatment of law was established), was a man of the modern French court culture; he was the editor of the first monthly magazine in the German language (1688), and also the first who introduced the German language into the lecture room. He despised scholastic philosophy and humanistic eloquence, as well as theological orthodoxy and ancient learned jurisprudence; with his own university in Leipzig, where he taught as assistant professor, he engaged in serious controversies; hence he was obliged to resign. He then established himself in Halle, where he found a hearty welcome. The group of students that gathered around him at Halle became the nucleus of the university which was opened in 1694. The theological faculty received its peculiar direction from Francke, the chief representative of Pietism; he, too, had been expelled from orthodox Leipzig. His theology culminated in practical Christianity and Bible study conducted with pure faith. The grand institution of the orphan asylum in Halle, which was founded by him, became a model school for his students for the practice of Christianity and the instruction of the young. During the second half of the century Joh. Sal. Semler taught in the theological faculty of Halle; he was the founder of historical or the higher criticism of the Holy Scriptures.

But of the greatest importance was the philosophy of Chr. Wolff, who taught in the philosophic faculty at Halle, from 1707 to 1723, and then again from 1740 to 1754. From 1723 to 1740 he taught at Marburg. His expulsion during the reign of Frederick William I, and his triumphant reestablishment through Frederick the Great, signifies the great turning point of the epoch. The acceptation of his philosophy may be said to signify the end of scholastic philosophy in German universities. From that time, modern philosophy in the form of Wolff's system took possession of the universities of Germany. Until then, it had been the

object of instruction in philosophy, generally, to transmit and master the former school philosophy (Aristotle in Melanchthon's garb) by means of recitations. Philosophy had been studied essentially for the purpose of formal preparation for theology. The new philosophy planted itself firmly upon reason. Rational Thoughts is the chief title of Wolff's works in the German language. It did not intend to be *ancilla theologiæ*, but to seek the truth without prejudice; its basis was found in mathematics and natural sciences in their modern form. With equal emphasis it denied transcendental sanctions for ethics and law; it based itself solely upon the nature of man and society.

Wolff's philosophy was triumphant in all Protestant universities in the course of the eighteenth century. The higher faculties also, especially theology and law, submitted to the influence of Rational Thoughts. Rationalism with its motto: "Nothing without satisfactory cause," became the maxim of the day.

With this we mark a decisive turn in science. The German unversities owe it, above all, to the acceptation of Wolff's philosophy that they were able to extricate themselves from the mire into which they had sunk during the seventeenth century, and that they could begin to assume the role of leaders in the intellectual life of our people. That the universities of our neighbors to the West have not been able to assimilate the modern philosophy, that they still occupy the standpoint of confessionalism, is really the ultimate cause why they exercise so much less influence upon the public life of their nations. The leading minds in France and England stand outside, in Germany inside, the universities.

Halle has the renown of being the first real modern university; the principle of *libertas philosophandi*, upon which the modern university rests, the principle of free investigation and untrammeled teaching (*freie Forschung* and *freie Lehre*) was first applied at Halle. They were clearly conscious of this in Halle. When the university, in 1711, celebrated the birthday of its founder, Prof. Gundling delivered an oration *de libertate Fridericianæ*. This oration called the youngest university a stronghold of free thought. It concluded with the following words: "*Veritas adhuc in medio posito est; qui potest, adscendat, qui audet, rapiat: et applaudemus.*" A bold word which characterized the great change in the intellectual world that had taken place. In the ancient university instruction always started from the presupposition that the truth was fixed and given, all that was to be done was to transmit it, and that the supervisory authority had the duty to see to it that no false teaching was transmitted. The modern university starts from the presupposition that the truth must be sought, and that it is the duty of instruction to enable the student to find it. The university simply realized the consequences of the situation created by the Reformation.

During the second half of the eighteenth century the University of

Halle found a rival in that of Göttingen, by which it was overtaken later on. At the close of the century Göttingen was considered an aristocratic university; counts and barons of the holy Roman Empire studied law and political science there under Profs. Schlözer and Pütter. Mosheim taught church history, theology, and pulpit eloquence; Michaelis taught oriental languages; Albrecht von Haller and his successor, Blumenbach, who were the best representatives of the science of man at that time, taught physical anthropology; the astronomer of worldwide fame, Tob. Mayer, the ingenuous physicist, Lichtenberg, and the elegant mathematician, Kästner, all these graced the institution. The newly awakened science of archæology found in Göttingen its first nursery; its philologists, J. M. Gesner and J. G. Heyne, to whom we owe the return of Greek to the university, found a new point of view for the study of classic authors. It is not dead erudition, nor Latin and Greek imitation that is needed, but formative, intimate intercourse with the authors of antiquity, the highest models of art and taste. This is the point of view of modern humanism, which has given a comprehensible human aim to the study of the ancient authors; its object has become the formation of taste for everything beautiful and genuine in literary representation. This modern humanism had a reciprocal action upon German poetry, that was just then beginning to flourish. This poetry, also, had its central seat in Göttingen; it suffices to mention Haller's poems, Gesner's German Society and the Hainbund.

If we compare the condition of the German universities at the close of the eighteenth century, as it had developed under the leadership of Halle and Göttingen, with the condition at the close of the seventeenth century, we may group the differences from the following points of view:

(1) The place of scholastic philosophy had been taken by rationalistic philosophy, that accepted no decision by authorities.

(2) In place of the mechanical treatment of the dead languages and imitation had come the animated study of ancient sciences for purposes of general human culture.

(3) In organic connection with this was the fact that the German language had displaced Latin as the vehicle of instruction in universities.

(4) In instruction the principle of free research and unhindered teaching had been generally accepted.

(5) Natural consequences of this were: abandonment of disputations, dismissal of text-books, and on the other hand the establishment of seminaries. Gesner in Göttingen opened the first philologic seminary; F. A. Wolff in Halle followed his example.

The third epoch; the nineteenth century.—This epoch, like the preceding one, is opened with a few important new foundations. First of all came the University of Berlin (1809), established under memorable circumstances at the capital of the Prussian state for the purpose of proving "that Prussia will not give up the function it has so long

exercised, namely, to work in the direction of higher intellectual culture, and in that to seek its real power; it will begin anew. Prussia will not be isolated, but desires to remain, not merely in political matters but also in regard to culture and civilization, in close contact with entire Germany." Thus Schleiermacher interpreted (in his Occasional Thoughts Concerning Universities, p. 145, which we may call the intellectual charter of the institution) the fundamental idea of the Berlin University, its historical and national duty. When the venerable university of Frankfurt was transferred to Breslau it formed with that institution a great modern university (1811). After the Napoleonic wars a new university for the western provinces was established at Bonn (1818). The new state of Bavaria soon founded a large central university at Münich (1826), in which the ancient University of Ingolstadt was perpetuated. Lastly, the reopening or reestablishment of the University of Strasburg by the new German Empire (1872) completed the number of new foundations. Thus we see political changes reflected in the changes which the universities underwent.

Still another change of vital importance must be mentioned. The universities abandoned their former denominational character. When the most prominent German states, during the great revolution at the beginning of this century, abandoned the confessional unity which until then had been preserved, the universities responded in kind. They thereby returned to the universality of the ancient "*studium generale*," departing from their church basis and placing themselves upon the basis of general human culture. The ancient internationality also returned, although now it acts in a contrary direction. During the Middle Ages the German students went into foreign countries—to Paris and Italy; at present the foreigners come to Germany from the far West and the far East.

During this epoch the philosophic faculty has become the most prominent in influencing the ideas and the entire intellectual life of the people. Of well-known and distinguished names in science the philosophic faculty can justly claim more than the other three faculties together, and the number of professors in the philosophical faculty is, as a rule, greater in all universities.

At the beginning of this epoch philosophy stood in the foreground; Kant, the sage of Königsberg, whose philosophy had followed that of Wolff, gained supremacy in all German universities, the Catholic not excepted. He was followed by representatives of the speculative philosophy which for a time had its seat in Jena, where Fichte, Schelling, and Hegel taught in the beginning of the nineteenth century; then philosophy had its chief center at Berlin, where first Fichte, after him Hegel, taught. The latter has exercised great influence upon the entire Prussian system of education. This philosophy could be designated, during the twenties and thirties, as the Prussian state philosophy in a double sense of the word: It was the officially recognized philosophy

of the state, or at least that of the department of education; and, on the other hand, Hegel was the admired preacher of the idea of state. This condition lasted until Frederick William IV ascended the throne. He hated Hegel's rationalism and called the aged Schelling from Münich to Berlin in order to combat it. Beside Fichte and Hegel, Schleiermacher exercised a far-reaching influence through his theological as well as through his philosophical lectures. As a representative of another tendency in philosophy, the so-called positive philosophy, Herbart (in Göttingen and Königsberg) must be mentioned. His philosophy has gained great ascendancy since the decline of Hegel, especially in Austrian universities.

Among the intellectual powers of this time must be mentioned the modern humanistic philology, which deserves a second place. F. A. Wolf, who soon surpassed the aged Heyne, taught first in Halle, then in the Berlin University, which had been founded through the active participation of W. von Humboldt (a friend of Wolf); it had been destined from the very beginning for a central seat of archæological sciences, and has remained true to its destiny to the present day. Here Boeckh, Lachmann, and Haupt have taught. Trendelenburg, the restorer of Aristotelean philosophy, for many years an influential professor in Berlin, combined philosophical with philological study. In this branch the other new universities became conspicuous. In Bonn we find Niebuhr, Welcker, Brandis, Ritschl; in Munich, Friedrich Thiersch, Spengel, Halm; Leipzig maintained its former rank through Gottfried Hermann; Göttingen, through Otfried Müller.

It is worth recording that a number of new branches of philosophic investigation sprang up. Above all, must be mentioned the cultivation of Germanistic studies through the brothers Grimm, who lived and taught, first at Göttingen, then in Berlin. To that was added the study of Romanic philology, the founder of which was Diez, in Bonn. Also the study of Oriental languages and literatures took a fresh impetus. It suffices to mention the name of Bopp, the founder of comparative philology, and of Lepsius, the Egyptologist, both in Berlin, and of Fr. Rückert, the great philologist and poet, of whom Erlangen may boast.

Of very pronounced importance is also the phenomenal development of historical investigation. Above all, L. Ranke, in Berlin, is to be mentioned as the most influential teacher, who was followed by a long line of notable pupils in the direction of research among original historical sources. It must not be left unnoticed that historical instruction in universities in this epoch has had an enormous influence upon the political thoughts of the nation. This influence has made itself felt particularly in favor of the unification of grand old Germany. It is not a mere accident that the most distinguished professors of history, Dahlmann, Waitz, Droysen, Häusser, played their rôles as members of the parliamentary bodies of 1848.

Lastly, we mention the impetus which investigation in the mathe-

matical and natural sciences has received since 1820. In Göttingen the mathematician Gauss and the physicist Weber taught. In Giessen, Liebig founded, with comparatively scanty means, a laboratory that proved to be of far-reaching consequences, both for chemical instruction and the practical application of science. In Berlin Joh. Müller formed a nucleus for the modern school of physiologists, that made it its object to explain biological phenomena purely by means of the natural sciences without the aid of metaphysical principles. This school has had an enormous importance in the development of medical science.

While thus the first half of our century is distinguished by a long line of pioneers in science and by works that laid the basis for future labors, the second half is characterized not so much by a growth in depth as by a growth in width. This is particularly true in regard to the two great branches of scientific investigation—for the philologic historic sciences as well as for mathematics and the natural sciences. An ever-increasing specialization in the fields of investigation is a consequence of this. This becomes obvious in the institutions of the university, where the number of chairs and seminaries for new branches of the natural sciences has increased enormously. The number of regular professors in the philosophic faculty has increased to double and triple of what it was at the beginning of the century. Berlin began with twelve such professors; it has now fifty-three, and that does not include extraordinary professors and Privat-Docenten.

If an attempt be made to sketch in a few lines the history of the other three faculties of this epoch, that of the theologic faculty might be stated in this way: At the beginning of our epoch theology was in the most intimate relation to philosophy; rationalistic as well as speculative philosophy make that plainly obvious. A peculiar position is occupied by Schleiermacher. He was himself a philosophic thinker, yet endeavored to sever religion from a combination with philosophy such as was found both in orthodox and in rationalistic theology. He did this by taking religion to be more a function of the emotions than of the intellect. Since the second third of the century passed two new currents, though opposing one another, seem to press philosophic theology into the background; first, the so-called positive current that depends upon church authority. In the Protestant Church this current is represented by Hengstenberg, in Berlin; in the Catholic, it is identical with the great movement of church restoration that led to the *Vaticanum* and now aims everywhere at strict adherence to authoritative harmony in theological and philosophical sciences. The second current is that of historic criticism, represented by Baur and the school of Tübingen within, and by D. Fr. Strauss outside of, the universities.

A similar plan might perhaps be observed in tracing the development of the faculty of law. At the beginning of the epoch under consideration we had here also a preponderating influence of, first, Wolff's, then Kant's and Hegel's philosophy, which influence was obvious in the

interpretation of the ancient natural law, and in the new philosophic construction of rights and state. Then the philosophical treatment of law was displaced, on the one hand, by the historical school (by Savigny, in Berlin); on the other, by the school of positivists (by Stahl, in Berlin). Lately a renewed tendency toward philosophic contemplation in both theology and law seems to manifest itself. In the school of A. Rietschl a leaning toward Kant's philosophy, and, strange to say, also toward Schleiermacher and his double position, are undeniable. Political science shows recently that it is influenced by economic-social ideas of history, and a historic-philosophic, or sociological view, becomes prominent (Ihering and L. Stein).

The medical faculty also was at the beginning of this epoch under the dominating influence of natural-philosophic theories. Since the thirties this course is abandoned, and the tendency is now toward strictly scientific investigation of nature. During the present generation the medical faculty has experienced an astonishing development. Up to the close of the eighteenth century this faculty was, as far as numbers are concerned, an insignificant appendix of the theological and law faculties. At present the number of students and professors of medicine occupies the front rank in not a few universities. Also medical institutes of all kinds have been increased and extended; they claim a large share of the expenditures of a university. This increase is doubtless owing to the rapidly-increasing wealth of the population, but the wonderful progress medical science has made is not without influence upon the growth alluded to. Improved methods of investigation, especially the application of the microscope, have caused a remarkable progress in recognizing causes and character of diseases, followed by important improvements in medical science, especially in surgery and the treatment of wounds.

As far as the outer form of the universities is concerned the ground plan has not been materially altered. The articulation into faculties has been retained, though at the beginning of this century all sorts of objections were uttered against this "institution of the Middle Ages." However, in a few universities the number of faculties has been increased by opening a new one for the other confession, or by dividing off from the philosophical a faculty for natural sciences and one for political science. The last traces of the ancient regulations of life and conduct have been lost. There are no "convicts" or dormitories, no professors who maintain boarding establishments, no obligatory courses of study, no tutors, and even the academic jurisdiction has vanished with the exception of a small remnant. The student now is a citizen of the state like all others. After he is enrolled, and has promised to the rector with word and hand-shake that he will obey the academic laws, no official person asks after him for a number of years. He is left entirely to his own counsel. It is evident that this dissolution of all school order is essentially a result of the gradual increase of the student's average age.

The twentieth year is now generally accepted as the average age of the freshman; and for young men of 20 to 25 years the strict regulations of a school are obviously out of place.

With regard to the constitution of the teaching bodies, a change in the position of the philosophic faculty has taken place. While formerly its object was the general scientific preparation for professional study in the three higher faculties, now it has become a professional faculty itself, namely, for the preparation of teachers for secondary schools. Up to the present century the profession of teaching was an adjunct to the theological profession, so that theological candidates first spent some time in the service of education, either by accepting a position in a city high school or as tutor, before a position in the gift of the church was obtainable. At present the teachers' profession is an independent calling; a transition from that into the profession of the clergy has occurred rarely since the middle of the century. The introduction of a professional examination for teachers in 1810 (*examen pro facultate docendi*) designates for Prussia the outspoken separation of the two professions which had hitherto been united; its intention was the elevation, if not the creation, of a profession of high-school teachers with uniform scientific preparation and professional spirit. The inner cause of this fact is the separation of the spirit of the time from theology and theologic views, and a tendency to following the humanism of Goethe and Wolf.

In the matter and form of instruction the changes for which the way had been paved in the preceding epoch have been completed, to wit: The German university professor does not consider it his duty to transmit a fixed inventory of generally accepted truths, but the results of individual investigation and research. It is true the term *tradere* has been perpetuated in our programme of lectures, but even the youngest Privat-Docent, and he perhaps most of all, would consider it an insult to his dignity if he were expected to take the word literally. This is quite in accord with the intention underlying instruction; it is intended to lead the student to independent thought and investigation. The act of learning expected of the student does not consist in accepting finished and polished facts, but in making him think and work scientifically.

This, above all, is true with regard to the philosophic faculty. Here investigation and suggestions for research are the predominating purpose. In the other faculties transmission and memorizing of knowledge necessary for a technical outfit in the profession play a more important role. Physicians, judges, and clergymen are not, and do not intend to be, learned scholars; at least, this is not their most important object. The practical profession and its promotion are already emphasized in the universities. On the other hand, the philosophic faculty is really the learned faculty. This is true with regard to the professors as well as the students. Externally, the case becomes obvious in its

relation to the academies of sciences. Between the German academies and the philosophic faculties there exists a personal union in the widest acceptation of the term, while the other faculties are represented only occasionally. Another point makes obvious the importance alluded to: The nurseries of investigation, the "seminaries," have their origin in the philosophic faculty; dissertations emanate from them. The importance of the different degrees, also, is characteristic. Degrees are given in other faculties as well, but in the theological and law faculty seldom, and the medical degree is, although acquired uniformly, of a different character. The acquisition of a degree in the medical faculty is the result of social compulsion, but no one believes any more than the young M. D. does that he has proven himself a learned investigator by having written a dissertation. But, to a certain extent, that is the meaning of the degree of *Doctor Philosophiæ*.

The character of instruction in the philosophic faculty is in accord with this: it aims throughout at the cultivation of learned scholars. A professor of philology, history, mathematics, and physics proceeds as though he had before him in his lectures and exercises nothing but future learned scholars, future professors. He overlooks, on principle, the fact that in reality the great majority of his hearers are intended for a practical profession—the profession of teaching; or, rather, he does not overlook it, but is convinced that the teacher can not bring anything better into his profession than true erudition. Everything points toward it. The ancient view of the object of the gymnasium, even the traditional name of the institution, "preparatory school for the learned," points toward it. What did a teacher in the preparatory school for the learned (the term gymnasium arose at the beginning of this century) need in the way of professional preparation more than erudition? And, on the other hand, the recently begun and gradually extending specialization in the branches taught in the gymnasium seems to necessitate such a state of affairs. At present every gymnasium has its professor of ancient and modern philology, its mathematician and professor of natural science, its historian and theologian. This secondary school assumes the aspect of a university in embryo. Finally, the character of the examination for the degree, which requires only erudition, may be regarded as proof of the assertion. The problems submitted to the candidates are themes for scientific investigation and essays. Not unfrequently published essays originate in these examinations. Thus, the German teachers in a gymnasium are imbued with the spirit of learned men, at least for a time; that is, so long as the university sentiments are still strong in them, and the best of them even retain some of this spirit all through life.

Doubtless this condition has its disadvantages; they appear first in the fact that many teachers who have devoted themselves in universities to learned studies are somewhat disappointed when they enter school, as though they had lost their proper place in the world. The

lowest grade of a gymnasium does not show many opportunities for displaying profound learning; nor, for that matter, does the highest grade of the school. The disadvantages also are seen in this fact, that teachers without having had a pedagogical preparation, and being suddenly placed in charge of a class, require considerable time before they can find their level and a suitable mode of intercourse with their pupils. (This has recently been obviated by the institution of seminaries for secondary teachers). On the other hand, it must not be forgotten that the old view, which saw a learned scholar in the teacher of a gymnasium, has had great advantages. Upon it rests the high estimate enjoyed by the profession of secondary teacher in Germany compared with that in other countries. This will not change in future. In the hierarchy of the state officers the teachers will never stand at the head; the only way in which they can maintain their position is by scientific exertions. This determines the character of our gymnasium—it still has something of the school for the learned, that directs the attention of the student toward scientific labor and research. If the faculty of such a school has only one really learned man, he will give the school its character. Thus we see cause and effect. The character of the secondary school requires learned men from the philosophic faculty and the entire university. They cultivate learned men because the teachers of gymnasia lay just claims to being learned men.

Doubtless the great abundance of scientifically prepared workers in all dominions of human exertion, of whom Germany is so justly proud, is partly owing to this. The surplus may at times be felt uncomfortably, but let us not forget that the remarkable working power of the German nation in all fields of scientific investigation, especially in philologic and historic research, is owing to this apparent surplus.

A Frenchman has recently expressed an opinion upon this point, the like of which a German would scarcely dare to express, or even entertain. Ferd. Lot says in his interesting little study (*L'enseignement supérieur en France, 1892*):

> The scientific predominance (*hégémonie*) of Germany in all domains of thought, without exception, is at present acknowledged by all nations. It is a confirmed fact that Germany alone produces more than all other parts of the world together; its superiority in science is similar to that of England in the commerce on the ocean. Perhaps it is even greater in comparison.

It is probable that this is to be taken with some allowance. But M. Lot is not mistaken when he says that the organization of the German universities, their uniform constitution as corporations, their liberty in teaching and learning, and above all, the tendency of their instruction toward investigation, are the chief causes of their superiority. This is particularly true with regard to the philosophic faculties. In them the peculiar character of the German universities, as nurseries of scientific investigation and research, is prominently apparent; they draw the other faculties into the same channels. Hence whatever would threaten

to rob the philosophic faculties of this character would endanger the German universities, and the position of Germany in the scientific world.

Finally, let us not forget, that all this exists and acts in intimate connection with historic life. The vital air of the German universities is the historic spirit which surrounds them all, and each one in its individual form. There is scarcely one of them which has not in the life of our nation, or in some science, at one time, played an important rôle; not one that may not be proud of a few distinguished names of abiding importance in the history of science. He who sets foot on this ground feels the breath of historic life. And he who enters the lists becomes conscious that he accepts certain obligations. Not all feel it in the same degree, yet it may be said that in some way everyone feels it who enters a university as a teacher, and in some way almost everyone feels it who enters as a student. And every graduate takes some of that spirit with him into his practical profession. For the German clergyman, physician or judge does not wish to be merely a practitioner, but also a little of a learned man, at least in so far as is necessary to keep his interest awake for what is produced and accomplished in his profession by others. This is particularly true (I repeat it emphatically) of the German high-school teacher; he feels himself not only as an officer and teacher, but also as a scholar, and not a small portion of them succeed, though often under very restrictive and oppressive circumstances, in taking active part in scientific investigation in their professional dominion.

That is what heretofore has given the German gymnasium its character; its pride has ever been to be a school for the learned, and to become, in its own manner and in a small compass, something similar to what a university is, not only a school for lessons and recitations, but an institution where scientific work is performed, and where the students learn to work scientifically.

It is to be hoped that the tendencies which aim at an ever increasing extension of the system of examination and supervision, and which would convert the teachers into mere officers and the schools into knowledge shops, will not succeed in finding general favor. If our gymnasi should lose their character of schools for the learned, the universities would not be able to maintain their position in future.

II.—THE GERMAN UNIVERSITIES IN THEIR RELATION TO STATE, CHURCH, AND SOCIETY.

Their relation to the State.—That the universities should be state institutions, seems to us quite self-evident; but it was not always so, and it is not necessarily so. Scientific investigation and scientific instruction are not, in the nature of the case, a state enterprise. The first universities were private corporations, which, under the general protection of the state, conduct scientific investigation and instruction. Like other guilds, they governed themselves; they made their

own laws, elected their own officers, had jurisdiction over their own members, and perpetuated themselves by admitting new masters of arts, in which act, it is true, a formal coöperation with the church took place. The English universities live in this way to the present day.

In Germany the state university has developed from historic necessity. In the beginning, as has been said before, the German universities were founded by heads or princes of the separate states. Since the fifteenth century the princely power has become predominant, and has made itself felt in the universities, by regulations for reform and ordination; though the corporations claimed the right to make their own laws, the princes enforced their own rules without much ceremony.

The Reformation gave to the Protestant princes church power in addition to their political power. The universities became institutions belonging to the princely rulers, and had the clearly defined purpose of educating officers for state and church service. Since the middle of the seventeenth century the state has gradually turned into a commonwealth that embraces all and attends to everything. The diminutive size of the German states favored the idea of a state that represented a single large household under absolute princely administration. During the eighteenth century this view ruled exclusively. The acknowledged principle was, the satisfaction of all essential needs of life in the community is a matter of state concern, to be attended to by state enterprise, or at least under state supervision. The Government attended to the growth of intercourse and commerce, to the opening of roads and canals, to cleaning and lighting of streets, to caring for the poor, to the promotion of industries, to the regulation of prices for labor and food, to the supply of proper intellectual food by means of books, theaters, etc. Naturally it belonged to the duties of the state to furnish the young with the necessary instruction. The German elementary school (*Volksschule*), which makes both the offer and the acceptation of a general elementary education a duty of citizenship, is the fruit of the eighteenth century. Naturally the universities were also drawn into the folds of this general parental Government. The Prussian civil code only formulated an existing and self-evident law when it said at the head of the chapter "Public Education":

> Schools and universities are state institutions, intended to offer instruction of the young in useful knowledge and science.

The nineteenth century, it is true, has not preserved the principle of state omnipotence in its original form; the various constitutions, since 1848, express in general terms a number of limitations to the state's activity. Thus the Prussian constitution says in section 20, "Knowledge and the teaching of knowledge are free," and adds in section 22, that it is left free to every one to give instruction and establish educational institutions; but as a necessary requirement is mentioned, that he first prove to the Government his moral, intellectual, and technical ability, and submit to governmental supervision. In fact only the nineteenth

century has thoroughly carried out the plan of turning the educational system into a state institution. Foremost of all, the "schools for the preparation of the learned" (the gymnasia), which during the last century were almost exclusively city institutions, came under direct state management. Later on, by creating a department of public instruction and the requisite machinery of management, the entire system of public education found a proper representation in the hierarchy of state officials.

In sketching the present legal status of the German universities, we may say:

The universities are institutions founded and maintained by the state. Coöperation with papal or imperial power, in vogue formerly, has ceased to be. Also the power of granting degrees emanates from the state. The state grants charters and prescribes statutes. It establishes chairs and institutes and endows them. The professors and directors of institutes (libraries, laboratories, hospitals, clinics, etc.) are state officers. The universities are under direct supervision of the minister of education, not subject to provincial governments. In a number of universities a local representative of the minister, in the person of the curator, sometimes called chancellor, is found; his chief duties consist in a general supervision of the institution and care for the promotion of its ability in every department, especially with reference to pecuniary matters. All communications between the Department of Public Instruction and the university go through his hands.

If thus the university has been made legally a link of the entire state system of education, it occupies nevertheless, a peculiar position, and, as it were, one of exemption. It enjoys a measure of independence and self-dependence like no other state institution; state supervision of the professors is almost imperceptible. Also essential parts of the ancient coöperative self-government have remained, chief of which is the free election of academic officers. The head of the university is the rector. He is elected annually by the college of regular professors. He formally represents the university, the other officers are subject to his orders; he matriculates students, and exercises supervision over the associations and meetings of the students. The senate, also, is elected by the professors. Beside the members elected, it consists of the rector as chairman, the academic judge, and the several deans. The senate forms a board of general management. The application of disciplinary jurisdiction over the students is the joint duty of the rector, the judge of the university, and the senate. In Prussia the following punishments for misdemeanors of the students are at the disposal of the rector: Reprimand, fine not to exceed $5, imprisonment, not to exceed fourteen days, suspension from the university threatened, actual relegation, and lastly, expulsion.[1]

[1] If a student is relegated from a German university he may attend another, but if he is expelled from one, he is thereby debarred from attending all other German universities. (THE TRANSLATOR.)

Like the university, so the faculties posess an important function of self-government. They each annually elect a dean from their midst, who conducts the business of the faculty. As a board the faculty supervises that which is taught, and it is their special duty to see to it that every branch of study is represented in the course or calendar of the term. Furthermore, they exercise supervision over the students in regard to their morals and scientific attainments, which supervision, however, in the usual course of events, is noticed no more than the supervision of the professors on the part of the state. They also manage the benefices and stipends, and conduct the examinations prescribed to secure them; they determine the prize questions and award the prizes. Last but not least, they conduct the examinations for academic degrees, and through their deans grant the degrees. They give to Privat Docenten the "*venia legendi*," and submit to the minister of education the names of suitable candidates for vacant chairs; this defines their old right of nomination.

In regard to the management of the course of study in the university, it may be said, that almost absolute liberty rules supreme. All the supervision there is confines itself in reality to the two points, that every appointed professor give lectures, and that the required branches are represented each by a course of lectures and exercises. On the other hand, no official courses of study are prescribed, as is done in schools, where contents, extent, and form of the matter are outlined. The professor is simply commissioned to teach a certain branch; it is left to him to interpret that commission: to determine the separate parts of his branch, the number of hours he may devote to them, the matter he may treat, the method he may employ—all this is left to his own discretion. No one speaks of reports, revision, or control by means of supervisory officers.

It is reasonable to say that at no time heretofore has university instruction enjoyed a greater measure of liberty than now. Up to the seventeenth century instruction was limited by the requirement that it should, in regard to the matter taught, be in accord with the doctrines of the church with which it was affiliated; also official prescriptions regarding the matter and form of instruction were rather peremptory. During the eighteenth century the Government not infrequently meddled with the internal affairs of the instruction; it often happened that the professors (particular ones, especially) were ordered to use certain sources of information, and to follow certain methods. Even during the first half of the nineteenth century similar orders were given; for instance, during the twenties and forties against Hegel's philosophy. At present all attempts to influence the internal management of the university have ceased; matter and method of instruction are left entirely to the discretion of the professor. While in the "schools for the learned" (the *gymnasia*) liberty of teaching has been more and more offensively restricted, in the university this liberty has been more and more extended, and is now admitted without reserve.

Postponing a discussion of this liberty for the present, a word may be inserted concerning the mode of appointment of professors. As was said before, the extraordinary professors are appointed by the minister of education, while the regular professors are appointed by the King himself. However, in filling the chair of a regular professor, there is a coöperation on the part of the faculty. The latter is called upon to send in nominations, accompanied by an opinion upon the work and reputation of the persons nominated. As a rule three names are proposed, but the Government is neither legally nor actually bound to accept these. This mode of procedure has been severely criticised; it has been said that it opened the way to intrigues, to school and family nepotism. The German universities are accustomed to meet this reproach with the calmness of a good conscience, and they may safely do so. Now and then a thing is done which had better have been left undone, but where in all this world are there coveted positions connected with which no irregularity ever takes place? Take it all in all, our universities have fared well under the present mode, and it would be difficult to find a system of filling university chairs which would better and more securely serve the purpose—i. e., to put the right man into the right place. The privilege of the faculty to propose candidates curbs the absolute will of the minister, which in reality means the rule of one man, the head of a school; for the minister, or a bureau chief in the department, could not possibly have an independent judgment of all branches of study, hence would ask privately the advice of a competent person. As it is now, he hears also the voices of others—i. e., of competent and responsible advisers.

On the other hand, it is necessary that the appointments should be made by the Government. The central state authority alone is able to view the entire field with its needs and available forces, and to weigh in the balance personal circumstances and local conditions. An election by the faculty alone would doubtless be disastrous, since it would open the door to the rule of schools and coteries, to personal interests and intrigues. In this light the procedure customary in Germany appears to be the securest and least dangerous; for to apply the mode in vogue in Romanic countries—i. e., to open such vacancies to competition with its applications, accompanied by copies of writings or the requests for trial lectures—this, at least with us, will not prove a means to secure proficient men, but deter the most talented from competition.

It would not seem inexpedient, though, to adopt the often made proposition to endow the various chairs with fixed and gradually increasing salaries according to length of service, partly in order to do away with the negotiations concerning the salary that now take place when a chair is to be filled, partly also to make the increase in salary less dependent upon the accident of appointments. The frequent changes taking place in the personnel of a university, caused by the existing cir-

cumstances, results in more evil than good; above all, the small universities suffer thereby. If a regular increase in salary were in vogue, as it is in Bavaria at present, one inducement for aiming at positions in the large universities would lose its force.

Relation of the universities to the church.—Originally this relation was so intimate that the universities of the Middle Ages, and in a certain sense also those of the sixteenth and seventeenth centuries, could be called ecclesiastical institutions. Since the eighteenth century this connection has been loosened, and during the nineteenth century, as stated before, the German universities, like the German states, have thrown off their ecclesiastical and denominational character.

The Protestant church has accommodated itself to this change; it has not even objected to its clergymen being professionally prepared in a state institution in which it has no influence. However, the church, being intimately connected with the state, could simply and confidently expect that the state, which it completely permeated, would assume a duty that by rights should belong to the church. In fact, the church has always exercised a far-reaching influence upon the entire system of education, from the primary school to the university. But since the state has become undenominational, and the state's policy is now determined to a great extent by the varying majorities in the legislatures, the Protestant church is beginning to see the insecurity of its position and efforts are being made to allow the church officials a decisive coöperation in filling theological chairs in the university; a proposition to that effect has been submitted to the supreme consistory. The prospect of success in these efforts are at present not promising. If the church should succeed in this, it is very doubtful that it will gain by it. If the appointment of chairs of theology becomes dependent to a great extent upon the ecclesiastical authorities, the faculty could not maintain their present position in the universities. Both professors and students would then stand only with one foot on university ground—that is, on the ground of free science. That, however, is a condition which would be prejudicial to Protestant theology. It can flourish only in intimate reciprocal relation with free philosophy and science. It is not backed, like the Catholic theology, by the authority of an infallible church; it rests wholly upon the live personal power of its representatives. Neither could the Protestant church endure it; a narrow-minded party rule within the church, which would be the inevitable consequence, would speedily wreck it.

Quite a different relation exists between the university and the Catholic Church, not only in Protestant, but also in Catholic states. The Roman Catholic Church is a great independently organized power, older than all the modern states. It claims the right to regulate the preparation of its own servants, and actually has succeeded everywhere in making good this claim. The majority of the Catholic clergy receives its preparation in institutions managed directly by the bishops, in boys',

clerical, and priests' seminaries. Attempts made in Prussia, in the seventies, to bring the preparation of Catholic clergymen under the influence of the state have been abandoned. A limited measure of supervision on the part of the state over the Episcopal institutions is, however, still in force. The course of study of clerical seminaries must be submitted to the minister of education, who is empowered to declare the instruction offered in Episcopal seminaries equivalent to that of a university course. This is necessary, because the state would not pay a Catholic clergyman his salary, unless he could prove his adequate preparation for the office. The Catholic faculties in the universities are, in fact, also dependent upon church government. Before a professor is appointed, the state seeks an agreement with the church authorities, and, after he is appointed, a simple order from the bishops not to attend his lectures has always proved a sufficiently effective means to nullify his usefulness.

During recent years efforts are being made by Catholics to call into existence denominational universities aside from the state universities. In Belgium, France, and Italy there are already a small number of these "*facultés libres*." It is the intention to establish a similar institution for German Catholics, and the city of Salzburg is thought of as a suitable locality. But, as yet, the execution of this plan seems to lie in the dim distance.

Relation of the University to Society.—This may be viewed from three sides: (1) The aim of the university in society; (2) the position which the representatives of academic culture hold in society; (3) the strata of society from which they come.

(1) The university, like all educational institutions, owes its origin to social needs. Upon a higher plane of culture the necessity for professional work is developed; that is, work which presupposes a high degree of scientific knowledge.

There are three services which, according to ancient custom, require a really scientific preparation: The ecclesiastical government (*cura et regimen animarum*); the secular government (legislative, executive, and judiciary); and the medical profession. For these three professions the three so-called higher faculties act as special schools—the theological for the clerical, the law faculty for the secular offices, and the medical for the physicians. The philosophic faculty was originally not a professional school, but an institution for general culture (arts and sciences). Only in the nineteenth century has it become a professional faculty also, namely, for teachers of secondary schools.

During recent years several new learned professions have arisen that require a really scientific preparation. The professional work of technologists, engineers, architects, chemists (as scientific heads of chemical manufactories), miners, and foresters, and similarly the work of agriculturists and army officers have so many scientific aspects that a scientific, professional preparation has become indispensable for them.

This new social need has occasioned new forms of higher education, which only need to be mentioned here, but must be mentioned in order to comprehend the ever-widening definition of the terms higher education or academic culture. First of all are to be mentioned the technical universities, or *polytechnica*, of which Germany has nine at present, all established during the nineteenth century. Secondly, mining and forestry academies, veterinary and agricultural schools, the latter mostly connected with universities. Finally, we may class among the institutions for professional work both the fine art and the military academies, which nowadays have a scientific basis. Many of these institutions imitate the universities in their constitution, courses, and regulations for students. This is especially true of the polytechnica.

An aim which all universities have in common is the theoretic, scientific preparation for the future profession. The practical admission to the profession, as a rule, follows the scientific preparation. But there are differences to be observed. The physician enters upon his practice as soon as he graduates from his medical course; his education is considered practically completed. The jurist, however, is obliged to spend a number of years in practical preparation after graduating, while the army officer requires this preparation before he enters upon a higher course of education.

Like their origin, so is the maintenance of universities dependent upon social needs, in which they have their fertile soil. The changing preponderance of the faculties, for instance, points toward changes taking place in the social conditions and views of the people. During the sixteenth century, when church affairs dominated all public interests, the theological faculty was most prominent in reputation and attendance. The development of the modern state during the seventeenth century enhanced the importance of the faculty of jurisprudence. The rise and independence of the philosophic faculty at the close of the eighteenth and the beginning of the nineteenth centuries is an indication of the great change in the ruling thought of the time, that may be characterized as a turning away from the supernatural and ecclesiastical to a rationalistic, secular view of the world. The church loses its hold in school and education; the disciples of modern humanism displace the church in the secondary schools, and the disciples of Pestalozzi enter the lower schools. The rise of the medical faculty during the nineteenth century, its phenomenal increase in attendance, is evidently a consequence of the increased wealth of the population, which causes an increase in the demand for medical advice and aid. But we see in it also a change of mind. The cure of the body has become so important a matter that people do not treat themselves any longer, but depend upon the advice of experts. In former times people relied upon traditional knowledge, handed down from one generation to another, while in questions of the soul they always depended upon expert guidance.

(2) With regard to the position in society of the representatives of academic culture, it may be said that in their totality they form an essentially homogeneous social stratum to which all leading and ruling men belong. To this stratum belong the clergymen, the officers in the higher positions of the Government, the teachers of secondary schools, the physicians, the higher technologists and architects, artists, and as a special group, the military officers. All take part in the government and administration. We find them in administrative offices and courts, in consistories and in the government of schools, in bureaus of construction, and in the administration of hygiene.

All who belong to this stratum associate with each other upon a level of social equality which, however, does not exclude differences in rank and birth. But he who has a university education belongs to society; he is entitled to *connubium* and *commercium*. On the other hand, he who has no university education, or an academic culture equal to it, is considered below par in the eyes of many people in Germany. He must at least have gone through a gymnasium, and with his graduation certificate have acquired the potential right to academic citizenship, in order to claim social consideration. The consequence of this is, of course, that aristocracy and plutocracy seek the university, or, at least, graduate from the "school for the preparation of the learned," the gymnasium. The entire gentility of Germany feels compelled at present to do either one or both.

This is not the case everywhere, and it has not always been the case in Germany. During the Middle Ages higher education was not at all a condition of admission to the ruling class of society. In the ancient university, gentility was sparsely represented. Higher studies were necessary only for officers in the church, and even that requirement could be replaced by aristocratic birth. Princes and rulers who were wanting in the simplest elements of a school education were in the majority during the first half of the Middle Ages, and during the second half not found unfrequently. A change began toward the end of the Middle Ages. Reading and writing became more necessary, at first in the cities, and therefore these arts were acquired more frequently. In the sixteenth century they became indispensable to every one who occupied an important position in society, and more extended scientific education gradually became necessary for gentility. As early as the fifteenth century we find everywhere, at the courts of princes, learned men as councilors in important positions, men who were acquainted with the laws. The aristocracy was thereby obliged to resort to higher studies in order to preserve its position as the ruling class. In the sixteenth century, the state schools, and likewise the colleges of the Jesuits, swarmed with aristocratic students, many of whom entered the university. During the seventeenth and eighteenth centuries it was more and more considered conformable to aristocratic rank and station to spend at least a few years in a university "for the purpose of study."

The most distinguished universities of that epoch, Halle and Göttingen, displayed with pride the names of hundreds of barons, counts, and even princes, who had been matriculated in these institutions. It is true there was another way to distinction—the military career that led through the military academy and the page service. The great princes were at that time standing too high to commingle with the people by attending a university; imperial and royal princes were sought in vain in gymnasia or universities during the sixteenth century.

On the other hand, that century did not make university education a condition of admission to society. Only the study of law gave entrance to society. Candidates for positions in school and church as such occupied a very inferior position. A candidate of theology who accepted a position as tutor in an aristocratic house was considered as belonging to the servants, and when he became rector of a small city Latin school, he counted as parts of his official income the fees he could collect for singing at funerals, and his new-year presents. Not until he had become pastor did he gain a more elevated position; but even as pastor it did not occur to him to consider himself socially equal to the lord of the manor.

It was in the nineteenth century that university education rose in prominence to such an extent that its possessors could lay claims to social equality with classes that had enjoyed inherited privileges. This was the result of the great political and social change that deprived aristocracy of the rank of the ruling class, which it had gained during the seventeenth century. Aristocracy is not any longer the privileged gentility that has an inherited claim to all state offices so far as they are desirable. Like all other classes, aristocracy is now obliged to pass through schools and examinations, and to stand in line with other applicants. Hence we find in gymnasia at present the sons of the most aristocratic families, even the princes of ruling dynasties are found there; they sit on the same benches with sons of simple citizens and meet them on the benches of the university. And again they sit side by side in Governmental bureaus, as high up as the King's cabinet. Frequently they meet as comrades in the corps of officers in the army; even the school teacher is officer of the reserve army, and may become privy-councilor of the realm. Thus education has won the victory over the aristocracy of birth, and the ancient idea of "misalliance" has died out.

With this change is intimately connected a disadvantage that oppresses all the learned professions of the day. Their official income is not sufficient to defray the necessary expenses of life and to maintain a high social position; at least this is true with regard to married men. This disadvantage is felt everywhere, but mostly in the teaching profession, the members of which chiefly come from strata of society which are not favored with wealth. The lawyers and medical men usually come from wealthier strata; besides, their professional work

enables them to secure a better income, in some cases to accumulate a fortune. The theologians are better protected in their profession, partly by good salaries, partly also by the fact that they live in rural communities, where luxury is seldom displayed or even known. It can not be denied that this disproportion is a source of discomfort and discontent which it is difficult to remedy.

(3) As to the third question, whence come the men of academic culture, it may be said they come from all classes of society. In preparatory schools and universities we find side by side with the sons of aristocracy and plutocracy the sons of farmers and tradesmen, village schoolmasters and subaltern officers. Here all academic citizens consider themselves equal on principle; occasional pretensions of aristocratic and plutocratic coteries usually end in their exclusion from the festive gatherings of the students. The principle is accepted that everyone who has been admitted to the right of academic citizenship has thereby acquired the claim to equality, which, if it should become necessary, he may defend with armed hand; no one can deny him satisfaction upon the ground of his descent.

Hence we may speak of a democratic character as marking the German university. It excludes no one on the ground of his descent, and makes all its members equals. E. M. Arndt expressed this beautifully in his periodical, The Watchman (1815), when he said:

> As a citizen of a university, the son of the poorest and most obscure parents, "armed and mounted" by culture, enters the arena together with the noblest and most distinguished, and he who proved to be the best in mind, aspiration, and courage can, if he is so inclined, rule by his talents. This proud equality, which life with its numerous limitations afterward rarely ever shows, I consider the greatest glory of the German students, the most precious relic that has remained of what the great German nation once was.

It is different with our Western neighbors, where admission to academic culture is limited to smaller social circles. In the old English universities the expenses are so high that they can be met only by wealthy people. Board and lodging in the college alone, for the six months of three terms, costs about 3,000 marks a year or more. To that must be added that the state does not maintain preparatory schools. In place of our *gymnasia*, which make higher study possible for sons of the poorer people by exempting them from tuition fees, in England the ancient public schools and some private institutions are all boarding schools; they prepare for the universities and are very costly institutions. By similar conditions in the *lycées* in France, which are always boarding schools, the poorer people are prevented from pursuing higher studies, though the church in France opens its educational institutions to them.

However, it can not be denied that recently, also in Germany, the circle from which the students of the learned professions are recruited has been narrowed down. The class of artisans and rural day laborers is not represented any longer in the university. This is the inevi-

table consequence of the fact that academic culture lifted its possessor into the ruling classes.

The case presents itself historically in this way. In the university of the Middle Ages all classes of the population were represented; aristocracy sparsely—only the younger sons destined to enter the church came to study. The middle classes of citizens were in the majority, but also sons of peasants and "poverty" were not wanting; they maintained themselves by alms; *solventes* and *pauperes* are the two classes which we meet on the rolls of the university. During the sixteenth century the order of begging monks disappeared and with them the beggar students; but in the court schools and other boarding schools public provision was made for indigent students by means of scholarships and private benefices—private, in so far as the names of those who enjoyed them were not published. Naturally the officers of church and school had the lion's share of these benefices. This is the reason why the theological faculty was considered less aristocratic, than the law faculty, where gentility was represented. During that century the expenses for university study rose perceptibly; also the duration of the course was gradually extended.

During the last century it was still customary for students to close attendance at a Latin school quite early, in order to go to a university, there to spend a few semesters with the aid of benefices, or as private instructor; then spend a few years as tutor in an aristocratic family in the country, and after that, pass a very difficult examination before a consistorial councilor and receive a position as rector of a school or pastor of a church. At present the rule is: Attendance of nine years in a gymnasium and of at least three years in the university, which frequently extends to four and five years. To this must be added the expensive voluntary one year's service in the army. This is followed by a long period of waiting, owing to enormous competition; the position of tutor has become very rare because the aristocratic families send their sons to military academies and public schools. Thus it has gradually come to pass that a safe income in the learned professions can not be expected before the twenty-fifth or thirtieth year of age.

Naturally the *pauperes* of the ancient university have begun to disappear, and there is a strong current going through society which approves of this disappearance. It is said occasionally by lawyers and physicians, "we do not want the sons of small people," and the teachers are beginning to say the same. One can read in periodicals for secondary teachers:

> The profession suffers when young men of the lower classes, sons of tradespeople, small farmers, and village schoolmasters, come to the university. They almost always bring with them a scanty scientific, and invariably an insufficient social culture, which makes it difficult to maintain themselves among the students.

Without doubt these objections are not unfounded. Certainly poverty is a great obstacle to successful study. He who is obliged to earn

his daily bread by dint of giving private lessons will not have left much time, power, or vigor of mind to occupy himself with learning.

If this obstacle is not overcome by exceptional talent and great moral strength, study becomes a misfortune. Nowadays cases of this kind are not rare. The earnest desire of parents to lift their children to a higher position in life, which desire is quite common with numerous subaltern officers, has, during the last few decades, contributed considerably toward overcrowding the universities, partly with elements entirely unfit. On the other hand, it can not be denied that the exclusion of indigent elements, which to all appearances is on the increase, is not without danger. Above all, the disintegration of the nation as a body would be hastened thereby. If it should come to pass that the broad mass of the population, including artisans and small farmers, that now rise through intermediate steps, such as the positions in lower schools and subaltern offices, should not be represented in the university, then these classes would consider the state and its entire administrative organization as a foreign domination. In the ranks of social democracy, which has permeated with its views the industrial population of large cities, this feeling is already prevalent; the state appears to them an institution of the privileged classes for the purpose of defending their interests against the masses. I know of nothing that could more effectually spread this idea than the actual exclusion from higher studies and the learned professions of all who do not belong to the wealthier classes of society. The comprehension on the part of the cultured, for the people and their life, would vanish; offensive haughtiness and foolish sentimentality together would bring about a complete estrangement.

Another thing should be considered: the exclusion referred to would deprive the intellectual life of the nation of talents and powers which it can not relinquish without exposing itself to the danger of intellectual impoverishment. It must not be forgotten that many of our most prominent men have come from very low strata—Winckelmann and Heyne, Kant and Fichte, were born in the humble homes of small tradesmen.

Jacob Grimm in his autobiography, looking back upon his own youth and the restrictions placed upon him, gives expression to a beautiful thought, worthy of being repeated. He set forth the honor and advantage of poverty admirably, saying:

> Poverty urges to diligence and labor, preserves us from many a dissipation and infuses us with a noble pride, that is, a consciousness of self-earned merit, in comparison with him who is supported by class-pride or wealth. I should even like to generalize, and say, many of the grand things the Germans have done should be attributed to the fact that they are not a wealthy nation. They work upward from below, and open new and peculiar ways, while other nations march the broad, well-paved highway.

III.—TEACHERS IN UNIVERSITIES AND UNIVERSITY INSTRUCTION.

Professors and Privat-Docenten (or Private Lecturers).—In German universities three classes of teachers are active in all the faculties, to wit: Regular, extraordinary, and *Privat-Docenten.*

Privat-Docenten simply have the permission to give lectures and conduct exercises (*venia legendi*), but no obligations. They are not appointed, and have no salary. The extraordinary professor is an appointed officer of the state, and as a rule receives a salary; but he has neither seat nor vote in the faculty, he does not take part in elections, meetings, and academic examinations. The regular professor is one of the members of the faculty occupying an endowed chair, he is appointed by the state, and is the official representative of a scientific branch. The entire number of the regular professors forms the body of the faculty. There is to be mentioned a fourth class of professors found occasionally, the so-called honorary professors. This grade is reserved for meritorious aged scholars, who are too old for the regular professorship, or do not desire to be a regular member of the faculty, yet wish to continue their work as professors. Their legal connection with the university is similar to that of the reading member of the academy, and does not essentially differ from that of the private professor. The *lectors*, or teachers of modern languages for practical use, who as a rule are foreigners, may be regarded as an appendage to the philosophic faculty. Finally, we mention the masters of exercises, teachers of fencing, riding, and dancing.

The three chief classes of university teachers mentioned show the normal gradation of an academic career. One enters the faculty as a *Privat-Docent*, then after a time which may be long or short, as circumstances decide, the *Privat-Docent* is appointed to an extraordinary professorship, and again, as occasion offers and vacancies occur, he becomes a regular member of the faculty. However, exceptions to this rule are so frequent, that of late years it has almost ceased to be a rule. Not every academic teacher is first a private lecturer; in the philosophic faculty especially, appointments take place from outside the university, frequently from among teachers of gymnasia. Nor does every *Privat-Docent* become in turn, a regular professor. Not a few of them leave the university in order to enter a practical profession, in ecclesiastic and secular offices, at the head of schools, in a library or some other institution; some remain private lecturers all their lives. The medical faculty has an unusually large number of *Privat-Docenten*, because their duties do not greatly interfere with the practice of a physician. Lastly, the extraordinary professorship is by no means a necessary stepping stone to the highest grade. A promotion from the private to the regular professorship is not at all rare. Nor is it unusual to see extraordinary professors remain in their positions without being promoted, especialiy in large universities. There are branches

of study for which there is only one extraordinary professor appointed. Despite all these limitations, the gradations mentioned may yet be considered the typical career of a German university professor.

Since the private lectureship is a peculiarity of the German university that has attracted the attention of foreigners, a word concerning this office and its importance may be of interest. Historically it may be looked upon as a survival from the constitution of a corporation, such as was the university of the Middle Ages. He who had by the faculty been declared *Magister*, that is, a master of sciences and arts, had thereby acquired the privilege of teaching in this faculty, and the right frequently became a duty in the faculty of arts. Since among lecturing masters of arts the older ones were provided with professorships in the colleges, with prebends or salaries, a distinction gradually arose between appointed and paid teachers who were obliged to give public lectures without receiving fees for them, and masters who taught for fees without receiving salary, or being under official obligations. This distinction was more sharply drawn when, after the Reformation, the system of permanent paid professors was extended to the philosophic faculty. With that distinction the obligation to serve as teacher, after obtaining the degree of master, was dropped, the perpetuation of the institution being secured by permanent professorships. Instead of this obligatory gratuitous service, the demand for further scientific accomplishments became customary in order to be accepted in any faculty as *magister legens*, we mean the work to be done for the purpose of habilitating as *Privat-Docent*, as it is at present required everywhere. The applicant for the *venia legendi* must nowadays, after having acquired the degree of doctor from one of the faculties, submit printed or written theses, pass an oral examination before the faculty, and deliver a public trial lecture; moreover, his habilitation, as a rule, is not allowed after the expiration of three years following his graduation as a student. The faculties are under no obligation whatever to admit anyone as a private lecturer; merit alone decides that. Generally, it may be said that the *venia legendi* is not granted very readily.

The importance of this habilitation is found in the fact that it gives admission to the circle of those from whom the college of professors is chiefly recruited. The *Privat-Docent* acquires no right with this admission, no legal claim upon a professorship, yet with tolerably profound scientific labor he is, exceptions not considered, sure to reach the next higher step, the *extraordinarium* after a few years.

These years of private lecturing are considered essentially trial years. The young man has opportunities to try his hand at teaching and to develop his scientific attainments. His work as a teacher, which, in regard to the extent of his subject and number of his students, remains limited, is of great importance for the future professor. He has opportunities to practice the art of academic instruction, a thing that has to be learned. The first mistakes, which are sure to be made, are made

before a small number of students, and are easily corrected. If his choice of the academic profession should prove an error, it may be rectified by turning into other directions without great injury or much loss of time.

The consequence of this gradation is that the three classes of professors stand on a level in a certain sense; and this fact is of the greatest importance for the form which instruction takes; it produces a competition of several professors in the same branch of study, which is a characteristic feature of German universities. This competition allows the students free selection of teachers. The regular professor is the appointed teacher of his branch, but he is not the only one. Besides him, there is, for extensive parts of his branch, it may be philology, history, physics, mathematics, or philosophy, and similarly in the other faculties, at least one *Privat-Docent* and one extraordinary professor, often there are several, who lecture on the same subjects. As a rule, the lectures are so arranged that no duplication takes place; but in large universities it is not unfrequently observed, that the same subjects occur several times in the published courses of lectures, and there is no objection to the student's preferring the lectures of the *Privat-Docent* or extraordinary professors; be this because he has personal preference or because it is more convenient for him to do so. Naturally, the regular professor has the preference, being an older and more widely known scholar; besides, he manages the institute or seminary, and is examiner in academic or state examinations. Nevertheless the activity of younger teachers is not insignificant, especially in large universities. We must also consider that in them the faculty has elements with which youth likes to associate. The young private lecturer enters more readily into intimate personal intercourse, especially with older students.

It has often been said that this competition between older and younger teachers contributes toward infusing fresh life into the instruction, and prevents humdrum routine work. This is unquestionably true. The younger man must do his best, in order to succeed beside the elder well-reputed professor; on the other hand, the elder one is spurred to ever renewed efforts, and prevented from sinking into ruts, a danger always connected with life appointments. If he should follow the natural tendency of advancing age, shut himself up in his thoughts and views, and pass by everything new that may turn up, or if he should devote himself entirely to his profound investigations, and perform his duties as teacher perfunctorily, he would soon, by the diminished attendance upon his lectures, be reminded of the necessity, that in order to attract youth, he must remain fresh himself, and be in sympathy with the movements of the time. The university students are not apt to tolerate such a thing as hearing read to them the same old papers that are spotted with age. Youth soon feels whether or not diligence, love, and animated sympathy prompt the professor to continuous inner revival. It is also important to consider that the personal rela-

tion between the student and teacher is based upon the fact that the former is not obliged to be present, but that he has chosen the teacher himself. Of course, deliberation and careful selection do not always decide; accident, habit, and calculation play their rôle frequently, but generally it may be said that the German student is really not under obligation to hear a professor whom he does not like. As a rule he finds in the same university another representative of the same branch of science, and when that is not the case, he goes to another university, and there looks for instruction that pleases him better. The personal friendly intercourse between teachers and students found everywhere in German universities is doubtless the result of this arrangement. Hostile treatment of a professor on the part of the students is something unheard of in Germany. Obligatory attendance at lectures would undoubtedly lead to discord and hostilities.

A remark concerning the payment of fees for private lectures may be inserted here. This arrangement may at first sight appear illiberal; would it not be better to abolish this last vestige of the system of paying fees in the Middle Ages, which system has been done away with in so many other state institutions? With regard to the relation of the scientific teacher to his pupil the custom has an embarrassing aspect. It reminds one of the sophists and their treatment of Socrates. The payment of a fixed sum into the university treasury, in return for which the student would be admitted to all the lectures he may choose to attend, or gratuitous attendance upon the entire course, after the student has paid "intellectual import duties" by passing his final examination in the preparatory school, would seem a more worthy and better mode. Nevertheless, we find that the university professors are much attached to the ancient arrangement, and not without cause. It would hardly do to look for the cause in selfish interest, for the present occupants of the positions would scarcely be losers if new regulations were adopted; on the contrary, on an average it is reasonable to suppose that they would receive larger incomes; at any rate, a security against fluctuations would be offered. However reasonable this appears, there are very strong objections to such an arrangement. (1) Man values and uses to better advantage that for which he pays hard cash more than that which is given to him as a present; to this general rule the student is no exception. Nor would a general payment of tuition fees per half year make any difference. As things are now the student acquires a claim upon certain performances by a payment dependent upon his own will. The introduction of a general advance payment would lead to irregular attendance upon all kinds of lectures, and this would have to be met on the part of the managers by introducing regulations that would degrade the university to the rank of a school. At present the student selects with serious deliberation the lectures which he intends to hear. (2) The teacher feels himself obliged to offer something in return that is worth being paid for; fur-

thermore, upon the results of his efforts his future income is, in a measure, dependent; hence he is spurred on by two considerations to doing his best. To me there seems to be no doubt whatever about this.

If the payment for lectures were abolished, and replaced by an increase in the salary, the professors would be exposed to the strongest temptation to diminish their work in quantity and quality—that is, professorships would become sinecures, the real hard work being done by assistants. The ancient clergy offers an example of this, and other examples could be found nearer at hand. Foreign countries that have abolished lecture fees show the results. The number of hours per week a German professor devotes to lectures appears astonishing to foreigners.

The tendency of human nature toward giving the least possible measure of work for a certain fixed remuneration is proverbial; to this tendency the nature of the German professor offers no exception. The necessary consequence would then be increased supervision and control. Hence in this regard also the lecture fees are a protection of academic liberty. This payment is to be perpetuated, thirdly, because it makes the university professor, in a measure, independent of the government; if he had no income but his salary, he would be an officer and nothing but an officer. Hence the payment for lectures is a very essential institution for the preservation of the ancient free character of the German university. Its abolishment would have the tendency to change the university into a strictly managed professional school with fixed courses and regulations for students. But that would be the end of the university in the German sense of the term. The liberty it grants is its main power of attraction, and that the professorship is not really an office, but a free calling, gives it a peculiar charm in the eyes of the best and most liberal minds.

Teaching.—As has been said in the introduction, the character and object of a university teacher is determined by the fact that he is both investigator and teacher. The former is considered the more important; not his success in teaching, but his scientific performances chiefly decide his appointment or election. His success as a teacher is dependent to a great degree on his ability to induce the students to scientific work and train them scientifically. However, this question is not of equal importance in the different sciences. What has been said has reference chiefly to the philosophic faculty, while in the law and medical faculties doubtless more emphasis is laid upon talent for teaching; the minister of education may insist upon pedagogical skill more than the colleagues do when they propose names of candidates.

With regard to the form of instruction we distinguish two kinds—lectures and exercises.

Lectures are the chief part of academic instruction; in most branches they take the first place. They are specially mentioned in the professor's contract; in this it is customary to mention his obligation for a public as well as a private lecture course.

The difference between public and private lectures consists in this—the former are gratuitous, while for the latter a fee is charged. There is also this difference, that the systematic chief branches of the faculty-sciences, are, as a rule, treated in private lectures, while the public lectures usually treat of less-important subjects, either supplementary sciences or the explanation of an author, or a group of problems which awaken general interest. The difference is seen also in the fact that public lecture courses require shorter time, mostly one or two hours per week, while the private lecture courses require from four to six hours per week, some even twice as much time.

The lecture as a form of academic instruction has often been made the object of bitter and sarcastic criticism. Since the days of Fichte and Schleiermacher, it has often been reiterated "that the professors are the only men who still dare to ignore the invention of the art of printing." It is said that "year after year they dictate now, as they did five hundred years ago, unprinted text-books to patient listeners. This method may have been necessary during the Middle Ages;" to-day, it is said, "most sciences can be acquired faster and more reliably from books. Attendance at a university is nothing but an expensive luxury, and a rather dangerous one to boot."

Indeed, if it were a fact that the lecturer merely dictated unprinted text-books, then, to speak with Schleiermacher, we can not conceive "why such a man asks the people to come to him, and why he does not sell his wisdom in the usual way, a wisdom that resembles a stagnant pool, for to speak of the wonderful impressiveness of the human voice in such antiquated work would be ridiculous." At present such cases are rare exceptions, at least outside of the law faculty, where the ancient practice is still in vogue to some extent for good reasons. In the science of law there is a good deal of unchangeable impersonal knowledge, cast in permanent form; besides, there is a multiplicity of lecture courses in the faculty, which makes it difficult, if not impossible, to refrain from routine repetition. The professors of no other faculty are required to conduct three or four private lecture courses at the same time. The real lecture, the animated oral transmission of thought, is justified to-day as well as in the times of Aristotle and St. Thomas, who, by the way, did not dictate, and to whose students books and the art of reading were not unknown. The lecture cannot be made superfluous by the most perfect text-book; it has an entirely different object in view, which may be expressed in this way: It is to give, in a series of connected talks, from the whole range of a particular science, from its fundamental problems and leading ideas, from its essential inventory and the manner of acquiring new accumulations, from its connection with the whole realm of science and the essential aims of life, a peculiar view which is matured by individual absorption of the matter and borne by personal life. On the other hand, it cannot be its object to transmit the whole accumulated matter

of any science together with the complete bibliography. If in this the lecture course were to replace the text-book, it would always fall short and deserve the reproaches quoted in the foregoing paragraph. Even a small-sized text-book would be superior to the most carefully prepared lecture in completeness of matter, exactness of dates, and bibliographical information.

To him who first approaches the study of a science, be it theology or jurisprudence, philology or history, natural science or medicine, it appears as something infinite and beyond his grasp; a vast abundance of facts, books, problems, opinions, investigations, overwhelming and perplexing him. Here, now, begins the task of the lecturer, to take him by the hand and serve him as a guide. He leads the student in gradual development to see the entirety of the science; he shows him the most important facts and problems, and gives leading points of view for their comprehension and solution; he makes him familiar with the possible aims and the essential forms in which they have appeared historically, and at the same time points out the direction in which a decision is likely to be reached.

All this may be contained in a book also; as is well known, many books originate in lectures. But for an introduction the animated talk of the professor has very important advantages; above all this, that science appears to the listener in the form of a person who possesses it and lives in it; this gives him at once an immediate relation to the subject; it gives him faith in its value and reality. A book is an abstract and dead thing, which cannot generate faith. Faith can only be propagated from person to person. That a man who stands before me and speaks to me, a man whom I respect and in whom I gain confidence, believes in this particular science, devotes his strength and his life to it, that is what awakens in me a feeling of its reality, as it were. We have a similar experience with regard to foreign countries of which we have read in books and heard in schools. When some one comes who has been there himself, has worked and lived there for years and tells us of these countries and their peoples, describes the journey thither, and offers views of work and gain to be found there, then it is that a feeling of reality of these things comes over us. Africa and America are not then on paper any longer, where so many things are described that never existed, but in tangible, accessible reality; and with the belief in their reality grows the courage to go and see them ourselves. Just so it is with the student and the sciences. To the future historian or philologist the past assumes real ty in the words of the teacher who stands before him in person. Thus trifles which no science can pass by, commentaries, fragments, micrological observations, and tiresome definitions assume significance and reality in the eyes of the student, without which he would lose the courage for hard work. It was in this way, if a personal reminiscence may be indulged in, that Trendelenburg awakened the courage of his students to study Aristotle.

They had heard something of the philosophy of the ancient Greeks, had even tried to read it, but the uncertainty as to whether it would be worth while, whether Aristotle was not too antiquated, deterred them. But when in Trendelenburg a man approached them who lived in the Aristotelean philosophy, and, as it were, stood in a personal relation to the Greeks, then faith in the subject was awakened, faith also in its significance for the present, and from faith courage resulted to penetrate into the strange world of thought.

The ancient saying of Aristotle still holds good: "He who desires to learn must believe." To keep him to this belief is the first and, perhaps, the most important advantage oral instruction has over the book. The presence of fellow students and co-workers is also an advantage not to be forgotten.

One more point. The book is something finished, inflexible; the lecture is something alive and growing. This difference is observable at once: The book is there as a whole; the lecture course offers, from hour to hour, a small measurable portion. Nor is this portion brought along as something finished, that may be shown around, but a thing brought forth before the hearer. It is well known how much more animated sympathy we bestow upon the origin and development of a thing than upon the finished object; hence, a map which the teacher sketches, with a few lines, on the board, representing the mere outlines of a country or a plan, will impress itself upon the memory better and deeper than the much more complete map of an atlas. The tension with which the listener follows the spirited thought of the lecturer can not possibly be provoked by a book. This tension has its influence upon the lecturer also. While thus he enters into reciprocal relation with his hearers, the moment gives proper form, the fitting word, and the convincing simile. In contact with his hearers he feels what part of all the mass of information he has at his command is useful and serviceable, and what is sterile subtlety and useless ballast.

Finally, the essential difference between the inner form of the lecture and that of the text-book may be pointed out. The text-book aims at a unity in the systematic course and prefers to progress, with synthetic method, from principles to the particular thing. The lecturer can move with much more freedom; he does not need to adhere to a fixed scheme, but can change his method with every new chapter, if it will serve his purpose pedagogically to proceed in a different way. Usually he will be inclined to prefer the analytic way. He will not begin with exhaustive explanations, with definitions and principles, but start from well-known facts and phenomena to lead to the definition; or, to use an expression of Aristotle, he will proceed from the *πρότερον πρὸς ἡμᾶς* to the *πρότερον φύσει*, from that which is near to the listener to certain hypotheses, while the text-book constantly impels toward synthetic development.

Furthermore, the text-book aims at completeness, symmetry, and

exactness of details. The lecturer is freer in this; he may yield to his own, or to the interest of the listener, by dwelling a little on one chapter, and hastily passing over another, though it may not be less important as a part of the system. The lecture is not to be a book of reference of which completeness, symmetrical treatment, and exactness is required, but it is merely to lead to a correct conception of the subject. For that purpose different matter may serve as means if applied in various ways. The lecture would not suffer if occasionally new facts and questions of the day that are apt to arouse general attention are interwoven. It would be unwise to disdain a lively interest that offers itself almost unsolicited; on the other hand, it would be foolish to give way to it always. Of course the lecturer will beware of burdening his talk with many dates and details, such as are found in a book of reference. The details he offers will serve as methodical examples and illustrations, for to impress upon the memory of the hearer the whole mass of detail would be a hopeless undertaking. That which the student is to take away from a lecture can not be a mind full of facts nor a notebook useful for purposes of repetition, but a general view of the science under discussion, a view of its important and essential features, enlivened by the aspect it assumes under the presentation of the professor, in whom the science is personified, so to speak. If the student gains this view he will the better find his way through the science and also profit by the use of reference books. The best thing a lecture can give is effective categories and leading ideas; a book can not do that as well as a lecture, and therefore there will be lectures as well as text-books as long as scientific instruction is given.

The lecture may also be considered from another standpoint: It does not only serve him who hears it, but likewise him who gives it. Every repetition of a lecture offers the professor an opportunity to re-review the entire matter, to compare new literature on the subject, to seek a new and better form for his thoughts; in short, it does exactly what a new edition of a work requires of an author. It does even more, since it awakens a livelier interest than the mere editing of one's own book. The fact that German text books of jurisprudence, for instance, are used all over the world, may be considered a proof positive of the assertion that the professors profit by their own lectures.

A saying of Goethe, which v. Savigny quotes in his exposé on this subject, may conclude this reflection:

> Writing is a misuse of the language, private reading a dreary substitute for speech. Man produces an effect upon man only through the influence of his personality.

The fact that the lecture can not be compensated for by the book becomes unquestionable where a comprehensive view plays an essential rôle; thus, for instance, where an experiment is the center of observation, as it is in experimental physics and chemistry, or in physiology; also where oral explanation concerning an object is necessary, as in the clinic, or in archæology, or in the history of art. Since this form of instruc-

tion has been extended more and more during our century, it may be said that the lecture is in no danger of becoming superfluous: on the contrary it is likely to be more and more necessary.

The significance of the lecture predetermines its *form*; it does what it should do only when it is a free lecture, that is to say, when it is not read. Naturally this can not mean an extemporary talk, which, both in matter and form, is the result of the moment. That would be an impossible thing. No one is in such complete possession of a science that the whole and its parts would be at all times at his disposal, and even then it would be necessary to arrange the matter beforehand, for a systematic arrangement is not always the same which is required by pedagogical considerations. Hence the lecture must be prepared; that, as a rule, leads to the making of notes in a note-book. This book may be filled more or less, according to the nature of the subject and the professor's familiarity with it; at times it may contain the whole lecture word for word, again it may confine itself to an exact articulation and disposition of the course of thought, at other times it may contain nothing but chief dates, formulas, and catchwords. To do without the note-book would be expecting unreasonable things, it would certainly not be profitable to the student. Nor will there be any objection to it if the professor brings his notes into the class-room to consult his plan or quote some formulas, facts and authorities. The lecture is not to be an oratorical masterpiece, nor a sermon the impression of which would suffer through being read. All that is wanted is a simple unassuming representation of thoughts which appeals to the intellect. In one thing the lecture must be free, that is, the eyes of the professor must not be fastened on the page, and the thoughts must readily find the proper expression desirable at the moment. Reading of a completely finished manuscript must not take place, if the essential object of the lecture is not to be lost. A lecture read from manuscript is without life, it can not give that feeling of reality which is caused by a free talk that flows directly from the mind. Nor does it create that intense attention in the lecturer and his hearers that charms free speech, for that needs the excitement of free formation of thought and the risk of failure.

A procedure frequently found is changing about from dictation to explanation in off-hand speech. The leading thoughts are dictated, then explained in order to secure an exact comprehension of essentials. But in this procedure, if a little too much is dictated, something of the effect of the lecture may be lost. The contents in that case appear as something fixed, while the kind deception, as though the result had to be discovered by fresh investigation and self-thought, is dispelled. Indolent students would be apt to rely upon copying the pages of others, and consider the moments filled with explanations as pauses for recreation and rest from writing. If nothing is dictated, the student is obliged to think for himself, to find the essential points, and to fix them in a form of his own. But there seems to be no possible

objection to a printed syllabus which is to ease the work of the student, and free the lecture from the very inconvenient statements of bibliography and the like.

The Seminaries.—An important aid to the lectures is at present offered in what is known as seminary exercises. They have, so to speak, taken the place of the disputations held in the Middle Ages. But their character is different, they are not intended to effect a transmittal of knowledge, but aid in producing knowledge. The seminaries are the real nurseries of scientific investigation. Originally they had another purpose; the first seminaries established during the last century at Halle and Göttingen were philological institutions; that is to say, they were intended for the preparation of future teachers of secondary schools; hence normal schools (to use an American term. The translator). In fact, however, these first seminaries, notably that of F. A. Wolf, were institutions in which the technique of philologic investigation was taught. This is true also of the philologic seminaries and societies conducted during the nineteenth century by G. Hermann, Fr. Thiersch, Fr. Ritschl and others. They were schools for philologists, not for teachers. The same may be said of the numerous seminaries that have in recent years been established for the other sciences within the philosophic faculty, also in the theological and law faculties. With few exceptions they have the outspoken purpose to give instruction in scientific work and investigation, and not how to apply science in any practical pursuit.

It is not the place here to review the various institutions of this kind and their mode of procedure. Generally, instruction given in seminaries takes this form: Scientific problems of investigation are given and worked out under the guidance of the professor. The philologist, the historian, the political economist, gives out a problem, the solution of which is possible to the student with the means at his disposal. The professor designates the material that may be used, and then allows him to find his own way to a solution. The essay he hands in is laid before one or two fellow-students, who are to examine it and report to the professor and students in session, where the weak and strong points of the work are pointed out. In a similar way the exercises of the seminaries in the theologic and law faculties are conducted. As a matter of course, in the naturals ciences the seminary exercises are different. Here the execution of the work in hand is effected under the direct guidance of the teacher or his assistant. Where the utilization of literary sources is the essential object, reading of the original matter is done in class. In presence of the teacher Latin or Greek texts are interpreted, or historical monuments, or different sources of information are compared, or some philosophic or theologic authors are read and discussed with reference to their leading ideas. Side by side with these real seminaries should be mentioned the official institutes maintained by the State, that have their own class rooms and library, and also the

private societies and mutual exercises, all of which are announced every half year in the official list of lessons.

A third kind of exercises is to be mentioned which is closely connected with the lectures, the so-called *repetitories* and *conservatories*. Their object is to secure the comprehension of the lecture, to solve difficulties, to answer queries, and to practice the student in using the categories and definitions of his science. However desirable these exercises may appear (the Prussian minister of education, Eichhorn, recommended them to the universities very warmly some fifty years ago), they have not yet assumed great importance or considerable extent. The cause of this may be that the necessity for such exercises is wanting: They presuppose an intimate personal relation between teacher and student, such as is the case in a school, but in a university, at least in the large lectures, and owing to the frequent change of professors, that intimate relation between teacher and student can not exist. With a great number of persons unknown to each other and to him, the professor can not use a dialogic method. Also the apprehension of meeting mocking glances in consequence of poor answers may be an obstacle to this kind of exercise. A conservatory would end, under these circumstances, in the teacher giving occasional supplementary lectures induced by questions or erroneous answers, without being able to see how far they would meet the general necessity. For the law faculty exercises of this kind and practical application in connection with the lectures have recently gained greater importance.

The liberty of teaching.—The task of the university professor presupposes liberty of teaching. If he is to be an independent scientific investigator, and if he is to educate his students to be the same, that which he is to teach must not be prescribed to him.

The thing is different in schools. Here it is not a question of searching for new, but of acquiring old truth. The pupil is not to judge, but to accept what is offered him, and, therefore, the teacher offers generally accepted knowledge. Of course, we understand that universities began as schools in this sense; during the Middle Ages the transmission and acceptation of knowledge contained in canonic texts was the main object, and during the sixteenth and seventeenth centuries this view remained in force. But during the eighteenth century, as has been stated before, a great change took place. Thereafter the consequences of the Reformation, and at the same time the consequences of the complete revolution in the view of the cosmos, that has since taken place through cosmologic scientific investigations, were accepted; it was recognized that the truth is not anything fixed, but produced by progressive work in scientific investigation. Dogmatic theology and Aristotelean philosophy lost their canonic value. Placing themselves on this ground, the German universities assumed an entirely different form. The student ceased to be a scholar in the old sense of the word, and the professor now became really what his title signified; he now

professes personal views and convictions. That has been his right and his duty ever since.

This is generally accepted everywhere. No one reproaches a physicist, or physiologist, a philologist, or a historian for lecturing on new, instead of confining himself to generally accepted theories; all that is required is, that he should furnish good reasons for his new views. Only with reference to theology and philosophy occasional attempts are made to limit the liberty of teaching.

With reference to theology ecclesiastic authorities and church parties object to the liberty of teaching. They assume that the church is in possession of absolute truth that has been formulated in dogmas. The dogma can allow only believing acceptance; doubt and criticism are not permitted. The object of the professor of the theologic faculty can only be to instruct the servants of the church in that which the church teaches, also to secure them immunity against doubt by showing them the invalidity of all objections to the dogmas. For this reason the treatment of heresies is an important part of the instruction; all possible forms of error, likewise the causes of their rejection are shown. The servant of the church is thereby equipped to recognize and eradicate newly arising errors as heresies that have long been rejected.

The Roman Catholic church has insisted upon its claim to controlling the teaching of theology. In Catholic faculties only approved instruction is given; the professors are servants of the church.

The thing is greatly different in Protestantism. The university professors of theology intend to be, first of all, servants of science, and to be servants of the church only as servants of science, in so far as no clergyman can do without scientific education. From this arises a constant conflict between the claims of the church and the demands of science, which conflict is sometimes held in abeyance, and sometimes breaks out in public, and becomes vociferous. The professor appeals to his right and his duty to teach what he has recognized as the result of scientific research. The representatives of the church, official or voluntary, reproach him for teaching differently from what the church and the creed demand its disciples to believe, hence, it is claimed, he can not be a teacher of the servants of the church. The representative of the state in the person of the minister of education, who has the general supervision of the universities, and therefore also of the theological faculties, is like the index of the scales; at times the objections of the ecclesiastics weigh heavier, and then repression of theories and teachers that are held to be anticlerical takes place; at times the liberty of scientific research weighs more, and then the state holds its protecting hand over the one who is attacked. Generally the scales have been in favor of untrammeled teaching in recent times, and this explains the dissatisfaction of the orthodox party with the present regulations, and hence their demand to allow the ecclesiastical authorities a direct control over the theological faculties.

It has been stated in the foregoing pages why these efforts must appear without a prospect of success: They are hostile to the spirit of the universities as well as to that of the Protestant church. In the Protestant church belief is not based upon external authority, hence no doctrine can be placed upon it. Between the creed of the church and that which the faculties teach, there is possible only a relation of free accordance, never that of absolute subordination. In the Catholic church the principle of absolute subjection rules supreme; the Protestant church is everywhere built upon the principle of free acknowledgment. Of course, the former is the simpler, but the simpler is not also always the better or the more secure. There is nothing simple about life, while mechanism has the advantage of simplicity. Absolutism in the life of the state is also simpler than the constitutional monarchy, yet it has become impossible, and the state now rests upon the free accordance of the two factors, an accordance that can not be forced. A similar condition exists in the relation between scientific theology and the Protestant church. Together they have grown up and become what they are, often while fighting one another; but on earth, as Heraclitos said, "without war no life."

He who does not want liberty in teaching must finally come to ecclesiastical seminaries and exercises; things which are in harmony with the Catholic, but would be the end of the Protestant church; as the former is based upon discipline, the latter is based upon freedom, from the very beginning; and for the churches holds good what has been said of states, namely, that they are preserved by the same powers that have originated them.

The other science which has at times to defend its liberty is philosophy. It is attacked by the same opponents who are hostile to freedom in theologic teaching. From philosophy is expected a limitation arising from a demand for accordance with church doctrines. In the Catholic press and Catholic conventions it is constantly complained that our universities allow an atheistic philosophy which has tended to undermine faith and corrupt youth. The lecture rooms are said to be the real nurseries of revolution, of social democracy, and anarchism. It would be futile to combat these if the real sources of the epidemic were left untouched. In a part of the Protestant press this view finds a vivid echo.

This is not the place to investigate whether these complaints are well founded, whether really atheistic philosophy is taught in the German universities, and whether it has the consequences alluded to. But the reply may be couched in a word; it is, that a philosophy under control is nothing and can do nothing.

Philosophy, in fact, is nothing but the attempt which every epoch repeats to give expression to the essence and the meaning of reality as it appears to the human mind which contemplates it unprejudiced. All sciences, natural as well as mental sciences, bring together building

stones for the recognition of reality, and since they constantly furnish new material, there can be no absolute and definite philosophy, at least not until reality has been completely exhausted by science. Every epoch has to renew the attempt of formulating the latest conclusion based upon all accumulated knowledge, and that is its philosophy. Nothing will hinder it in learning from similar attempts in former epochs, both in regard to form and contents. Historical development will appear as a matter of self-evidence, and it may be expected that a philosophy will be the more vital and fertile, the more faithfully it utilizes the acquisitions of former processes of thought. But one point it can not yield without imperiling its own existence, i. e., the right to examine the thoughts of older thinkers, and, as necessity requires, to remodel or reject them. A philosophy which would remove this right, which would accept certain thoughts as unassailable and absolutely sacred from examination, would be no philosophy. Philosophy means an unprejudiced search for truth, that is to say, unhindered by presuppositions that must not be doubted or tested.

The same argument holds good in philosophic instruction in universities. It would cease to be philosophic if subjected to any other control than free investigation. It would cease to be fertile, as soon as external control should be exercised. Philosophic instruction can be effective only if the student is certain of finding free and unhindered expression of his teacher's conviction formed according to his best knowledge and belief. We find this a matter of course for all other sciences. We should not expect much of instruction in mathematics and physics, philology and history, if it based its theories on certain presuppositions that must not be examined and tested, or aimed at reaching certain conclusions predetermined by external authority. Precisely that is claimed for philosophy. A prerequisite of its effectiveness is the confidence of the student that he is not dealing with humbug. Kant said:

> It is absurd to demand enlightenment from human reason, and prescribe at the same time what form it is to take, and on what side of the question the decision is to fall.

The student is fully aware of this. If he knows or thinks that the professor of philosophy must have certain views, or at least that he is not allowed to entertain certain others, he will not be inclined to think much of his instruction. What he wishes to hear in philosophic lectures are not views which are officially prescribed or sanctioned, but thoughts represented by a man who has devoted thorough study to the great questions of the world and life, and stands up for them as for his personal convictions.

Idealistic philosophy especially has a deep interest in not restraining other currents of thought from making themselves felt. Every limitation of this liberty would awaken a suspicion of insincerity, and destroy its effectiveness. Hence, so far as the matter of instruction is concerned, perfect freedom, "*libertas philosophandi*" is a prerequisite of

successful university instruction. Every invasion of this freedom engenders irritation on the part of him who is thus disciplined, and on the part of the learner distrust of the views prescribed and officially protected.

The limits of the untrammeled right to teach refer only to the form of instruction; here they may be drawn tighter than the law provides. The lecturer is limited first by a consideration for the place he occupies and its dignity. To treat with scorn and derision things which are venerable to others, may not be forbidden to the public press or speakers in public assemblies, but respect for his profession will forbid the professor to do so. His duty is to lead his students to search for truth. Truth never admits of contumely. The professor will not even indulge in a disdainful and deprecating treatment of the views of others, which he does not share. If they deserve such a treatment, being entirely perverse, he will avoid rather than combat them. For, what would it profit to make his hearers familiar with what fools say, or have said, since so much time and attention is claimed by that which wise men have said? If he will warn his hearers of error, he must show it in its relative strength; that which is absurd deceives and misleads no one. And then he is limited by this other consideration, that no reply is possible in the lecture room. The press, public assemblies, and parliament are public places, where the party attacked may defend himself, but in the lecture room only one person speaks. Hence it is the professor's duty, when he attacks, to allow the other side to be heard by quoting it. In a certain sense he must be prosecutor and defender in one person, otherwise he could not act as a judge. A consideration for his hearers will guide him in this. An orator wants to capture the judgment of his hearers, so that they follow him blindfold, but the professor wants to free his hearers; he intends to guide them in acquiring individual, self-active observation and judgment. He can do that only if he has accustomed himself to look at both sides of a question, and can impartially represent them.

IV.—The Students and their Work.

The years of university study are the blossoming springtime of life. That which gives them that sunny luster in the remembrance of the man, as well as in the expectation of the pupil, is the golden freedom they bring with them. Indeed, it is the time of the greatest and fullest freedom a man can ever enjoy. Coming from the parental home and from school, which hedged him in by fixed rules and regulations, the young man is left to rely upon himself entirely. His exterior life is regulated to suit his own will. He selects his own associates and environment. Likewise does he determine his interior life. He chooses his own science and his teachers; he sets himself the tasks he intends to do every day; or he may neglect to do so. His life is wholly free; for what he does he is responsible to himself only.

Later life limits this liberty in many ways. The family sets up a thousand claims and causes much care; the student has to attend to no one but himself. When he enters his profession or an office, unavoidable demands are to be met; he has to curb himself in thought and speech; his thoughts soon learn to subordinate themselves to practical demands, they soon lose the ability to rise into the infinite realm of possibility; reality becomes the measure of thought. That is the realism of manhood. He who wishes to accomplish anything must seize upon things and opportunities, and can not indulge in roaming in the realm of possibility. This realism is in contrast with the idealism of the student; youth measures reality with ideas, and becomes enthusiastic in the belief that it can remodel the world by means of ideas. Idealism is the prerogative of youth, perhaps also a danger; just as realism may be both a prerogative and a danger to advanced age.

Preparation for study.—The legal requirement for admission to university study is the same in all German states, namely, a graduation diploma from a gymnasium; it is acquired by passing the final examination with which a gymnasial course is concluded. It is true, other educated young men are matriculated in the university without such a diploma, but only in the philosophic faculties, and without acquiring the right of being admitted to state examinations, which open the gates to the learned professions. The course of study in a gymnasium is one of nine years, which must not begin before the completed ninth year of age. Beside these classical *gymnasia*, the so-called *Real-gymnasia*, that have a course of nine years also, are entitled to prepare students for the university, but only for certain studies of the philosophic faculty, i. e., mathematics, natural sciences, and modern languages, while the higher faculties require the student to have graduated from a classical *gymnasia*. Whether this exclusion will continue seems doubtful to many, and it is often urged that the study of medicine might be opened without danger to the graduates of Real-gymnasia. Perhaps we shall return to the former usage of giving to the individual much more liberty in the selection of his preparatory course. A hundred years ago the university was open to every one who was equipped with an ordinary school education. The requirement of a graduation diploma from any high school of a nine years' course would apparently suffice to exclude unsuitable elements.

Students' age and length of the course of study.—The university study falls into the time of transition from youth to manhood. On an average the years from the twentieth to the twenty-fifth are devoted to this study. Only a hundred years ago the average age of the student was considerably lower; admission to the university was frequently granted to very young students, likewise also to much older students than now. The two extremes were much farther apart. The causes of this change is to be found in the extension of the preparatory course. The students now come, with the exception of a very small percent-

age, from *gymnasia* that have a fixed prescribed course. The exterior extension of this course is closely related to its inner growth: The course in classic languages, which, during the last century, embraced almost the entire language instruction, has received additions in the modern languages and sciences. German, French, mathematics, natural science, history and geography are now essential, where formerly they were either subordinate branches or taught incidentally. Naturally, the opinion is now prevalent that the freshman has completed his preparatory studies, and can turn at once to his professional study, while during the eighteenth century the completion of his general studies was to take place in the university, and it was done by attending some courses of the philosophic faculty, which was considered a kind of intermediate stage leading up to the higher faculties.

The legal duration of university study in Germany varies between three and four and a half years. In Prussia the law prescribes three years, but for the study of medicine four and a half years. In other countries, for instance, in Bavaria, four years is the limit for a professional study. As a matter of fact, though, the length of the course exceeds the legal requirement on the average quite considerably; the triennium of the philosophic faculty is always found insufficient, and four or more years are devoted to it. To the years of actual study is usually added a year of preparation for the examinations. The military service, lasting one year, is included in these statements.

The demand is not infrequently made, especially by jurists, that the legal time of university study be extended, and that the fallacy that the one year of military service is a year of study be rejected. However desirable the extension of scientific study may be, its legal sanction meets with well-founded objections. Every extension of the time brings with it an increase in expenses, and hence a narrowing of the social circle from which the universities are recruited. Nor does this extension necessarily mean an extension and a deepening of the scientific work performed. Many who have made it possible, after wasting two or three years, to prepare themselves for the examinations during the last few semesters by means of private coaching, would simply use this extension in order to enjoy a little longer the liberty of student life; and it is reasonable to suppose that many a one who, under the present circumstances just barely succeeds, would then entirely lose the capacity of saving himself from utter ruin. The purposes of study would be better served by adopting a suggestion made by H. von Sybel:

> To enable talented students who have passed examinations creditably to continue their scientific study in post-graduate courses, by means of scholarships and stipends.

Others have suggested shortening the vacation, and thus lengthening the course. Practical people outside the university think the vacations too long. It is true they consume a very considerable portion of the scholastic year, not much less than two-fifths of the year, or about

twenty weeks. However much it may be appreciated that the state authorities oppose the natural tendency of further shortening the semesters, it can not be said that a considerable decrease of the vacations would serve the purposes of the university. If the vacations were merely thought to be a time for recreation, they might be considered too long, but in fact they are not used in that way, certainly not by the university professors. The German professor may be reproached for many a thing, but idleness certainly can not be charged to him. The bulk of scientific labor done in Germany is doubtless, to a great extent, performed during vacation.

Nor is the vacation only a time for recreation for the students. It may be that some take it to be so, but they are certainly not those who are the most diligent during the semesters; the industrious always find good use for this time. But even if the vacations do interrupt study for a time no great loss will result therefrom, because a temporary reaccustoming to the general human way of thinking and speaking causes a reaction which may prove beneficial in many cases. To the diligent student a long vacation will give opportunity for pleasant recreation, extensive excursions, and desirable periods of quiet, connected work. This consideration is not of equal force for all students; those who chiefly work with books, like the theologian, the law student, and philologist, can make the best use of their vacation.

It is more difficult for the students of medicine or natural science, because they will miss the laboratories and other institutions. But for them also a few weeks of steady reading cannot be an unmitigated evil. For the older students of medicine the opportunity for hard study is offered in the vacation courses. Perhaps a similar arrangement may be made possible for the other branches of scientific investigation. Thus, for instance, the chemical laboratories that are often overcrowded during the semester could be opened for vacation courses under the direction of assistants. Many an older student, and some practitioners, who lack arrangements and means for difficult investigations, would gladly make use of such opportunities.

Outer conditions of life.—As has been said before, the nineteenth century has done away with the last remnants of ancient school regulations. Nowhere in Germany can anything be found like the "burses" of the Middle Ages, or the college halls of England and America. The student takes lodgings where he can find them; in a large city he must be satisfied with one room; in smaller university towns he can afford to rent in addition a second room for a bed-room. In the latter places he takes his lodgings for the semester; in the large cities for the month. His board he takes in restaurants, now here, now there. His intercourse in families is as a rule very limited; many a student who has no relatives in the place or brings no letters of introduction may live for years in a university town without coming in contact with a family.

That this occasions a great want of comfort in living, in health, and

in social culture cannot be doubted. The conditions in lodgings are not infrequently very disadvantageous; lack of cleanliness and comfort, and noise, make quiet study impossible and threaten health, life, and morality. An Oxford college is certainly a better place for study than a wretched room in a tenement barrack. Granted that we cannot have such institutions as the English colleges, for they are the result of centuries and clothed with the reminiscences of generations, but we might have students' houses of modest dimensions that could offer a comfortable, secure, and reposeful home to our students, with or without the element of living in common, without increasing the costs of attending a university. These houses would have the further advantage of social intercourse and combined work, while under the present circumstances many a student suffers severely from isolation.

We must not, however, deceive ourselves by neglecting to state that our students do not show great inclination for this kind of institution. Where they exist (the Melanchthon House in Berlin is such an institution) the demand for rooms is not great. Evidently the cause is found in the fact that absolute freedom of action is valued higher than all the advantages such a house may offer. To be subjected to regulations necessary in such an institution, however limited they may be, and though their execution may be left to the lodgers themselves, is hard, for they still express a restraint to personal freedom, and are felt as "*capitis deminutio*," of which students are ashamed. This may be the result of the disinclination and awe with which everything is regarded in Germany that reminds one, even remotely, of church and school discipline. Another obstacle to the institution of students' homes is the frequency with which the students change their universities, for such homes presuppose a stationary habitation and continuous attendance of the students, as found in English and American universities.

A word concerning the expenses may not be amiss. The expenses of the great majority of German students, not counting in the four or five months of vacation, range between 1,000 and 2,000 marks ($250 to $500); the average may be between 1,200 and 1,500 marks ($300 to $375). A small number will exceed these sums considerably, and a greater number may get along with less than the average. In the latter case, scholarships and stipends, and free admission to lectures, private income from giving lessons, correcting proofs, doing shorthand work, etc., make this possible. The benefices or stipends are derived from public means and private bequests; the latter are mostly of ancient date, and the older universities are quite lavishly provided with them. But since the purchasing power of money is so greatly reduced from what it formerly was, the benefices are mostly quite insignificant. Public benefices are relics of a time in which the insufficient supply of students led to artificial means of encouragement. To do this was thought a political necessity, in order to recruit the

governing class with the necessary well prepared elements. With this intention the government of each State established dormitories during the sixteenth century. But since then the rising wealth, and the increased respect for the learned professions, have caused an overproduction of professionally educated people, and the dispositions referred to have lost their former importance to a great extent.

The fact that students change their universities frequently in Germany is an ancient custom based upon the migratory tendency of the ancient Germans. The number of those who pass the entire time of their study in the university of their home province is not large. Most students attend at least a second, many a third and a fourth, university. Though this may be overdone to such an extent that the student never becomes domesticated and wastes time and strength in changing about, yet, as a general rule, an occasional change is not without great profit. Above all, an exchange of students between north and south is of great importance. About 2,000 students from north Germany, as Conrad proves, study in south Germany; on the other hand, the south is a little more reserved towards the north. Even though the scientific results of the migration may not be very great, yet the gain in general culture must not be underrated. There is no period in life in which a man with open senses is more influenced by the outer world than this period, and he who has observed life abroad will view and judge with greater clearness that which he finds at home; he corrects his standards of measurement.

Also for scientific education the change alluded to is very profitable. The wanderer's observation is sharpened and he is freed from prejudices. Small and large universities each have their peculiar advantages. In the smaller ones the student will find his place more easily; personal intercourse with his teachers affords him many advantages. On the other hand, the large universities offer opportunities to see and hear the most distinguished and noted men in all branches, and to use the rich equipment of institutions and establishments connected with them.

Associations and clubs.—In German universities students' clubs are as characteristic as college associations are in English and American universities. In the life of the individual they play a similar rôle; they form his intimate associations, determine his social intercourse, and mold, to a great extent, his views and habits.

Naturally it can not be the intention in this connection to give a complete description of the varied forms of students' club life; the principal features must suffice. From the great number of students' clubs a few stand forth quite prominently. They are the color-bearing fellowships. Of these there are three principal classes, "Corps," "*Burschenschaften*" (fellowships), and "Christian societies," besides which there are several other types. The "Corps" are intimately related to the ancient provincial corporations or nations (see p. 255); they are called according to German provinces and tribes (Allemans, Suevians, Borus-

sians, etc.—The translator). In every German university there is a smaller or greater number of "Corps;" all of them taken together form a large union that embraces all the German universities. It is characteristic of this group that it is chiefly recruited from wealthy and aristocratic circles; also that it lays much stress upon outer appearance and display, and shows a strong inclination toward aristocratic separation. This group claims to be the élite of the students and the right to represent them officially. The "*Burschenschaft*" owes its origin to the time of the Wars of Liberation from the yoke of Napoleon. It was founded as an organization of the mass of students in opposition to the "Corps," and did not originally intend to form exclusive clubs, but to oppose and do away with the narrow-mindedness of the old club life with its various dissipations and extravagances, and to infuse the German student life with new ideas of its position and object in the life of the people, with love of country and nation, and with enthusiasm for its power and freedom. Through the inimical regulations of the reactionary state, the "*Burschenschaft*" was forced into other channels. Pursued and repressed, it took the form of secret societies. But it has been most essential in contributing to keeping the idea of German unity alive and developing this thought to a live power among the people. At present the "*Burschenschaften*," of which there are several in each university, are exclusive societies like the "Corps." Many of them do not greatly differ from those in aspirations and outer appearance. Others, especially the older and more extensive ones, that have their strong roots in history, have retained a little of the spirit and aspirations of the old "*Burschenschaft*." Ever since the third decade of this century the third group of students, the "Christian societies," have been found side by side with "Corps" and "*Burschenschaften*," mostly under the name "Wingolf." Their constitution and outer appearance is like the other "color-bearing" societies, only differing from them in the fact that they reject dueling. Another essential difference is found in the fact that the members are almost exclusively theologians, while the other societies are not recruited exclusively from any one faculty; thus, for instance, the "Corps" recruit themselves preferably from the law students, with occasional additions from the medical faculty. The "*Burschenschaften*" recruit themselves from nearly all faculties; they also unite the different social strata more than the other kinds of societies do. In recent years Catholic student societies have been formed with exclusiveness and tendencies similar to the "Wingolfs."

Side by side with the old clubs, other societies have become prominent in recent years in large universities—societies of a looser bond than the three kinds of clubs mentioned before. They practice arts, such as vocal music and gymnastics, or are devoted to mutual promotion of scientific education, some also to the fostering of certain ideas and theories or practical purposes. They differ from the old clubs

generally in this, that their purpose is a particular one and their membership not at all exclusive. These societies aim at complete communion in life, not during the time of study only. Men quite old in profession and office preserve an intimate connection with the members of such societies.

One is accustomed to consider the "color-bearing" and dueling club student the real representative of the German students, in foreign countries more so than in Germany, although he is statistically in the minority. Scarcely five per cent of the total number of students are of that kind. In large universities they disappear in the mass, while in smaller ones they form a considerable part.

The opinions concerning the importance and value of this kind of student clubs—that is, the "color-bearing" ones—differ greatly. In public they are judged harshly; it is said of them that they neglect their studies, overestimate display, and despise others haughtily; this is specially alleged of the Corps. And indeed the dangers are not to be underrated. A waste of time and strength in all kinds of frivolities, a narrowing of the view upon human affairs, neglect of and contempt for hard study, are consequences arising from certain tendencies and the character of these clubs; they are more strongly felt in clubs of small membership. And yet a generally deprecatory judgment would be too hasty. It should not be forgotten that there are occasions and temptations for loitering and degeneracy outside of these clubs. If we had statistics on this point figures would prove, perhaps, that this group of students, as a rule, furnishes no more lost cases than other societies, perhaps even fewer. There are not wanting among these clubs such as make a special demand of its members to decently complete their studies, if it be best for the reputation of the color they bear. And again, from such a society, if no bad spirit is prevalent, and if its membership is not too limited, many a precious gain for life is made, of which an exchange of high ideas and aspirations is not the smallest. One gain is, that the society is a free, self-governing corporation, its members learn daily the great art of governing themselves and others. It may be said that there are no laws in the world which are more minutely obeyed and more strictly enforced than the laws which the student-clubs give themselves. But more, they learn how to treat friend and foe outside of their ranks; every misdemeanor finds sharp observers and strict judges. The result is a certain attitude and assurance by means of which old men betray their former membership in the "corps." It would be altogether incomprehensible where the joy and affection should come from with which many old men remember their student-club life, if they owed nothing to it; and still less would it be comprehensible why they should induce their sons to join the same clubs; fathers are apt to think of other things for their sons than pleasures, and vanity, duels, and faces full of scars.

A special obstacle for many students is firm adherence to duelling, or the "Mensur." There is no occasion to discuss duelling here; only a few words concerning students' duelling. I do not intend to justify the custom, nor defend the extravagances to which it easily leads: to appear in provocative and bullying attitude will certainly not make any one appear pleasing before God and man, and a frivolous play with one's own life and the lives of others is contemptible. The thing, however, may be looked at from another stand-point. Without the motive of the duel, exercise in fencing would be lacking in the intense interest it now has, and rob the clubs of a good deal of their discipline. In a certain way it is a test of courage, or rather of strength of nerve; it contributes towards securing the individual an estimation which is independent of the amount of his father's check. Says the American J. M. Hart, in his book concerning the German universities, which is full of sound sense and sharp observation: "To fight is an evil, but there are other evils which are just as bad and much meaner," and then he points out all sorts of occurrences that happen in American colleges. He says:

The German system has at least the advantage of being manly. It holds the student down to the strictest responsibility for what he does and says.

The work of the student.—The object of university study is, the ability to think scientifically—that is, the ability to comprehend scientific investigations, to test them and conduct them; secondly, to solve practical problems in the light of scientific knowledge.

This is what the German university conceives to be its task. It is not the object to have the students learn—that is, accept upon faith—knowledge that is offered them, but to lead them to independent thought, investigation and research. Naturally the student has to learn; to accumulate knowledge is necessary. But he who would be satisfied with doing that would not come up to the ideal of a German student. He may have been ever so diligent, have heard lectures regularly, and reviewed conscientiously, studied his manuals, and at last with the aid of his accumulated treasures have passed his examinations splendidly, yet, we would have to say, he is lacking something, indeed the most essential thing, that is, he has not tested his own powers in individual investigation. H. von Sybel emphasizes this point by saying that the object is not to learn the entire extent of a science down to its last sources; that would be impossible.

But it is essential that the student gain a clear consciousness of the purposes of his science, and of the operations with which its tasks are to be performed. It is necessary that in a few points, at least in one point, he should carry out these operations himself, that he should pursue a few of the problems down to the last consequences, to a point where he can say of himself that there is no one in this world who could teach him anything concerning them; here he stands firm and secure on his own feet and decides according to his own judgment. This consciousness of having gained self-dependence by means of his own efforts is of inestimable value. It is almost indifferent what subject of research he has chosen first, or has led him on; suffice it, that he has, in one direction, in however small a compass,

overcome the dependence upon school, he has tested his powers and means, with which henceforth he can seize upon new problems, and approach their solutions; he has in the midst of his joyous time of youth ripened to manhood.

That is the ideal. Not all reach it, nor is it everywhere easily reached. For a long time it was given chiefly to the philosophic branches to lead their students to such an independence. At present the experimental sciences are almost abreast of them, if they have not succeeded in surpassing them. In the study of law, perhaps, it is the most difficult to acquire this independence, and this may be the reason why the professors of law complain most frequently of lack of joy and independence in study; the burden of actual learning is, perhaps, nowhere so enormous as it is in law.

The liberty of learning.—It is the correlate of the liberty of teaching. As the one is given with the presupposition that the university professor is a scientific investigator, so is the other coupled with the demand that the student be trained to independent scientific thought. Like the liberty to teach, the liberty to learn is in German universities almost absolute. The student chooses his own university and his science, his teachers, and his course of study. It depends upon himself what lectures he will hear, what work he will perform; there is no official influence, scarcely advice is offered: he may prefer to hear nothing, and not to work at all.

The fact that not a few prefer, at least for a time, to do nothing, has urged anxious fathers and apprehensive governments to propose the question whether academic liberty had not better be limited. Again and again such old worn-out devices for the promotion of diligence, as obligatory courses of study, with semiannual examinations, or annual intermediate examinations, or lists of attendance, controlled regularly, and testimonials of diligence are suggested.

He who is familiar with the conditions of German universities, and knows youth, will not doubt that all such attempts to aid diligence in study by means of gentle force will be futile and disastrous; futile, because one can only force the semblance of, not actual diligence; disastrous, because such means would only weaken the spirit of self-reliance and responsibility.

A forced study presupposes the discipline of a school, and relations such as existed between teachers and pupils in the colleges of the Middle Ages. Such school-like order and relations are impossible in German universities, owing to the traditional custom in vogue, and to the advanced age of the students. It would be folly to seek teachers who could govern young men, between 20 and 25 years of age, with the forms and means of school discipline. Without such order all other means would be futile, not to speak of lists of attendance, and such things. Examinations at stated intervals would not be reliable aids in inducing the students to work, and for scientific work they would prove a hindrance. At best the examinations would force the students to learn by heart some lecture-notes, or text-books, or the students

would coach themselves by means of question books that would quickly be published to meet the demand. Every such examination brings forth suitable means for evading the difficulties it offers.

This scanty positive result would be overbalanced by the negative effects. First, the relation between student and academic teacher would be disturbed. At present it is wholly based upon freedom and confidence, and is therefore a most delightful one. Every attempt to increase the attendance upon the lectures by other means than are found in their own attraction, would seriously endanger the present relation. Who could endure to stand before an audience to whom he could not say at any time: He who does not find it profitable to attend to my words, will please remember that he is not obliged to come? And then, too, the relation to science would be disturbed: She will be sought and wooed as a free-born by the free; if she were forced upon the students she would become an object of loathing and hatred, not only to those who now avoid her, but also by those who love her fondly.

He to whom his own knowledge of human nature does not tell all this, may learn it through the experience that has been always and everywhere the result of such measures. It is instructive to read what a gentleman well acquainted with Russian circumstances says. (Reform of Russian Universities, Law of 1884, Leipzig, 1886.) There are official courses of study for each year, attendance is obligatory, examinations are held and testimonials given. And the result?

> Everywhere is heard the complaint, that as early as the middle of November the lecture halls are nearly deserted. It is well, if after New Year till the close of February a little increase is noticeable in the attendance; but after that the preparation for the coming examination prevents all further attendance upon lectures. * * * Much importance is given to "lithographed lectures;" they are bought at high prices, and enjoy official acknowledgment. The professor revises the copies or stenograms of his lectures first, before he questions the students in examination on the contents of these copies. (P. 99.)

About the manner in which these examinations are conducted the same source offers some curious information. Observations made by Fr. Nicolai more than a hundred years ago, in the Vienna University, can be read in the description of his travels (see Vol. IV, p. 57). He found in the philosophic lecture room about two hundred hearers; the lecture was good, interesting, and comprehensible, but the students conducted themselves like boys:

> Some lay on their backs on benches, others conversed, some looked about like children, and still others nodded in gentle sleep. All that is allowable, but in order to prevent these "lovers of wisdom" from becoming boisterous and disturbing the professor, an older student, the "*fiscus philosophiæ*," is placed near the cathedra. He rises when occasion demands and reminds the students that they owe respect to their teacher.

We may also refer to a parallel which J. M. Hart, in his book on "German Universities," draws between the relation of the German professor to his hearers and that of the American professor to his pupils.

> The contrasting feature in the life of a professor in America, namely, the obliga-

tion to maintain discipline and perform police duty, is wholly wanting in Germany. The German professor reads only for such as are willing and capable of hearing him. His relation to his hearers is that of one gentleman speaking to others. He is not in constant dread of being called nicknames, or seeing caricatures of his face; his nightly repose is not disturbed by serenades.

Certainly these things would be found with us also, if we introduced the causes that engender them, viz, school discipline and police supervision.

But even if these effects failed to appear, if it should come to pass that all the students were changed into willing pupils who do their lessons diligently, this result would be far from the ideal; on the contrary, it would be synonymous with the destruction of the idea of the German university. To form young men to be independent men, independent in thought and will, and conscious of their own responsibility, that is the idea of the German university as it has developed during the last two centuries. To make use of liberty, to advise and govern one's self, can only be learned in liberty. It is true, this is a dangerous school, but there is no other. Many lose their way, yes, most of them, for a shorter or a longer period, wander about without guidance, before they find the right thing and that which suits them best.

But he who has not erred on his own account, and not found his way by his own vigor of mind, can not be said to have made important experiences. He who travels through a country on a straight road, can not see much of it; on round-about paths and occasional misleading roads, one learns to know the country; they oblige one to observe sharply, to look in every direction, and to notice land marks in order to find the right way. It is just so in the sciences. He who travels on the straight road of school exercises and acknowledged truths, he who has not the courage to deviate and to err, may be said not to have seen much in the land of truth. And to err long means to remain young long; only he who is finished, does not err any more. He who has learned from experiences to err, to seek, and to find, will be a much better helper and guide for other erring strugglers. And even such errors as lie on the side of volition are not without beneficial fruit for him who finds his way back by his own might. Man matures in the battles which the will fights with the inclinations to secure its liberty and sovereignty. "One must risk the boys in order to gain men." This word of Rousseau still holds good. Upon this principle the German university is based. And that is the very thing for which the man of ripe age feels grateful. The university did not take him by the hand, guide him like a schoolboy, and guard him from errors of all kinds; no, it made him find his own way; but it awakened powers that made it possible for him to trace his steps aright, and to take heed for himself. It is not the teachers alone (it is lucky for the student if, here and there, he meets a teacher who throws a little light upon his path), but the entire university with its institutions, regulations, its traditions

and associations that make a man of him; every thing calls upon him to exert his own will, to be a man, and stand up for himself.

Once more H. von Sybel may be quoted. He says:

> We can not estimate too highly the gain derived from the fact that our universities in their innermost character, have the tendency to liberate the spirit of the man. In the preparatory school authority necessarily governed the whole man; in subsequent life the practical profession does so, and with it exterior authority claims a considerable portion of existence. But upon German soil every educated man shall have one moment in his life in which the organs of authority, in which nation, state, and teacher, proclaim to him as the highest of all commands: Be thou intellectually free.

Since we have arrived at the essential point in the character of the German university, the opinion of another classic witness may here find a place. Schleiermacher says in his Occasional Thoughts (p. 110):

> It is not the real purpose of the university to make its students learn, but to offer to the young men an entirely new life, to awaken in them a higher and truly scientific spirit. But that can never be done by means of compulsion; only in the atmosphere of absolute freedom of the mind is this possible, especially among Germans. As man can be made subject to the laws of love and faith only through love and faith (presuming that he is open to both) and not through force and compulsory exterior exercises, so he can be brought to approach knowledge and science that free him from the service of authority, only through knowledge, and through nothing else. We Germans especially, we sworn lovers of freedom in general, as well as of the individuality of every person, we who have never thought much of a general or normal form of science and belief, nor of an exclusive, infallible method for all to reach science and belief, how else can we but presuppose that this higher spirit of cognition must break forth in each person in his own way? How else can we but presuppose, and prove by our institutions, that this process can not be conducted in a mechanical way, but must bear the character of freedom in all its parts? Therefore we can not treat all that belongs to it other than very tenderly.

The appliances for study and their use.—Form and importance of the instruction offered in the university has been treated on previous pages. It is the business of the student to make good use of the instruction. During the first few semesters it will chiefly be his object to be admitted by some well-chosen lectures to the field upon which he is to work. Tradition suggests his writing out the lectures from notes taken; if it is done with circumspection, it is an exercise not to be despised. It necessitates him to follow the speaker with constant reflection, to shape anew the essential contents in abbreviated form. Gneist calls attention to the fact, in his Aphorisms Concerning Reform of Legal Education (1887), that it is a good preparation for the lawyer for his subsequent work to follow oral transactions, and by jotting down the main points to enable himself to recall the entire course of the proceedings. Similar occasions present themselves to everyone, not to the lawyers only; speech and oral proceedings begin to become more prominent with the ever increasing publicity of our modern life, side by side with reading and writing. Hence, written reports have their value if they are not merely done with the hand, to which the art of shorthand writing offers temptation. If the lecture is of interest,

the notes taken will have their practical value for home repetition and thorough review.

During the next following semesters, the so-called university exercises accompany the lectures. In them it is the object to learn the method of investigation or treatment of related problems. It may be supposed that nowadays, at least in the philosophical faculty, all diligent and eager students participate in one way or another in the exercises that are offered either in public seminaries or in private societies and courses. Indeed, the active work offered here is a necessary complement of the more receptive mental activity during the lecture. The transmission of scientific working methods now takes place almost exclusively in these institutions. These seminaries and conferences, as they may be called, are the best means for making personal acquaintance between teachers and students possible. Wherever a really intimate relation is formed between them, it has, as a rule, its roots in seminary exercises, in the course of which the student enjoys individual, personal attention and care; here it is that the teacher sees the growth of talents that in future will continue his labors.

A second very important means of study in the university is reading. It is essential that the student should read the most important authors in the chief branches of his chosen science, and that he learn to know them by thorough study. The lecture gives him, at first, a general view, then, by skillful use and thorough study of a text-book on the same subject, he succeeds in a better control of technical terms, and in supplementing facts. It is also advisable to use extensive reference works occasionally. Even their bare acquaintance is a positive gain; in later life, especially in remote localities, they are not readily accessible. Then it will be important for the student to make himself familiar with the history of the science, at least in outline. The lectures being directed more toward the systematic part are supplemented, as a rule, by reference to literature; this is especially true with natural sciences. Occupying one's mind with the history of a science, however, will be fruitful only if it leads the student to study a few of the historically important works, to conduct in person a few of the classic investigations, and not merely learn them from the reports of others. If literary monuments are the chief material of investigation, that is, in the philologic and historic sciences, the task of becoming familiar with them by careful reading and comparison is imperative. Thus, for instance, the theologian and philologist will find that the perusal of the writings which form the chief object of his science comprise the most important part of this work. He becomes freer and securer in proportion to the mastery he gains over the real substance of his science. He who knows the subjects themselves will easily find his way through their bibliography, codices, and editions, problems and commentaries, and he will go through these only as far as is desirable and necessary.

This study of his own science is then supplemented, as opportunity

and inclination allow, by reading works on related subjects and matter suitable to promote general culture. In this connection philosophy will claim its right of being noticed. According to the ancient truism "All roads lead to Rome," and so in science all roads lead to philosophy. All investigation ends in those general problems the solution of which has always been assigned to philosophy.

With regard to the method of reading, the old advice to read with pen or pencil in hand will forever hold good. By noticing the course of ideas, by emphasizing essentials, the attention is kept alive, and ideas and facts are impressed upon the mind. For the purpose of subsequent remembrance a few notes made personally during the first lectures are of greater value than a minute or exact report by others.

Reading is most fruitful when it is guided by certain points of view, historical or other. Around these points the actual profit accumulates.

It may be remarked that recently much has been done to make the literary resources of German universities more accessible than formerly. The public libraries have come to meet the demands of the students by placing in immediate reach a rich collection of reference books for free use in the reading room, so that every attendant may without much formality at any time consult the most important text-books and works of reference. Also the well-stocked seminary libraries are open for use in the university buildings, the books of which may be loaned and taken home by the members of the seminary. It is devoutly to be hoped that the very extensive provision for literary treasures in libraries by means of public funds will not have the effect of increasing the customary economy of students in procuring their own collection of books. A small home library is, after all, an indispensable possession for anyone who works scientifically.

Lastly, I may touch upon the advantages of working in company with others. It may be done in two ways—either by individuals working together privately, or by organized work in scientific societies. Both ways can be very successful. When two or three who are agreeable to each other and complement one another come together, for the purpose of reading or review, the work progresses well amid cheerfulness. The contemplation of a subject from two points of view and the opportunity to express one's views and opinions offhand increase the interest, facilitate and deepen the comprehension. Also scientific societies as they have recently formed in great numbers have an importance that can not be underrated; partly because they bring together men of similar aspirations and give them opportunities to get acquainted with each other. In good and well-conducted societies something of historical tradition is formed that infuses the newcomer with good spirit, guides him into right ways, and encourages him to high aspirations. The opportunity to lay before the circle of fellow students the results of little investigations or essays, reviews, and communications proves to be a desirable supplement to seminary exercises.

Examinations.—Everywhere in German universities there are two kinds of examinations—academic and state examinations. The former are held by the faculties, and through them academic degrees are obtained. The state examinations are held by boards of examination which are appointed by the government, mostly for one year. These boards receive instructions as to the manner of conducting these examinations. To pass a state examination is a *conditio sine qua non* for entering the learned professions. Academic examinations and degrees have practical significance only for the university career, since they are necessary for gaining admission as private professors; otherwise they have the significance of a recommendation, or an ornament, only.

The general adoption of the system of state examinations dates from the beginning of the nineteenth century. Its beginnings date back to the eighteenth century. For the medical profession the academic examinations and degrees were sufficient. For governmental offices entrance to the professions was conditioned, as a rule, by academic testimonials (either by official proofs of having acquired a degree, or at least having attended a university, or by private testimonials of distinguished professors), and by temporary employment in a governmental office, or a court as auscultator. If he proved his efficiency, and after a few extra tests satisfactory to his superiors, a definite appointment was sure to follow. The oldest examinations were those for clerical offices; they were conducted by ecclesiastical authorities. For the profession of teaching, special examinations for candidates were separated from the theological examinations not before the beginning of the nineteenth century, in Prussia since 1810. The development of the system of state examinations is in closest connection with the entire historical development of the state. The new order of the German states adopted at the beginning of the nineteenth century, that is, since the clash with revolutionary France, necessitated a new order for appointing officers. The old system of inherited claims to the higher positions in military and civil service, was done away with; in place of distributing the offices according to the judgment, favor, and inclination of the crown and private patrons, a new principle was adopted—that of selecting from the applicants those who passed prescribed examinations. From this the principle of promotion according to length of service followed logically.

With the general adoption of this system two results have been accomplished. (1) It gives to the state a certain security that the offices will not fall into the hands of applicants wholly or insufficiently prepared. (2) It gives to him who prepares himself for any career, or who enters it with the proofs of his capacity, a certain security that no one without merit can be preferred to him merely through personal favoritism.

This is the essential significance of the examinations. He who prefers this system to that of patronage and privileges must also want

the examinations, however little of an infallible means they may be for recognizing capacity and merit, and however much of discomfort and disturbance they may cause, both for examiners and examinees. Above all, the freedom of scientific study suffers from them most. Every examination which is not a purely pedagogical act between teachers and pupils, every state examination which has the object of ascertaining the amount of knowledge by examiners not acquainted with the applicants, will necessarily lead to reviewing compendiums and memorizing text books. In the nature of the case, such an examination is directed toward externals—that is, things that can be stated in a few words—and not so much toward internals and the essence of a science. The real intellectual product of scientific occupation can never be of much account in such an examination, as the sharp-sighted Englishman, Latham, in his excellent book proved, "On the action of examination considered as a means of selection" (1877). This fact becomes very prominent when the examination is conducted partly, or entirely, by men who do not take active part in teaching. This has been the case in Prussia in examinations for entering the legal profession, but recently the university teachers have found a better representation in the boards of examiners.

V.—THE UNITY OF THE UNIVERSITY.

It is a conviction generally shared that the preservation of the unified university is a happy dispensation in our national history. This concluding chapter may show what gain for science and the life of the nation is derived from it.

The most obvious gain is, that a unified university is superior in influence and reputation to the separated faculties. The French facultés have felt this; a detached faculty of law or medicine is barely known, while small German universities, like Jena, Kiel, Erlangen, have a world-wide reputation. In Erlangen it is the theological, in Kiel the medical, in Jena the philosophical faculty which gives luster and reputation to the whole corporation. This is not without importance for each individual member of a university. As a professor of the university of Jena or Erlangen, a scholar is everywhere known, and all doors are open to him, while a member of an obscure detached faculty disappears from public view. For students, too, the term university has a better sound. That, for instance, Paris could gain such a preponderance over the other facultés that it alone enrolls one-half of all the students of France, is owing to the fact that there are no universities in the provinces. For this very reason efforts are being made recently to consolidate the professional schools into unified universities.

A more important consideration is that which pertains to the internal importance of the question. The unified university represents the unity of science in its organization, and thus makes it obvious to all its members. Since it constantly suggests to every member to seek

aid among the others, it leads the representatives of the most varied sciences to intimate reciprocal action. The professors meet daily within and outside of the university buildings. The theologian meets the physiologist, philologist, historian, and physicist; and because these sciences present themselves to him personified, as it were, he can not possibly pass them by. He feels impelled to make terms with them in his mind, as he does socially. Doubtless, the character of Protestant theology is in close relation to this, for to reconcile science and religion is its chief tendency; especially is it the task of dogmatics to construct a bridge between scientific consciousness and the religious needs of the times. Catholic theology originates chiefly in the exclusive seminaries, and where it exists in universities it maintains a certain exclusiveness; hence there is more unity in its teaching, but also less power to influence science and the culture of the times. Protestant theology being reinforced by all the sciences, has a reflex effect upon them; consider, for instance, such men as Schleiermacher, Baur, Hase. For the German universities it is not an insignificant source of impulse that most of them have a Protestant theological faculty in their midst. Estrangement of scientific thought from religion, as it is often found in Catholic countries, the universities of which have no theological faculties, is not possible in the Protestant world. Compare the French civilization with the German; the former is irreligious, the latter on the whole is a religious movement. Wolff and Kant are both, in a certain sense, reformers of theology; and Fichte, Schelling, Hegel are such even to a greater degree.

A similar effect is noticed in the other sciences. The philosopher comes together daily with investigators of nature and history; influences work hither and thither. He constantly receives from them impulses to bring his thoughts into contact with concrete reality; the whole modern development of philosophy in Germany shows this. On the other hand, he awakens and enlivens in the investigator the desire to find general truth and ultimate aims. The inclination of German science toward philosophy may be the result of constant personal contact of philosophers and theologians. Likewise the jurist meets daily the historian, the political economist, the physician and the physicist, the chemist and the biologist. The mere existence of the others is an appeal to him to seek relations beyond the limits of his own field of study. The friendship that united v. Savigny and Jacob Grimm, the founder of the school of historic right and the founder of the school of Germanistic research, may be considered a symbol of the unity of the legal and the historic investigation in Germany.

A similiar unity exists between medicine and natural science. We may also call attention in this connection to the ease with which students turn from one science to another—frequently the limits of a faculty are passed over. Lotze, the philosopher, was a physician and professor of medicine in Leipzig, before he was called to Göttingen as

professor of philosophy. Wundt also started with the study of medicine. Fechner was a professor of physics all his life. Helmholtz, the physicist and physiologist, had completed his medical studies and was army surgeon before he became professor of physiology, and afterward of physics. Mommsen, the historian, was originally professor of law before he became professor of history. Zeller, the historian of philosophy, was a theologian, and for a long time professor of theology, before he turned to the philosophic faculty. All these men and many others have laid the foundation to this double nature while they were still students.

And this leads over to the other point. As social communion is of the greatest importance for the faculties, so it is for the student. It is true the university has not the unity of a school, for it is really a combination of independent institutions, the courses of which are essentially laid side by side. Nevertheless, a frequent reaching over from one faculty to another takes place. There is scarcely a student in a German university who has not attended one course of lectures outside of his own faculty, or at least attended occasional lectures there. Of all the faculties, it is the philosophic which proves to be the most general. In the lectures of the philosopher, the historian, the scientist, the political economist, the student of all the faculties meet; most frequently are the students of theology seen there, for of them it may be said that they have the most universal desire for culture. The students of law and medicine are not so often found in the philosophical faculty, but frequently enough to make an absolute nonattendance a rare exception. The contrary case is found also. Members of the philosophic faculty attend, according to inclination and the nature of their study, courses of literature in other faculties. The student of history hears lectures on law and church history; the student of natural sciences hears lectures on medicine, etc. Undoubtedly this facilitates the passing from one faculty into another—that is, the change from one profession to another which takes place frequently. The unity of the university makes it possible to recognize and correct betimes errors in the selection of the studies and profession, since it invites all its students to survey the ground in the whole realm of science.

This reciprocity in the lecture courses is supplemented by another important fact, the social and scientific intercourse of the students themselves. There is scarcely a student who is not in more or less lively intercourse with the members of other faculties. In this regard the students' clubs are very beneficial; here lawyers and philologists, theologians and medical students, learn to know each other intimately. Many a friendship that lasts for a lifetime is cemented here. This is not a trifling consideration. He who has lived in personal friendship with a single member of another profession in the university enters into relation to the entire profession; the basis of mutual comprehension and confidence is given. "*Ars non habet osorem, nisi ignorantem.*" The unity of university culture contributes to a great degree toward creat-

ing in all who have academic culture a feeling of unity and solidarity, a feeling of aristocracy of the mind, destined to counterbalance the aristocracy of birth and money. Since it excludes no one who has the capacity to rise to the level of the academic world, it reestablishes, as the clergy did formerly, the unity and spiritual leadership of the nation.

To do honor to truth it must be stated, however, that the ancient "universitas" is recently exposed to the danger of disintegration more than before. Not that the outer bond is in danger of being loosened, but its inner relations seem to lose their strength. It is the progressing division of labor, and the tendency to specialization arising therefrom, which threatens the unity of the institution. The students and professors of medicine have loosened their connection with the university proper more than those of the other faculties. This is owing to unavoidable circumstances, namely, the independence and remote location of their institutes, such as clinics and hospitals. The study of medicine takes hold of the newcomer more decisively and exclusively than any other faculty. The students of theology and law remain more closely attached to the university. On the other hand, the tendency spoken of is found active in the philosophic faculty also. In the nature of the case this faculty intends to represent the unity of the sciences. Construing it purely theoretically, one might lodge in it all that is really scientific in the higher faculties, for it either belongs, like religion and law, to the realm of historical research, or like natural phenomena, to the field of scientific investigation. Upon this is based the ancient connection of the higher faculties with the philosophic—that is to say, we presuppose the philosophic faculty to be the general basis of the higher faculties, the latter having branched off and assumed the character of technical or professional institutions.

But in proportion as the sciences within the philosophic faculty branch off and specialize, in proportion as these branches develop into technical or professional schools, in the same proportion the faculty loses the capacity to serve general purposes. Since the lectures on philosophy and mathematics have assumed the character of a professional institution for specialists, they are not as numerously attended by students of theology and medicine. And in the lectures on natural science and history a similar change, with its consequences, is noticeable. The philosophic lectures, pure and simple, are about the only ones which are generally attended.

However, the division of labor can not be undone, for upon it depends the enormous progress of scientific investigation in modern times. It must become the object of all who understand the danger, to combat the spirit of specialism, of self-limitation, and narrow-minded self-sufficiency; to aid in this endeavor every member of the university is called upon. The view of that which is general, a philosophic sense which is ever ready to place the particular at the service of the highest intelligence, should forever find a home in the philosophic faculty. This

would be a noble object of the public lectures, in which, to a large audience of members of related branches of science, the results and problems of separate sciences might be treated, so far as they are found to be of general interest. The official managers also might, to a certain degree, aid in checking the tendency to excessive specialization, both among the professors and students. An excessive number of chairs for one science will naturally promote a division of the matter to be taught, and thus threaten the aims of higher education. On the other hand, the character of higher study might be influenced advantageously, both by the order of examination and the composition of the examination board.

In conclusion we shall touch upon another point: The unity of all universities of the German tongue. The totality of the German universities forms a world of its own, exclusive toward the outside world and closely linked together. A constant exchange of students as well as professors runs through it, as the life-giving current of blood does through the body. This peculiarity is not found in foreign universities, notably not in those of the English type. As the students remain in their colleges, so the graduates remain with their university; at least, the institution preferably recruits its faculty from its own graduates, *ceteris paribus*. In Germany this is not at all the case, so that one is tempted to speak of a prevalent inclination to procure new professors from outside. Every university tries to draw into its folds the best men wherever it can find and induce them to come, and it does that in order to increase its own power of attraction. The territorial division of Germany into many states of varying size is, undoubtedly, one of the causes of this system. There has ever been, and is now, a noble rivalry between the various German governments to elevate their universities, and to keep them on a high level of excellence without regard to the place of birth of the applicants for professors' chairs. It can not be doubted for a moment that this system is superior to the system of favoring home talent. Though the change at times may be a little too abrupt, yet on the whole, it has great advantages that every university takes part in the life of the union, and is ever supplied with new blood and new thoughts.

At the close of this essay it need scarcely be offered as an excuse that I have attempted chiefly to show the great underlying ideas of the German university system, and hence lightly passed over deficiencies and the shady sides of the picture, such as are not wanting in any human institution. People nowadays prefer to dwell upon these, thinking that they represent the reality, whereas such persons, perhaps unknowingly, lose sight of the essential features as they have been represented in the foregoing pages. The underlying idea is also a piece of reality, and so long as this reality is alive, the most important and most significant portion of reality, its animating spirit, will be found active.

A word of Savigny may express what the German nation possesses in its universities. In an essay, quoted before, he says:

That which constitutes their value is not the perfect scientific scholarliness of their teachers, nor the growing scholarliness of their students. If we were to claim that, we should be holding before ourselves a mirror that would shame us. But it is the fact that in our universities we have a form in which every distinguished talent among the professors finds a chance for development; in which every strong predisposition among the students finds satisfaction; a form by means of which every progress in science easily finds introduction; a form by means of which it is easy to recognize a man of talent who seems destined for a higher vocation, and by means of which in the poorer life of more circumscribed talents a feeling of higher existence is awakened. Upon the possession of such a form we have reason to be proud, and he who knows our universities, will agree with me that this praise expresses literal truth, and is no exaggeration.

APPENDIX.

I.—UNIVERSITIES WITHIN THE LIMITS OF THE PRESENT GERMAN EMPIRE, TOGETHER WITH THE DATE OF FOUNDATION.

[Those in parentheses have been dissolved.]

Heidelberg, 1385.
(Cologne, 1388–1794.)
(Erfurt, 1392–1816.)
Leipzig, 1409.
Rostock, 1419.
Greifswald, 1456.
Freiburg, 1457.
(Ingolstadt, 1472–1800.)
(Treves, 1473–1798.)
(Mayence, 1477–1789.)
Tübingen, 1477.
(Wittenberg, 1502–1817.)
(Frankfort on the Oder, 1506–1810.)
Marburg, 1527.
Königsberg, 1544.
(Dillingen, 1549–1803.)
Jena, 1558.
Braunsberg, 1568; renewed, 1818.
(Helmstädt, 1576–1809.)
Würzburg, 1582.
Giessen, 1607.
(Paderborn, 1614–1818.)
Strassburg, 1621; renewed, 1872.
(Rinteln, 1621–1809.)
(Altdorf, 1622–1807.)
(Osnabrück, 1630–1633.)
(Bamberg, 1648–1803.)
(Duisburg, 1655–1818.)
Kiel, 1665.
Halle, 1694.
Breslau, 1702; renewed, 1811.
Göttingen, 1737.
Erlangen, 1743.
Münster, 1780.
Berlin, 1809.
Bonn, 1818.
Münich, 1826.

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Fr. Harms. Die Methode des akademischen Studiums. 1885.

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Part II.

STATISTICAL REVIEW OF THE GERMAN UNIVERSITIES.

[Written for the World s Columbian Exposition by Prof. J. Conrad. Halle.]

1. GENERAL REVIEW.

Germany has at present twenty complete universities, one royal academy at Münster with only two faculties, and the Lyceum Hosianum at Braunsberg, which has the character of a Catholic school of theology.

Of the universities only Bonn and Berlin have their origin in this century, while the foundation of the others date back to former centuries; some, like Heidelberg, are 500 years old.

The total attendance at German universities is at present about 28,000, or about 57 students to every 100,000 inhabitants. This number is not easily compared with that of other countries, since other requirements for admission are in vogue there, hence the composition of the mass of university frequenters not being alike, a numerical comparison is obviously unfair. Especially the theologic faculty causes a disturbing element in statistical comparison, since in some countries it is separated from the university, or supplied by independent seminaries quite different in organization and management.

Sweden had at the close of the eighth decade about 63 students, Norway 85 to every 100,000 inhabitants, Holland 51, Switzerland 63, of which 5·2 were women. Hence several countries show a greater number of students than Germany, a fact that may be owing to the greater length of the course. Leaving the theological students out of consideration, we find in the countries we are especially interested in, the following average numbers for the years 1886–1889. To every 100,000 inhabitants—

Germany had 48 students.
Austria had 55·9 students.
Italy had 51·3 students.
France had 42·6 students.
Belgium had 82·3 students.
Holland had 45·4 students.
Switzerland had 50·4 men students.
Switzerland had 5·2 women students.
Denmark had 47·1 students.
Norway had 76·6 students.
Sweden had 57·3 students.
Russia had 9·9 students.

From this list it is obvious that the number of students in Germany, compared with that of other leading countries, is by no means very large.

Naturally the attendance has varied considerably in the course of time. As early as the beginning of the thirties we find more than 52 students in every 100,000 inhabitants, a number that considerably exceeded the demand. This number decreased in the following decades to 33, but rose again during the eighties, until it reached 63, the highest point ever reached; since then it has decreased again. At the end of the third decade the universities enrolled 11,500 students, at the close of the sixth decade the number was 13,000, and in the summer semester of 1890 it was 29,382. Especially from the beginning of the seventh decade a very rapid increase took place. These fluctuations may be explained by the economical circumstances of the times. A phenomenal progress in the general activity of the nation attracts talent with magical power towards industrial pursuits; economical depression, on the other hand, invites youth more toward the secure career of civil officers. During a depression all professions turn towards academic culture. During the fifth and sixth decade, the extremely low salaries paid to all categories of civil officers deterred many from professional study, while in later years the general improvement in the payment of

salaries has had the contrary effect. The distribution of the students in the various universities shows great differences. The great universities (Berlin, Munich, and Leipsic, representing the three states Prussia, Bavaria, and Saxony) during the last three semesters attracted 5,000, 3,400, and 3,260, or, together, 11,660, that is, 41 per cent of all the students, while during the first few decades of our statistical exposé they enrolled only 31 to 36 per cent.

It is plain that the concentration in chief centers of commerce in large cities has made great progress. The small universities also have shown a perceptible increase. The smallest German university, Rostock, has 390 students; this institution had barely 100 students during the thirties and forties. Königsberg, Kiel, Jena, Giessen, with 500 to 700 students, may be still counted among the smaller, the others among the middle-sized universities. In the smaller universities, as experience shows, the younger students are chiefly represented, while the older ones prefer the larger universities, and in middle-sized universities both freshmen and seniors are found. However, each university exhibits varieties that have their cause in its peculiar features.

TABLE I.—*Attendance in German universities from 1831–'32 to 1892–'93.*

TOTAL NUMBER OF MATRICULATED STUDENTS AND THOSE OF PHARMACY.

[Average per semester.]

Years.	Berlin.	Breslau.	Halle.	Greifswald.	Königsberg.	Bonn.	Münster.	Braunsberg.	Göttingen.	Marburg.	Kiel.	Münich.	Würzburg.	Erlangen.	Tübingen.	Heidelberg.	Freiburg.	Leipzig.	Jena.	Giessen.	Rostock.	Strassburg.	Totals.	To every million of inhabitants.
1831–'32–'36	1,821	902	810	208	421	795	261	24	865	331	275	1,556	445	278	806	661	474	1,145	501	355	95	.....	13,029	394·9
1836–'37–'41	1,726	681	655	198	391	647	212	30	744	273	242	1,392	440	297	745	570	343	1,002	433	367	95	.....	11,519	
1841–'42–'46	1,715	707	712	218	347	632	238	33	670	263	208	1,329	447	316	889	727	235	917	421	484	88	.....	11,626	345·9
1846–'47–'51	1,426	766	671	190	323	806	284	42	676	265	151	1,696	582	396	832	661	291	970	402	476	87	.....	12,029	
1851–'52–'56	1,599	822	639	214	358	846	348	37	684	245	141	1,701	743	475	764	684	331	843	396	383	98	.....	12,351	334·8
1856–'57–'61	1,593	831	710	274	390	813	473	42	688	254	149	1,292	648	528	697	584	313	854	427	356	121	.....	12,037	
1861–'62–'66	1,972	958	768	345	445	896	524	36	721	264	194	1,245	625	474	777	742	303	991	482	378	144	.....	13,284	343·2
1866–'67–'71	2,219	927	839	420	469	866	453	19	772	332	172	1,245	613	369	755	632	277	1,433	384	293	152	.....	13,611	338·3
1871–'72–'76	1,948	1,037	968	508	606	776	409	12	1,007	401	175	1,142	890	404	863	651	289	2,686	423	318	141	470	16,124	386·0
1876–'77–'81	3,102	1,279	1,017	538	723	944	289	18	1,002	510	262	1,582	930	452	1,077	643	426	3,044	491	350	176	713	19,568	444·9
1881–'82–'86	4,660	1,447	1,509	820	883	1,117	344	19	916	786	419	2,545	1,209	724	1,312	835	858	3,214	599	495	265	830	25,858	561·5
1886–'87–'91	5,185	1,297	1,577	907	781	1,279	423	28	944	873	538	3,495	1,554	954	1,334	958	1,049	3,288	621	548	352	886	28,861	599·5
1891–'92	5,414	1,229	1,540	708	669	1,211	384	38	807	840	480	3,292	1,367	1,060	1,172	932	856	3,431	581	543	381	969	27,904	564·5
1892.....	4,619	1,251	1,477	821	692	1,397	423	41	771	831	612	3,538	1,285	1,107	1,334	1,156	1,305	3,104	645	573	396	915	28,293	572·4
1892–'93	5,040	1,219	1,472	778	660	1,258	414	37	715	837	488	3,380	1,330	1,099	1,185	973	998	3,307	631	515	413	969	27,718	560·0

TABLE I.—*Attendance in German universities from 1831-'32 to 1892-'93*—Continued.

STUDENTS OF PROTESTANT THEOLOGY.

Years.	Berlin.	Breslau.	Halle.	Greifswald.	Königsberg.	Bonn.	Münster.	Braunsberg.	Göttingen.	Marburg.	Kiel.	Münich.	Würzburg.	Erlangen.	Tübingen.	Heidelberg.	Freiburg.	Leipzig.	Jena.	Giessen.	Rostock.	Strassburg.	Totals.	To every million of Protestants.
1831-'32-'36	534	211	505	90	169	94	.....	....	224	92	102	.....	.....	140	177	46	.....	402	230	72	15	.....	3,103	137·2
1836-'37-'41	409	144	380	36	125	84	.....	....	177	73	70	.....	.....	139	150	18	.....	283	160	68	15	.....	2,321	
1841-'42-'46	317	89	435	33	75	69	.....	....	154	72	63	.....	.....	162	164	35	.....	231	110	83	25	.....	2,117	90·0
1846-'47-'51	197	63	366	27	49	47	.....	....	137	76	37	.....	.....	179	159	50	.....	212	98	76	25	.....	1,798	
1851-'52-'56	203	53	368	27	61	60	.....	....	122	66	26	.....	.....	214	143	71	.....	169	90	51	27	.....	1,751	89·0
1856-'57-'61	316	96	471	31	122	60	.....	....	160	80	32	.....	.....	302	185	93	.....	225	118	51	32	.....	2,374	
1861-'62-'66	386	100	391	25	110	61	.....	....	145	90	48	.....	.....	276	225	93	.....	261	135	50	41	.....	2,437	99·0
1866-'67-'71	324	67	318	25	80	56	.....	....	141	76	55	.....	.....	191	253	57	.....	347	101	20	43	.....	2,154	84·2
1871-'72-'76	179	46	220	27	59	53	.....	....	95	49	51	.....	.....	155	259	19	.....	384	85	15	34	52	1,780	67·0
1876-'77-'81	191	70	248	51	59	65	.....	....	112	63	44	.....	.....	170	268	24	.....	407	73	26	38	52	1,961	70·1
1881-'82-'86	547	143	538	216	186	96	.....	....	191	137	60	.....	.....	351	367	53	.....	656	127	83	53	81	3,880	132·5
1886-'87-'91	732	169	660	305	201	130	.....	....	235	194	86	.....	.....	325	408	88	.....	640	126	99	61	113	4,572	149·3
1891-'92	686	139	600	242	144	110	....	....	184	137	73	.....	.....	264	318	73	.....	555	95	83	41	118	3,862	122·8
1892.....	531	140	603	296	141	107	.....	....	177	149	80	.....	.....	294	392	86	.....	468	116	83	44	114	3,821	121·5
1892-'93	620	131	585	251	126	94	.....	....	157	123	68	.....	.....	276	306	65	.....	451	102	78	49	119	3,601	114·5

Years.	Berlin.	Breslau.	Halle.	Greifswald.	Königsberg.	Bonn.	Münster.	Braunsberg.	Göttingen.	Marburg.	Kiel.	Münich.	Würzburg.	Erlangen.	Tübingen.	Heidelberg.	Freiburg.	Leipzig.	Jena.	Giessen.	Rostock.	Strassburg.	Totals.	To every million of Catholics.
1831–'32–'36	.....	218	.....	.....	.....	195	187	24	.....	.....	.....	281	90	.....	142	.....	143	.....	.....	30	.....	.....	1,310	100·3
1836–'37–'41	.....	171	.....	.....	.....	99	150	30	.....	.....	.....	185	88	.....	91	.....	99	.....	.....	37	.....	.....	960	
1841–'42–'46	.....	198	.....	.....	.....	117	158	33	.....	.....	.....	183	89	.....	132	.....	85	.....	.....	37	.....	.....	1,027	93·3
1846–'47–'51	.....	219	.....	.....	.....	184	174	42	.....	.....	.....	241	114	.....	136	.....	138	.....	.....	49	.....	.....	1,297	
1851–'52–'56	.....	230	.....	.....	.....	202	193	37	.....	.....	.....	214	96	.....	143	.....	185	.....	.....	.....	.....	.....	1,300	95·9
1856–'57–'61	.....	180	.....	.....	.....	219	258	42	.....	.....	.....	136	96	.....	134	.....	179	.....	.....	.....	.....	.....	1,244	
1861–'62–'66	.....	176	.....	.....	.....	211	254	36	.....	.....	.....	95	89	.....	130	.....	162	.....	.....	.....	.....	.....	1,153	81·8
1866–'67–'71	.....	139	.....	.....	.....	186	231	19	.....	.....	.....	92	82	.....	100	.....	133	.....	.....	.....	.....	.....	982	67
1871–'72–'76	.....	95	.....	.....	.....	107	213	12	.....	.....	.....	76	134	.....	115	.....	84	.....	.....	.....	.....	.....	833	55
1876–'77–'81	.....	65	.....	.....	.....	87	94	18	.....	.....	.....	84	142	.....	149	.....	43	.....	.....	.....	.....	.....	682	42·6
1881–'82–'86	.....	151	.....	.....	.....	78	172	19	.....	.....	.....	121	181	.....	155	.....	73	.....	.....	.....	.....	.....	952	56·8
1886–'87–'91	.....	180	.....	.....	.....	135	263	25	.....	.....	.....	147	152	.....	156	.....	173	.....	.....	.....	.....	.....	1,231	70·2
1891–'92	.....	181	.....	.....	.....	165	252	28	.....	.....	.....	136	149	.....	167	.....	208	.....	.....	.....	.....	.....	1,286	71·5
1892	.....	211	.....	.....	.....	208	265	28	.....	.....	.....	137	150	.....	171	.....	203	.....	.....	.....	.....	.....	1,373	76·3
1892–'93	.....	189	.....	.....	.....	173	264	26	.....	.....	.....	135	156	.....	172	.....	215	.....	.....	.....	.....	.....	1,310	72·8

TABLE I.—*Attendance in German universities from 1831-'32 to 1892-'93*—Continued.

STUDENTS OF LAW.

Years.	Berlin.	Breslau.	Halle.	Greifswald.	Königsberg.	Bonn.	Münster.	Braunsberg.	Göttingen.	Marburg.	Kiel.	Münich.	Würzburg.	Erlangen.	Tübingen.	Heidelberg.	Freiburg.	Leipzig.	Jena.	Giessen.	Rostock.	Strassburg.	Totals.	To every million of inhabitants.
1831-'32-'36	560	227	137	34	90	244	.....	.....	324	109	92	490	75	53	90	312	88	439	144	90	44	.....	3,642	109·7
1836-'37-'41	496	116	87	12	74	223	.....	.....	274	94	94	427	74	75	117	314	88	370	129	77	38	.....	3,179	
1841-'42-'46	524	137	96	39	75	215	.....	.....	205	90	81	439	92	108	226	466	54	330	150	104	36	.....	3,467	110·1
1846-'47-'51	572	235	144	40	120	295	.....	.....	234	76	54	640	171	152	211	409	51	387	126	109	35	.....	4,061	
1851-'52-'56	640	274	147	53	149	273	.....	.....	224	56	54	722	181	149	163	447	64	334	94	106	39	.....	4,169	95·5
1856-'57-'61	476	152	75	33	86	151	.....	.....	171	37	53	451	133	94	102	274	29	297	81	46	48	.....	2,782	
1861-'62-'66	483	157	46	14	69	158	.....	.....	176	41	63	439	121	89	86	384	44	315	78	51	53	.....	2,867	74·1
1866-'67-'71	589	168	56	24	91	172	.....	.....	158	28	31	418	124	68	94	337	48	412	81	52	60	.....	3,011	74·8
1871-'72-'76	614	326	139	70	188	213	.....	.....	283	50	15	251	108	40	162	339	43	911	94	72	40	163	4,121	98·6
1876-'77-'81	1,073	373	110	81	175	268	.....	.....	247	90	31	463	116	50	280	278	103	970	110	85	35	187	5,134	116·7
1881-'82-'86	1,133	225	113	58	129	270	.....	.....	170	84	42	195	147	89	255	273	180	700	90	62	40	105	5,034	109·3
1886-'87-'91	1,317	214	126	73	136	266	.....	.....	168	118	45	1,280	281	178	267	270	203	895	93	84	45	189	6,248	129·8
1891-'92	1,557	262	191	73	152	288	.....	.....	164	155	47	1,214	267	227	193	253	142	1,068	99	108	56	229	6,745	136·4
1892	1,150	274	184	64	162	323	.....	.....	171	155	78	1,312	256	246	356	384	342	988	120	112	58	221	6,956	140·7
1892-'93	1,470	292	173	69	160	290	.....	.....	161	187	75	1,161	260	238	312	302	195	1,078	123	110	68	245	6,969	140

STUDEN TS OF MEDICINE.

1831-'32-'36	346	115	100	58	69	144	.....	.....	204	75	61	338	193	55	165	219	146	120	76	75	20	.....	2,579	78·3
1836-'37-'41	390	128	120	66	72	136	.....	.....	201	42	51	196	143	53	126	149	114	145	72	70	20	.....	2,294	
1841-'42-'46	331	120	108	83	75	95	.....	.....	207	42	41	94	120	26	110	130	75	149	57	62	18	.....	1,943	55·1
1846-'47-'51	226	88	90	79	56	103	.....	.....	189	49	35	149	145	43	104	116	60	152	57	70	16	.....	1,827	
1851-'52-'56	280	110	64	79	77	90	.....	.....	197	65	41	277	317	78	95	109	61	168	73	91	19	.....	2,291	60·7
1856-'57-'61	298	119	45	128	97	108	.....	.....	162	62	35	133	239	80	103	113	52	182	56	96	23	.....	2,131	
1861-'62-'66	363	152	89	202	115	139	.....	.....	172	38	50	151	253	68	124	91	54	189	62	91	32	.....	2,435	62·9
1866-'67-'71	423	188	126	262	120	192	.....	.....	150	112	57	213	268	75	146	77	49	210	69	64	37	.....	2,838	70·5
1871-'72-'76	339	176	152	280	155	140	.....	.....	142	114	59	287	446	108	160	92	98	380	80	63	33	157	3,491	83·5
1876-'77-'81	425	205	135	249	136	140	.....	.....	132	122	88	378	431	102	158	109	182	395	86	61	38	162	3,734	84·9
1881-'82-'86	1,137	379	268	399	234	252	.....	.....	186	215	171	849	681	167	206	213	350	757	159	88	77	209	6,869	149·1
1886-'87-'91	1,487	363	302	427	255	339	.....	.....	223	252	273	1,151	910	307	251	266	388	830	215	102	138	289	8,768	182·1
1891-'92	1,625	304	283	331	226	257	.....	.....	217	258	259	1,081	770	372	230	245	304	901	215	171	139	356	8,544	172·8
1892	1,448	292	285	393	255	325	.....	.....	200	256	335	1,192	680	365	236	278	443	834	212	172	138	333	8,672	175·4
1892-'93	1,418	276	231	382	232	271	.....	.....	181	247	245	1,155	738	349	224	249	303	899	205	104	135	327	8,171	165·3

1831–'32–'36	381	131	68	26	93	118	74	....	113	55	20	447	87	30	232	84	97	184	51	38	16	.....	2,395	}	83
1836–'37–'41	467	122	68	84	120	105	62	....	92	64	27	584	135	30	261	89	42	204	72	115	22	.....	2,765	}	
1841–'42–'46	543	163	73	63	122	136	85	....	104	59	23	613	176	20	257	96	21	207	104	198	9	.....	3,072	}	89·5
1846–'47–'51	467	161	71	44	98	177	110	....	116	64	25	666	152	22	222	86	42	219	121	172	11	.....	3,046	}	
1851–'52–'56	476	155	60	55	71	221	155	....	141	58	20	488	149	34	220	57	21	172	139	135	13	.....	2,840	}	87
1856–'57–'61	503	284	119	82	85	275	215	....	195	75	29	572	180	52	173	104	53	150	172	163	18	.....	3,499	}	
1861–'62–'66	740	373	242	104	151	327	270	....	228	95	33	560	162	41	212	174	43	226	207	186	18	.....	4,392		113·5
1866–'67–'71	883	365	339	109	178	260	222	....	323	116	29	492	139	35	162	161	47	464	133	157	12	.....	4,626		114·9
1871–'72–'76	816	394	457	131	204	263	196	....	487	158	50	528	202	101	167	201	64	1,011	166	168	34	98	5,896		141·1
1876–'77–'81	1,413	566	524	157	353	384	195	....	511	235	99	657	241	130	213	232	98	1,272	222	178	65	312	8,057		183·2
1881–'82–'86	1,874	539	589	147	327	421	173	....	478	352	147	782	201	118	322	296	255	1,212	220	263	94	345	9,123		198·1
1886–'87–'91	1,714	371	491	101	189	409	160	3	318	309	134	911	201	142	252	333	285	911	181	268	108	292	8,083		167·9
1891–'92	1,546	343	466	62	147	391	132	10	242	290	101	861	181	196	264	351	202	868	172	181	145	266	7,417		150
1892	1,464	331	405	67	134	434	158	13	225	284	121	897	199	202	179	408	317	814	197	206	156	247	7,458		150·9
1892–'93	1,532	331	483	76	142	430	150	11	216	280	100	929	196	236	170	357	285	879	201	243	161	278	7,686		155·2

2. THE DIFFERENT FACULTIES.

The German universities had, during the last few semesters, 3,850 students of Protestant theology, which is equal to 12·3 to every 100,000 Protestant inhabitants. This number far exceeds the demand, although not many years ago the number had risen to 4,500, or almost 15 to every 100,000 Protestants. This high tide did not begin until the eighth decade, while during the seventh the number of such students was between 1,700 and 1,900, which number was insufficient to fill all the vacant pulpits.

The number of students of Catholic theology falls short considerably of that of the Protestants, both in absolute and relative numbers. There were only 1,300, or 7·4 to every 100,000 Catholics, during the last few semesters. During the last years an increase is noticed, but it is not quite sufficient at present to meet the demand. At the close of the seventies, at the time of the "Culturkampf" in Prussia, the number had decreased to 700, or 4·2 to every 100,000 Catholics, while as early as the fifties, and still earlier, in the thirties, the number had been more than 1,300, or between 9·3 and 10 to every 100,000 Catholics.

The chief centers of Protestant theology are Berlin and Halle with over 600 students each, Leipzig with 500, Tübingen with 400, while Kiel, Heidelberg, Giessen, and Rostock have scarcely 100 each.

For Catholic theology Breslau and Bonn, Münster, and Freiburg, with over 200 students each, are of special importance, while Braunsberg has only 28.

The number of law students was 6,850 during the last two semesters, or 13·8 to every 100,000 inhabitants, which is almost twice as large as circumstances demand. At the beginning of the seventh decade, there were only 4,000; between 1856–'66 the average number was 2,800, a number which proved inadequate.

The law students crowd into large cities, and this tendency has shown itself more prominently than in former years. Thus we find in Berlin, Munich, and Leipzig over 1,000 law students, and in the winter semester of 1891–'92 as many as 1,557, or 52 per cent of all law students, inscribed in three universities.

Greifswald, Kiel, and Rostock have considerably less than 100, while the other universities have between 100 and 350. The law faculty of some universities shows remarkable differences between the attendance in summer and winter. Berlin naturally has greater attraction in winter than in summer; this explains why in winter the number of law students is greater by 400 than in summer. The southern German universities with beautiful surroundings, such as Tübingen, Kiel, and Freiburg, double their number of law students in the summer.

The medical faculty also shows an extraordinarily strong attendance in late years, namely, 8,600 or 17·4 to every 100,000 inhabitants. During the seventh decade, the number of students was scarcely half of

what it is now, namely, 3,600 or 8·4, while in the forties the number did not reach 2,000 or 5·5.

The greatest attraction for medical students Berlin seems to have with over 1,500 students during the last year. Munich with 1,000, then follow Leipzig with 860 and Würzburg with 730; Rostock has the lowest number, 138; the other universities have between 170 and 370.

The philosophic faculty which, for a long time, was the best attended faculty in all German universities, has recently fallen somewhat behind the medical. It has now 7,400 students, or about 15 to every 100,000 inhabitants. Since the beginning of the eighth decade, when it had an attendance of 9,000, or about 20 to every 100,000 inhabitants, it has gradually gone back, so that now it has reached a normal number. During the sixties this faculty numbered 4,500, from 1846–'56 not quite 3,000 students, or about 8·8 to every 100,000 inhabitants.

The rather mixed composition of the philosophic faculty makes it necessary to analyze it and to judge each group separately. It contains, first of all, the large group of students of philology and history, who numbered during the last year 2,800, or 37·8 per cent of all the students of the philosophic faculty. How remarkably this number has decreased seen from the fact that in 1881 this group had 4,546 students, or about 53 per cent. Then comes the second group, that of students of mathematics and natural sciences, which had 2,150 students during the last year, or 28·6 per cent. In this group the number has decreased less than in the first, for in 1881 it had 2,682, or about 31·30 per cent. Still the decrease is quite perceptible. The third group comprises the students of political science, agriculture, forestry, mining, etc., which group is not easily analyzed. The number of students in this group fluctuates frequently and therefore offers no measurement for comparison, many of these students finishing their studies in other special schools which, though on a par with universities, are not distinctively universities. Thus, for instance, the special schools of agriculture in Berlin and Hohenheim, the forestry schools at Eberswalde, Münden, Tharandt, the mining academies at Freiberg and others, and the nine technical universities (polytechnica) for civil and mechanical engineering. While many of the students of agriculture attend universities in northern Germany, especially Halle, the students of forestry attend those of southern Germany, Munich, Tübingen, and Giessen. Students of political science also are found there more frequently because they find there a technical preparation for specific classes of civil offices, for which a thorough study of law is required in northern Germany. The third group, then, taken together, comprises 1,013, or 13·4 per cent which number shows a considerable increase which is probably owing to the organic connection of some academies of agriculture and forestry with universities, institutions which formerly had an independent existence.

In the lists of students we now generally find another category: the

students of pharmacy and dentistry. That these two classes of students are thrown together, is owing to the fact that their admission to the university is not dependent upon graduation from a gymnasium. Where this category was not specially mentioned, we went back of the summaries in order to complete our statistical analysis. Only for Tübingen we failed to do so, since the official report of that institution omits to state to what profession each student devotes himself. This source of error, however, is quite insignificant. The number which is withdrawn from observation in Tübingen, is replaced by 28 veterinary students in Giessen, the report of which enrolls them in the philosophic faculty. During the last two semesters 1,480 persons, or 20 per cent of the students of the philosophic faculty, belong to the group of students of pharmacy and dentistry. The greatest number is exhibited by Berlin, which has 276, Munich 258, Leipzig 186. By far the greatest number of them are students of pharmacy, only Berlin has the large number of 154 students of dentistry; Leipzig has only 36, Munich in the summer of 1892 only 3, Halle 7, Würzburg 8, Giessen 5. Altogether we count more than 330 students of dentistry in German universities. There are consequently about 1,150 students of pharmacy, while during the period of 1861–'71 there were only 470, which shows that this number of students has increased nearly 300 per cent.

3. THE RELATIVE STRENGTH OF THE FACULTIES.

The relative strength of the faculties has changed very essentially in the course of time. At the beginning of this century, up to the fourth decade, theology played the most important part in German universities, for it enrolled nearly one-half, later on, one-third, of all the students. But during the forties the percentage fell to one-fourth, and during the seventies it receded to 13 per cent; since then it has increased to 18 per cent. In the Protestant theological faculty, the proportion of 16.8 per cent gradually decreased to 10 per cent, at the end of the seventies. In later years it fluctuated between 13 and 15 per cent. The fluctuations in the Catholic theology are much greater. At the beginning of the thirties it absorbed 11 per cent of all the students; after various changes during the years 1876 to 1886, it sank to its lowest point, 3.4 per cent, since then it has increased to 4.8 per cent.

The law faculty fluctuated between 20 and 33 per cent, taking the average by decades. At present it absorbs a little less than one-fourth of all the students, which would seem a normal state of affairs. The medical faculty had, up to the year 1881, between 15 and 21 per cent, but since then it has increased remarkably, and now stands in the foreground with over 30 per cent.

Students of the philosophic faculty, pure and proper, have been counted as such only during this century. Formerly they were absorbed by the other faculties, especially by that of theology, in which the teachers were being prepared, while the students of natural science completed

their studies in the medical faculty. At the beginning of the thirties the philosophical faculty had already been consolidated so well that 18 per cent of all the students were enrolled in it, and they were all students who were not enrolled in any other faculty. Up to the year 1861 this proportion rose to 30 per cent, and up to 1881 to 41 per cent; in late years it has returned to a more normal state, and enrolls only 26·5 per cent, since both, the study of mathematics and natural science, as well as that of philology, have considerably decreased.

TABLE II.—*Relative strength of the different faculties in all the German Universities.*

Year.	Protestant theology.	Catholic theology.	Law.	Medicine.	Philosophy.	Total.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
1830–'31	26·8	11·4	28·3	15·8	17·7	100
1831–'32–'36	23·9	9·9	28·2	19·8	18·2	100
1836–'37–'41	20·1	8·1	28·2	19·8	23·7	100
1841–'42–'46	18·3	8·6	29·7	16·8	26·6	100
1846–'47–'51	15·9	10·5	33·6	15·2	25·7	100
1851–'52–'56	14·2	10·2	33·8	18·6	23·2	100
1856–'57–'61	19·6	10·0	23·1	17·8	29·5	100
1861–'62–'66	18·3	8·5	21·5	18·2	33·5	100
1866–'67–'71	15·9	7·1	22·1	20·9	34·0	100
1871–'72–'76	11	5·1	25·5	21·7	36·7	100
1876–'77–'81	10	3·4	26	19·1	41·5	100
1881–'82–'86	15	3·7	19·4	26·6	35·3	100
1886–'87–'91	15·8	4·3	21·6	30·4	28	100
1891–92	13·8	4·6	24·2	30·6	26	100
1892	13·6	4·8	24·6	30·6	26·4	100

4. THE PREPARATION OF GERMAN STUDENTS.

By far the greatest number of students have graduated from the gymnasium, for only the graduate of a gymnasium has the unlimited right to be matriculated in all faculties, and after having attended the lectures, be admitted to the state examinations that open the way to the learned professions in so far as they are, directly or indirectly, connected with official duties. Only in the philosophic faculty an exception from the requirement mentioned is made. Here the graduates of other high schools, with a nine years' course, are on equal footing in certain branches of science, and as "bona fide" students they are admitted to the examinations for academic degrees also. All others who aim at the acquisition of general culture only, or are preparing themselves for practical pursuits without claiming the right to state appointments, such as agriculturists, chemists, pharmacists, dentists, etc., are matriculated without having graduated from the gymnasium or real-gymnasium. In Prussia such young men are admitted if they have acquired the right to the one-year voluntary service in the army.

The statistics of Prussian universities give us very minute information concerning the number of graduates. Of the 10,825 German students who, on an average, studied during the six semesters from 1887–'88 to 1890 in Prussian universities, there were 85.2 per cent graduates of gymnasia, 6.7 per cent graduates of real-gymnasia, 8.1 per cent had not graduated. Hence in the total number these last two items are not yet of considerable importance. For the philosophic faculty, though, these

small percentages are of vital importance, for it is in this faculty that they matriculate almost exclusively. Among the students of Protestant theology there was but one graduate of a real-gymnasium, and two had not graduated, probably because they were preparing for missionary service. Among the Catholic theologians there was but one graduate of a real-gymnasium. Among the students of law there were two, and one who had not graduated. Among the medical students 3 were graduates of a real-gymnasia, and 16 had not graduated. The philosophic faculty had on an average 1,816 German students, of whom only 49.1 per cent were graduates of gymnasia; 23 per cent were graduates of real-gymnasia, chiefly students of modern philology, mathematics, and natural sciences; 27.9 per cent had not graduated, these were chiefly agriculturists, chemists, pharmacists, and dentists.

From the other German universities outside of Prussia we have not such minute information. Only a few universities can be mentioned here. In the summer semester of 1892 Leipzig had 3,104 students, of whom 2,431 were graduates of German gymnasia, 119 graduates of real-gymnasia, and 320 Germans and 234 foreigners had been admitted without having graduated from such schools. Expressed on the scale of 100, and leaving the foreigners out of consideration, we find that 84.8 per cent were graduates of gymnasia, 4.2 per cent of real-gymnasia, and 11 per cent had not graduated. Of 612 German students in the philosophic faculty 320, or more than one-half had not graduated. In Giessen 425 of the 570 German students were graduates of gymnasia, 96 graduates of real-gymnasia, 50 had not graduated—that is, less than one-fourth of the 216 members of the philosophic faculty.

5. NATIONALITY OF THE FOREIGN STUDENTS.

During the last two semesters there was an average of 1891 foreigners, or 6.7 per cent of all the students in German universities. This number has gradually increased, although it has somewhat fluctuated. In 1835–'36 there were only 475, or 4.02 per cent; in 1870–'71 there were 753 or 6.1 per cent; in 1880–'81 the proportion was 5.16 per cent; at present it is 6.7 per cent. By far the greatest number of foreigners naturally flock to large cities. Berlin had 626 in winter of 1891–'92, and 568 in summer of 1892; Munich had 18 in winter, 190 in summer; Leipzig 296 and 241—that is, together the three universities had on an average 1,052—or much more than one-half of all the foreigners.

TABLE III.—*Nationality of the foreign students.*

Countries.	1835–'36.		1860–'61.		1880–'81.		1891–'92.		1892.	
	No.	*P. ct.*	*No.*	*P. ct.*	*No.*	*P. ct.*	*No.*	*P. ct.*	*No.*	*P. ct.*
Austria	41	9	114	15	178	16	127	6·4	82	4·6
Hungary							131	6·6	176	9·8
Switzerland	233	50	236	31	213	19	267	13·4	230	12·8
Russia	64	14	156	21	204	18	407	20·5	367	20·4
Great Britain	26	6	42	5	71	6	137	6·9	130	7·2
France	21	4·5	9	1	21	2	34	1·7	29	1·6
Sweden and Norway	21	4·5	14	2	22	2	19	1	31	1·7
Belgium	16	3	23	3	34	3	20	1	16	·9
Netherlands							47	2·4	41	2·3
Bulgaria							34	1·7	35	1·9
Denmark							6	·3	6	·3
Greece							56	2·8	46	2·5
Italy							34	1·7	29	1·6
Luxemburg	30	7	77	10·5	167	15	25	1·3	19	1
Portugal							2	·1	2	·1
Roumania							27	1·4	25	1·4
Servia							22	1·1	19	1
Spain							5	·3	5	·3
Turkey							33	1·7	37	2·1
United States of America	4	1	77	10·5	173	15·5				
America	6	1	8	1	42	3·5	446	22·5	383	21·3
Asia							84	4·2	77	4·3
Australia							8	·4	4	·2
Africa							11	·6	12	·7
Total	461	100	753	100	1133	100	1982	100	1801	100

If we compare the nationalities we find that the greatest number of students, namely, 415, or 22 per cent, comes from America. The number of Americans, coming almost exclusively from the United States, has increased extraordinarily during the last few years; within the last 10 years it has been doubled, and during the last 30 years it has been quadrupled. After America comes Russia with 20.4 per cent; then Austria-Hungary with 13·7 per cent; then Switzerland with 13. per cent. Great Britain sends 7 per cent; Asia, especially Japan, is represented with 4.3 per cent.

The greatest number of foreigners are matriculated in the philosophic faculty; it absorbs 52.7 per cent of all the foreigners; the medical faculty has 25 per cent, the law faculty 13 per cent, the theological 9.3 per cent. Of the 1,000 foreigners in the philosophic faculties, the greatest number studied philology and history. Of the 308 foreigners in 1891–'92 matriculated in the philosophic faculty in Berlin, 203 studied philosophy and history, 66 mathematics and natural sciences, 20 agriculture and political science, 9 pharmacy and dentistry. Only in Halle a great number of the students of agriculture and political science are foreigners; in summer of 1892 there were 75 foreigners among the 218 students of that class, and in the preceding winter there had been 89 foreigners among 272 students.

On an average 161 foreigners studied protestant theology during the last year—41 from Switzerland, 39 from Austria-Hungary, 36 from America. Only very recently have there been foreigners in the faculty of the Catholic theology; their number was 16, of whom 9 came from Switzerland. Fully one-third of the foreign theologians attend Berlin; the other two-thirds are found in the other 21 universities. Halle had 18, Tübingen 4, Leipzig 11, Jena 15, etc.

Of the 250 foreign law-students 85, or one-third, came from Switzerland, 32 from Austria-Hungary, 29 from Russia, 15 from Greece, 12 from America, 11 from Asia. Most of them attend the large centers. Berlin had 58, Leipzig 55, Munich 38, Heidelberg 37.

From Table IV we see that the greatest number of foreign students of medicine came from America, or 122 among 469, while 100 came from Russia, 60 from Switzerland, 38 from Asia. Berlin attracted 138 of them, Munich 60, Leipzig 24, Würzburg 44, Heidelberg 26.

TABLE IV.—*Nationality of foreign students according to faculties.*

Countries.	Protestant theology.		Catholic theology.		Law.		Medicine.		Philosophy.		Totals.	
	1891-'92	1892.	1891-'92.	1892.	1891-'92.	1892.	1891-'92.	1892.	1891-'92.	1892.	1891-'92.	1892.
Luxemburg	.....	.....	.....	.....	3	1	13	15	9	3	25	19
Austria	14	5	2	2	19	8	10	11	82	56	127	82
Austria-Hungary	37	40	.....	.....	29	36	8	22	57	78	131	176
Belgium	2	.....	1	1	3	1	1	1	13	13	20	16
Bulgaria	.....	.....	.....	.....	10	12	7	7	17	16	34	35
Denmark	.....	.....	.....	.....	.....	.....	1	1	5	5	6	6
France	3	2	.....	.....	6	2	4	6	21	19	34	29
Greece	.....	.....	.....	.....	18	11	17	15	21	20	56	46
Great Britain	13	7	2	1	5	6	19	14	98	102	137	130
Italy	2	2	.....	.....	9	5	7	8	16	14	34	29
Netherlands	4	1	2	2	4	1	12	12	25	25	47	41
Portugal	.....	.....	.....	.....	.....	.....	1	1	1	1	2	2
Roumania	.....	.....	.....	.....	7	4	5	5	15	16	27	25
Russia	10	9	.....	1	30	28	112	86	255	243	407	367
Sweden and Norway	2	2	.....	.....	1	.....	6	10	10	19	19	31
Switzerland	45	37	9	9	92	77	65	54	56	53	267	230
Servia	.....	.....	.....	.....	6	5	.....	.....	16	14	22	19
Spain	.....	.....	.....	.....	.....	.....	4	4	1	1	5	5
Turkey	1	.....	.....	.....	5	5	14	19	13	13	33	37
Africa	1	.....	.....	.....	.....	.....	6	7	4	5	11	12
America	46	27	1	.....	13	12	133	112	253	232	446	383
Asia	6	4	.....	.....	12	10	35	41	31	22	84	77
Australia	.....	.....	.....	.....	1	.....	3	3	4	1	8	4
Total	186	136	17	16	273	224	483	454	1023	971	1982	1801

TABLE IV*a*.—*Foreigners in German universities.*

Year.	Theology, including Catholic.		Catholic theology.		Law.		Medicine.		Philosophy.		Totals.	
	No.	*Per cent.*	*No.*	*Per cent.*	*No.*	*Per cent.*	*No.*	*Per cent.*	*No.*	*Per cent.*	*No.*	*Per cent.*
1835-'36	85	14	.....	.....	138	36	163	34	75	16	461	100
1860-'61	170	28	.....	.....	169	24	163	24	251	24	753	100
1880-'81	102	9	.....	.....	192	17	304	27	535	47	1133	100
1891-'92 + 1892	178	9.4	16	0.8	248	13.1	460	24.8	997	52.7	1891	100

6. LENGTH OF THE UNIVERSITY COURSES.

The question, "How long do the students attend the university?" can not be answered with any degree of certainty. For those who afterward enter the State service or pass the State examinations, it might be possible to determine it from official documents, but statistics on this point have never been compiled. For those who enter other walks of life we are entirely without reliable sources of information. Prussian official statistics offer indications with regard to the German stu-

dents in Prussian universities, by stating how many of the matriculated students of German descent are studying longer than is officially required as preparation for a certain profession. It is also stated how long those have studied who left the universities after completing their studies. Furthermore, it is stated how many semesters these students stayed longer than is officially prescribed for each profession. If this sum be divided by the number of students who finished the course we arrive at a tolerably correct average length of the course. Since, as we shall see later on, the students frequently change their university, the quotient found is not expressing the exact length, for that ought to be considered a little shorter. We must also consider that a great number of students perform their year of voluntary army duty during their university career. Of course during this time attendance upon lectures ceases. Hence there is a further distinction to be made; that is, between those who enter the army and those who do not. We add, also, the absolute numbers in order to offer a chance for proper comparison. The results in the margin can not lay claim to absolute correctness, inasmuch as the numbers compared are too small for comparison and calculation.

During the four semesters from the winter of 1886–'87 to the close of the summer of 1888, the following number of students completed their studies in Prussian universities:

Faculties.	Number.	Average Number.	Number in last semester.	All semesters.
			Per cent.	*Per cent.*
Protestant theology, after 6 semesters	446	112	29·5	7·85
Catholic theology, after 6 semesters	97	24	38·7	10·70
Law, after 6 semesters	877	219	59·8	7·47
Medicine, after 9 semesters	577	144	52	12·16
Medicine, after 7 semesters	38	9	5	11·70
Philology, after 8 semesters	215	54	31·6	.....
Mathematics and natural science, after 6 semesters	86	21	15·7	.....
Mathematics and natural science, after 7 semesters	47	12	10·6	11·16
Mathematics and natural science, after 8 semesters	83	21	26·8	.....

It is of some interest to state how much the military service lengthens the course of study. It was found that the students of Protestant theology, who were not obliged to serve in the army, could complete their studies in 7·22 semesters, while those who did serve in the army required an average of 8·24 semesters. In the Catholic theologic facuyt the difference was very much greater; in the former case the duration was 9·77, in the latter 13·5 semesters. Military service lengthened the course of the law students about 1·5 semesters, while the course of the medical students was lengthened by not quite 1 semester. The philologists lost on an average 3 semesters; that is to say, they not only lost the one year spent in serving under arms, but had to add another semester in order to regain what they had lost during that time.

From the foregoing numbers we conclude that on a general average

the duration of all university courses is actually extended longer than is officially required. The students of Protestant theology study 1·85 semesters longer, the law students 1·17, the medical students 3·16, and the students of the philosophic faculty 3·5 semesters longer. These averages do not give a very minute picture of the circumstances; for a considerable number of students actually succeed in completing their studies in the prescribed time, while others extend it extremely, be it from idleness or want of means of subsistence, which requires them to spend much time in giving lessons, etc., or be it that they lose time in changing their profession. Thus we find in the winter semester of 1888–'89 and in summer of 1889 that of 12,893 German students in Prussian universities 161 are in their nineteenth semester, 185 in the fifteenth to the eighteenth semester, 927 in the tenth to the fourteenth semester. The greatest number of those who study so long belong to the medical faculty; the next number is that of the students of the philosophic faculty, and especially of the division of philology and history.

It must not be ignored in this connection that a change of profession, and hence a transfer from one faculty to another, occurs comparatively often. The Prussian statistics give information on this point for the period from 1886 to 1888. We note the following ratios: Of the students of Protestant theology, 6 per cent had belonged to another faculty; of the Catholic theology, 11 per cent; of the law students, 9·4 per cent; of the medical students, 11·5 per cent; of the students of philosophy, 6 per cent; this gives us an average of 8·5 per cent. Since such changes always cause a loss of time, this high percentage can not be regarded as a favorable sign. In the Protestant theologic faculty the number of those who entered it from the other faculties and those who left it were about equal; the Catholic theologic faculty had a gain of 1·5 per cent; the law faculty had also a gain, but an insignificant one; the medical had a considerable gain of 9 per cent, while the philosophic had a loss of 7·3 per cent. The Protestant theologians who forsake their faculty more frequently join the law or medical faculty than that of philosophy. Catholic theologians prefer medicine and natural sciences. The law students prefer medicine, while the medical students choose law. The students of philosophy mostly enter the medical faculty, some the law faculty, and a few the theologic faculty.

Only a small number of students complete their studies in one university. A large number change universities several times; many attend two or three different universities in order then to return to the first. We are not able to state these changes with accuracy; we can compare from only fifteen universities the average number of new matriculations with the whole attendance, and thus state the average number of semesters spent by the students in these fifteen universities. During the year 1891–'92 the comparison resulted in the fact that the average length of attendance was 3·12 semesters, or 1·56 years. These

numbers may not express the truth accurately, since the foreigners are included in the comparison. The longest time was found to be spent by students in Königsberg, namely, 4½ semesters; in Breslau and Tübingen, 4; while Heidelberg and Bonn, to which the students flock in summer, owing to the beautiful surroundings of the cities, show only 2 semesters. Naturally the facility with which students change their universities has constantly increased during the last five decades; for during the thirties the average time spent by students in universities was more than four semesters. The strongest migratory tendency is displayed by the law students, who during recent years spent on an average 2·58 semesters in one university; the Protestant theologians, 3·15; the Catholic theologians, 4.62; the medical students, despite their very extensive course, 3·72; the students of the philosophic faculty, 3·35 semesters.

7. MILITARY SERVICE.

In connection with the foregoing, a brief remark concerning the military service may be inserted here. Not all the universities report under this head. We are obliged to resort to statistics from Prussia only.

Of 12,775 German students who on an average attended the Prussian universities between 1886–'88, there were 661, or 5·2 per cent, under arms; 1,221, or 9·9 per cent, had been declared free from military duty; 7,133, or 55·8 per cent, had still to serve; 2,959, or 23·2 per cent, had completed their service in the army; 802, or 6·3 per cent, had been assigned to the reserve force.

Among every 100 whose military fate had already been decided—

Faculties.	Were serving or had served.	Were assigned to reserve.	Were free from military duty.	Of the enrolled students were under arms. *a*
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Protestant theology	60·75	15·54	23·71	5·9
Catholic theology	50·13	23·63	25·94	6·1
Law	74·34	8·22	17·44	9·8
Medicine	71·39	12·86	15·75	4·9
Philosophy	54·93	16·87	28·20	3·9

a Numbers in this column may be duplication of those in the first column

A comparatively large number of law students serve in the army during their university course. Very few of them are found physically unable to serve under arms; also few of the medical students, because, though they may not be able to serve in the rank and file, they can be made use of as surgeons and physicians. Among those who are placed in the reserve, that is to say, are taken into the army on condition, the law students furnish the smallest number.

8. AGE OF THE STUDENTS.

Our students come to us at a comparatively advanced age. In Prussia—the statistics which we are here following—one-half of all the graduates of gymnasia are over 20 years old.

Among 11,475 German students, excluding students of agriculture, pharmacy, and all students who may be considered special, only 58 were found to be less than 18 years, and only 1,424 under 20 years; that is 12·4 per cent. There were 33·3 per cent between 20 and 22 years, 40·9 per cent between 22 and 25 years, and 23·5 per cent were 25 years and over. By far the greatest number of the students are in age between 20 and 25. The law students are the youngest; 18·4 per cent are under 20, nearly 43 per cent between 20 and 22, 33·6 per cent between 22 and 25, and only 5 per cent over 25 years. The cause of this is, that these students chiefly come from the better situated families, where they received a well regulated education and attended good schools, while students of other faculties, notably the theologic, attended, to some extent at least, insufficient elementary and citizens' schools, and then, later on, entered a gymnasium, whereby a loss of time was unavoidable. This explains that only 11·7 per cent of the Protestant theologians were under 20 years old, 43·4 per cent between 22 and 25, as against 33·6 per cent among the law students, although the officially prescribed course of both is equal in length. The Catholic theologic students are still older, because many of them are peasants' sons; only 7·5 per cent of them were under 20 years old, 30·8 per cent between 20 and 22, and nearly 47 per cent between 22 and 25; 2·8 per cent were over 30. However, we have to consider that the average length of the course of such students is much longer than that of their Protestant colleagues.

Among the medical students few are under 20, 9·7 per cent; however, 19·5 per cent were over 25 years, which is considerably more than in any of the other faculties. The length of the course is much greater, and it is often extended voluntarily. For the same reason we find the students in the philosophic faculty are comparatively old and comparatively young. The students of mathematics and natural sciences are sparsely represented among the students between 20 and 25 years of age, namely, with 68 per cent, while the total average is 74 per cent.

TABLE V.—*Statistics of Prussian universities.*

AGE OF ALL NATIVE GERMAN STUDENTS, INCLUDING STUDENTS OF AGRICULTURE, PHARMACY, DENTISTRY, AND ALL SPECIAL STUDENTS.

[Averages per semesters: Winter 1887-'88—summer 1890.]

Ages.	Totals.	Theology.		Law.	Medicine.	Philosophy.					
		Protestant.	Catholic.			Total.	Philosophy, philology, history.	Mathematics, natural science.	Agriculture, political economy.	Pharmacy, dentistry.	Other branches.
Under 18 years	68	8	1	23	13	23	8	7	1	7	.....
Under 20 years	1,546	307	43	436	338	422	208	125	24	61	1
From 20 to 23 years	6,229	1,446	286	1,434	1,559	1,504	182	445	149	124	4
From 23 to 25 years	2,935	626	158	378	909	864	384	264	86	129	1
From 25 to 30 years	1,766	215	68	112	599	772	236	211	71	253	1
Over 30 years	233	19	16	9	79	110	40	31	21	18	.....
Total	12,709	2,613	571	2,369	3,484	3.672	1,650	1,076	352	588	7

[Expressed in percentages.]

Under 18 years	0·54	0·31	0·18	0·97	0·37	0·63	0·48	0·65	0·28	1·19	.....
Under 20 years	12·17	11·75	7·53	18·40	9·60	11·49	12·61	11·62	6·84	10·88	.....
From 20 to 23 years	49·01	55·34	50·09	60·53	44·75	40·96	47·40	41·36	42·45	21·09	.....
From 23 to 25 years	23·09	23·95	27·67	15·96	26·09	23·53	23·27	24·53	24·50	21·94	.....
From 25 to 30 years	13·90	8·23	11·61	4·73	17·19	21·02	14·30	19·61	20·23	43·03	.....
Over 30 years	1·83	0·73	2·80	0·38	2·27	3·00	2·42	2·88	5.98	3·06	.....
Total	100	100	100	100	100	100	100	100	100	100	.....

TABLE V*a*.—*Statistics of Prussian universities.*

AGE OF ALL NATIVE GERMAN STUDENTS, EXCLUSIVE OF STUDENTS OF AGRICULTURE, PHARMACY, DENTISTRY, AND ALL SPECIAL STUDENTS.

[Averages per semesters: Winter 1887-'88—summer 1890.

Ages.	Totals.	Theology.		Law.	Medicine.	Philosophy.		
		Protestant.	Catholic.			Total.	Philosophy, philology, history.	Mathematics, natural science.
Under 18 years	58	8	1	23	13	13	8	5
Under 20 years	1,424	307	43	436	336	302	204	93
From 20 to 22 years	3,809	938	176	1,015	965	715	487	223
From 22 to 25 years	4,693	1,133	268	796	1,493	1,003	643	360
From 25 to 30 years	1,371	214	68	112	597	380	222	158
Over 30 years	178	19	16	9	78	53	33	23
Total	11,475	2,611	571	2,368	3,469	2,456	1,589	867

[Expressed in percentages.]

Under 18 years	0·51	0·31	0·18	0·97	0·37	0·53	0·50	0·58
Under 20 years	12·41	11·76	7·53	18·41	9·68	12·30	12·84	11·30
From 20 to 22 years	33·19	35·92	30·82	42·86	27·82	29·11	30·65	26·30
From 22 to 25 years	40·90	43·39	46·94	33·62	43·04	40·84	40·47	41·52
From 25 to 30 years	11·95	8·20	11·91	4·73	17·21	15·47	13·97	18·23
Over 30 years	1·55	0·73	2·80	0·38	2·85	2·28	2·07	2·65
Total	100	100	100	100	100	100	100	100

9. OCCUPATION OF THE FATHERS.

It is not without interest to inquire into the professions and occupations of the fathers of the students, and to see what faculties the various categories choose. Twenty-one per cent of the students in Prussian universities came from social strata having academic culture; we determine this from the professional occupations of the fathers. But beside these, there are men of means, army officers of high rank, landed proprietors, many of whom also have academic culture. Hence it may be presumed that not less than one-fourth of all the students have fathers who have had higher education. This percentage may be taken to be very nearly correct, since agricultural students, pharmacists, and other special students are not excluded from the calculation. Seven per cent are sons of civil officers of high rank, including clergymen. Fully one-third are sons of merchants, manufacturers, and landed proprietors. It is to be regretted that no distinction is made between artisans who own a little shop and owners of factories; neither has there been a distinction made between great merchants and small trades people, so that we can not distinguish the degree of wealth represented by them. Local inquiries in Halle have resulted in the following figures: Of the 14·8 per cent of industrial people only 3·4 per cent were owners of factories, and 11·4 per cent simply artisans who had a shop, which number shows that the small people were much better represented. Likewise among the landed proprietors not 2 per cent could be classed among the wealthy; 12·7 per cent were peasants, gardeners, and other agriculturists on a small scale. The number of students who were sons of subaltern officers and teachers without academic culture was 23 per cent, while 0·1 per cent were sons of day laborers and servants. Almost 20 per cent of the students of theology followed the profession of their fathers, and 58 per cent of the sons of clergymen attending universities studied theology. Comparatively speaking, very few theologians are sons of high civil officers, about 6 per cent, more than one-third who are sons of officers of low rank and elementary school teachers. Farmers sent 14 per cent to study theology; industrial people 13 per cent, of whom 12 per cent are to be classed as coming from artisans and mechanics (if the results of local inquiries are taken as a standard).

TABLE VI.—*Statistics of Prussian universities.*

OCCUPATION OF THE FATHERS OF GERMAN STUDENTS, INCLUDING STUDENTS OF AGRICULTURE, PHARMACY, AND ALL SPECIAL STUDENTS.

[Winter semester, 1887–'88, to summer semester, 1890, inclusive—Absolute numbers.]

Faculties.	State or communal officers, lawyers with university education.	Teachers of university education.	Clergymen.	Physicians.	Druggists.	Army officers.	Merchants.	Manufacturers.	Landed proprietors.	Farmers.	Hotel keepers.	Living from proceeds of funds.	Civil officers without university education.	Elementary school-teachers.	Subaltern officers.	Laborers.	Unclassified.	Totals.
Theology:																		
Protestant	70	71	515	23	13	10	210	343	10	367	41	29	437	444	4	4	22	2613
Catholic	7	4	.....	5	1	1	54	129	2	165	14	10	86	79	.....	2	12	571
Law	438	92	81	78	27	65	440	297	141	226	27	85	284	67	.....	.....	21	2369
Medicine	182	95	160	260	62	14	812	519	34	443	69	101	460	231	2	1	39	3484
Philosophy in general	191	154	134	105	82	37	682	693	66	412	67	126	582	278	3	5	55	3662
Philosophy, philology, and history	79	91	78	30	13	16	273	290	9	163	34	41	317	181	2	3	30	1650
Mathematics and natural sciences	63	48	30	31	18	12	237	245	14	105	18	42	146	54	.....	2	11	1076
Agriculture, pharmacy, etc	49	15	26	44	51	9	172	158	43	144	15	43	119	43	1	.....	14	946
Total	888	416	899	471	185	127	2,198	1,918	253	1,613	218	351	1,849	1,099	9	12	149	12,709

TABLE VI.—*Statistics of Prussian universities.*—Continued.

OCCUPATION OF THE FATHERS OF GERMAN STUDENTS, INCLUDING STUDENTS OF AGRICULTURE, ETC., AND ALL SPECIAL STUDENTS—Cont'd.

[Percentage of faculties.]

Faculties.	State or communal officers, lawyers with university education.	Teachers of university education.	Clergymen.	Physicians.	Druggists.	Army officers.	Merchants.	Manufacturers.	Landed proprietors.	Farmers.	Hotel keepers.	Living from proceeds of funds.	Civil officers without university education.	Elementary school teachers.	Subaltern officers.	Laborers.	Unclassified.	Totals.
Theology:																		
Protestant	7·88	17·07	57·86	4·88	7·03	7·88	9·55	17·32	3·95	22·75	18·81	8·26	23.63	40·40	44·45	33·33	14·77	20·56
Catholic	0·79	0·96	.....	1·06	0·54	0·79	2·46	6·51	0·79	10·23	6·42	2·85	4·65	7·19	.....	16·67	8·05	4·49
Law	49·32	22·11	9·10	16·56	14·59	51·18	20·02	14·99	55·73	14·01	12·39	24·22	15·36	6·10	.....	.....	14·09	18·64
Medicine	20·50	22·84	17·98	55·21	33·51	11·02	36·94	26·20	13·74	27·46	31·65	28·77	24·88	21·02	22·22	8·33	26·18	27·42
Philosophy in general	21·51	37·02	15·06	22·29	44·33	29·13	31·03	34·98	26·09	25·55	30·73	35·90	31·48	25·29	33·33	41·67	36·19	28·89
Philosophy, philology, and history	8·90	21·87	8·77	6·37	7·03	12·59	12·42	14·64	3·56	10·11	15·59	11·68	17·14	16·47	22·22	25·00	20·13	12·98
Mathematics and natural sciences	7·09	11·54	3·37	6·58	9·73	9·45	10·78	12·37	5·53	6·51	8·26	11·97	7·90	4·91	.....	16·67	7·38	8·47
Agriculture, pharmacy, etc	5·52	3·61	2·92	9·34	27·57	7·09	7·83	7·97	17·00	8·93	6·88	12·25	6·44	3·91	11·11	.....	9·40	7·44
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

[Percentage of categories of callings.]

Theology:																		
Protestant	2·68	2·72	19·71	0·88	0·50	0·38	8·04	13·13	0·38	14·05	1·57	1·11	16·72	16·99	0·15	0·15	0·84	100
Catholic	1·23	0·70	.....	0·88	0·17	0·17	9·46	22·59	0·35	28·90	2·54	1·75	15·06	13·84	.....	0·35	2·10	100
Law	18·49	3·88	3·42	3·29	1·14	2·74	18·57	12·54	5·95	9·54	1·14	3·59	11·99	2·83	.....	.....	0·89	100
Medicine	5·22	2·73	4·59	7·46	1·78	0·40	23·31	14·90	0·98	12·71	1·98	2·90	13·20	6·63	0·06	0·03	1·12	100
Philosophy in general	5·20	4·19	3·65	2·86	2·23	1·01	18·57	18·87	1·80	11·22	1·83	3·43	15·85	7·57	0·08	0·14	1·50	100
Philosophy, philology, and history	4·79	5·52	4·73	1·82	0·79	0·97	16·54	17·57	0·55	9·88	2·06	2·48	19·21	10·97	0·12	0·18	1·82	100
Mathematics and natural sciences	5·85	4·46	2·79	2·88	1·67	1·12	22·03	22·77	1·30	9·76	1·67	3·90	13·57	5·02	.....	0·19	1·02	100
Agriculture, pharmacy, etc	5·18	1·59	2·75	4·65	5·39	0·95	18·18	16·70	4·54	15·22	1·59	4·54	12·58	4·54	0·12	.....	1·48	100
Total	6·99	3·27	7	3·71	1·46	1	17·29	15·59	1·99	12·69	1·72	2·76	14·55	8·65	0·07	0·09	1·17	100

Among the Catholic theological students 29 per cent come from the humble homes of peasants, about as many are sons of subaltern officers and teachers of the lower grade, 22 per cent are sons of industrial people, chiefly from artisans. A different state of affairs is noticed among the law students; 18·5 per cent are sons of high civil officers, and nearly one-half of the sons of such men attending the university are enrolled in the law faculty.

Of all the students of law 29 per cent have fathers who had acquired a higher education, 11 per cent are sons of officers and teachers of a low grade (the pecuniary means of teachers are rarely sufficient to meet the costs of preparing for the law), 9·5 per cent are sons of farmers, 6 per cent are sons of large landed proprietors (the latter exhibit a great inclination for the study of law), 18·5 per cent are sons of merchants, and 5·5 per cent are sons of industrial people.

The sons of physicians preferably follow the profession of their fathers (55·2 per cent), but, owing to the comparatively small number of physicians, the medical profession furnished only 7·5 per cent of the medical students; other strata of academic culture furnished 20 per cent, about as many came from subaltern officers and teachers, while merchants and industrial people furnished 38 per cent. Almost identically the same percentage of the students of the philosophic faculty was sent by merchants and industrial people, but only 13 per cent had fathers possessing academic culture. Subaltern officers and teachers supplied 23·5 per cent of the students of philosophy, of whom the greater number devoted themselves to philology.

From the foregoing we notice an upward tendency in all strata of society; then, on the other hand, we notice that those classes who have the advantage of birth or wealth are not able to meet the demand of the country for people of academic culture.

10. THE RELIGION OF GERMAN STUDENTS.

With regard to this important question we regret to be obliged to resort to the statistics of Prussian universities exclusively. The whole population of the state contains 64.24 per cent Protestants, but the percentage of Protestant students in universities is somewhat larger, namely 72·11 per cent. About the same percentage of students is found in the middle schools, but 80·88 per cent in the secondary schools, and 63·13 per cent in the elementary schools. The Catholic population amounts to 34.15 per cent. In the elementary schools the percentage of Catholic pupils is 33·71 per cent. In the middle schools the number sinks to 10·4 per cent, while in the secondary schools it rises to 17·5 per cent, and in the universities to 18·62 per cent. Hence Catholics do not aspire to higher education so much as the Protestants. This is partly explained by the fact that in the eastern provinces of Prussia the rural laboring class consists of Poles, who belong to the Catholic faith, and among whom a university student is a remarkable exception. The diametrical opposite is noticed among the Jews, who constitute only

1·28 per cent of the entire population. They are represented in elementary schools by 0·74 per cent, in the middle schools by 8·3 per cent, in the secondary schools by 9·7 per cent, in the universities by 8·9 per cent. Among the law students the percentages vary little from the general average; the philosophic faculty also shows small variations from the average. In the medical faculty the Protestants recede a little from their average, showing only 59·5 per cent; the Catholics rise to 21·7 per cent; the Jews exhibit the remarkably high percentage of 18·5 per cent, for over one-half of all the Jews studying in the universities are enrolled in the medical faculties.

TABLE VII.—*Statistics of Prussian universities*

RELIGION OF THE GERMAN STUDENTS.

[Winter semester 1887-'88– summer semester 1890 inclusive. Absolute numbers.]

Religious confession.	Totals.	Theology.		Law.	Medicine.	Philosophy.
		Protestant.	Catholic.			
Evangelical	9,168	2,613	.....	1,738	2,072	2,745
Catholic	2,366	.....	571	438	757	600
Jewish	1,136	.....	.....	187	643	306
Others	39	.....	.....	6	12	21
Total	12,709	2,613	571	2,369	3,484	3,672
[Percentage of faculties.]						
Evangelical	100	28·50	.....	18·96	22·60	29·94
Catholic	100	.....	24·13	18·51	32·00	25·36
Jewish	100	.....	.....	16·46	56·60	26·94
Others	100	.....	.....	15·38	30·77	53·85
Total	100	20·56	4·49	18·64	27·42	28·89
[Percentage of religions.]						
Evangelical	72·13	100	.....	73·37	59·47	74·76
Catholic	18·62	.....	100	18·49	21·73	16·34
Jewish	8·94	.....	.....	7·89	18·46	8·33
Others	·31	.....	.....	·25	·34	·57
Total	100	100	100	100	100	100

11. PROFESSORS IN GERMAN UNIVERSITIES.

A distinguished Englishman, James Bryce, M.P., professor in Oxford (in his preface to The German Universities for the Last 50 Years, by Dr. J. Conrad, Glasgow, 1885), has said that the great capacity for work of the German universities is chiefly owing to the great number of professors, which allows an extensive division of labor, and gives the teachers a chance to restrict themselves to comparatively few lectures in order thereby to gain time for independent scientific work or private instruction to the students. These considerations make it appear necessary to observe the present number of professors, and to subject it to analysis and comparison.

Altogether there are in German universities 2,275 professors, to whom must be added 26 teachers of modern languages, and a number of teachers of agriculture, dentistry, etc., also teachers of drawing,

dancing, fencing, gymnastics, and riding, who are not of equal rank with the professors. During the last fifty years the number of professors has nearly doubled, but it has not increased in the same ratio in which the students increased, for the average number of students to a professor, which was 9·5 in 1840, and 8·9 in 1870, is now 12·2. Not one-half of all the professors, or 1,029, are regular salaried professors, 591 are extraordinary, and 655 private lecturers. The number of regular professors has increased least of all, namely, from 633 fifty years ago to 1,029. While in 1840 the regular professors had on an average 18 students each, they have now 27 each. The number of extraordinary and private professors has more than doubled, but on the whole the proportion between these two classes has not essentially changed.

Fifty years ago the number of regular professors amounted to 52 per cent of the total number, and that number was maintained until very recently, when in 1892 it sank to 45·2 per cent. The extraordinary professors gradually rose from 20·8 per cent to 25·9 per cent; the private lecturers numbered in 1840, 26·9 per cent; in 1880, 24·9 per cent, while in 1892 the number rose to 28·9 per cent. The great number of 655 young professors, who, without receiving salary, devote themselves to teaching and scientific work, and from whom the regular professors are recruited, form, as is well known, the essential fountain for the continuous influx of new life into our university system, and also for the promotion of science, since they lay most stress upon writing on scientific subjects, through which alone they can hope to rise to higher positions.

TABLE VIII.—*Professors in German universities.*

Year.	Theology.						Law.			Medicine.		
	Protestant.			Catholic.								
	Regular.	Extraordinary.	Private.	Regular.	Extraordinary.	Private.	Regular.	Extraordinary.	Private.	Regular.	Extraordinary.	Private.
1840	83	28	35	37	3	6	108	32	59	135	66	84
1850	79	30	26	40	4	7	114	34	46	146	64	105
1860	72	24	18	36	5	4	96	31	36	131	63	97
1870	87	24	15	43	9	7	126	30	41	166	100	146
1880	96	26	19	47	3	7	139	29	25	194	139	191
1892	102	30	23	49	9	5	148	31	43	211	189	238

Year.	Philosophy.			Total.			Total number of professors.					
							Theology.		Law.	Medicine.	Philosophy.	Grand total.
	Regular.	Extraordinary.	Private.	Regular.	Extraordinary.	Private.	Protestant.	Catholic.				
1840	270	124	142	633	253	326	146	46	199	285	536	1,212
1850	304	161	146	683	293	330	135	51	194	315	611	1,306
1860	270	195	137	605	318	292	114	45	163	291	602	1,215
1870	383	175	169	805	338	378	126	59	197	421	727	1,521
1880	477	236	217	947	433	459	141	51	193	524	930	1,839
1892	519	332	346	1,029	591	655	155	63	222	638	1,197	2,275

TABLE VIIIa.—*Number of students to 1 professor.*

[Includes all kinds of professors.]

Year.	Averages.	The faculties.				
		Theology.		Law.	Medicine.	Philosophy.
		Protestant.	Catholic.			
1840	9·48	15·76	20·22	16·31	8·05	5·07
1850	9·11	13·32	24·61	20·77	5·84	5·04
1860	9·86	20·64	26·71	12·39	7·32	6·52
1870	8·84	17·10	16·32	15·24	6·89	6·37
1880	10·81	13·91	13·02	26·35	7·56	8·72
1892	12·44	24·74	21·74	31·33	12·03	6·23

TABLE VIIIb.—*Number of students to 1 regular professor.*

Year.	Averages.	The faculties.				
		Theology.		Law.	Medicine.	Philosophy.
		Protestant.	Catholic.			
1840	18·15	27·81	25·14	30·05	16·96	10·06
1850	17·55	22·76	31·37	35·34	12·52	10·12
1860	19·81	32·68	33·40	28·78	16·27	13·10
1870	16·88	24·76	22·40	23·84	17·10	12·10
1880	20·22	20·43	16·20	36·60	19·25	17·00
1892	27·50	37·59	28·02	47·00	41·10	14·37

TABLE VIIIc.—*Relative number of regular, extraordinary, and private professors.*

Year.	Percentage of the total number of professors.			Percentage of the total number of professors of theology.					
				Protestant theology.			Catholic theology.		
	Regular.	Extraordinary.	Private.	Regular.	Extraordinary.	Private.	Regular.	Extraordinary.	Private.
1840	52·23	20·87	26·90	56·85	19·17	23·98	80·43	6·52	13·05
1850	52·30	22·40	25·30	58·52	22·22	19·26	78·43	7·84	13·73
1860	49·80	26·17	24·03	63·16	21·05	15·79	80·00	11·11	8·89
1870	52·93	22·22	24·85	69·05	19·05	11·90	72·88	15·25	11·87
1880	51·49	23·55	24·96	68·08	18·44	13·48	80·39	5·88	13·73
1892	44·23	25·98	28·79	65·81	19·35	14·84	77·78	14·28	7·94

Year.	Percentage of the total number of professors of law.			Percentage of the total number of professors of medicine.			Percentage of the total number of professors of philosophy.		
	Regular.	Extraordinary.	Private.	Regular.	Extraordinary.	Private.	Regular.	Extraordinary.	Private.
1840	54·27	16·08	29·65	47·36	23·16	29·48	50·37	23·13	26·50
1850	58·77	17·52	23·71	46·35	20·32	33·33	49·75	26·35	23·90
1860	58·89	19·02	22·09	45·01	21·66	33.33	44·85	32·39	22·76
1870	63·97	15·23	20·80	40·29	24·27	35·44	52·68	24·07	23·25
1880	72·02	15·03	12·95	39·27	28·14	32·59	51·29	25·37	23·34
1892	66·67	13·96	19·37	33·07	29·62	37·31	43·36	27·74	28·90

More than one-half of all the professors are engaged at present in the philosophic faculty, namely 1,197; and in this faculty the greatest increase is noticeable, especially in late years. In 1840 we find 536, or 1 professor to every 5 students; at present 1 to every 6. The proportion of the three classes of professors in this faculty is about the same that we find in the sum total.

The smallest increase is found in the faculty of Protestant theology, where the number of professors has risen from 146 to 155 within fifty years; however, the number had fallen to 114 in 1860. In this faculty the regular professors constitute the greater percentage, namely, 66 per cent, against 19·3 per cent of extraordinary and 14 per cent of private professors. This circumstance has often proved annoying, so that it has been found necessary to call to chairs in universities ordained ministers who had distinguished themselves by scientific publications. In this faculty the number of students to 1 professor is 25; in 1880 it was 14; the number of students to 1 regular professor is now 37·6; twelve years ago it was 20·4.

The Catholic faculties have at present 63 professors, with an average of 21·8 students each. Since in this faculty private professors are exceptions, the number of regular professors, 78 per cent, is greater than in any other faculty. In 1880 the proportion was 80 per cent, with only 6 per cent extraordinary professors.

The law faculty has at present 222 professors, 1 for every 31 students. This is by far the greatest relative number of students noticed anywhere, and is owing to the enormous throng attracted to the study of law. In this faculty the percentage of extraordinary professors, 14 per cent, is below the average; also the number of private professors is smaller than the average, at present 20 per cent, while in 1880 it was 13 per cent.

The division of labor has taken place in the medical faculty more than in theology and law. The number of professors has increased to more than twice the number it had fifty years ago. However, we must consider the fact that the aspiration of practical physicians in large cities is to obtain a position in the university in order to gain the confidence of the public. Hence the number of private professors is larger than in any of the other faculties. It is at present 37 per cent of the whole number of the medical professors. Also the number of extraordinary professors is comparatively large, namely, 30 per cent, which may be owing partly to the cause mentioned before, partly also to the fact that more specialties have been developed in the study of medicine than there are regular chairs. Only few universities have regular chairs for aural diseases, dentistry, psychiatry, hygiene, children's diseases, etc. Therefore the number of regular professors is at present only 33 per cent, whereas it was 47 per cent fifty years ago. However much the number of professors has increased the number of students has increased much faster; while formerly the average number of students to a professor was 6 to 8, now it is 12, and while the regular professor had 12 to 19, now he has 41.

Naturally the number of professors in the different universities varies very much. Berlin has the most, namely, 341 professors, 3 language teachers, and 3 teachers of dentistry. The number of regular professors is 83, or less than one-fourth of the whole number, the number of extra-

ordinary and honorary professors is 198, the number of private professors is 160, or nearly one-half of all the professors. It is easily seen that the metropolis, with its many scientific institutions and the great number of advanced students who form the chief audience for special lectures, attracts men of scientific aspirations more than the small towns. Besides, what we said concerning the medical profession holds good particularly here, where we find 15 regular, 30 extraordinary, and 66 private medical professors, a proportion that can not be duplicated by any other university. The philosophic faculty has the enormous number of 76 private professors (the theologic faculty only 4, the law faculty only 8), 51 extraordinary, and only 50 regular professors.

The other large universities fall considerably behind Berlin. Leipzig has 168 professors, Munich, 152. The difference is explained, in the first place, by the smaller number of private professors, Leipzig has 59, Munich, 64. In Munich the number of extraordinary professors falls behind that of Leipzig (29 as against 78). The smallest university, Rostock, has 44 professors; that is 31 regular, 8 extraordinary, and 5 private professors. Giessen has 58 professors, among whom there are 39 regular. Jena with a few more students is better supplied with professors, namely, with 82, many of whom are extraordinary and honorary professors (36). A similar proportion is found in beautiful Heidelberg, that has 45 regular, 44 extraordinary, and 20 private professors. Very much different from this proportion is that of Erlangen, which has 41 regular, 7 extraordinary, and 8 private professors.

From all this we see that in proportion to the students the smaller universities are better provided with professors than the larger ones, hence that they afford a more intimate personal intercourse between teachers and students, which is the chief advantage they offer. In these smaller universities, seminaries, practical exercises and other private instruction are frequently found; in them the students receive special inducements for scientific investigation, and the professor can impress his personality better upon his hearers than when he stands before a large assembly.

12. DEGREES GRANTED IN GERMAN UNIVERSITIES.

The close of a university career is marked by state examinations prescribed by law for the various professions. We leave them out of consideration, since they do not interest us at this juncture, and turn to the examinations that are exclusively university affairs, that is, examinations for degrees. Degrees are granted only as an acknowledgment of purely scientific achievements; they secure no professional rights.

The requirements for degree examinations depend upon the constitutional provisions of each university, hence differ considerably in various institutions. The examination fees, also, vary greatly, and this is one reason why some universities are preferred by candidates, who need not

have attended the full course of the institutions in which they wish to receive a degree. A great number of degrees conferred in a university may be an indication of active scientific aspiration and of great development of certain studies in that institution, but not necessarily so; it may be that the fees are lower, the requirements easier, or that the execution of the rules and regulations is laxer than in other universities.

TABLE IX.—*Number of degrees granted in German universities.*[1]

	Protestant theology.		Catholic theology.		Law.		Medicine.		Philosophy.		Total.	
	Regular.	Honorary.	Regular.	Honorary.	Regular.	Honorary.	Regular.	Honorary.	Regular.	Honorary.	Regular.	Honorary.
Prussian universities, April, 1890-'91.												
Berlin	2	2	.....	....	7	1	146	....	88	....	243	4
Bonn	2	1	.....	....	2	....	111	2	21	2	136	5
Breslau	.....	2	3	....	3	....	28	....	22	....	56	2
Gottingen	3	3	.....	....	31	1	29	....	44	1	107	5
Greifswald	1	3	.....	....	.....	....	79	....	13	2	93	5
Halle	2	....	.....	....	5	....	34	....	75	1	116	1
Kiel	.....	1	.....	....	1	....	74	....	22	....	97	1
Königsberg	1	....	.....	....	1	....	19	....	22	1	43	1
Marburg	.....	2	.....	....	2	....	20	....	38	1	60	3
Münster	.....	....	1	....	.....	....	.....	....	9	....	10	
Other German universities, April, 1892-'93.												
Munich	.....	....	.....	....	5	....	154	2	41	....	200	2
Leipzig	1	....	.....	....	112	....	299	....	143	....	555	
Heidelberg	1	....	.....	....	69	....	16	....	44	....	130	
Jena	2	2	.....	....	63	1	45	2	53	....	163	5
Würzburg	.....	....	6	....	7	....	163	....	24	....	200	
Tübingen	1	....	2	....	7	2	27	2	51	3	88	7
Freiburg	.....	....	5	2	.....	1	62	....	53	1	120	4
Erlangen	1	....	.....	....	45	....	64	....	104	....	214	
Giessen	1	4	.....	....	1	1	12	....	15	....	29	5
Strassburg	1	1	.....	....	5	1	47	....	35	1	88	3
Rostock	.....	1	.....	....	2	....	13	....	36	....	71	1
Total	18	22	17	2	368	8	1,442	8	973	14	2,818	54

[1] It was impossible to obtain the numbers for the same year, but the differences are so insignificant that this source of error scarcely needs to be considered. The numbers for Prussian universities are gleaned from the publications of the Prussian minister of education; those for other German universities are reported by the respective university secretaries.

In the Protestant theologic faculty the degree of doctor is extraordinarily rare; it is mostly granted *honoris causa*. The place of the degree of doctor is, as a rule, taken by that of licentiate. That also is rarely secured, because the requirements for that degree are almost as rigid as those for "habilitation," or entering the university as private professor. During the last scholastic year, only 18 theologians were promoted to the degree of doctor or licentiate after passing the examinations, but 22 doctor degrees were conferred *honoris causa*.

In the Catholic theologic faculty, also, the granting of a degree is an exception; only 17 candidates secured it, during the last year, while 2 were honorary degrees.

In the law faculty 368 degrees were given and 8 honorary. The greatest number was conferred in Leipzig, 112, while in Munich and

Berlin, where the number of law students was much greater, only 7, 5 degrees, respectively, were conferred. After Leipzig came Heidelberg (69), Jena (63), Erlangen (45), and Göttingen (31); in other universities the number varies between 1 and 7.

In the medical faculty the number of degrees conferred has in recent years greatly decreased, since the degree no longer opens the gates of the medical profession; the state examination alone does that. Nevertheless the number of medical degrees is still very large and is kept high, owing to the enormous throng to the study of medicine. Last year 1,442 degrees were conferred after successful examinations, but only 8 honorary degrees. Again Leipzig stands at the head of the list with 299, then follow Würzburg with 163, Munich with 154, Berlin with 146, while Giessen, Rostock, and Marburg, conferred only 12, 13, and 20 degrees.

In the philosophic faculty the number of degrees granted last year was 973 and 14 *honoris causa*. Though in this faculty comparatively few pursue their studies for the purpose of general culture (the greater number preparing themselves to enter a profession, as is done in the other faculties almost exclusively), there still are such cases; but even then the students endeavor to pass the examination for a degree, because they thereby indicate to the world that they have completed their studies. It is done by literary men, private teachers, chemists, agriculturists and wealthy men who do not intend to enter a definite profession. Besides, future teachers, authors, chemists, etc., regard the degree as a letter of recommendation, and as a means of aiding them in their careers. Leipzig heads the list in the number of degrees conferred in this faculty also. It conferred 143 last year, Erlangen 104, Berlin 88, Halle 75, while Bonn conferred only 21, Greifswald 18, and Giessen 15.

The sum total of all degrees conferred in Germany during the last year was 2,818, to which should be added 54 honorary degrees.

13. INCOME AND EXPENDITURES OF GERMAN UNIVERSITIES.

The regular expenditures for maintaining German universities (we quote the budgets of 1891–'92) amount to 19,912,913 marks (or $4,797,100). This total does not express the entire cost of maintenance, since various subsidies on the part of governmental departments from the general disposition fund, expended for the universities, can not be accurately stated. Nor does the total stated include the amount of fees paid by the students for lecture courses—fees that constitute a considerable part of the professors' income. They are not entered as regular items in the financial statements of the universities, because formerly the students paid them directly to the professors; only recently the "Questor" of the institution collects them. Up to late years we had no way of determining the amount of students' fees for lectures. Neither does the total mentioned include the payments made by patients in clinics.

To the regular expenditures should be added considerable sums for new buildings and purchases that do not occur at stated intervals. These sums vary in different years; hence the statement of one year does not suffice. In 1891-'92 these extraordinary expenditures amounted to 3,280,385 marks (or $787,292) for Prussian and 4,768,173 marks (or $1,144,362) for other German universities. These amounts came from state treasuries except the small sum of 46,125 marks (or $11,170), which was derived from invested funds. In the course of the following remarks we shall consider only the regular income and expenditure, except where expressly stated.

The average sum expended for every student in German universities is 708 marks ($170), or 0.4 marks (or $0.096) per capita of the popula, tion. Of the sum total 22·5 per cent is derived from invested funds, real estate, rents, etc., inclusive of fees, 75·4 per cent from state or provincial subsidies. A mere trifle—namely, about $2,000—came from other sources. The state treasury in Prussia paid for the universities 0.26 mark (or $0.0624) per capita of the population; in Bavaria, 0.31 mark (or $0.0744); in France the state pays 0.28 mark (or $0.0672).

The sums spent for the maintenance of the various universities differ greatly. Berlin requires 2,476,786 marks (or $594,429), of which only 13.6 per cent is derived from the universitys' own sources. Leipzig follows with 1,987,468 marks (or $476,992), of which 22 per cent is derived from the universitys' own funds. Bonn, Göttingen, Halle, also require more than a million marks (more than $240,000) each; Breslau, Königsberg, Munich, Strassburg, between 900,000 and a million marks. The smallest sum is required by Rostock, 332,300 marks (or $79,752). The other universities vary between 500,000 and 900,000 marks ($120,000 and $216,000).

TABLE X.—*Total regular income and current expenditures of German universities, in 1891-'92.*

Prussian Universities.	Total regular expenditures.	Derived from—		Used for—		
		Fees, funds, and real estate.	State subsidies.	Salaries.	Other personal expenses.	Buildings and incidental expenses.
	Marks.	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
Berlin	2,476,786	335,636	2,141,150	890,090	475,380	1,111,316
Bonn	1,129,349	213,222	916,127	488,086	166,681	474,582
Breslau	964,060	69,080	894,980	436,910	158,542	368,608
Göttingen	1,147,272	729,730	417,542	492,037	204,977	450,258
Greifswald	716,158	436,664	279,494	292,108	117,405	306,645
Halle	1,257,597	591,912	665,685	415,820	180,307	661,470
Kiel	755,447	191,680	563,767	269,436	113,640	372,371
Königsberg	928,101	129,498	798,603	343,869	147,499	436,733
Marburg	777,435	174,853	602,582	301,372	134,655	341,408
Münster	246,245	84,043	162,202	160,012	34,750	51,483
Braunsberg	40,809	20,922	19,878	34,820	1,650	4,330
To these should be added sums expended not for any one but for all universities	492,766	.....	492,766	104,000	328,766	60,000
Total Prussian universities	10,932,016	2,977,240	*7,954,776	4,228,560	2,064,252	4,639,204
Or	$2,623,684	$714,538	$1,909,145	$1,014,854	$455,420	$1,113,409

* In 1870, 2,636,316 marks; in 1880-'81, 5,575,316 marks.

TABLE X.—*Total regular income and current expenditures of German universities, in 1891-'92*—Continued.

Other German universities	Total regular expenditures.	Derived from—			Used for—		
		Fees, funds, and real estate.	State subsidies.	Other sources.	Salaries.	Other personal expenses.	Buildings and incidental expenses.
Bavaria:	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
Munich [1]	913,589	261,394	652,195	.....	493,391	219,638	200,560
Würzburg [1]	724,932	314,142	410,790	.....	281,980	226,324	216,628
Erlangen [1]	634,460	136,274	498,186	.....	231,820	202,998	199,642
Leipzig, Saxony [2]	1,987,468	428,786	1,558,682	.....	543,258	878,349	565,861
Tübingen, Würtemberg [3]	881,386	106,191	775,195	.....	273,380	[11] 252,043	355,963
Baden:							
Freiburg [4]	519,700	79,932	437,862	1,906	[9] 260,432	70,770	188,498
Heidelberg [4]	699,010	19,746	677,906	1,358	[10] 331,396	70,820	296,794
Giessen, Hessia [5]	654,994	190,611	463,560	[8] 823	239,771	47,175	368,048
Rostock, Mecklenburg [6]	332,300	2,261	325,802	4,237	154,450	15,901	161,949
Jena, Thuringia [7]	638,058	278,235	359,823	.....	208,288	179,874	249,896
Strassburg, Alsace-Lorraine [13]	995,000	78,346	[12] 911,500	5,154	526,000	72,235	396,765
Non-Prussian universities	8,342,839	1,617,683	6,711,678	13,478	3,335,878	2,056,253	2,950,708
Prussian universities	10,932,016	2,977,240	7,954,776	.....	4,228,560	2,064,252	4,639,204
Total German universities	19,912,913	4,873,158	15,026,277	13,478	7,772,726	4,300,379	7,830,808
Or	$4,779,099	$1,169,558	$3,606,306	$3,235	$1,865,454	$1,032,091	$1,879,394

[1] According to Budget of 1890-'91.
[2] Budget of 1889-'90.
[3] Budget of 1891-'92-'93.
[4] Budget of 1890-'91.
[5] Budget of 1891-'92.
[6] Report of 1890-'91.
[7] Not taken into consideration that professors are free from taxation.
[8] Subsidy of city of Giessen.
[9] Except compensation for rent.
[10] Same for the directors of the hospital and insane asylum.
[11] Includes 9,514 marks, state stipend.
[12] Of this 400,000 marks comes from the imperial treasury.
[13] Budget of minister of education.

TABLE X*a*.—*Extraordinary expenditures of the German universities in 1891-'92.*

Universities in Prussia.	Extraordinary expenditures.	Universities in other German states.	Extraordinary expenditures.
	Marks.		*Marks.*
Berlin	1,235,294	Munich	198,644
Bonn	193,800	Freiburg	156,500
Breslau	778,070	Heidelberg	295,468
Göttingen	198,659	Giessen	219,800
Greifswald	115,250	Jena	368,576
Halle	329,198	Strassburg	248,800
Kiel	113,800		
Königsberg	247,000	Total	1,119,212
Marburg	53,000	With Prussian universities	3,280,385
Münster	17,114		
		Grand total	4,768,773
Total	3,280,385	Or	$1,144,382

The subsidies from the State treasury to the various universities are very unequal. The Prussian universities receive an average of 72·7 per cent, the other German universities an average of 80·5 per cent. While Breslau receives 92·8 per cent, Königsberg and Berlin 87 per cent, Bonn 81·1 per cent from the State, Greifswald receives only 39 per cent, Göttingen 36·4 per cent. To Rostock and Heidelberg the State pays 98 and 97 per cent, Tübingen 88 per cent; Jena, however, only 56 per cent.

If we compare these incomes, or rather expenditures (which in this

case means the same), with the number of students, we find in the different universities a very great inequality. Despite the extraordinarily large expenditures of Berlin, they amount only to 489 marks (or $117) per student, the lowest per capita in Germany, except that of Munich, where it is only 264 marks (or $63). Würzburg has the same per capita that Berlin has; the largest per capita is found in Göttingen, Kiel, and Königsberg, namely over 1,300 marks (or $312). The per capita in Giessen is nearly that much, while in Strasburg 1,068 marks (or $256). The other universities vary between 500 ($120) and 900 marks ($216).

The per capita of the state subsidies in Prussia is 592 marks (or $142), while in other German universities, is 458 marks (or $110).

Our sources of information give only two items of expenditure, namely, personal and incidental, but both are regular or current. The former means salaries and the other personal expenditures. The salaries amount to 7,772,726 marks ($1,865,454), or 39 per cent. The other personal expenditures amount to 4,300,379 marks ($1,032,091), or 21·5 per cent. The incidental expenses* amount to 7,839,808 marks ($1,879,394), or 39·5 per cent. These incidental expenses include the enormous sums used for new buildings, which in Table Xa are given separately under the head of extraordinary expenditures. The new university buildings erected in late years require millions every year. In 1891–'92 Berlin alone required 1,234,294 marks (or $296,231), or 45 per cent of the expenditures for that year. In Munich this item claimed only 300,560 marks (or $72,134), or not quite 20 per cent, but it required nearly 200,000 marks (or $48,000) for extraordinary purposes (not for buildings). In Halle the buildings claimed more than 50 per cent of the extraordinary expenses; besides 329,000 marks (or $78,960), were needed for extraordinary purposes.

The column containing the salaries does not state the whole income of the professors, since the lecture fees are not included. The public lecture courses are free; for private lecture courses the professors charge a fee of 3 to 5 marks (or 72 cents to $1.20) per semester (one lesson a week). For medical practice, work in the natural sciences, demonstrations in the clinics, work in laboratories, in the dissecting rooms, and in microscopic courses, etc., various fees are paid, some very high. For certain studies that require a considerable number of hours on the part of the professor, 40 to 70 marks (or $10 to $17) per semester is charged, without costing the professor anything for material or for assistants' work.

The income of the professor varies very much according to the number of lectures and their attendance. It is to be regretted that a complete summary of these incomes is not available for comparison. But in order to obtain material for an estimate we state that, on an average, in the Prussian university the total income from fees amounts to about

* New buildings, libraries, clinics, hospitals, laboratories, museums, repairs, fuel and light, etc.

one-half the professors' fixed salary. The various professors participate in these incomes from fees in a very unequal manner, for it must be remembered that the extraordinary and private professors who receive no fixed salary rely entirely upon the lecture fees.

A just estimate of the income from all the sources gives to salaries (including rent where dwellings are not provided) and other personal remunerations (such as traveling expenses) 63·7 per cent, to lecture fees 32·9 per cent, and to other fees (matriculation, examinations, and diplomas) 3·4 per cent. The latter fees play an important rôle in some universities and faculties, while they almost disappear in others. Naturally only the regular professors draw these fees; they also receive the largest part of the lecture fees, because they, as a rule, have the largest audiences.

In Bavaria, during the years 1869–1872, the lecture fees amounted to 13 per cent of the entire university income. In Tübingen, during the year 1875–'76, the fees amounted to 15 per cent of the entire income of the university, and 25·9 per cent of the salaries and remunerations.

The Prussian official statistics offer very exact information concerning the professors' salaries. According to the budget of 1892–'93, the salaries of professors amount to 3,429,015 marks (or $822,964), besides 561,912 marks (or $134,859) are paid for rent of dwellings. Since the officers who receive subsidies for rent do not cut a great figure, we can round off the two sums in a total of 3,980,000 marks (or $915,200). But we are not able to state accurately the amount paid for rent to the different classes of professors; hence can not separate this item from the salaries.

To 534 regular professors the sum of 2,955,120 marks was paid, an average of 5,534 marks ($1,328). The minimum salary was $360; the maximum salary was $3,024. To 187 extraordinary professors the sum of 457,740 marks was paid, an average of 2,448 marks (or $588). The minimum salary was $144, the maximum was $1,052. Ninety-two extraordinary professors did not receive a salary.

As a matter of course, in large universities higher salaries are paid than in smaller institutions. The average salary of a regular professor in Berlin was 7,396 marks (or $1,775). The salaries here vary between 3,000 and 12,000 marks ($720 and $2,880). In Greifswald the average salary was 4,670 marks (or $1,120), the salaries varying between 2,800 and 6,000 marks (or $672 and $1,440).

The salary of a regular professor was: In the Protestant theological faculty, average, 5,797 marks (or $1,391); minimum, 3,200 marks (or $768); maximum, 10,200 marks (or $2,448). In the Catholic theological faculty, average, 4,332 marks (or $1,040); minimum, 1,500 marks (or $360); maximum, 6,000 marks (or $1,440). In the law faculty, average, 6,044 marks (or $1,450); minimum, 2,700 marks (or $648); maximum, 12,600 marks (or $3,024). In the medical faculty, average, 5,194 marks (or $1,247); minimum, 3,000 marks (or $720); maximum,

8,400 marks (or $2,016). In the philosophic faculty, average, 5,576 marks (or $1,338); minimum, 1,500 marks (or $360); maximum, 12,000 marks (or $2,880).

These salaries are higher than those paid to teachers in secondary schools. They are about on a level with the salaries paid to judges of higher courts, only it must be remembered that judges have no other sources of income than their salaries.

In Tübingen (according to an anniversary publication of 1877) the salaries in 1877–'78 were 4,400 marks ($1,056) paid to 16 regular professors of the highest rank, 4,000 marks ($960) paid to 16 regular professors of the next lower rank, 3,000 marks ($720) paid to 17 regular professors of the lowest rank; 2,200 marks ($528) paid to 6 extraordinary professors of the higher, and 1,800 marks ($432) to 4 extraordinary professors of the lower rank. The income from lecture fees amounted to 85,000 marks ($20,400) a few years previous to 1877–'78. Since then the salaries have been raised considerably.

Beside the regular and extraordinary expenses tabulated in Tables X and X*a*, other funds should be considered in which the professors have an interest. They are partly derived from the universities' own property, and partly from state subsidies for the benefit of widows and orphans of professors. In order to place the widows and orphans above want and treat them all alike the Prussian state makes a contribution of 160,000 ($38,400) per annum to this fund. According to the law concerning pensions for widows and orphans of university professors the pension of the widow of a regular professor is 1,400 marks ($336) per annum; that of a widow of an extraordinary professor 1,000 marks ($240). The pension paid to an orphan is 600 marks ($144), to every additional orphan 400 marks ($96), to a half orphan 400 marks, to every additional half orphan 250 marks ($60). In some universities local funds for the support of widows and orphans of professors are maintained by societies.

The Prussian minister of public instruction disposes annually of the sum of 60,000 marks ($14,400) in aiding private professors and other young persons of scientific attainments who prove of value to the universities. Likewise the universities themselves have funds for the support of such men who draw no salaries, and at first have but a scanty income from lecture fees, but these local funds are insignificant.

14. THE COSTS OF UNIVERSITY STUDY.

The expenditures of students are different in the various universities. Naturally the differences arise from personal wants and from the duration and extent of the study chosen. Since minute statistics, or general statements concerning the cost of university study, do not exist, we are again obliged to resort to an example. We choose the Prussian university of Göttingen as an institution of medium size.

The matriculation fee is 15 marks (about $4), the auditory fee 2 marks (50 cents), and contribution to the sick fund 7 marks ($1.75).

Medical and chemical students pay special fees for the use of institutes (such as laboratories, clinics, hospitals) about 5 marks ($1.25). When a student severs his connection with the university he also pays a small fee to have the fact entered opposite his name on the rolls. Other fees for the practical use of institutes amount to only a few marks. The accounts of a few students have been carefully sifted, and an annual average calculated; these then are multiplied by the average number of years to determine the total average cost of a university career.

Students of theology pay 7 marks matriculation and other fees, 53 marks lecture fees (which vary between 21 and 110 marks), together 60 marks per semester. This gives for 7·2 semesters a total of 432 marks ($104).

Law students pay almost the same sums: 7 marks matriculation and other fees, 62 marks lecture fees (the maximum paid was found to be 122 marks), together 69 marks per semester. This gives for 6·75 semesters a total of 466 marks ($112).

Medical students pay 17·5 marks matriculation and other fees, 125·5 marks lecture fees (maximum 343 marks), and other trifling fees, together 145 marks per semester. This gives for 10·2 semesters a total of 1,479 marks ($355).

Students of philology pay 7 marks matriculation and other fees, 51 marks lecture fees (maximum 110 marks), together 58 marks per semester, or for 10 semesters 580 marks ($130).

Students of mathematics and natural science pay 9·75 marks matriculation and other fees, 56·22 marks lecture fees (maximum 144 marks), together about 66 marks, or for 9·5 semesters a total of 627 marks ($150).

Students of chemistry pay 27·23 marks matriculation and other fees, 87·20 marks lecture fees (maximum 172 marks), together 114·50 marks, or for 9·5 semesters a total of 1,083 marks ($260).

In Halle the matriculation fee for a student just coming from a secondary school is 17·25 marks ($4.14), and 13·75 marks ($3.29) for a student who comes from another university. The fee for ex-matriculation is lowest for the students of philosophy, 10·50 marks ($2.52), the highest fee for the law students, 16·50 marks ($3.96). Fees as hearers are paid per semester 5 marks ($1.20), institute fees likewise 5 marks ($1.20).

Regarding the cost of medical study we have the result of an investigation embracing all the Prussian universities which exhibits great varieties. In Konigsberg the study costs 1,515 marks ($363.60), in Berlin 2,049 marks ($491.70).

In order to obtain still another item by which to judge the cost of university study we mention, that in Halle, with 1,525 students, the fees for matriculation and examination, auditory fees, etc., amounted to 26,683 marks ($6,404) in one year, which is 17·5 per capita, or not quite 30 marks for every new student. The lecture fees paid amounted to 175,300 marks (41.072), or 114 marks ($27.36) per capita, or 57

marks ($13.68) per semester. To this item should be added 31,206 fees for degree examinations, and habilitation fees (the latter are quite insignificant) amounting to 2 marks (48 cents) per capita of the students. The fees for state examinations can not be mentioned here, because they rarely get into the hands of the professors.

In the Bavarian universities the lecture fees during the years 1869–70 were on an average 165,012 marks ($39,603), that is, 13 per cent of the total income of these universities. It was equal to 74·3 marks ($17.83) per capita of the students, and 175 marks ($42.00) for every student who paid lecture fees.

It would be hazardous to make any definite statements concerning the personal expenditures of the students, that is, cost of life, since much depends upon the mode of life of the students in their parental home, and upon personal taste and inclinations, etc. We know of cases in which the students did not spend more than 700 marks ($168) per year; of course, the payment of lecture fees in this case was postponed, and living at home during vacation was a necessity. On an average the great majority of students pay between 1,000 and 1,500 marks per annum, while for the the wealthier students an average of 1,800 to 2,000 marks may be assumed; the very wealthy of course go much beyond that.

15. BENEFICES.

Since time out of date pecuniary aid has been offered to students, in order to facilitate their attendance in the university; this has been done in three ways. First, by postponing the payment of lecture fees; second, by granting free dinners, and third, by benefices in cash. It is to be regretted that complete statements concerning these benefices are not available; it is only in recent years that the Prussian university statistics offer any information under this heading.

How the lecture fees are to be paid, as well as their amounts, for what period the paying of the fees may be postponed, are questions settled by the professors themselves. In Prussian universities indigent students are relieved temporarily from the payment of these fees, if they petition for postponement and furnish the questor with documentary evidence of poverty, signed by home authorities. Usually the payment is postponed for six years, after which the questor attempts to collect the fees, unless the debtor has no fixed employment or regular source of income. Frequently the final settlement is set aside, if the debtor's financial condition remains unsatisfactory. In late years the petitions for postponement of payment of fees have considerably decreased in number; they are found almost exclusively in the theologic and philosophic faculties. The postponement of payment is not granted with the same liberality in all the universities. The principle has been adopted lately of not postponing the payment of any fees during the first semester; in other universities the postponement holds good only for the time of study in that particular institution. Where postpone-

ment is customary, release from payment is excluded, while in some universities a commission examines each case and releases the student from payment; but in such institutions postponement is not customary.

During the year 1887-'88 the payment of fees was postponed in 3,010 cases, or 22 per cent of all students; 2,891 of these students were native Prussians, 94 had come from other parts of Germany, 25 were foreigners. During that year 25·63 per cent of the Prussian students enjoyed this kind of benefice (in 8 semesters an average of 26·1 per cent). The proportions varied in different universities: while in Berlin, Bonn, Halle, Kiel, and Königsberg the percentage was 20·4 and 20·9 per cent, it was only 7·6 per cent in Marburg, 9·3 per cent in Göttingen, 10 per cent in Braunsberg, 17·6 per cent in Münster, but 54·5 per cent in Greifswald. Some of those who enjoyed these benefices were sons of professors, who according to the charter of the institution are exempt from lecture fees, but their number is very small. There are also cases of professors who do not charge for private instruction to foreigners, but such cases do not come under observation. Some students pay part of their fees and postpone the payment of the other.

All in all, it may be said that fully one-fourth of all the students are in needy circumstances, and furnish proof of this fact, whereupon the benefice mentioned is accorded them. This percentage is considerably increased if we add those who receive benefices in cash in addition to the postponement of lecture fees, or depend upon aid in cash only. In Prussia 2,430, or 17·9 per cent, of all the students received cash benefices; 76 of these were foreigners, 236 were Germans, but not native Prussians. Free dinners were given to 1,052 persons, or 7·7 per cent of the students. But since these dinners were frequently given to the same persons, it will not do to add the total numbers of the three classes in order to arrive at the number of those who enjoy benefices. If each one is counted but once, we get a total of 4,510, or more than one-third of all the students. Among these were 88 foreigners, 414 Prussians, and 308 other Germans. The Prussians represent a percentage of 36·48 per cent of the students; 18·74 per cent received benefices in cash and 8·77 per cent free dinners. There can be no doubt that the number of beneficiaries is actually greater than stated in the foregoing, because many are not counted who receive aid from private sources in their native towns. This phase of the question is of greater importance in regard to the amount of benefices than in regard to the number of beneficiaries.

Altogether 2,868 German students received cash aid and free dinners amounting to a value of 441,619 marks ($105,989), which is equal to 154 marks ($37) per semester. Since the number of benefices given was 3,346, it is plain that a number of students receive several kinds of benefices. However, this statement falls much behind the actual truth; the causes of this are found in the foregoing. Seventy per cent of 3,346 cases of aid consisted of cash gifts and 30 per cent free dinners. The 70 per cent in number had a value of 87 per cent.

A word concerning the sources of these benefices may be welcome. We state that 1,341=40 per cent, valued at 134,745 marks ($32,339),= 30·5 per cent were derived from funds of the universities; 1,470=42·9 per cent, valued at 212,708 marks ($51,050)=48 per cent were derived from funds appropriated by municipal governments, corporations, etc., and 535=17·1 per cent, valued at 94,166 marks ($22,600)=21·5 per cent were derived from family endowments. Concerning the last mentioned item we may say that, owing to want of information, it may be very much too small. The Prussian minister of education paid in 1891–'92 the sum of 68,766 marks ($16,704) to needy students and beside that had at his disposal a fund of 100,000 marks ($24,000) for such students of German parentage who consented to accept government positions in the Polish provinces. The foregoing numbers are distributed among the faculties as follows:

Benefices in cash and free dinners were given in 1887–'88 per semester to students of the—

	Protestant theological faculty.		Catholic theological faculty.		Law faculty.		Medical faculty.		Philosophic faculty.	
	Students.	Marks.	Students.	Marks.	Students.	Marks.	Students.	Marks.	Students.	Marks.
Absolute numbers	1,093	151,950	244	34,897	265	62,136	614	88,760	653	103,876
Per cent of faculty	37·7	34·4	8·5	7·9	9·3	14·1	21·4	20·1	22·7	23·5
Per cent of the students of the faculty	41·1	.....	44·6	.....	11·8	.....	17·6	.....	17	.....
Per capita	.....	140	.....	143	.....	234	.....	144	.....	159

From the foregoing table we see that the students of theology are the most numerous of those receiving aid, partly because they are mostly in needy circumstances; partly, also, because for such students the largest benefit funds are in existence. The percentage of the philosophic faculty, which used to be much larger, has decreased in late years in consequence of the addition of students who did not formerly have the right of citizenship in the university, such as agriculturists, pharmacists, etc., and for whom very few endowments for scholarships and benefices exist.

The amounts paid to individuals is generally very small. Almost one half the number of cash benefices amounted to 100 marks ($24) or less per semester. Only 38 amounted to 500–800 marks ($120–$192). Only 9 amounted to 800 marks and more.

The statistics of public instruction in the Kingdom of Bavaria, embracing the years 1869–1892, contain the statement that of every 100 students, 20 were completely exempt from the payment of lecture fees; 25 partially so; together, 45 per cent. Of the students of theology 59 per cent belong to that class; of the law students, 40 per cent; of the medical students, 39 per cent; of the students of philosophy, 50 per cent. Fifteen per cent of the students (330) received aid in cash (54,298 marks or $13,132)=164·5 marks ($39.38) per capita.

It is reasonable to suppose that in Bavaria as well as in Prussia the

number of needy students has diminished during the last twenty years, in consequence of which the cases of exemption from payment of lecture fees are now less numerous than at the beginning of the seventies.

SOURCES OF INFORMATION FOR PART 2.

(1) Personal-Verzeichnisse, published by each university semi-annually. (2) Statistik des Unterrichts im Königreich Bayern. Th. I. Munich, 1873. (3) Statistik der Universität Tübingen. Stuttgart, 1877. (4) J. Conrad, Das Universitäts studium in Deutschland während der letzten 50 Jahre. Jena, 1884. (5) J. Conrad, The German Universities for the last 50 Years. Translation by John Hutchison. Glasgow 1885. (6) Preussische Statistik, herausgegeben vom Königl. preuss. statist. Bureau in Berlin. Preussische Landesuniversitäten. Berlin, 1892. (7) Statistische Mittheilungen über das höhere Unterrichtswesen im Königreich Preussen. (Supplement to Centralblatt der gesammten Unterrichtsverwaltung. Berlin W. Hertz.)

APPENDIX.

The following table is added by the translator as a valuable summary of secondary school statistics, showing the number of boys in Germany who are predestined by their parents at an early age (10 or 11) to pursue higher studies. These students are all boys; for girls who aim at entering the higher seats of learning, no provision in form of preparatory secondary schools is made as yet in Germany. Efforts are being made of late to establish gymnasia (or classical schools) for girls, and the government has the question under advisement.

Number of boys in schools leading up to universities, polytechnica, and other professional schools, in Germany, in 1890.

States of Germany.	Population.	Number of students in the age between 11 and 19 or 20.	Population to one student.
1. Prussia	29,957,367	135,337	221
2. Bavaria	5,594,982	29,412	190
3. Saxony	3,502,684	13,834	253
4. Württemberg	2,036,522	17,018	84
5. Baden	1,657,867	10,587	157
6. Alsace-Lorraine	1,603,506	7,426	215
7. Hessia	992,883	6,782	147
8. City of Hamburg	622,530	5,389	116
9. Mecklenburg-Schwerin	578,342	3,401	170
10. Brunswick	403,773	3,619	112
11. Oldenburg	354,968	1,401	296
12. Saxe-Weimar	326,091	1,806	189
13. Anhalt	271,963	1,620	168
14. Saxe-Meiningen	223,832	808	277
15 Saxe-Coburg-Gotha	206,513	1,465	141
16 City of Bremen	180,443	2,681	67
17 Saxe-Altenburg	170,864	804	212
18 Lippe	128,495	444	289
19. Reuss, junior line	119,811	706	170
20. Mecklenburg Strelitz	97,978	779	128
21 Schwarzb.-Rudolstadt	85,863	380	226
22 City of Lübeck	76,485	1,256	61
23 Schwarzb.-Sondershausen	75,510	999	75
24 Reuss, senior line	62,754	198	170
25. Waldeck-Pyrmont	57,281	267	213
26. Schaumburg-Lippe	39,163	251	155
Total	49,428,470	248,670	198
21 universities of Germany have 28,000 students; 22 polytechnic, agricultural, forestry, veterinary, and mining schools have 8,853 students		*36,853	1,341

*Average age, 19–24.

CHAPTER XI.

SCHOOLS FOR RECRUITING THE CIVIL SERVICE IN FRANCE, AND AN ACCOUNT OF THE CIVIL SERVICE REQUIREMENTS IN PRUSSIA.

By W. F. Willoughby, A. B., and W. W. Willoughby, PH. D.

PART I.—FRANCE.

TABLE OF CONTENTS.

INTRODUCTION.

The subject of special schools, preparing young men for the service of the state in the various positions of the civil service, is of interest from a double point of view—that of education and that of an efficient personnel of Government employés. Of the two, the latter interest is probably the more important.

Of the number of movements looking towards the improvement of the general conditions of society under which all must live, the movement for better government is prominent. Good government can be said to be the result of two conditions—that of a good system and that of the capacity and honesty of those who administer it. The first of these can to some extent be absent. The latter is a *sine qua non*. Hon.

James Bryce has shrewdly said that such is the capacity for government of the New Englanders that they can make a bad system of government give good results. But, however good the system of government may be, the results can not be good unless it is honestly and efficiently administered. Whatever efforts are made in other directions every effort should also be made to secure the best men for the most important and responsible positions in government administration.

It is difficult to see why the government service should not be considered as a profession to be as deliberately chosen as any other. There is no one institution in which the people are so vitally interested. Certainly every movement which will tend to raise the position of servant of the state to a more honorable standing and to attract to it the best men of the country is a step in the right direction.

The purpose of the present paper is to present a sketch of the efforts which have been made by France to secure an efficient personnel for the higher branches of government service through the establishment of special government schools preparing for particular services of the state.

France more than any other country affords us material for the study of the results of the policy of recruiting the civil service through the establishment of special government schools preparing for particular branches of the service. Two conditions in the character of the French life have contributed powerfully to this result—the great centralization and increase of governmental activities and the specialization in the system of public instruction. In America the average youth attends school and on the completion of his studies determines in what direction he will turn his energies. Fortuitous events determine, in a majority of cases, the occupation of each. In France quite the reverse is true. So difficult is the establishment of a position in business that the French boy must at the very earliest opportunity make a selection of the profession he wishes to follow and then direct all his energies toward attaining this goal. As a result the system of technical education has received a development unequaled by that of any other country of Europe, Switzerland possibly excepted, and to an extent which it would take years of growth for American and English technical schools to equal. There is not a trade, and one might almost say not a branch of a trade, which does not have special schools devoted to preparing students in the acquisition of the technical knowledge necessary for its efficient prosecution. What is true of private business is not less true of governmental activities. The technical branches of government administration have been considered as professions to be prepared for as for any other profession.

The second condition which has been mentioned, that of the great increase in governmental activities, has contributed no less to this result. One must have his residence for some time in France to realize the im-

portant part which government plays in the life of the French people. Not only has there been during the present century a constant development of the duties usually performed by a central government, but the domain of private business has been entered, and numerous services have been added to the state. Political and social conditions have led to the assumption of the telegraphic, telephonic, and, in part, the railway system of the country. Economic conditions have long caused the French Government to busy itself with such important interests as forestry and the cultivation of improved breeds of domestic animals. Financial and other considerations have led to the assumption by the Government of the manufacture or exploitation of salt, tobacco, matches, powder, saltpeter, special tapestry and porcelain products, etc. Enormous sums have been spent within recent years on public improvements, roads, bridges, and canals, and these improvements are made much more directly by Government employés than is the case with us. All of this has not only required a great development of the civil service, but also the employment by the state of large numbers of men of whom a high degree of technical skill and ability is required. Such industries as forestry and the manufacture of products which are state monopolies can necessarily have no similar establishments from which to draw their employés, and a training by the state thus becomes almost a necessity.

Among a people where government plays such an important part as in France and where the government service necessarily absorbs a not inconsiderable part of the workers of the country, the whole school system must have in view to a greater or less extent the preparation for this service. The greater number of positions, especially the subordinate ones, require little of what we call technical instruction, at least other than that which must be gained by actual experience in the positions in question. There are, however, a considerable and ever increasing number of positions for the proper filling of which a previous special training is absolutely essential. For the recruitment of these two kinds of positions the Government of France has taken into consideration this difference. For the first the Government has instituted competitive examinations, which relate only to matters of secondary and in some cases only to primary education. In a certain number of services more severe examinations have been established for the employés occupying somewhat higher positions, as, for example, with the minister of the interior, the minister of finance, the prefecture of the Seine, etc. These examinations, as well as other tests established for admission to the service of inspection of the finances, imply a careful and to some extent special preparation. The preparation for these examinations is left to the general school system.

For the positions requiring a technical preparation the Government has established a system of purely Government schools, specially preparing for these services. It is to these schools that this paper relates.

A division must be made at the start between those technical schools which prepare exclusively for the army and navy and those preparing for other Government services. The first have been carried to a high degree of perfection, and special schools exist for the recruiting of each special branch of the army and navy. These schools are, however, of interest, chiefly from the military and naval standpoint, and their consideration does not come within the scope of this report. Also, such schools as the primary and superior normal schools, which prepare only indirectly for the Government service, scarcely come within the strict meaning of special schools preparing for Government employment.

After these introductory remarks, which have been necessary to enable us to appreciate more fully the description of the French system, we will commence the consideration of the individual schools.

THE POLYTECHNIC SCHOOL—*École Polytechnique.*

The idea of special preparation for Government employment through the aid of special schools is an old one in France. Francis I. projected the establishment of a school where 600 youths should be carefully trained to fill positions chiefly in the foreign service. In 1672 the Marquis de Torcy, secretary of state for foreign affairs, founded, under the name of *Académie Politique*, a diplomatic school to instruct young men to become secretaries of legations. These two enterprises, however, had but short lives.

The real modern system of technical Government schools owes its origin chiefly to the military needs of the country, which were felt in the few years preceding the French Revolution. This period saw the establishment of a number of schools which are in active operation at the present day. The School of Bridges and Roads (*École des Ponts et Chaussées*) was founded in 1747, the School of Mines (*École des Mines*) in 1783, and the military school (*École Militaire de Paris*) in 1851.

These beginnings are, however, of more historical than practical interest. The system of government schools as it exists to-day really begins with the French Revolution and the establishment of the Polytechnic school.

The history of the establishment of this school is interesting, as being the outcome of a deliberate plan for securing employés for the Government who should have had a careful preparatory scholastic training. The polytechnic is one of the products of the French Revolution and is one feature of the new régime. Towards the end of the year 1793 all public instruction in letters and sciences had practically ceased. All colleges were deserted. A few national schools, in which officers were educated for the army and navy and for the construction of bridges, maintained an uncertain existence. Of these the School of Bridges and Roads, founded in 1747, excited the most solicitude and was the most important of the Government schools. But so many of its scholars and teachers were drawn to the war that it was practically

inactive. These schools, however, established in different places, accomplished but little as regards real higher scientific instruction; they were isolated, and conducted without regard to their relationship to the services. Finally, scholars were drawn wholly from the privileged classes.

The state was in desperate need of skilled men to take charge of various Government works, the manufacture of guns, powder, etc. It was then, as the result of this need, that M. Lamblardie, the director of the School of Bridges and Roads, conceived the idea of a central school which should generally prepare students for entering all the more technical branches of the Government service. The proposition of M. Lamblardie met with a favorable reception by the convention, and, after a considerable discussion as to the relation the projected school should bear to that of Roads and Bridges, there was created by decree of March 11, 1794, the Central School of Public Works (*École Centrale des Travaux Publics*).

Lamblardie was made director of the school. The number of students was fixed at 400, who should be, on entrance, between the ages of 16 and 20. By a law of September 1, 1795, the name of the school was changed to its present one, *École Polytechnique.* The school itself was reorganized and placed under the direction of the minister of the interior. The number of pupils was reduced at first to 350 and then to 250. From its foundation to the present time the school has passed through a number of reorganizations. These changes, however, have generally resulted in its constant strengthening, until now it is one of the most important scholastic institutions of France. During the exciting times consequent upon the various changes of Government, the students on many occasions took an active part, and the school has a rich military history.

By the side of this *École Centrale des Travaux Publics* or *École Polytechnique*, the convention allowed to live, at least provisionally, until "the new school should attain an assured position," the former national schools, which had until then furnished the state with engineers and officers for its army and navy. These schools formed the natural complement to the Polytechnic and the transition, almost indispensable, between it and the public service. They were definitely preserved by the law of 30 Vendémiaire, An IV, which made them, under the title of schools of application, the complement of the Polytechnic. This system, adopted in the year IV (1795), has been religiously preserved, and in all or nearly all the branches of the Government service to which the Polytechnic conducts, the students going out from it receive special instruction in schools of application before actually entering upon their professional duties.

This has not at all lessened the importance of the Polytechnic. On the other hand, it has made it the center of the system of schools preparing for the Government service. The Polytechnic more than any

other school stands in the same relationship to the civil service as do the military and naval schools to the military and naval services. It is not merely the most important, it is the keystone to the whole system, since it is through it that admittance is gained to the more important of the other schools. The Polytechnic school is thus, in a way, the trunk of a tree, the separate branches of which are the special schools of application. In this way the following schools of application are wholly or in part recruited through it:

The School of Bridges and Roads (*École des Ponts et Chaussées*).

The School of Mines (*École des Mines*).

The Forestry School (*École Forestière*).

The Telegraph School (*École de Telegraphie*).

The School of Hydrography (*École d'Hydrographie*).

The School for the Manufactures of the State (*École des Manufactures de l'État*).

The School of Application of Powder and Saltpeter (*École d'Application des Poudres et Salpêtres*).

In addition to these are the numerous military and naval services, the corps of army and navy artillery engineers, the army and navy engineers, and the national marine.

It will be seen from this statement that the Polytechnic to some extent supplies instruction for those who subsequently enter the army and navy. This, however, but relates to those positions requiring a high grade of scientific acquirements, and it in no way does duty as a military or naval school, properly so called, of which there are a great many other special schools, each relating to a special branch of the service. The important function of the Polytechnic is the supplying to the state of trained employés for the management of public works, the construction and inspection of roads and bridges, the management of the state forests, the supervision of the exploitation of state mines, the direction of the manufacture of tobacco, matches, gunpowder, etc., by the Government, the recruitment for technical scientific positions in the telegraph service, the furnishing of expert hydrographers for the construction of charts for the army and other purposes, etc.

The administration of the school is thoroughly democratic. Scholars are chosen solely through a competitive examination. This examination is open to all, under the following conditions:

The candidates must be native or naturalized Frenchmen. They must be at least 16 and not more than 21 years old on the 1st of January preceding the examination. An exception is made for those at the time in the army, the maximum age being in their cases raised to 25 years.

They must also possess the diploma of *bachelier ès lettres*,[1] or of *bachelier ès sciences*, or *bachelier de l'enseignement secondaire spécial*, or a certificate of the first proof of *baccalauréat de l'enseignement secondaire*

[1] An advantage of 15 points is given on the examinations to those in possession of the diploma of *bachelier ès lettres*.

classique, or a certificate relative to the first proof of the *ancien baccalauréat ès lettres*.[1]

The candidates must also present various other papers, showing that all military duties have been performed, the ability of the parents to support their child while at school, etc. Finally, a physical examination, similar to that for entrance into the military schools, must be passed before the examinations can be taken.

The entrance examinations consist of three separate examinations: (1) written compositions, (2) oral examinations of the first degree, and (3) oral examinations of the second degree.

The written compositions are in the nature of a preliminary examination. They consist of a composition in French, drawing and coloring, the elements of arithmetic, geometry, and trigonometry, and the elements of physics and chemistry. The examination is held in Paris and in the chief cities of the various provinces.

Candidates successful in this examination are permitted to attend the oral examinations of the first and second degrees, which are held in the twelve chief cities of France. These examinations relate to algebra, trigonometry, analytic geometry, descriptive geometry, physics, chemistry, the French language, the German language,[2] geometrical drawing, sketching, and imitation drawing. All these requirements are obligatory. The failure in any one incapacitates the candidate for entrance.

The extensive knowledge of mathematics required by these examinations necessitates a laborious and special preparation during several years prior to the taking of the examination. For this purpose many of the intermediate schools and lyceums have organized special courses looking towards this end. There are also a number of special schools whose object is to prepare students for these examinations. These schools are the colleges Rollin, Chaptal, and Stanislas, and the schools Sainte Geneviéve, Sainte Barbe, and Monge, at Paris, and the Prytanée Militaire de la Flèche and Saint Sigisbert School at Nancy, in the provinces.

There is thus here a distinct departure from the method pursued in the United States for the recruitment of our military and naval schools. With us the selection of students is placed in a few hands—the President and the members of Congress. In France, owing to the technical knowledge required for entrance, actual training commences on an average three years before the school is actually entered. With us the special training only commences after admittance to the school.[3]

[1] An advantage of 15 points is given on the examinations to those in possession of the diploma of *bachelier ès lettres*.

[2] A sufficient knowledge of a modern language other than German gives the possessor an advantage of 5 points out of 100.

[3] It is not intended to assert that one of these methods is preferable to the other. A descriptive paper like the present can not go into a discussion of methods. Each method has its advantages and disadvantages. It can scarcely be desirable for a large

Another important difference consists in the length of studies. The course at the Polytechnic lasts but two years. This, however, as we shall see, is supplemented by the training received in schools of application which the graduating students afterwards enter.

The programme of studies consists almost entirely of mathematics and applied science. A brief statement of the subjects of instruction is as follows:

Calculus.—Differential and integral—two years.

Descriptive geometry.—Different methods for the representation of bodies; a study of the principal geometrical surfaces; the construction of models—one year.

Stereotomy.—Carpentry and stonecutting—one year.

Mechanics and machinery.—Theoretical study completed by the construction of models, the designing of new machines, etc.—two years.

Physics.—Thermodynamics, electricity and magnetism, acoustics and optics, laboratory practice—two years.

Chemistry.—Organic and inorganic, accompanied by experiments—two years.

Astronomy and geodesy.—Practical work—one year.

Architecture.—Theory and the drawing of designs and plans—two years.

Military art.—Two years.

History, geography, and literature.—The military, political, and moral history of the principal nations of Europe during modern and contemporaneous times; compositions on historical topics—two years.

German language, drawing from objects, coloring.—Two years.

Laboratory and workshop practice, the designing and construction of models, are required whenever possible. The instruction in drawing and designing is an object of especial care. In addition to the school instruction, students are also taken on visits of observation to the observatory and to manufacturing establishments in and around Paris. The régime of the school is military. All the students are exercised in military tactics, in horseback riding, fencing, and general gymnastics. The military training and conduct while at the school, however, is much less severe than that at the special military schools.

The students board at the school and wear a school uniform. The cost to the students is about $200 (1,000 francs) for tuition and board

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number of youths to devote their time in preparing for a certain school when but a small portion of them will succeed in entering. With us, on the other hand, many youths enter the academies of West Point and Annapolis who are unable to meet the requirements and are dropped, thus not only to some extent losing a year, but receiving in a way a stigma upon their ability. From the standpoint of the school, however, it would seem that the French system of preparatory schools would produce the best results. As long, however, as the position of cadet at our academies remains, as it is, a coveted position, we need have no fear of obtaining good material. Certainly the past history of these institutions affords no ground for solicitude in this respect.

per year. The outfit and incidentals cost each year from $140 to $150 more (700 to 750 francs). The school, however, is quite liberal in the granting of scholarships. Four grades of scholarships are granted: (1) Full scholarships; (2) half scholarships; (3) scholarships carrying relief from outfit (and incidental) expenses; (4) scholarships carrying half relief from outfit (and incidental) expenses. The number of such scholarships is not limited. As the result of the examination of 1891, there were granted 142 scholarships with outfit, 1 scholarship with half outfit, 2 scholarships without outfit, 5 half scholarships with outfit, and 1 half scholarship with half outfit.

The students rise at 6 o'clock, breakfast at 8:30, dine at 2, and take their supper at 9. Lights must be out at 9:30. The greater portion of the studies courses are between the breakfast and dining hours. From 2:30 to 5 o'clock in the afternoon the time is devoted to recreation, military drill, fencing, gymnasium practice, etc.

The school is located in Paris, on the south bank of the Seine. In general it is well provided with all the necessary equipment and facilities. Its library includes 30,000 volumes.

The position of student in the Polytechnic is one much sought after. The number admitted each year varies somewhat; in 1892 it was 250; contesting for these places, 1,715. The number now admitted forms a great increase over that of former years, in consequence of the very great extension of Government employment since the Franco-German war. Before that event the annual admissions were from 130 to 140.

The Polytechnic, as we have seen, does not prepare directly for the Government service, but only for certain schools of application, each giving instruction preparatory to entering a special service. The choice of the particular branch of Government service to be entered is thus not made by the students until their graduation from the Polytechnic. This choice is made according to respective ranks at graduation. In principle the number of places open in the Government service may be less than the number of graduates, but in fact all the graduates have during the past years had a place in the Government service assured to them. The following tabulation will show the various services entered by graduates during the past six years (1886–1891):

	1886.	1887.	1888.	1889.	1890.	1891.
School of Mines	3	2	2	4	3	3
School of Bridges and Roads	18	10	8	8	8	8
School of Manufactures of the State	1	1	1	4	4	4
School of Telegraphy	.....	1	.....	.....	.....	1
School of Application of Powder and Saltpeter	.....	.....	.....	.....	1	1
School of Forestry	.....	.....	.....	.....	.....	.....
Land Artillery	119	149	154	134	145	188
Marine Artillery	20	12	10	15	15	15
Commissary for the Marine Service	1	.....	.....	.....	.....	.....
Marine Engineering	10	5	5	5	2	5
Military Engineering	35	20	30	36	33	20
Marine Hydrography	1	.....	.....	.....	.....	1
National Marine	6	9	4	4	4	4
Total	214	209	214	210	215	250

Each year two places are reserved in the School of Forestry for graduates of the Polytechnic, but these places have not been taken in recent years.

The graduates who enter the service of the land or sea artillery or military engineering enter the school of application at Fontainebleau. On entering they are called cadet sublieutenants (*sous-lieutenants élèves*) of artillery or engineering, and in this capacity pass two years at Fontainebleau. When their course is finished there they are appointed sublieutenants and placed in a regiment. Those entering a military service other than through this school at Fontainebleau form an insignificant number each year. The Fontainebleau is not what we call the military school of France. That is the school of Saint Cyr. The former is rather an engineering or technical school, as its name, School of Application, implies. That the military services take so large a number of the graduates of the Polytechnic is owing to the technical knowledge required in various branches of the military service other than that offered by military training.

Those entering the service of the mines or of roads and bridges enter the School of Mines or School of Roads and Bridges, where they continue their studies for three years. While at these schools they are named student engineers (*élèves-ingénieurs*) of mines or of roads and bridges. On completing their courses they are appointed engineers of mines or of roads and bridges (third class). Those entering the service of marine engineering pass two years at the School of Marine Engineering as student engineers, and on graduation receive appointments as assistant engineers (*sous-ingénieurs*) of naval constructions. Those entering the manufactures of the state service also receive the title of *élève ingénieur* (student engineer) and are attached to the manufacturing establishments of matches and tobacco. Those going into the service of powder and saltpeter are attached to the central depot at Paris. Those entering the postal service enter the the superior professional school of posts and telegraphs.

Although the Polytechnic was specially created and is maintained for the purpose of training engineers and others for the service of the state, the school is not without influence upon the private industries of France. A number of the graduates usually at once resign and enter into private undertakings, while many who were originally government employés resign after some years of service and enter private manufacturing and other concerns.

The certificate of graduation from the *École Polytechnique* gives the right to holders to contest for the positions of *auditeur* of the second class at the *Conseil d'État*, or to admission into the service of inspection of the finances.

Superior School of Mines (*École Superieure des Mines*).

The *École Nationale Supériéure des Mines* is one of the most important of the schools of application to which the Polytechnic conducts.

With rare exceptions, it is the first choice of those graduating at the head of the list from the Polytechnic. Unlike the practice in the United States, the central Government in France is directly interested to a greater or less extent in the exploitation of the mines of the country, and exercises over all mines the duties of inspection to a considerable extent. The school of mines is organized in connection with this service, and, to quote Article 1 of the decree under which the school is now administered:

> It has for its object the forming of student engineers for the purpose of recruiting the national corps of mining engineers, and the giving instruction to external students who wish to obtain the superior diploma of civil engineer of mines which this school confers.

Until near the end of the eighteenth century France possessed no institution giving instruction in the science of mining engineering. For the exploitation of her mineral resources, wherever technical skill was required, she was dependent upon English and German science. It was not until the beginning of the last quarter of that century that any attempts were made to provide technical instruction in the art of mining. Under Louis XV, in 1769, the acts granting mining concessions stipulated that the concessioners should annually pay a sum for the maintenance of a school of mines.

The true promoter of a scholastic instruction in mining was M. B. G. Sage, a mineralogist, who received letters patent in 1778 to establish a public and free school of mining at Paris. Soon after, in 1783, a School of Mines was definitely created by royal decree. Two chairs were established, one in chemistry, mineralogy, and mineralogical investigation (*docimasie*), the second in physics, underground surveying, hydraulics, the ventilation of mines, the use of machines necessary for the working of mines, the erection of metallurgical forges, etc. Assistant instructors were also provided for.

The length of course was three years; it included theoretical instruction during the winter, and practical operations during the summer, when the students accompanied the Government inspectors in their tour of inspection, or were placed at work in the mines. At the outbreak of the Revolution, however, this school was swept away with other schools. But the policy of educating for the public service was not abandoned. The committee of public safety created, in the place of the school which had been destroyed, an agency of mines (*Agence des Mines*), which, in a measure, carried on the instruction. The celebrated law of October 22, 1795, by which the National Convention organized anew the great public services, transformed this makeshift into a true school of mines. From a school of primary instruction it was made a school of application. The number of students was fixed at 20, to be drawn from among the graduates of the Polytechnic. Ten private or special students were also admitted, who were destined to become chiefs of private mining industries. In order to satisfy the

conditions of this law, a consular decree, of February 12, 1802, abolished the School of Mines at Paris and established in its place two schools, one at Geislautern for the iron and coal mining industries, and the other at Pesey for the exploitation of lead, copper, and silver mines. This system did not succeed, and during the years 1814 and 1815 the schools were practically inoperative.

September 5, 1816, a royal ordinance reconstituted the *École Supérieure des Mines* at Paris. From this ordinance of 1816 dates the true origin of the present School of Mines. Since then the school has continued without interruption to exercise a most beneficial influence on the operation of all mines, public and private. It exists to-day with but few modifications of its organization in 1816. The decree of 1856, though reorganizing the régime of the school, wrought but few fundamental changes in its structure. The school, as at present carried on, is organized and conducted pursuant to the decree of July 18, 1890.

This institution is under the administration of the minister of public works. Though the main object, the *raison d'être*, of the school is that of a school of application to recruit the corps of Government engineers of mines, it yet has other important objects. M. Maternes d'Ocagne, in his work, Les Grandes Écoles de France, makes the following enumeration of its functions, which shows in as condensed a form as possible, both the administrative and general educational importance of the school. The enumeration of these objects is:

(1) To form engineers destined to recruit the corps of Government engineers of mines.

(2) To diffuse among the public a knowledge of the sciences and arts relating to the mining industry, and in particular to form men having the practical knowledge necessary for the exploitation of mines and metallurgical establishments belonging to private enterprises.

(3) To gather and classify all the material necessary for the completion of a statistical survey of the mineral resources of the departments of France and of the French colonies.

(4) To maintain a museum and a library specially devoted to the mineral industry, and to keep these collections on a level with the progress of the mining and metallurgical industries, as well as the sciences relating to them.

(5) Finally, to execute either for the public administrations or for individuals assays and analyses which may aid the progress of the mining industry.

In a word, the school is intended to serve as a general bureau of information concerning matters relating to the mineral industry of the country. In a way it thus includes a part of the duties which, with us, has been intrusted to the Geological Survey Bureau of the Interior Department.

To carry out these objects the school receives four classes of students.

(1) The student engineers (*élèves ingénieurs*), destined for the recruitment of the corps of mining engineers of the Government, and who are taken entirely from among students going out from the *École Polytechnique.*

(2) Private or special pupils (*élèves externes*). These are admitted

through competitive examinations. On the completion of the course of studies they are declared capable of directing the exploitation of mines or metallurgical establishments, and to this effect receive a diploma and title of "*élève breveté.*"

(3) Foreign pupils (*élèves étrangers*), admitted on the application of their Governments, after having passed a satisfactory examination.

(4) Free auditors (*auditeurs libres*), those simply receiving permission, on their own request, to follow a part or all of the courses. They cannot take part in the practical work or in the examinations.

The school possesses a rich library, including, in addition to books of science, a valuable collection of designs and models relative to the mining engineer's art.

It possesses, in addition, magnificent geological and mineralogical collections in its museum. The school is connected with that of the geological survey of France, where are centralized all the documents and information collected by the engineers for the execution of this survey.

Like the School of Roads and Bridges, the School of Mines possesses, annexed to its laboratory, a bureau of assay intended for chemical analyses. Manufacturing establishments, the chiefs of foundries, the exploiters of mines, etc., who desire to have mineral substances analyzed can send them to the school for this purpose. They are only made when it is believed that they will render a real public service, but when undertaken are entirely gratuitous.

The first class of students, student engineers, are recruited solely, as we have seen, from the graduates of the Polytechnic.

The second class, the special students, are admitted after examination. Extraordinary precautions are taken to insure the admittance of only those fully prepared to follow the courses of the school. Candidates must, with some exceptions, first pass an examination admitting to a preparatory course of one year, which must be taken before the school proper can be entered.

The examination for admittance to the preparatory courses includes tests of writing and spelling, drawing, geography, arithmetic, algebra, geometry, plane trigonometry, analytic geometry of two dimensions, the elements of analytic geometry of three dimensions, descriptive geometry, physics without electricity or magnetism, and inorganic chemistry.

Candidates must be Frenchmen and between the ages of 16 and 22.

The preparatory courses include (1) the elements of infinitesimal calculus and rational mechanics. (2) Descriptive geometry and its applications to shadows, to perspective, stone-cutting, and carpentry. (3) Physics. (4) General chemistry.

These courses last from the beginning of November to the end of May.

There is an additional examination for admittance to the school itself, which others than those having taken the preparatory courses can take.

Candidates for this examination must first deposit a page of French written under dictation and five designs of a specified character.

The examination itself consists of four oral examinations on infinitesimal analysis, mechanics, descriptive geometry and its applications, physics and general chemistry, geometrical drawing and coloring (*lavis*). Candidates must be between the ages of 18 and 22. An exception is made for those in the military service, the maximum age limit being raised to 25 years in their cases.

The number of special pupils admitted varies from year to year. The average number is probably twenty.

The instruction lasts three years. It is entirely gratuitous. The character of the courses is designed with special reference to the knowledge required for the exploitation of mines and the treatment of mineral substances. It has also for its object the study of steam engines, the management and materials of railroads, the investigation, preservation, and regulation of mineral waters, etc. The instruction is divided among the three years as follows:

First year.—Exploitation of mines; general metallurgy, iron; analytical chemistry (metalloids); industrial chemisty of the minerals; mineralogy; zoological and vegetable paleontology; topography and leveling; drawings and projects of exploitation and of metallurgy; exercises in the analysis of minerals; exercises in mineralogy and paleontology; exercises in topography.

Second year.—Metallurgy, different metals; analytical chemistry, metals; geology and petrography; machines and the resistance of materials; railroads; industrial economics; projects of metallurgy and machines; exercises in mineral analysis; exercises in petrography; visits to industrial establishments, and geological courses.

Third year.—Applied geology; construction; construction of machines; legislation concerning mines; applications of electricity; artillery; plans for the exploitation of mines; use of machines, and metallurgical work.

In addition, each scholar is required to pursue during the three years a course in English or German, or he may pursue both.

Independently of visits to manufacturing establishments and numerous excursions and of the courses which the students are required to master in order to complete their professional instruction, each student is required to make a sojourn of about a month during the summer vacation in a mining or metallurgical district of France or Belgium. At the end of the third year the student engineers make a second voyage of instruction of about one hundred days in some foreign country. This trip is optional for the special pupils. On the return from these trips the students must furnish a description of the establishments visited, and of the different subjects to which their attention has been directed.

The school year lasts from the first of November to the middle of April.

On the completion of their courses the student engineers are appointed "ordinary engineers of the third class of the corps of mines," with a salary of $500 (2,500 francs) per year. They receive while at the school a salary of 1,800 francs per year.

The actual organization of the corps of mines dates back to the year 1810. In order to appreciate the role of the corps of mines, it is necessary to see it under its triple scientific, industrial, and administrative aspect. The engineers are charged with the inspection of mines, quarries, sources of mineral waters, etc., with the control of the management of railroads, and the study of the geological and mineralogical formation of France in detail. A certain number also devote themselves entirely to the sciences and to giving instruction. A few, under certain circumstances, can obtain leave and enter private establishments.

The personnel of the corps and the salaries paid are as follows:

	Francs.
Inspector-generals:	
First class	15,000
Second class	12,000
Engineers in chief:	
First class	{ 8,000 / 7,000
Second class	6,000

	Francs.
Engineers, ordinary:	
First class	4,500
Second class	3,500
Third class	2,500
Student engineers	1,800

The special pupils who receive the title of civil engineer of mines readily find advantageous positions in private mining establishments, metallurgical works, railroad company shops, etc.

SCHOOL OF BRIDGES AND ROADS (*École des Ponts et Chaussées*).

Among the public services of France which enjoy a high reputation that of the management of roads and bridges occupies the first rank. French engineers have acquired just renown throughout Europe for their skill. This reputation naturally redounds to the credit of the school in which many of them have received their training. The School of Roads and Bridges is the most important, and at the same time the oldest, of the schools of application, the students of which are recruited through the medium of the Polytechnic School. It is this school and the School of Mines which are the more often selected by those having the first choice of service to which they are entitled by their rank at graduation.

The school is located at Paris, and is under the supervision of the minister of public works. Its object is to educate civil engineers to recruit the national corps of engineers, which has charge of the construction and maintenance of the great public works of France—the railroads, bridges, canals, highways, harbors, etc.

The creation of a corps of engineers to have the management of public works dates from the reign of Louis XV. In 1716 Louis created the first body of Government engineers. The first trace of the principle

of specially training young men for these positions is found thirty years later, in 1747, when a state engineer, named Perronet, was called to Paris to undertake a considerable work in connection with the system of public works generally, and was authorized to have a number of young men specially instructed to assist in the work. As a result, Perronet organized what he called a *Bureau des Ponts et Chaussées.* Force of circumstances soon transformed this into a true school. The employés were divided into three classes: the first composed of sub-inspectors or assistant engineers, the second of students, and the third of candidates or young men less instructed, who were permitted to work in the bureau as assistants until they were appointed students.

This, as can be seen, was the creation of a system of regular instruction, and various documents left by Perronet speak of these employés as under the direction now of the *Bureau* and now of the *École*, using the two terms interchangeably.

In 1775 Minister Turgot confirmed officially the institution which existed *de facto.* He published an instruction concerning the *École des Ponts et Chaussées.* Perronet was continued as director of the school. The number of students was fixed at 60. During the summer the scholars were employed on the various Government works. This organization was productive of good results. This was the condition of the school at the outbreak of the Revolution.

January 19, 1791, the Assembly passed a law decreeing that—

> There shall be a School of Bridges and Roads. It shall include 60 students, divided into three classes of 20 each. All shall be appointed.

Nevertheless, during the Revolution the school remained completely disorganized, and the members went into the various armies.

In 1794, Lamblardie, who, on the designation of Perronet, had succeeded to the directorship of the school, as we have seen, conceived the idea of creating a grand school preparatory to all the technical branches of the public service. This idea took shape in the creation of the *École Centrale des Travaux Publics*, which very soon became the *École Polytechnique.* For sometime it was uncertain whether the creation of this school should carry with it the suppression of the schools already existing. Finally, however, it was determined to retain the School of Bridges and Roads in connection with the Polytechnic as a special school of application (*École Speciale d'Application*). The number of scholars was fixed at 36, to be wholly drawn from the Polytechnic. Little further change was made in the school until 1804, when an imperial decree, reorganizing both the corps of engineers and the school, fixed the number of students at 60, to be divided into three classes. The scholars of the first year were to receive a salary of 700 francs, of the second year 800 francs, and of the third year 900 francs per year. Various acts and decrees were made in 1830, 1839, and 1851, regulating the régime and the conditions of entrance to the school, but without materially affecting its work and character. The school is at present carried on under a decree bearing date July 18, 1890.

The School of Bridges and Roads is under the administration of the minister of public works. It is situated at Paris, on the left bank of the Seine. In general, the organization and character of the school is the same as that of the school of mines, except as to the subject-matter of the instruction given. It stands in the same relation to the Government service of roads and bridges as the School of Mines stands to the service of mines. The school has for its primary object the instruction of students who are intended to recruit the national corps of engineers of roads and bridges. But, like the School of Mines, it employs the organization, which has to be made for this purpose, to give instruction to others than those intended primarily for the Government service.

With these objects in view, it admits the same four classes of students as are admitted to the School of Mines, viz:

(1) The student engineers (*élèves ingénieurs*) recruited from the Polytechnic and intended for the Government service of roads and bridges.

(2) The private or special students (*élèves externes*) admitted on competitive examination—a certain number each year.

(3) Students of foreign nationality admitted on the application of their governments after a satisfactory examination; and

(4) Students admitted on their own application to follow a part or all of the oral courses.

The school is well equipped for its work. In its library of over 50,000 volumes it possesses one of the most valuable collections of books relating to the engineer's art which is in existence. It is well catalogued. Its museum of models includes a large number of models and designs of the more remarkable engineering works which have been executed during the past fifty years, such as bridges, viaducts, harbor improvements, etc. A great many of the models possess considerable value on account of the fineness with which they have been executed.

Its experimental laboratory affords facilities for engineering experiments of all description, the testing of the strength of materials, stonecutting, carpentry constructions, forging, etc.

In its physical and chemical laboratory are made analyses of all kinds, which are sent to the school by engineers throughout the country. It is estimated that over 30,000 such analyses and tests have been made at the request of private engineers and establishments.

The student engineers are recruited entirely from the Polytechnic. The number of places varies each year, but is generally between the numbers 10 and 20.

The new decree organizing the school distinguishes between the private students, who must be French citizens, and foreign students. The latter are now only admitted when there remain places after the others have been provided for. As at the School of Mines, a preparatory course has been organized by which most of the private students gain admittance to the school. Admittance to this course is gained by means of competitive examinations. Candidates must be between the

ages of 17 and 20 years, except for those having completed their military service, in whose cases the maximum age is raised to 25 years.

Knowledge is required of arithmetic, algebra, elements of geometry, plane trigonometry, analytic geometry of two and three dimensions, descriptive geometry, the elements of physics and chemistry, linear drawing and coloring.

Seventeen students were admitted to the preparatory course during the year 1892.

The course lasts one year, and consists of instruction in differential and integral calculus, rational mechanics, physics and chemistry, descriptive geometry, stereotomy, the elements of architecture, drawing and coloring.

Those passing the examinations at the end of the year do not have to take the examination for admittance to the School of Bridges and Roads, but are placed at the head of the list of candidates for admittance. Another examination is held for external pupils who have not taken the preparatory course. The age limits for this examination are 18 and 22, or 26 years in the case of those having completed their term of active military service. The programme of studies covered by the examination consists of arithmetic, elementary geometry, algebra, plane trigonometry, analytic geometry of two and three dimensions, descriptive geometry with its applications to stonecutting and carpentry, elements of differential and integral calculus, mechanics, physics, chemistry, and architecture.

The places of private students can be granted to *conducteurs des ponts et chaussées* who have passed the examination and have been in the service at least six years. During their stay at the school they are considered as in the active service and receive the regular salary with the indemnity usually allotted to conductors of roads and bridges while residing at Paris. On the completion of their courses they are placed at the disposition of an engineer-in-chief, to be employed in active service in the same way as the student engineers. At the beginning of the scholastic year of 1892 there were admitted to the preparatory course 7 students, to the school itself 2 conductors of roads and bridges, and 5 public functionaries of foreign nations. The foreign students are admitted in the same way as in the case of the School of Mines.

At the end of their studies the external students receive a diploma of an engineer. They usually find little difficulty in securing good positions in private industrial establishments.

The instruction is entirely gratuitous, as in all the schools of application. It lasts three years, generally from the 16th of November to the 31st of May of each year. The method of instruction followed is in part theoretical and in part practical. The courses of studies according to years are:

First year.—Applied mechanics (resistance of materials); construc-

tion (roads); mineralogy and geology; architecture (employment of wood and iron in constructions, decoration of bridges); political economy; general processes of construction; applied chemistry.

Second year.—Applied mechanics (hydraulics); construction (internal navigation); construction (bridges); steam engines; architecture (employment of wood and iron in constructions, decoration of bridges); administrative law (first part).

Third year.—Construction (railroads); construction (maritime works); administrative law (second part); fortification.

The instruction also includes for each student a study of the English and German languages, experiments in laboratories, graphical works, drawing of plans, coloring, the testing of the strength of materials for the purposes of construction, the construction of machines and buildings, etc.

In addition to the above regular instruction, information is given through conferences to the students on electrical telegraphy, photography, the exploitation of railroads, pisciculture, or new discoveries and important public works.

At the end of each year's course of study at the school the student engineers are sent on missions into the departments and are attached to works in process of construction, in order to exercise themselves under the direction of the chiefs of the service in the practical duties of the engineer. At the end of the third year missions to foreign countries can be given to students who have particularly distinguished themselves during their stay at the school.

While attending the school the student engineers receive a salary of 1,800 francs. On graduation they enter the national corps of engineers of roads and bridges. A few words regarding the character of this service of the Government will not be out of place. The decrees which organized the corps of roads and bridges bear the dates October 13, 1851, March 28, 1852, and June 17, 1854.

The service is divided into (1) the ordinary service, (2) extraordinary service, (3) detached services. The ordinary service is further divided into (1) the general service, (2) special service, (3) divers services. The general service includes the direction and execution of ordinary works relating to roads and bridges in the departments. The special service relates to such special services as the draining of marshes, the regulation of establishments located on water courses, the canal service, and maritime works.

A law of the date of July 12, 1865, created a division of "railroads of local interest." This law requires that projects of work which ought to be executed by the departments in connection with the communes must first be submitted to an examination by the engineer in chief of roads and bridges; and in a certain number of departments the ordinary engineers of roads and bridges have been intrusted with the preparation of the plans for the works and their execution, such was the confidence placed in their ability by the prefects and general councils.

The divers services include the secretaryship of the council general of roads and bridges, the school, the depot of maps and plans, missions, scientific works, etc.

The extraordinary service includes the direction and the execution of large public works not requiring permanent oversight, such as railroads, canals, marine works, etc. The detached services include all the services not specially specified, but which must, nevertheless, be performed by the corps, such as the service of water and paving in the city of Paris, the chairs of instruction in special governmental schools, etc. The personnel and salaries of employés of the service are as follows:

	Francs.
Inspector-general:	
First class	15,000
Second class	12,000
Engineers in chief:	
First class	{ 8,000 / 7,000
Second class	6,000
Ordinary engineers:	
First class	4,000
Second class	3,500
Third class	2,500
Élève ingénieur	1,800

Superior Special School of Posts and Telegraphs (*École Professionnelle Supérieure des Posts et des Telegraphes*).

In France the telegraphs and telephones belong to the central government, and are administered in connection with the postal system as a single service. A school of telegraphy was established in 1878 to recruit the higher positions in the service. It has since been enlarged in scope and now is divided into two sections. It is situated in Paris, and is under the minister of commerce, industry, and the colonies.

The first section is open only to employés of the service who are at least 25 years of age and have had five years of service. They are admitted after a competitive examination bearing upon the following subjects: The postal and telegraphic services; the management and study of telegraph instruments; mathematics—arithmetic, algebra, and geometry; physics—mechanics, heat, acoustics, optics, electricity, and magnetism; chemistry; general history and geography.

This course is intended to train employés for the higher positions of the service other than the engineering branch. The instruction lasts two years. It consists during the first period (October to July) of the history of social relations and of scientific progress; administrative law and civic duties; the legislation and management of telegraphic systems; the applied sciences (elementary mathematics, mechanics, physics, and chemistry); a study of telegraphic and telephonic apparatus; the construction and materials of telegraph lines. During the second period (July to the following April) the scholars pass their time successively in the four services of construction, overseeing, and maintenance of air lines; the construction, overseeing, and maintenance of subterranean lines, pneumatic conduits, and telegraph lines; the exploitation of the great telegraph and telephone systems; the establishment of special telegraphic and postal services.

At the end of their courses the successful students receive a diploma of capacity, which furnishes the only means of admittance to the following positions: Administrators, chiefs and assistant chiefs of bureaus, head agents of the central administration, comptrollers, directors of the departmental and nonstationary services, inspectors and assistant inspectors, receivers of first and second class bureaus, chiefs of the central depot, section chiefs.

The second section is exclusively for the training of engineers for the service of posts and telegraphs. There are admitted to this course the graduates of the Polytechnic who select this service, and others through a competitive examination. Those permitted to take this examination are the agents and subagents of posts and telegraphs having had two years of service—bachelors of science and graduates of the following schools: *école polytechnique*, *école normale supérieure*, *école des mines*, *école des ponts et chaussées*, and *école centrale des arts et manufactures*.

Candidates must be between the ages of 20 and 30 years. The examinations embrace mathematics, physics, chemistry, history, and geography, drawing, and English or German.

The duration of studies in this course is two years. The instruction includes: (1) Theoretical electricity; the management of telegraphs; the management of the postal system; the construction of lines; electrical measurements; practical telegraphy; chemistry applied to telegraphy. (2) Conferences on: administrative law; architecture; military telegraphy; optical telegraphy; pneumatic telegraphy, apparatus for rapid transmission; telephones and microphones; the application of electricity to railroads, and to the transmission of force. (3) The study of the English and German languages; drawing.

Government scholars in this section take the title of "*élève ingénieur des télégraphes*" and receive a salary of 1,800 francs per year. After graduation they enter definitely into the service as assistant engineers (*sous-ingénieurs*) of the corps of telegraph engineers at a salary of 2,500 francs per year.

Free private students, both French and foreigners, are also admitted to this course after satisfying the administration that they have received a suitable preparation. At graduation they receive a simple diploma.

SCHOOL OF MANUFACTURES OF THE STATE (*Écoles des Manufactures de l'État.*)

The Government of France has from time to time taken charge of the entire manufacture of various commodities, and made of their manufacture state monopolies. Tobacco, matches, gunpowder, saltpeter, Gobelin tapestry, Sèvres pottery, etc., are solely manufactured in state factories. The monopoly of the tobacco manufacture was established by a decree of December 29, 1810. These manufactures form one of the public

services which recruit their engineers from among the students going out of the Polytechnic.

From the beginning there has been a marked distinction in the procedure between the methods for recruiting the technical directors of the manufactures and the employés charged with the accounts. We are interested only in the first class.

Until 1824 this special personnel was recruited from young men who, with the title of student of manufactures (*élève des manufactures*) received an instruction in the art, under the direction of higher grade employés. At the epoch of which we speak, the administration recognized that this mode of recruitment did not take sufficient account of the scientific knowledge required. It instituted, in consequence, an "*École à la manufacture de Paris.*" Different functionaries were charged with the special instruction, and two members of the Institute, Mathieu and Gay-Lussac, received the mission to deliver courses in applied mechanics and organic chemistry at the school. It was decided that no scholar should be promoted to the position of "*sous-inspecteur*," a grade equivalent to that of "*sous-ingénieur*," unless he had passed a satisfactory examination giving proof of his scientific knowledge. They even recalled the under-inspectors already employed, and required them to attend the courses. Those who were not able to come up to the requirements in science were transferred to the administrative and clerical force.

In 1831 a royal ordinance required all the scholars for the state manufactures to be recruited from among the students of the Polytechnic. It was determined that after the instruction received in the Polytechnic, the *élèves des manufactures* should receive two more years of training in the special school of application at Paris before becoming "*sous-inspecteurs.*"

It is easy to understand that the instruction given in 1831, which was then almost entirely in pure theory, has changed in character since that time. The instruction to-day is almost entirely devoted to the numerous applications of science to the special and various processes of the service. This instruction of employés has brought about in different ones of the establishments important mechanical changes, showing the desirability of engrafting on the practical and technical training of employés instruction in the higher theoretical studies. The higher grade employés are not only chiefs of industries as in former times, but their position as engineers is frequently utilized for the designing or improvement of material and methods. This instruction is the more necessary since there are no analogues in private industry, the state having a monopoly of the manufacture of the special tools and methods. These engineers who alone know the needs of the manufacture, who alone have at their disposition the material to be worked up, are the only ones who can be looked to to invent or perfect apparatus, to modify methods, and construct the establishments, and, as a result, a high degree of preparatory instruction is absolutely essential to efficient service.

The actual organization of the school dates from 1861. The courses of study include: (1) Analytical chemistry and agricultural chemistry as applied to the cultivation of tobacco; (2) the manufacture of tobacco; (3) the industrial administration and accounts; (4) the manufacture of powder; (5) applied mechanics; (6) special machines and tools; (7) the resistance of materials; (8) construction.

The duration of study is eight months. During the remaining four months the students are sent on missions into the tobacco and powder manufactories in order to commence their practical instruction.

The *élèves ingénieurs* receive 1,800 francs a year salary. After leaving the school they enter the following graded service:

	Francs.
Student engineer	2,000
Assistant engineers:	
Second class	3,000
First class	4,000
Engineers:	
Third class	5,000
Second class	6,000
First class	7,000
Engineer in chief or director:	
Third class	8,000
Second class	10,000
First class	12,000
Administrator	15,000
Director-general	25,000

SCHOOL OF APPLICATION OF POWDERS AND SALTPETERS (*École d'Application des Poudres et Salpêtres.*)

This is not a school in the ordinary sense of the word. The corps of engineers of powder and saltpeter includes only 36 engineers (2 inspecteurs-généraux, 8 chief engineers, 14 engineers, and 12 subengineers), and vacancies are rare. These vacancies, however, are exclusively filled from among the graduates of the Polytechnic. When a scholar is required, he follows a course at the School of Mines, and participates in the work at the central laboratory of powder and saltpeter. The salary of the subengineers is 2,400 francs per year.

SCHOOL OF HYDROGRAPHY (*École d'Hydrographie*).

There exists, under the minister of marine, a small corps of *ingénieurs-hydrographes*, whose duties consist in the construction of charts, the compilation of instructions for navigators, the publication of results of scientific investigations made by the marine departments, and in general those duties which with us are performed by the Hydrographic Office. They may also be stationed at naval stations for the execution of hydrographic works, either in France or in foreign countries. This service is entirely recruited from graduates of the Polytechnic. They are required to have had a two years' course of preparatory training before entering the service. The number required being so limited, not more than one in every two or three years, a true school of hydrography does not exist, but I do not know how better to designate the two years of instruction required than as a school. While pursuing this course

the scholars receive the title *élève-ingénieur* and receive a salary of 1,800 francs per year. On leaving they enter the following graded service:

	Number.	Salary.		Number.	Salary.
Assistant engineers:		*Francs.*	Engineers:		*Francs.*
Third class	2	2,539	Second class	4	6,669
Second class	3	3,069	First class	4	8,185
First class	3	3,486	Engineer in chief	1	10,000

The salaries given are received while the engineers are employed on land. When at sea the salaries are somewhat higher.

National Institute of Agriculture (*Institut National Agronomique.*)

Among the various spheres of governmental activity there are a number which have a more or less close connection with the practice of agriculture, using this latter term in the broadest sense of the word. Such, for instance, as the management of the national forests, the management of the stud farm at Pin, the inspection of agriculture, the service in connection with the phylloxera pest, etc. Partly with the purpose of recruiting the various Government services, but more particularly to create one center of higher education in all matters relating to the exploitation of the agricultural resources of the country, the French Government has established and now maintains at the expense of the state the *Institut National Agronomique*, at Paris. To some degree it stands in the same relation to the classes of service which have been enumerated as does the Polytechnic to the more strictly engineering sciences. In both, the school is used as a recruiting agency to supply students for more special schools leading up to the Government service. In the case of the Institute of Agriculture the preparation of students for other careers than the service of the state is much more developed, and the school is not so distinctly a school preparing for the Government service. For this reason we can not give it as much attention as in the case of the Polytechnic, but must limit ourselves to giving, as briefly as possible, a general idea of the work of the school as preparing for the Government service.

The objects of the school are, to quote from the *Journal Officil*, of April 20, 1891, to form—

(1) Agriculturists and proprietors possessing the scientific knowledge necessary for the best exploitation of the soil.

(2) Special professors for agricultural instruction in the national schools, the practical schools of agriculture, in the departments, in the normal schools, etc.

(3) Educated and competent administrators for the various public or private services in which enter the interests of agriculture, such as the inspection of agriculture, horse breeding, the phylloxera, etc.

(4) Agents for the administration of the forests, in conformity with the decree of January 9, 1888.

(5) Directors of agricultural stations.

(6) Chemists or directors for agricultural industries.
(7) Agricultural engineers.

The institute is composed of two sections: The *École Supérieure de l'Agriculture* (Superior School of Agriculture) at Paris, and the *Ferme Expérimentale de l'Institut National Agronomique* (Experimental Farm of the National Institute of Agriculture), an establishment for experiments and researches established on a farm of about thirty hectares at Joinville-le-Pont.

The school receives students, properly so called, and free auditors, or those not intending to complete the whole course but wishing to follow a part of the courses.

Candidates for places as students must be at least 17 years old, and pass an examination bearing upon the following subjects: Arithmetic, algebra, geometry, trigonometry, descriptive geometry, mechanics, cosmography, physics, chemistry, natural history, physical and economic geography.

An advantage of a number of points is given to those having certificates of bachelor of sciences, or diplomas of certain schools.

The following table will show the number of candidates and the number of students admitted during recent years:

Year.	Number of candidates.	Number admitted.		Year.	Number of candidates.	Number admitted.	
		French.	Foreigners.			French.	Foreigners.
1876	32	20	6	1884	70	49	5
1877	33	20	7	1885	46	35	6
1878	32	21	7	1886	65	39	5
1879	35	24	5	1887	91	46	16
1880	51	35	8	1888	120	86	10
1881	58	40	6	1889	98	61	1
1882	72	51	7	1890	158	79	1
1883	80	48	15	1891	292	79	1

Foreigners can be admitted either as *élèves* or *auditeurs libres*.

The régime of the school is that of a day school. The cost of tuition and expenses is 560 francs per year. Scholarships, however, are liberally offered to those unable to bear this expense. Ten of these carry a remission of the payment of this sum of 560 francs, 6 give in addition to this 1000 francs, and 4 give 500 francs. There are also two scholarships worth 1,000 francs and free tuition maintained by the Department of the Seine. The instruction lasts two years and consists of:

First year.—First semester: Mechanics, general physiology, general chemistry, zoology, physics and meteorology, mineralogy and geology, botany, mathematics.

Second semester: General chemistry, mineralogy, and geology, mechanics, *zootechnie*, physics and meteorology, general agriculture, rural engineering, zoology, political economy, botany.

Second year.—First semester: Agricultural technology, rural economics, agricultural chemistry, rural engineering, *zootechnie*, special agriculture, arboriculture, comparative agriculture.

Second semester: Colonial and meridional husbandry, comparative agriculture, administrative law and rural legislation, vegetable physiology, economic forestry, study of the horse, agricultural hydraulics, hygiene, and accounts.

The scholars are exercised in chemical manipulations, the analysis of earths, plants, and seeds, the management of the microscope, the determination of plants, the drawing of plans, carpentry, leveling, the the calculation of the flow of water courses, etc. Excursions are made once a week to interesting agricultural and industrial establishments. During vacation the students whose parents are not farmers are sent to important farms in France or abroad. The two students graduating at the head of the list are sent at the expense of the state to study in foreign countries during a period of three years. The nine next on the list are allowed to remain a third year to work in the laboratories of the institute, during which they receive 1,200 francs a year. Four places are reserved in the School of Pin for training managers of the National Stud Farm. Finally, the School of Forestry annually takes from 10 to 12 of the students graduating from the Institute of Agriculture. These last two schools, the Forestry School and the School for Managers of Stud Farms (*École des Haras*), we shall now consider, being schools directly preparing for the Government service.

NATIONAL SCHOOL OF FORESTRY—(*École Nationale Forestière.*)

In no service of the State has the good influence of the establishment of a special school for the training of employés for the State been more apparent than in that of the administration of the national forests. For years this service had been the most inefficiently managed of any under the Government. Formerly it was the great resort for the exercise of favoritism. It was here that the influential placed their protégés without the least regard to their fitness or capabilities. This was prior to the year 1820, at which date the forestry administration was reconstituted under a normal régime and made a special service. The school of forestry itself is of comparatively recent origin as compared with the other schools of application. For some unexplained reason, while provision had been made in other sections of the State for the training of employés, the administration of the forests had been neglected. The reorganization of the service in 1820 was not sufficient. The entire creation of an honest and capable administrative corps was necessary. A deputy of the administrative corps, M. Van Recum, in speaking of the service in 1807, said:

> The small amount of instruction of the forestry administration is the principal source of the evil which exists in the administration of the forests. I speak not only of the subordinates but of the superiors as well, who have rarely the knowledge required for their positions.

As the means of improving the service, the School of Forestry was established in 1824 at Nancy, where it has since remained. Its estab-

lishment had the almost immediate effect of raising what had been one of the most inefficient services of the State to one of the most efficient.

The school is at present under the administration of the Minister of Agriculture. Its object is the education of young men destined for the higher positions in the administration of the national forests.

Previous to January 1, 1889, scholars were admitted only by competitive examination, with the exception made for the yearly reception of two students each from the Polytechnic and the Institute of Agriculture. Since that date all the students have been received from among those receiving diplomas from the Institute of Agriculture, with the exception of the two places annually reserved for graduates of the Polytechnic. This change was made because the knowledge required for a good administration of the forests had become so varied and extended that all the subjects of instruction could not find a place in the two years of study originally established, and it was thought better that such instruction should be obtained in the Institute of Agriculture, an institution already in existence, than through the lengthening of the course of study at the School of Forestry.

The number of Government students admitted each year is fixed at 12. The two places reserved for graduates of the Polytechnic are not often taken; from 1883 to 1891, only 13 scholars having passed from the Polytechnic to School of Forestry. The Institute of Agriculture therefore furnishes either 12, 11, or 10 students each year. These places are offered to graduates in the order of their rank at graduation. Candidates must, however, be not more than 22 years of age, unless they have had military service, in which case the age limit is raised to the extent to which they have been in such service.

In addition to the regular Government scholars of which we have been speaking, the school also receives day scholars, both natives of France and of foreign countries. This is in accordance with the regular policy of the French school administration in regard to the schools of application. These students are admitted on the authorization of the Minister of Agriculture without any preliminary examination. The high reputation of the school is attested by the presence of a large number of scholars from different foreign countries who come to attend its courses. Certain governments have special conventions with France for the admittance of their subjects. As regards England, a special order, bearing date of 1867, provides for the instruction each year of five or six English youths whom the English Government desires to prepare for service in the administration of forests of India.

The duration of instruction is two years. The Government students board at the school, but the other students are day scholars.

Each school year is divided into two parts. Six months and a half are employed in theoretical and practical studies, and two months and a half in practical field operations. During the first period, the winter semester, one day each week is devoted to the practical instruction of

the students; the remaining days are occupied by class-room exercises and study. During the shorter period, the summer semester, the students are given practical instruction in the country and forests in the neighborhood of Nancy or in other regions of France. During these terms the scholars visit the Vosges, the Jura, or the basin of Paris. They prepare reports on the utilization of forest products, concerning the conditions in the Alps as relating to the regulation of torrents, etc.

The courses of regular instruction consist of—

(*1*) *Forestry Sciences*, comprising the culture and management of forests, forest technology, tree measurement, economic forestry, statistics of forestry, the estimation of forest properties, and finally the history of the science of forestry (150 lectures of an hour and a half each).

(*2*) *The Applied Natural Sciences*, consisting of the applications to forestry of botany, mineralogy, geology, and finally the ethnology and zoölogy of animals, birds, and insects useful or injurious to forests (150 lectures of an hour and a half each).

(*3*) *Forestry Legislation*, which extends much beyond that of the forestry code of 1827, and embraces important parts of civil law, administrative law, and penal law, the legislation concerning public works, especially that relating to the restoration of forests on mountain sides, the hunting and destruction of undesirable animals (100 lessons of an hour and a half each).

(*4*) *Applied Mathematical Sciences*, as relating to topography, the means of transport in forests (wagon roads, railroads, etc)., the elements of applied mechanics, the construction of bridges, sawmills, and forest constructions generally, the regulation of torrents, the prevention of floods, etc.

(*5*) *The German Language*, so as to be able to read and understand German works on forestry (60 lessons of one hour each).

(*6*) *Military Art*, in order to have the necessary knowledge to become efficient officers in the national army in case of war.

Previous to 1889, when scholars were not drawn from the Institute of Agriculture, there were a number of other courses. Important modifications were made in certain of these which were retained. The courses on agriculture, political economy, general chemistry, and meteorological physics, which had formerly found a place in the curriculum, were dropped entirely, sufficient instruction in these branches being obtained at the Institute of Agriculture.

The school contains important collections of natural history, of wood and forest productions, which are utilized in the courses of instruction. A library contains the majority of French and foreign works relating to the subject of forestry.

In connection with the school, there is also a station for investigation and experiments, the directors of which are two *inspecteurs-adjoints*. This station, which is administered in connection with the school, has for its object to supplement the theoretical instruction by experiments and operations in which the scholars can participate.

With this object in view, the technical management of about 2,600 hectares of forest domain belongs to it, the greater part of which is situated in the environs of Nancy. Here are put into practice the different methods for the treatment and exploitation of forests in conformity with the methods approved by the administration. It should be remembered that no more expense is caused the Government than if it were administered in the ordinary method, and the receipts from the sale of wood and privileges are equally large. In addition to the management proper of the tract, observations in forest meteorology have been taken during a period of twenty-five years, which have been productive of quite valuable results. Various other experiments and investigations concerning agriculture and forest physiology are also carried on in connection with the management of this tract.

While at the school the Government students receive a payment of 1,200 francs each year, but they are required to make a payment at the beginning of the first year of 1,200 francs to defray the expenses of their equipment, and 600 francs each year for riding lessons, and the expenses of their tours of observation.

On graduation from the school of forestry, the scholars who have passed with success the examinations are placed with the grade of *garde-général stagiaire* under an inspector charged to initiate them into the practical details of the service. They then receive a salary of 1,500 francs. After about a year of this service they are named general foot guards (*gardes généraux en pied*) and have the direction of a certain district designated a cantonment. They receive in this capacity a salary of 2,000 francs and an indemnity for traveling expenses of from 300 to 500 francs. The grades which succeed in the service of the forest administration are as follows:

	Francs.
General guards:	
Third class	2,000
Second class	2,300
First class	2,600
Assistant inspectors:	
Third class	3,000
Second class	3,400
First class	3,800
Inspectors:	
Fourth class	4,000
Third class	4,500
Second class	5,000
First class	6,000
Guardians:	Francs.
Fourth class	8,000
Third class	9,000
Second class	10,000
First class	12,000
Inspector-generals:	
Third class	12,000
Second class	13,500
First class	15,000
Directors	18,000

Students entering the service in this way usually attain the grade of inspector, at 4,000 francs a year, at about the age of 42. Almost all become in time inspectors of the first class, at 6,000 francs per year, and the more favored reach the grade of conservators of the first class, with a salary of 12,000 francs.

In conclusion, it may be said that the school at Nancy has fully answered all the requirements of a school recruiting for the Govern-

ment service. It has been very successful, and is to-day one of the best, if not the best, schools of forestry existing anywhere on the continent of Europe.

There are also a number of other schools which aid to some extent in the recruitment of the service for the management of the public forests. Thus the *Institut National Agronomique*, as we have seen, prepares for the *École Forestière*, besides recruiting other public services relating to forestry and agriculture; the *École Secondaire Forestière des Barres* and the *École Pratique de Sylviculture*, which prepare for the lower grades of the forestry administration.

SCHOOL FOR MANAGERS OF THE STUD FARMS (*École des Haras*).

The Government of France has for a great many years interested itself largely in the breeding of horses and the maintenance of stud farms. It maintains for this purpose a fine tract of ground of 800 hectares at Le Pin (Orve), a central breeding farm (*haras*), where there are from 2,500 to 3,000 stallions. This *haras* was established at the commencement of the reign of Louis XV. It was suppressed by the government of the revolution, reorganized in 1806, instituted on a new basis in 1840, suppressed again in 1842, and finally reestablished in 1874. It was at this last date that the school at Pin was put upon its basis and provision made that the service in regard to the *haras* should be recruited entirely from this school, which itself is recruited from the National Institute of Agriculture.

Candidates for the position of student must be between the ages of 19 and 25 years. The number admitted each year is 3. External students to the number of 12 each year may also be admitted. The latter pay a tuition fee of 600 francs.

The duration of studies is two years and consists of: (1) General study of the horse; (2) natural history of the horse, anatomy, physiology, hygiene, pathology, principles of shoeing; (3) maintenance and administration of *haras*, accounts, principles of administrative law; (4) theory and practice of riding, harness, training of horses, etc.; (5) English language, drawing.

The students proper, on graduation, are appointed overseers (*surveillants*), at a salary of 1,800 francs per year.

The grades of the service with salaries are:

	Francs.
Overseers:	
Second class	1,800
First class	2,000
Subdirectors:	
Third class	2,500
Second class	3,000
First class	3,500
Directors of the depot of stallions:	
Third class	4,000
Directors of the depot of stallions—Continued.	Francs.
Second class	5,000
First class	6,000
Inspectors-general:	
Second class	8,000
First class	10,000
Director-general	15,000 to 18,000

SCHOOL OF ARCHIVES (*École des Chartes*).

Since the beginning of the eighteenth century more or less successful efforts have been made by all the governments which have succeeded each other in France looking toward the preservation and publication of the national archives.

In 1708 a royal decree created the offices of guardians of the archives (*gardes des archives*). In 1733 *secrétaires-greffiers* were created, to have charge of municipal and communal archives. The government of the revolution continued these traditions and required all administrators to take the greatest possible care for the preservation of the records of the governments which it displaced. A law of 1795 required all such records to be collected together in the chief place of each of the 86 prefectures which had been created. Nevertheless the collections suffered considerably from the indifference of the administrators during the years 1795 to 1838.

The year 1838 marks the beginning of a new era for the national archives of France. Several years before, in 1834, M. Guizot, then the minister of public instruction, had obtained the grant of an annual sum of 120,000 francs with which to make researches into and to publish documentary material relative to the history of France. He desired also to carry the work into the departments, and for this purpose secured, in 1838, the passage of a law requiring all departments to collect together, house, and classify their archives. In the same year the minister of the interior created the *Commission des Archives*, composed of the most prominent men in the field of education in the country. Previous to 1853 the departmental archives administration was attached to the bureau of statistics. In that year the service was made a special bureau, and two inspectors-general of archives were appointed.

The work in connection with the care and publication of these archives required considerable special knowledge, both concerning the past history and government of France, but more especially of the forms of the French language employed at different epochs of her history. To recruit this service with those having this knowledge a school of archives (*École des Chartes*) was created in 1821 by royal ordinance, which fixed the number of students at 12 and gave to each a small salary. A decree of 1829 created the office of paleograph-archivist (*archiviste-paléographe*), and assured to the students of the school, on their graduation, employment in this position in the public libraries of the state and the national archives.

The actual organization of the school, however, dates from the decree of 1846. The school as now organized is intended solely to educate young men for the position of paleograph-archivists at the national and departmental archives and the public libraries of the state. The completion of their courses gives the students entrance to the following

positions: Archivist at the national archives; archivist at the departmental archives; employment in the public libraries as assistants in the publication of documents relative to the history of France; employment at the *Académie des Inscriptions et Belles-Lettres*, and to professorships at the School of Archives.

A yearly appropriation of 3,600 francs is made for the payment of graduates who do not obtain positions immediately on graduation, but are employed temporarily in works of classification, cataloguing, and other departments of work in connection with the archives and manuscripts.

Students are selected by means of a competitive examination. Candidates must be less than 25 years of age and have received the *bachelierès-lettres*. The maximum number of scholars admitted each year is 20. Sixteen were admitted in 1890 and 18 in 1891. The scholars board outside the school. The school is located at Paris, and is under the administration of the minister of public instruction. Eight scholarships bearing 600 francs each are yearly granted to the students most deserving.

The course of studies extends over three years. It is public and gratuitous. The instruction is in the following subjects:

First year.—Paleography, philology (Romanic), bibliography, and classification of libraries.

Second year.—Diplomacy; history of the political, administrative, and judicial institutions of France; sources of the History of France; classification of archives.

Third year.—History of civil and canonic law of the Middle Ages; sources of the history of France.

Each year the school sends one of its pupils to the *École Française de Rome.*

Though the school is intended but for the recruitment of special services of the state, it has become in reality a true school of the history of France, and the position of student at the school is one much sought after. During recent years the following number of students have been graduated:

1884	13	1888	13
1885	15	1889	13
1886	15	1890	16
1887	14		

Colonial School (*École coloniale*).

In 1885 the governor of Cochin-China sent to France, at the expense of the colony, twelve young Cambodians and one Siamese to learn the French language and institutions, so that they could be employed in responsible places on their return. In 1888 it was determined to add a French section to the school which had been created for the education of the Cambodians, in order to prepare young men for the colonial serv-

ice, the character of the personnel of which at that time left much to be desired. This section was opened to students in 1890.

Its object is the recruitment of the following administrations and colonial corps: Central administration of the ministry of the colonies; colonial magistrates; corps of the colonial commissariat; service of the bureaus of the general secretary of the government of Cochin-China; administration of native affairs of Cochin-China; the personnel of the resident officers in Cambodia, Annam, and at Tonkin; the corps of colonial administrators; the penitentiary administration at Guiana and New Caledonia. The duration of studies is three years, unless the student is a bachelor of law, in which case but two years are required. Students pay a tuition fee of 120 francs per year, and 160 francs for fencing and riding lessons, which are obligatory. Forty students are admitted each year. Candidates must be between the ages of 18 and 25 years, and are selected after a competitive examination. The course of instruction is as follows:

First year.—Foreign colonial systems (first part); French colonization (first part); history, customs, and religions of Indo-China; a course specially preparing for the colonial commissariat service; English language; Annamite language; Chinese characters.

Second year.—Foreign colonial systems (second part); French colonization (second part); legislation and administration of Indo-China; a course specially preparing for the colonial commissariat service; English language; Annamite language.

Third year.—Organization of the colonies; acclimatization and practical medicine; topography; accounts; ethnography; practical construction; colonial productions; legislation and administration of Indo-China; English language; Cambodian language.

Only those intending to adopt careers in Indo-China are required to follow the courses in the Eastern languages.

A considerable development is expected in the sphere of activities of this school; and in measure as it develops a separation will be made of the studies into groups corresponding to the different colonies and kinds of services.

Six scholarships, each bearing 1,200 francs, are offered in favor of students of the second and third year classes.

At the end of the third year the number of places at the disposal of graduates of the school are indicated to them. The students then select their places in the order of their standing at graduation. Since the first of January, 1892, three-fourths of the vacancies which have occurred in the services which have been enumerated have been reserved to students of this school.

Those admitted into the Government service are at first appointed to the position *stage rétribué*, with a salary of 2,400 francs, in Europe. Then as vacancies occur they are drafted into foreign administrative positions at increased salaries.

SPECIAL SCHOOL OF MODERN ORIENTAL LANGUAGES.

École Spéciale des Langues Orientales Vivantes.—This school has been created in order to give instruction in modern oriental languages so as to prepare young men to fill the positions of consuls and interpreters in these countries. It is located at Paris and is under the administration of the minister of public instruction.

The courses are public and open to all. But the regular students intended for diplomatic and administrative positions must be between the ages of 16 and 24 and possess the title of bachelor of letters or bachelor of sciences.

The courses of studies last three years and consist of instruction in the following languages and subjects: Written Arabic, common Arabic, Persian, Turkish, Malayan and Javan, Armenian, modern Greek, Chinese, Japanese, Annamite, Hindostanese and Timoul, Russian, Roumanian languages; geography, history, and legislation of countries of the extreme East; geography, history, and legislation of Eastern countries under Mussulman dominion.

After the first year, scholarships may be awarded ranging in value from 250 to 1,200 francs. The graduates who are the most distinguished on account of their aptitude may be sent at the expense of the state to the countries whose languages they have learned, to perfect themselves in the use of these languages and to acquire a knowledge of the political and commercial interests of the countries.

During recent years 66 students have been graduated from this school, of which 12 were in 1887, 14 in 1888, 6 in 1889, 19 in 1890, and 15 in 1891.

SCHOOLS IN CONNECTION WITH THE NATIONAL MANUFACTURES.

As is well known, the French Government carries on as state enterprises the manufacture of various articles belonging to the decorative or fine arts department. Among these the most important are the manufacture of porcelain at Sèvres, the manufacture of Gobelin tapestry at Paris, the national manufacture of mosaics, and the manufacture of tapestry at Beauvais. In connection with these establishments, and for the purpose of recruiting more especially the artist-workmen required at these manufactories, the Government has established at each apprenticeship schools in decorative art.

Of these the one at Sèvres is the most important. The instruction here lasts two years in a preparatory school, and two years in the first division and three years in the second division of a special school. The number of students is limited to 20. When admitted they must be at least 12 years old. They are selected preferably from among the children of employés of the manufactory. After the second year they receive a salary of 100 francs a year. In the special school, 300 francs

per year are paid in the first division and 600 francs per year in the second division (during the last year 1,000 francs).

The instruction relates to drawing, modeling, coloring, decorating, and the technique of the art of porcelain manufacture as practiced at Sèvres.

At the Gobelin manufactory students are received without examination in a preliminary course, where they compete for entrance into the school of tapestry. At the end of a year the successful ones are named apprentice students and receive a salary of 600 francs a year. They are next appointed apprentices at 900 francs and commence work in the factory itself. Starting from this moment until they are 20 years of age they follow during the winter the superior course at the academy.

The school at the national manufactory of mosaics was founded in 1876. Its object is mainly to educate skillful workers in mosaics for private establishments, as only a few of the students are received in the national factory, whose entire force of artists numbers but 10. The instruction given is partly received at the School of Decorative Arts (*École des arts decoratifs*), the school in connection with the Gobelin factory, and partly in the mosaic factory itself. The instruction lasts two years. During the second year the students receive 500 francs.

The instruction at Beauvais is organized on the same model as that at the Gobelin and Sèvres manufactories. Scholars are appointed, who must be at least 12 years old, to attend a preparatory course, and afterwards a superior course in connection with work in the factory.

With the foregoing we must terminate our consideration of the particular schools preparing for the civil service of France. Not that these schools which have been considered are the only ones preparing for the civil branch of government service. In a country where governmental duties are so varied and play so important a part in the industrial economy of the nation it is inevitable that the whole school system of the country should be in a measure affected, and there are a number of schools which have not been included in our survey which directly or indirectly prepare their students for government employ. But all those schools whose main object is such instruction have been considered. A large class of schools which have been omitted is that of schools which are to some extent connected with the military and naval services, though not constituting what we would call military or naval schools. In the United States we have but two schools where all military and naval instruction is given. In France, with its enormous standing army, and the great detail and efficiency to which each service has been brought, specialization has been carried to an extreme limit. There thus exists, in addition to numerous schools preparing each for a special branch of the service, schools for surgeons, for military and naval pharmacists, for administration of the army and navy, for veterinary surgeons, for mechanics and engineers of the war vessels, etc.; positions whose duties are mainly civil, though performed in connection

with the military and naval services. No little difficulty has been experienced by the writer in determining what schools should properly be treated in this paper.

It is hoped, however, that the main purpose of the paper, to give a broad idea of the general system of scholastic preparation for the service of the state in France has been accomplished.

We shall conclude our work with some account of the attempt, during several years successful, to maintain a civil academy in the more restricted meaning of the word, i. e., an academy giving instruction in national economy, public finance, administration, and in general the imparting of that information the possession of which is the *sine qua non* of enlightened statesmanship.

In many respects the history of this effort, though as yet unsuccessful in France, is the most interesting and instructive of any feature of the subject which we have been considering.

EFFORTS TOWARD A SCHOOL OF ADMINISTRATION.

In the foregoing schools the services to be recruited have, without exception, been such as require a special knowledge on the part of their employés. School after school has been created until all of the technical and scientific branches have been more or less well provided with special schools for the recruitment of their personnel. The service of administration, a service requiring not less of a higher and special training, has alone been left unprovided for at the present time. This has not been because France has not given considerable attention to the subject, but because the benefits, though they might be as great, do not admit of as clear a statement, and because such preliminary training can in a measure be acquired either in existing schools and colleges or after admittance to the service is obtained.

France has nevertheless made important efforts to fill this gap in the preparation for the service of the state, and on more than one occasion it has been proposed to crown her system of government schools by the creation of a special school of administration, in which students should be prepared for positions in the administrative departments and in the foreign diplomatic and consular services. Since the first creation of the Polytechnic, a school having special reference to the engineering services of the state, the creation of a similar school for the recruitment of administrative positions has been more or less discussed by educators and has been before the French legislature in one form or another. The idea finally assumed a definite form towards the end of the Government of July. A special commission appointed to inquire into the advisability of the establishment of such a school made a favorable report in 1847. After the revolution of 1848, a new commission made its report favoring such a school in the year of the revolution. As the result of this report M. Hippolyte Carnot, then the minister of public instruction, recommended, and March 8, 1848, the Government decreed,

"that there be established a school of administration destined for the recruitment of the various branches of administration, on the same plan as that of the Polytechnic." An entirely new school, however, was not at first created. Dictated largely by motives of economy the new institution was annexed to the College of France. A decree of April 7, 1848, created at the college for this school new chairs of instruction in the following subjects: French politics, private, public, and criminal law, general economics, statistics of agriculture, mines, arts, and manufactures, public works, finance, commerce, administrative law, the history of French and foreign administrative institutions. In addition the school made use of existing chairs of history, literature, etc.

The term of studies was fixed at three years and the number of students at 200. A complete organization was made and the school opened in that year.

In November, 1848, the school was separated from the College of France.

The school, however, had but a short life. It was unable to maintain its existence during the political changes of the period, and was suppressed in 1849. Though the project has been repeatedly revived, and attempts have been made at different times, as in 1869, 1876, and 1881, to reestablish the school, it has as yet never been pushed to a successful conclusion.

This failure to reestablish a school of administration is not due to a rejection of the principle that such a school would be valuable in increasing the efficiency of the service. It is due to the inherent difficulties of the case. It is a much more delicate matter to prepare for the services of pure administration. In the administrative services the knowledge required is so various that it is much more difficult to determine the exact character of the instruction to be given. It is not sufficient to establish a school preparing generally for administrative positions. Particular services must be designated as ones which can be profitably recruited through it, such as positions in the diplomatic and consular services, attachés of the chiefs of departments and bureaus, statistical experts, examiners, etc.

These difficulties, though inherent, are by no means insurmountable. The *École Libre des Sciences Politiques*, of Paris, though a school organized and carried on as a private undertaking, furnishes a brilliant demonstration of this.

Though, as I have said, this school is not a Government institution, it yet has such close relations with the Government service, that to omit its consideration would be to omit the description of one of the most admirable scholastic institutions of France as regards the furnishing of trained servants for the higher administrative positions of the French Government.

It has the additional claim to recognition in that it is the lineal successor of the school of administration which came to its premature end in 1849.

In 1866, M. de Malarce, a former pupil of the school of administration, sought, through his personal efforts and through the press, to prepare for the re-establishment of this school as a private establishment. This idea was realized in 1872, when M. Boutmy, also a former student of the school of administration, created at Paris the *École Libre des Sciences Politiques*. A notice, published by the school at the time of its organization, declares the objects of the school as be as follows:

As a whole the instruction given by the school of political sciences forms the natural crowning of all liberal education. Its program embraces the principal branches of knowledge to which no cultivated man should be a stranger. From the special point of view it proposes the same object as the old school of administration. Each of the grand divisions of its instruction constitutes a complete preparation for one of the following careers, and for the examinations through which entrance to them is obtained: (1) The diplomatic service, the ministry of foreign affairs, legations, consulships; (2) counsel of state (conseil d'état), auditor of the second class; (3) administration, central and departmental administrations, under-prefects, secretary-generals of the departments, prefecture councils; (4) inspection of the finances; (5) court of accounts; (6) colonial employment.

The statement of the various courses included in the curriculum will best show the important branches of education covered. The instruction is organized in five sections.

I. Administrative section.—Comparative administrative organization; administrative matters; financial systems of the principal states; public revenues and taxes; political economy; statistics; external commerce and customs legislation; constitutional law; the constitutions of Belgium, Switzerland, Germany, Austria-Hungary, and Italy; parliamentary and legislative history of France since 1789; the English or German language.

II. Diplomatic section.—Geography and ethnology; diplomatic history; description of contemporaneous Europe and Eastern affairs; economic geography, foreign commerce, and customs legislation; rights of nations; international law; comparative commercial and maritime legislation; comparative military organization; the English or German language.

III. Economic and financial section.—Political economy; the financial systems of the principal states; public revenues and taxes; statistics, foreign commerce, and customs legislation; economic geography; comparative administrative organization; administrative matters; comparative commercial and maritime legislation; international law; the English or German language.

IV. Colonial section.—Organization of the central power; administrative matters; markets of the state; revenues and taxes; international law; economic geography; foreign commerce and customs legislation; colonial systems; law and administration of Annam *vs.* Turkish law; French colonial legislation; history of the relation of Western powers with the extreme East; colonial geography; political economy; money, exchange, and credit; the English language.

V. General section (*public law and history*).—Comparative civil legislation; constitutional law; parliamentary and legislative history since 1789; diplomatic history from 1789 to the present time; description of contemporaneous history and Eastern affairs; law of nations; history of political ideas and public thought; political economy; finance; geography and ethnology; the English or German language.

The faculty and corps of instructors includes twenty-two professors, taken from the *Conseil d'État*, the Institute, the law faculty of the university, the heads of administrative departments, etc. The school receives regular students, who follow the whole course, and auditors who attend only special-lecture courses.

The duration of studies is generally two years. It can be extended to three years where a specially careful preparation is required.

The tuition fee for a fully registered student is 300 francs per annum; for attendance on a single course of one lecture a week, 60 francs.

A traveling scholarship of the value of 5,000 francs is offered once every five years to students having graduated during the preceding five years.

The success of this school as a school of administration has been remarkable.

M. H. Vuibert, in his excellent description of French schools for 1892, says:

> From the special point of view of preparation for the government service the school of political science has replaced the old school of administration. Since 1880 all the candidates received at the department of the inspection of the finances have been prepared by this school. The great majority of candidates admitted to the *Conseil d'État*, the court of accounts, and to the ministry of foreign affairs, have attended this school.

Commissioner Chamberlain, in his report on Education at the Paris International Exhibition of 1878, said of it:

> Although a private institution, it is likely to be, in its scope and efficiency, the great civil-service school of the state.

The greatest proof, however, of its success in preparing for the government administration lies in the fact that much of the discussion concerning the establishment of a government school of administration has taken the form of making of this school a national school, rather than attempting to create a new institution on new foundation.

The good work which has been done, is due in part to the great pains taken to keep the school in intimate relation with the government services to which its instruction relates. In large part its professors are drawn from those occupying the chief places in the departments.

CONCLUSION.

It is not difficult to discover the spirit which has inspired the creation of the different schools considered by this report. As is the case in all governmental institutions, systems of administration are rarely created. They are a growth. As a need makes itself felt, an instrumentality is devised to satisfy such requirement. Individual features are thus created, and the combination of these features, the system, is the aggregation of these units as they are created from time to time. The student no doubt prefers to find as the result of his studies a completed system which can be described as a harmonious whole, but in the field of administration this is a desire rarely gratified.

In our present study we have found much of interest relating to our search, but we end by saying that no system complete either in theory or practice has been found. Though France has done more than any other country in the fitting of young men for the service of the state

through a scholastic training, she has not done it as the deliberate elaboration of a scheme previously conceived and worked out. Each school has been created to meet the wants of a particular service as the needs of that service became prominent enough to demand that some action be taken.

Though the foregoing schools have not been created on a uniform plan, they have many features in common, which permit of their being studied as a whole. Though not correlated into a single system, it is evident that their organization has in many respects been along the same lines, which enables us to select certain features as indicating the policy which has dominated in the creation of all the schools.

The most prominent, and at the same time the most important similarity, is found in the nature of the services which have been selected to be recruited through special Government schools. Without exception they have been such as require a quite special previous preparation on the part of their employés. In the various engineering services of roads and bridges, mines, etc., a considerable knowledge of higher mathematics has been a *sine qua non* of good services. In others, such as forestry, the manufacture of tobacco and other products, the superintendence of the *haras*, etc., the duties were of such a nature that the ordinary schools did not, nor was it advisable that they should, attempt to give instruction in the particular branches of knowledge required. In general we may say then that France has found it advisable to organize a special system of instruction in all those services, in which a special, and in general a scientific, training is required of the employés. So completely has this idea been carried out to all services in any way partaking of this nature, that there can be but little doubt that the system has furnished better results than that of recruiting in the ordinary way from among those not having received such special training.

Another distinctive feature of the system is the policy of grouping special schools of application around larger and central academies, as with the Polytechnic and National Institute of Agriculture, and giving in these academies all the general instruction required, leaving the professional instruction to the more special schools. This system has many undoubted advantages. For two or three years it gathers together a large number of students at just that age when the students themselves are least fitted to determine what career they are best adapted to undertake. The important point here is that the students on entering do not know what particular service they are going to enter. It is only on graduation that their rank entitles them to a choice. Thus in the preliminary training they are constantly in connection with those preparing for all the services; in a measure they examine the character of each position in order to make a satisfactory choice, and at the end of their studies are much better qualified to select a Government career most advantageous to the Government service.

The third feature which we find common to the whole list of schools is the simultaneous instruction of Government pupils, intended for employment by the State, and free students, or those desiring a similar instruction to that given in the Government schools. There is no one feature which to me seems so happy a conception as this. In many cases it has been found necessary to create a system of instruction for the education of but a comparatively small number of students. The system once organized, little or no extra expense is entailed by allowing additional pupils to attend the courses. In this way these schools have become important parts in the system of schools for technical education, which France has so perfectly organized. But especially must this practice exert a good effect on the Government pupils themselves. They are then not so isolated from outside influences. The danger of a few students taken apart and subjected to a fixed course of studies, becoming impervious to outside suggestions and dropping into ruts—a danger by no means absent from schools of this class—is largely averted, and the pupils, at least as long as they are pupils, are kept in touch with the outside world. The competition displayed for opportunity to attend these schools as free pupils furnishes us at the same time the best evidence of the high estimation placed on the character of the training there to be obtained.

A final feature common to most of the schools is one which has not been brought out in our consideration of the individual schools. This is that the direction, and in large part the instruction, is in the hands of chief officials of the services to be recruited, who are detailed for this service on account of special aptitude and attainments. The effect is to insure that the instruction given is always exactly of that character which the services require. At the same time this system is not without its dangers. If too closely adhered to, narrow-mindedness, conservatism, and unwillingness to accept improvements coming from outside suggestions may be the result. It is not for a moment desired to convey the impression that such has been the case in the present instance. The writer did not have such opportunities of observation as to warrant him expressing his opinion on this point. As can be supposed, both advocates and opponents of the system of Government service schools were encountered, and this point was mentioned more than once by those not favoring the schools.

In conclusion, the writer must say that he regrets that the school of administration established in 1848 did not have a continuous life to the present time. The history of the School of Political Sciences has shown that there are certainly a number of services coming under the head of administration, to which such a previous training is applicable, such as the positions of consular clerks, diplomatic attachés, certain legal officers, employés of the department of foreign affairs, statistical employés, etc. In these cases their duties admit of clear definition, and the character of the instruction to be given can not be in doubt. In

some respects a school of administration would be the keystone to the whole system, and for us would possess more features of interest than any other one school.

In the foregoing sketch of schools of France preparing for the Government service, though I have made no reference to similar services and conditions in America, I have nevertheless kept constantly in mind the consideration that if studies such as the present are to be of value they must be prepared not as a mere historical inquiry, but as a description of conditions which may be of service to the people in considering kindred questions. The establishment of a scheme of scholastic preparation for the Government service can scarcely be called a live one at the present time. It nevertheless involves questions worthy of careful consideration, and is not altogether neglected by those most interested in educational questions.

As showing the views of at least one of our most prominent educators, I insert the remarks of Prof. Herbert B. Adams, of the Johns Hopkins University, on this subject, as expressed in his History of William and Mary College.[1] He says:

The Government is compelled to patronize institutions of learning from self-interest, for the reputation of its departments and its scientific bureaus, some of which are constantly turning to colleges and universities for special work. The War and Navy Departments have detailed no less than ten men for further scientific training or for the conduct of necessary Government investigations at the Johns Hopkins University. Various members of the university staff have been employed upon special commissions in the interest of the Geological and Coast Surveys, Bureau of Education, etc. This comity between science and the Government ought not only to continue, but to be promoted, especially with reference to political science.

IDEA OF A CIVIL ACADEMY IN WASHINGTON.

While the National Government will continue to seek special service wherever it can best be found, and while its public servants will continue to seek special training wherever they prefer, it is not inexpedient to suggest that the Government might easily secure for the civil service what West Point and Annapolis have so long provided for the Army and Navy, viz, well-trained men for administrative positions requiring expert service. There is in these times as great need of special knowledge in civil science as in military and navy science. A civil academy for the training of representative American youth would be as great a boon to the American people as the Military and Naval Academies have already proved.

The West Point and Annapolis idea of educating representative young men from political districts is already abroad in nearly every State in the American Union. A combination of this idea with the merit system in appointment is frequently made by Congressmen in the institution of a competitive examination to discover whom they shall appoint as cadets. The joint system has long been established in the State of New York, the center of political gravity in these United States. The system should be taken up by the present administration, which sprang from New York and which represents the New York idea in administrative reform. The West Point plan of taking student appointees from Congressional districts, and the Cornell University plan of student appointment for merit, should be transplanted together to the city of Washington. From each of the three hundred and twenty-

[1] Circular of Information No. 1, 1887, of the United States Bureau of Education.

five Congressional districts there should be appointed by the respective Congressmen, upon competitive examination held by the State or leading university, or by some other impartial examining board, one student of the grade of bachelor of arts, to enjoy Government tuition in Washington for two years at a civil academy, as hereafter described, with an allowance of $600 a year for necessary expenses, as is now done for cadets at West Point and Annapolis. As at these two Government academies, so in the civil academy, if properly constituted, undoubtedly a large proportion of the appointees would be "found deficient;" many would resign for professional reasons or from dissatisfaction with the civil service, but a choice remnant would surely be saved to the State; the fittest would survive. Even if all returned to their own homes after two years' public training, the cause of good citizenship would be greatly promoted.

Men thus educated would prove of great service to the Bureau of Labor or to the Bureau of Statistics. They would be capable of doing much of the special work now required in the taking or elaboration of the United States census. At present special economic or statistical work is sometimes done by men selected upon political recommendation and not always thoroughly fitted for the task required.

That this idea is in the air of Washington and is not deemed impracticable by practical politicians, is seen in the recent remark of Mr. Trenholm, Comptroller of the Currency, who is reported to have said: "It is my intention to take young men from various parts of the country and give them a preliminary training in this office; fit them for bank examiners, and then appoint them. By this arrangement I think I will be able to have in these positions men who have excellent qualifications for their duties, and thus make a most efficient force of bank examiners. Besides, it will be the best kind of civil service reform." [1]

The system might be applied also to the training of picked young men for the consular, diplomatic, and other branches of the public service which require special knowledge. European Governments foster their civil and diplomatic services by systematic training in connection with Government offices and schools of administration. The practice is already beginning to evolve in connection with the State Department and the training of consular clerks.[2] It might easily be extended in connection with other departments and the various scientific bureaus.

The Government commission for the civil service academy or Government college should not be appointed in the interest of party, but of scientific politics and good administration. It should be as trustworthy as the three commissioners for the government of the District of Columbia, and it should work in perfect harmony with the administrative offices of the Government.

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[1] "The Civil Service Commission and the heads of bureaus." Baltimore American, January 16, 1887.

[2] The consular clerk system was inaugurated by act of Congress approved June 20, 1864 (see 15 Statutes at Large, p. 139; Revised Statutes, sections 1704 and 1705). Consular clerks, not exceeding thirteen in number at any one time, are appointed by the President. They are assigned to such consulates as the President shall direct. At present they are assigned to the consulates at Havana, Paris, Rome, Kanagawa, Bordeaux, Turin, Liverpool, Berlin, London, Cairo, Chemnitz, and Honolulu. Before appointment it must be satisfactorily shown to the Secretary of State, after examination and report by an examining board, that the applicant is qualified for the duties to which he may be assigned. A consular clerk can not be removed, except by cause stated in writing, which must be submitted to Congress at the session first following such removal. Consular clerks hold office during good behavior. They usually receive instructions at the Department of State before going to their posts. The idea underlying this system is that of training young men for consular positions of the higher grade. One consular clerk, not now in the service, was promoted to a consulship; many of them have been made vice-consuls, and some of the present incumbents fill the vice-consular office in addition to the consular clerkship.

These considerations are of great importance. To one not living at Washington a realization of the amount of purely business work requiring the highest degree of special and technical instruction is impossible.

An inspection of the great range of duties now performed by the central government reveals a great many services requiring the most special description of training, the possession or nonpossession of which determines whether it will be well or badly performed. The mention of but a few of the scientific bureaus, the Coast and Geodetic Survey, the Geological Survey, the Bureau of Ethnology, the Nautical Almanac Department, the scientific bureaus of the Department of Agriculture, and such services as the diplomatic and consular services, the corps of examiners of patents, etc., will, to some extent, illustrate the varied and special information required. It is in such positions as these that improvement might be looked for through the creation of special schools. Each year the necessity for specialization in knowledge becomes greater. In this the administration of government is no exception. The necessity for expert knowledge in the service of the Government becomes yearly greater. Personal aptitude is without doubt the first condition for success in any profession, but natural aptitude has need of special instruction in order that it may obtain its fullest development. In the Government service, as in every occupation, there must always be a difference between employés chosen at hazard and those specially trained for the performance of the duties which they are called upon to discharge.

The determination of the desirability of special training must be made for each service on its own merits. It is safe to say that an effective school of administration can only be obtained through the designation of a few services, the recruiting of which should be solely through the school of administration to be established. Then, from time to time, as the system develops, additional services can be put under the same régime. What services should and what should not be so treated can only be decided by the practical administrative heads of the departments, and not by outside educators, however much they may here give the subject attention.

The experience of a foreign nation whose system is as complete as that of France can not but be of service to us in considering these questions as relating to our own Government.

Civil Service Requirements in Prussia.

INTRODUCTORY.

It has been thought that the value of this report will be enhanced by subjoining to the account of schools for recruiting the civil service in France, a condensed statement of the extent and character of the scholastic requirements for admission to the civil branches of the public services of the Prussian Kingdom. Though the conditions for admis-

sion to governmental service here are no less severe than we have found them to be in France, in neither Prussia nor Austria has the French method been followed of establishing schools for the special and almost exclusive purpose of providing instruction whereby the youth of the land may be enabled to meet these scholastic conditions. The schools of Prussia and Austria being already under the control of the general government, the plan has been followed, rather, of consciously modifying the curricula of existing institutions, and of considering these needs in the establishment of new technical institutions. That is to say, we do not find in Prussia or Austria schools of an exclusively civil service character, such as, for example, the *École Polytechnique* and its affiliated schools, but in their place find the courses at the universities framed so as to meet civil service requirements, and discover throughout the land a large number of technical schools where instruction is given to all those desirous of obtaining such special knowledge, without reference to whether or not they intend upon graduation to enter the public service. At the same time those who do desire to stand the examinations set by the State for appointment to office, have thus the means of preparing themselves in the necessary special branches. Besides her ten universities, her gymnasia, and common schools, Prussia possesses the following technical schools: Polytechnica in Berlin, Hannover, and Aachen; academies of forestry at Eberswalde and Münden; agricultural academies at Berlin and Poppelsdorf, besides departments for study of agriculture connected with several of the universities; high schools for veterinary surgeons at Berlin and Hannover; school for architecture at Nienburg; mining academies at Berlin, Clausthal and Saarbrücken; and pomological institutes at Proskau and Geisenheim.

This being the condition that prevails, it has not seemed practicable to describe all these schools, which would obviously necessitate a description in detail of the general school system of Prussia. Rather, it has seemed best to content ourselves with a simple statement of the character and amount of scholastic and practical preparation required of candidates for office. Naturally only the higher administrative offices will be considered, where the requirements are significant, and these as a rule only in large groups, the conditions being given that govern the appointments to all positions of a given character or rank, and the detailed requirements for individual offices being stated only where of special interest as illustrating the preparation demanded of a class to which such position belongs.

In the first section of the account which follows is given in some detail the fundamental law which regulates entrance to all the higher offices where special judicial knowledge is required, and in the second section the law governing appointment to all positions which fall in the higher branches of the public service generally, technically known as "*Der höhere Verwaltungsdienst.*" In the remaining sections are given in less detail the special requirements demanded of officials intrusted

with duties of a technical nature, and the lesser requirements set for subordinate functionaries.

There will be noticed the important fact that all public officials in the higher administrative branches, whether they be judicial officers or not, are required to possess a very considerable knowledge of public law, including administrative and constitutional law, an acquaintance with the practical operation of government in all its details, the legal and administrative relations between different governmental departments, and, finally, a knowledge of political economy and political science in general. Thus it will be seen that there is guaranteed on the part of the prospective functionary such a breadth of political knowledge as will enable him intelligently to understand his duties, to appreciate his legal rights and responsibilities, and thus to make his efforts harmonize with those of his coordinate or superior officials.

As regards subordinate positions it will be noticed that though appropriate examinations are set, many of them are open preferably, if not exclusively, to those who have completed the full term of military service.

In all but the lowest positions it will be found that a period of probationary practical service is required. Thus is joined scholastic training with practical knowledge.

The introductory remark should also be made that as in France, so in Prussia, the General Government has in its hands the control of material interests which require for their management officials with technical and special knowledge. Among these industries under State control are the public domains and forests, the state bank, the Naval Commercial Institute (*Seehandlung*), royal porcelain works, salt mines, state railways, the lottery, and various other less important interests.

GENERAL REQUIREMENTS.

The general requirements for admission to all offices is the possession of the civil honor (*Ehre*). Those who have served terms in penal institutions, or have been in houses of correction, are disqualified. Whether a civil officer must be by birth a Prussian is not provided for by public law, but one of foreign birth must obtain the special approbation of the King, and in certain cases of the head of the department in which employment is sought. Religious beliefs do not enter as a condition, except that those who have to do with ecclesiastical affairs must be of the Christian religion. All candidates must have performed the required military duties. In most cases the candidate is required to show that he has means sufficient of his own to support himself during the time he is preparing himself for permanent employment. The King appoints all officers, either himself, or by delegation.

Since the development of the state's service into a regulated organism the method has arisen of selecting functionaries by means of examinations. As the complexity of the public service has increased, and

the variety and importance of the interests placed under public management have become greater, *pari passu* has the importance of these scholastic tests augmented and the standard of their requirements been raised. Embracing all branches of the service is the theory followed in Prussian administration, that no man shall receive an office who has not proved his mental qualifications and given a practical test of his fitness and aptitude.

The examinations for different positions are naturally different. There is a distinction between the higher and lower branches, and between the legal offices (*Justizbeamten*) and the ordinary administrative offices (*Verwaltungsbeamten*), and especially between the offices in the various technical branches. In the higher offices is in general required a high scientific education, and a complete knowledge of the special branches (*Fächer*) in all their parts. In the lower ranks is required a common education and a knowledge of the special work in their individual fields of activity.

JUDICIAL OFFICERS.

For the higher judicial service (*Justizdienst*) existed formerly three examinations, viz, (1) for the position of Auskulator (*zum Auskulator*), (2) for the Referendariate (*zum Referendariate*), and (3) for the Assessoriate (*zum Assessoriate*).

Following the reorganization of the kingdom in 1849 and 1866 considerable changes were introduced. Through the law of May 6, 1869, were finally and legally settled and verified for the whole kingdom (the Rhine provinces excepted) the rules regarding the examinations for the higher legal offices, and the minister of justice was given charge of these matters.

This law[1] provides *inter alia* as follows:

(1) A three years' study of law at a university and the passage of two juristic examinations are required. Of the three years to be spent at a university, at least three semesters must be in attendance at one of the German universities.

(2) The first examination is given by an *Oberlandesgericht* (superior state court). The second examination—the "great examination of the state"—is for the whole monarchy, and is set by the examination committee (*Justiz-prüfungs-kommission*).

Before presenting himself for the first examination the candidate must submit a petition showing (1) the evidence of the required study at the university, (2) the proof of military service, and (3) a short autobiography in the candidate's own handwriting, showing especially the courses of studies pursued at the university.

After the examination of the petition, the president of the court has the power to dispose of it as he sees fit, by consenting that the examination shall be taken or sending the candidate back if all the requisites have not been properly presented and the conditions fulfilled.

The first examination is both written and oral, and embraces the following subjects: Public and private law, legal history, and the

[1] Gesetz über die juristischen Prüfungen und die Vorbereitung zum höheren Justizdienste, vom 6 Mai, 1869. Somewhat modified subsequently, especially by law of August 22, 1879.

fundamentals of political service (*Staatswissenschaft*). The candidate must exhibit such an insight into the theory and historical development of legal relations (*Rechtsverhältnisse*) as will evidence his thorough comprehension of general legal and political rights. The candidate must further prepare a written theme for the commission, and has his choice of subject from the field of civil law, church law, civil procedure, and criminal law. Six weeks' time is allowed for the preparation of this essay, which period can be extended to eight weeks at the discretion of the commission. At the end of his work the candidate affixes his oath that he himself has prepared it, and without assistance from others. After this work comes an oral examination, which is not public. The question as to whether the examination has been satisfactorily passed is determined by a majority vote of those forming the commission; if the vote is equally balanced, the candidate is turned down. If turned down, he is sent back for six months additional preparation. If by the unanimous vote of the commission the candidate has passed very well, the oral examination is much abridged. When, after the additional time for preparation, the second examination is not satisfactorily passed, the candidate is henceforth and forever disbarred from entrance into those classes of the public service that require such previous preparation.

Upon passage of this first juristic examination, the candidate receives a certificate from the commission. Upon this evidence he goes to the president of the district (*Bezirk*) in which he wishes to perform his practical preparatory service (*Vorbereitungsdienst*). By this president he is named a referendar, and with this begins his *Vorbereitungsdienst.*

Referendars, before being allowed to take the second examination, are required to spend four years in practical preparatory service. During this period they are engaged in the transaction of legal business, and are associated with a state's attorney (*Rechtsanwalt*) or notaries under whose supervision they are. During this period the candidate's work is so arranged that he is initiated into the practical workings of these affairs. Among other duties the referendar is allowed to attend to the duties of clerk of a court (*Gerichtsschreiber*).

At the end of this four years' service there is submitted an account of the manner in which the candidate has performed the work allotted to him. This report is in detail and is very complete. In some cases the four years' limit is somewhat shortened on account of excellence of work.

The "Great Examination of the State" (*die grosse Staatsprüfung*) is given by a commission composed of university professors and certain State legal officials, is both written and oral, and is of an eminently practical character. The purpose is to discover whether the candidate has a fundamental knowledge of the public and private law of Prussia, and is prepared for practical service as a *Justizdiener.* Here again there is a legal essay to be written, and a six week's period allowed for

its preparation. The report must contain the complete exposition of some legal subject in all its relations and can be founded upon either past or current laws. If this written work be not satisfactory the candidate is sent back to the superior state court (*Oberlandesgericht*) for further preparation.

The oral examination is before three members of the commission. There is allowed only a single repetition of this states' examination, the candidate who fails the second time being forever shut out from the higher judicial service.

Those successful in the "states examination" are appointed legal assessors (*Gerichtsassessoren*) or attorneys (*Rechtsanwalte*) by the minister of justice.

Under the law of May 6, 1869, the minister of justice was empowered to issue the necessary ordinances for properly carrying out in detail the general provisions of the law itself, and some of the foregoing conditions which have been stated have been taken from ordinances issued under said authorization.

HIGHER ADMINISTRATIVE OFFICES.

The fundamental law upon which rests the general system of civil-service examinations for entrance to the higher administrative branches of the Prussian Government is that of March 11, 1879, entitled "A law governing the requirements for the higher administrative service."

The provisions of this law are very similar to that of the law regulating higher judicial appointments, the essential difference being in the manner in which the period for political preparation is employed.

The law[1] applies to the appointment of functionaries in the following branches of the service: Section chiefs (*Abtheilungsdirigenten*), associates in the "administration" (*Regierung*), and the higher positions under the presidents of the provinces (*Oberpräsidenten*) and the president of the "administration" (*Regierungspräsidenten*), with the exception of justices and technical positions, as, for example, in forestry, public works, medicine, and as teachers. Also under this law are appointed certain functionaries under the superior administrative courts (*Oberverwaltungsgerichte*) and the administrative courts of the district (*Bezirksverwaltungsgerichte*). Those candidates desiring to enter the department of finance are required, in addition to the qualifications prescribed under this law for the higher administrative service in general, to have as well, a previous practical preparation in financial administration (*Steuerverwaltung*).

The requirements imposed by this law for appointment to the above-mentioned positions are: (1) A three years' study of law and political science at a university; (2) a juristic examination, governed by the law of May 6, 1869 (*ante*); (3) a two years' preparatory service with a

[1] Gesetz betreffend die Befähigung für den höheren Verwaltungsdienst vom 11. März 1879.

judicial authority (*Gerichtsbehörde*) and two years with an executive authority (*Verwaltungsbehörde*). (4) The candidate is now named a Referendar and is ready for a second examination, denominated a "great examination of the state," and set by an examination commission ("*Prüfungs-Kommission für höhere Verwaltungsbeamte*"). This examination is both oral and written, and embraces Prussian public and private law, especially constitutional and administrative law, and political economy and finance. Upon the successful passage of this examination the Referendar is appointed by the minister to the position of assessor[1] (*Regierungsassessor*) and is thereby judged to be qualified for entrance into the higher administrative service, including the positions that have been enumerated above.

The details of this law are largely regulated by the ordinance of May 29, 1879, issued by the ministry of State (*Staatsministerium*).[2]

THE ADMINISTRATION OF THE ROYAL FORESTS.[3]

For appointment as "head forester" (*Oberförster*) two examinations are required; (1) a forestry examination (*Forstreferendar-Examen*); (2) a state forestry examination (*Forstassessor-Examen*).

The preparation for the forestry examination (No. 1) is by a course of systematic scientific study, and a practical service in forestry, in which is gained a knowledge of all branches of the science of forestry and phases of forestry administration. The candidate must show:

(1) That he has taken a course as scholar (*Abiturient*) at a gymnasium of the German Empire, or a Prussian school of exact science (*Realschule*).

(2) That he is not over 22 years of age.

(3) That he has the necessary physical qualifications—sight, hearing, speech, and muscular strength.

(4) That he has led an upright and blameless life.

(5) That he has spent the necessary time in service under a royal head forester, and that he has the certificate of that office to that effect.

(6) A two years' course at a forest academy or at a university which has joined to it a forestry institute (*Forstlehrinstitut*).

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[1] A lateral or assistant judge.

[2] The minister of the interior and of finance has the power to decree ready for the higher administrative service such persons as have been qualified for the higher *Justizdienst* and have performed three years' service as a *Justitiar*, or with one of the *Auscinandersetzungsbehörde*, as Spezialkommissarius, or in Kollegium; or who have filled the place of *Landrath, Kreis-* or *Amtshauptmann* in the Hohenzollern domains.

[3] Regulating appointment to this branch of the service are the following: Bestimmungen über Ausbildung u. Prüfung für den königlichen Forstverwaltungsdienst, vom 1. August 1883; Regulativ über Ausbildung, Prüfung u. Anstellung für die unteren Stellen des Forstdienstes in Verbindung mit dem Militärdienst im Jägerkorps, vom 1. Februar 1887; Schriften für die Försterprüfung, vom 3. Februar 1887.

(7) Besides this, the candidate must have attended two *semesters* at a university in the study of law and political science.

(8) Upon the completion of these studies and, at the latest, six years after the beginning of his preparatory period, the candidate is ready for the first examination. This examination embraces, besides forestry, cognate sciences (zoology, botany, mineralogy, chemistry, and physics), pertinent laws, and the necessary mathematics. The purpose of this examination is that thereby the evidence shall be obtained "that the candidate possesses the necessary general education and intellectual comprehension to pursue his specialty with satisfactory results, and that he has laid a sufficient scientific foundation for further practical development, and that upon the whole he exhibits just grounds for the belief that he will become a useful administrative officer in the royal forestry service."[1]

(9) If successful in this examination the candidate becomes a *Forst-referendar*, and is allowed to continue his preparation, which consists largely of further, actual forestry service, though the theoretical study is continued. This period is spent under the supervision of a head forester and lasts two years, during which time is kept a detailed record of work done, observations actually taken, and progress made.

(10) This period having been satisfactorily passed, the candidate is now ready for the state examination. This test is largely of a practical character, though the aspirant's knowledge of political economy, finance, forestry administration, and forestry and hunting statistics is also inquired into. Upon a satisfactory showing in this last test, the candidate becomes a "forest assessor" and is now placed upon the list (*Anwärter*) for the position of head forester. Until appointed, as opportunity affords, the assessor is employed upon miscellaneous duties in the forestry service.

A position in the royal forest administration can also be obtained through service in the field hunting corps (*Feldjägercorps* or *Jägerbataillon*).[2]

The appointments which can be obtained in this way are forester (*Förster*), forest inspector (*Forst-Hülfsaufseher*), and such other forestry officials whose salary is at least 750 marks yearly, but from whom there is not required a scientific education higher than that of royal forester (*König-Förster*).

For entrance into the Hunting Corps there is required a certain amount of training in forestry, together with the necessary scientific knowledge. The practical service lasts two years. During service in the Hunting Corps the education in forestry matters is continued, not only by practical service in the woods, but by class-room instruction, and intermediate and final examinations are held, which must be passed

[1] Law of August 1, 1883, section 12.

[2] Regulativ über Ausbildung, Prüfung und Anstellung für die unteren Stellen des Forstdienstes in Verbindung mit dem Militärdienst im Jägerkorps, vom 1. Februar 1887.

if the candidate, at the end of his military service, is to be given a position in the administration of the forests of the kingdom.

Upon the passage of higher examinations, which are set from time to time, candidates can attain the degree of *Forstassessor*, and are eligible for appointment as head foresters.

The acquirements for appointment as "patrolmen" and "under foresters" (*Schutzbeamte* and *Unterförster*, etc.), are naturally not so great as those for the higher positions. These are selected according to length of military service, and service as "head hunters" (*Oberjäger*) or sergeants (*Feldwebel*). For these there are also appropriate examinations.

THE ADMINISTRATION OF THE PUBLIC RAILROADS.[1]

The general conditions for admission to the railway service of the kingdom are as follows: (1) That the candidate shall not be over 40 years of age. For the positions of station policemen and firemen and locomotive engineers, they must be at least 21 years of age. (2) Sufficient bodily strength. (3) School education sufficient to enable the candidate to read and write plainly and to perform the simple examples in arithmetic. For such positions as locomotive firemen and engineers, telegraph agents, etc., special knowledge in matters pertaining to the duties of such places is required. (4) There is generally a year's probationary service before a permanent position is obtained. (5) Promotion is generally according to length of service and ability displayed. Examinations for promotion are held from time to time. (6) Those who have passed the higher State examination for the other branches of the public service can also qualify for the royal railroad service.

PUBLIC WORKS (*Baufach*).

Entrance into the higher branches of this division of the public service is through a preliminary examination, and two chief examinations (*Hauptprüfungen*). The Department of Public Works is in general divided into three divisions, architecture, engineering, and machinery (*Hochbaufach*, *Ingenieurbaufach*, and *Maschinenbaufach*), and for each of these the examinations are different and distinct, and the other conditions also not the same.

Previous to the preliminary examination there is required two year's study in the division of *Maschinenbaufach*, an extra year's service under a machinist.

Following the preliminary examination is demanded two year's further study before the first chief examination is taken. Following the first chief examination is needed a further period of preparation of three years in the case of architects and engineers, and two years in the case of machinists. This consists of genuine practical work.

[1] Prüfungsordnung für die mittleren und unteren Beamten der Staatseisenbahn-Verwaltung, sowie Bestimmungen über die Annahme von Civilsupernumeraren für den Staatseisenbahndienst. Vom 26. März, 1887. (Abgeändert durch Erlass vom 12. März, 1890.

The first and second periods of study are taken at a technical high school. The first chief examination is held in Berlin, Hanover, or Aachen, where there are examination commissions composed of teachers from technical schools, and selected practical workmen. The second chief examination is set by the head examination commission (*Ober Prüfungs-Kommission*) in Berlin. All of the examinations are of a highly technical character, and are very thorough and exhaustive. The last examination includes: (1) The preparation of a special drawing of some plan or machine according to given data. (2) The performance of other written tasks. (3) An oral examination lasting two days in which is tested the knowledge of the candidate in all the branches of architecture and engineering, and has the further purpose in view of determining just what special character of work the prospective functionary is best fitted to perform; whether in the divisions of streets and highways, of railways, of bridges, of waterworks, of machinery, or in the office.

STATE MEDICAL OFFICES.

These must have received the degree of M. D. from the medical faculty of a German university, after nine semesters' study and a permitted dissertation. After this there is at least two year's further prescribed work. Finally, there is the state examination, which is divided into the following seven divisions: Anatomy, physiology, pathology, surgery, materia medica, gynecology, and hygiene. The examination also includes practical bedside tests at a hospital.

For state veterinary surgeons there are also appropriate examinations.

MISCELLANEOUS.

In the remaining branches of the public service, the same system of examinations for appointment is followed. The higher positions are awarded according to the tests described under the law of March 11, 1879, governing the requirements for the "higher administrative service" (*für den höheren Verwaltungsdienst*).

Where special knowledge of a technical character is demanded, suitable examinations are held, and for the subordinate positions appropriate educational tests are required. Thus the principle is everywhere followed, that there shall be no appointment made to a public position until the candidate has demonstrated his intellectual fitness, by a written or oral examination, and has proved his ability and aptitude by a probationary service (*Probedienst*).

As a rule promotion is also largely determined by written examinations, the other determining element being excellence of service in the subordinate position. Thus, in the post-office, the "collector of letters" is required to have had a course at a university, gymnasium, *Realschule*. After three years' experience as collector, he may take an examination which embraces among other subjects a certain amount of knowledge

of foreign languages, and if he passes, is appointed *Postpraktikant* or practitioner. After three years' further service another examination can be taken, which being passed, the higher positions of the service are open to him.

The choice of functionaries in the diplomatic service lies with the minister of foreign affairs, and appointments are regulated by the general requirements that prevail in other branches of the public service. None are appointed save those who have had a three years' course at a university, have successfully taken an examination, and have had a year's service with a judicial administrative authority (*Justizverwaltungsbehörde*) or state administrative authority (*Landesverwaltungsbehörde*). In addition there is also a special examination determining the candidate's knowledge of the inner workings of the administrative methods and an acquaintance with the social and material conditions of the Fatherland. A complete knowledge of French is required, also a probationary service of one year or as an *attaché* to one of the greater foreign missions.

Most of the subordinate civil positions under the state are open to those who have completed the full term of from nine to twelve years' service in the army. Yet all are required to pass suitable examinations and to perform a probationary service, except in the cases of those positions where the work is of a purely mechanical character. Those upon the retired or invalid military list are also eligible to positions suitable to their physical capabilities. The right to appointment upon the police force (*gendarmerie*) is regulated by the following conditions: (1) Nine years' service in the army; (2) unstained reputation for truth, morality, and honesty; (3) bodily strength; (4) passage of an examination. This examination includes a ready reading and writing knowledge of German script in the German or Latin letters, mental arithmetic, writing according to dictation, and two short essays upon suggested topics. Following the examination is in most cases a period of probationary service before a permanent position is awarded.

The system of examinations for public-school teachers is carried out in detail, strict educational tests being required for appointment. In all the higher grades only those are allowed to present themselves for examination who have certificates of attendance at a university and gymnasium. It has not been thought advisable to detail the different subjects embraced in the examinations, which naturally vary according to the position to be filled.[1]

[1] For details regarding appointment as teachers, see Ordnung der Prüfung für das Lehramt an höheren Schulen, vom 5 Feb., 1887. Abgeändert bezw. ergänzt durch Erlasse vom 31 Dec., 1887, 11 Mai u. 4 August, 1888, 2, 21, u. 26 Januar, 1889.

CHAPTER XII.

EDUCATION IN SWEDEN.[1]

GENERAL VIEW OF THE SYSTEM.

The report of the Commissioner of Education for the year 1888–89 contained a statement of the system of education in Sweden *in extenso*. The general features of the system are here reproduced, with additional information received since that date.

The early history of both elementary and secondary schools may be traced in Sweden to the Reformation period, although the most earnest effort to establish people's schools dates from 1640, when it was decreed that a school be established in each city. In 1649 a division into people's and higher schools was made, and in 1686 the Government was called upon to aid the peasantry through state subsidies for school purposes. The impossibility of supporting a sufficient number of stationary schools for the people was soon demonstrated, and till 1786 the ambulatory school was deemed the only means of bringing children under the jurisdiction of a teacher, who himself was oftentimes hardly fitted for such a position.

The influence of the church over the school is a special feature in Swedish educational history and many of the secondary or "learned" schools, which date from the time of Gustavus Adolphus, were under control of the clergy, and by law of 1724, no one outside of the diocese could be employed as teacher. A distinct division into classical and nonclassical schools was made in 1820, but, as the result of prolonged discussions, a reuniting of "learned" schools and gymnasia was accomplished in 1845. The burgher school and the ancient *trivium*, or Real school, have, in one form or another, been in existence two hundred years; from 1807 the course of study in the *trivium* tended towards training for practical life; in 1849 the two classes of schools were united. In the year 1824 the Bell-Lancaster, or monitorial system was introduced, and the year 1842 was notable for an entire reorganization of the school system. As it now stands the system embraces the ambulatory school, in sparsely settled districts; the preparatory divisions (småskolor) leading to the stationary schools of each district or parish; the normal schools of each chief town of the diocese; the higher elementary schools (since 1858) of villages and districts having more than 60 pupils; the secondary

[1] Prepared by Miss Frances Graham French, specialist in the school systems of Northern and Eastern Europe.

schools, consisting of classical and modern schools (gymnasia and Real schools) which admit pupils from 9 years of age on; the universities, technical schools of higher and lower grade, agricultural, military, navigation, and medical schools. Illiteracy is almost unknown in Sweden, the very latest data showing that among the conscripts mustered there were only 0.27 per cent who were unable to read. Education in Sweden is essentially a concern of the state; the church, too, exercises supervision, for the local school boards are expected to submit their reports to the bishops and consistory; the inspectors are often clergymen and so are the chairmen of the district or parish councils. There are central boards of officials connected with the different ministries, and in connection with the ministry of ecclesiastical affairs there are two divisions—the one having charge of elementary schools, the other of secondary schools, and there are special inspectors who take charge of elementary schools in each diocese. Every school district has its school board—to which women are eligible for membership—for the superintendence of elementary schools, and there is also a council of teachers for secondary institutions, subject to the bishop or ephor of the diocese. Normal schools are directly supervised by the diocesan authorities, but all these grades of schools, through the system of inspection, are brought into direct communication with the central authorities, who in turn report to the King. Elementary schools are maintained by the parish, but since 1842 state subsidies are given for the payment of part of the teacher's salary and for the purchase of school material. The state maintains secondary and normal schools, and there are special subsidies for technical and Slöjd training. The cities of Stockholm, Göteborg, Malmö, Jönköping, and Norrköping have special laws governing their schools.

Swedish children are expected to be in school[1] from the seventh to the fourteenth year of age, and instruction is obligatory after the age of 9 years is reached, and it is also nominally free of charge. The average school year is thirty-six weeks.

ELEMENTARY SCHOOLS.

The stationary and ambulatory schools, with their preparatory divisions (fasta folkskolor, flyttande folkskolor, and småskolor), serve the purpose of giving an elementary education to children of school age in Sweden. As far as possible with the mountainous condition of the country there is intended to be a four-class central school of this grade,

[1] According to law of 1881, which is still in force regarding the employment of minors at factory work, manual labor, and other trades, children of 12 years of age are permitted in craft and factory labor if they have acquired the lowest standard of instruction of the people's school. The period of labor for children to 14 years of age is six hours; for children from 14 to 18 years ten hours a day; night work for children is prohibited. The observance of the law is controlled by the communal authorities.

with a general grouping of smaller schools around. When this plan can not be carried out the ambulatory school fills its purpose, and lower grade schools or preparatory divisions give the first impetus to the child's education. Where six-class schools are found the lowest classes are usually under the instruction of a woman teacher, who may be considered to be more in sympathy with the little children of from 7 to 9 years of age.

For the young people of agricultural districts who have passed the school age, but who wish to obtain practical information which will be generally useful to them, there are the högre folkskolor, which in 1891 numbered 25, with 927 pupils—men 622, women 305. Institutions for giving elementary instruction to working men have sprung into existence within the last few years. Due at first to private initiative, they were found to be of so much value that the state has appointed higher grade teachers to take charge of the instruction.

In each school district the elementary grades are under the direct surveillance of the school board or council, presided over by the pastor of the parish. This board formulates regulations appertaining to instruction, discipline, days and hours of study. It also endeavors to organize a parish library suited to the needs of the schools and it attends to the rental or construction of suitable buildings for school purposes—each building to be well ventilated, surrounded by a garden in which horticulture and arboriculture may be taught. The board also has to make annual report to the diocesan authorities as to the status of education in the district.

In 1889 the number of children who were of school age was 764,909: boys, 388,539; girls, 376,370, that is, 16 per cent of the population; the number of pupils who were under instruction was 715,878; those who had already left school after examination, 23,847. Hence we obtain the number 739,725, or 96 per cent of school age who were receiving or had received instruction. In 1891 out of 777,610 children of school age there were but 26,574 not availing themselves of tuition, either on account of illness, physical defects, or other causes. Besides these there were 29,803 who had completed the required course in the schools, and were thus exempt from further tuition. Of the remaining 721,233 children 656,947 received instruction in the elementary grades, 16,532 in private schools (13,476 in either secondary or technical schools, hence are not really to be included under this head), and 34,284 in their own homes, but under control of school boards. A child can not be admitted into school without a certificate of vaccination unless he has had small pox; all children are to be vaccinated before they are 2 years of age. In the primary schools coeducation is usual, although in some of the higher classes in the large towns boys and girls are instructed separately.

THE TEACHER AND THE GENERAL PLAN OF TEACHING.

The following conditions are required of those who desire to obtain a position as instructor in primary schools: The candidate must be 20 years of age, of good standing morally and religiously, have a normal school diploma, and be selected for the position by the school board from the candidates decided upon by the consistory of the diocese. University study, graduation diplomas from the normal schools, and attendance at a practice course in the normals are required of those desiring to teach in higher grade schools. Regular teachers receive at least $160 a year ($188 after five years), with a small plot of land, lodging, fuel, fodder for a cow; this amount is increased in towns and cities to between $300 and $500, but in such case free lodging is not given, nor other material assistance. Pensions are accorded to all teachers, their widows and children.

There are 12 normal schools—7 for men and 5 for women—with a four years' course in each. The studies, which include among other branches, pedagogy and methods, gymnastics, horticulture, music and singing occupy thirty-four hours a week each in the first and second classes, thirty-three and twenty-six in the third and fourth classes. Six hours in the third and sixteen in the fourth class are devoted to practice teaching. In 1891 there were 470 men under instruction, 133 of whom had a diploma, and 361 women, of whom 145 had a diploma.

The Swedes have endeavored not to encumber the primary school program with too many studies, the main effort seeming to be to give instruction tending to prepare for a practical life.[1] The school board arranges as to duration of studies in the district over which it has control. It is expected that there will be at least an eight months' school and that the school-day be from five to six hours in length. In the two preparatory classes the maximum is five hours a day; in the primary school proper it is six hours. After each lesson the pupils have ten to fifteen minutes recreation—that is, fifty minutes of work, ten or more of recreation; during one recess lunch is partaken of. This regularity is due to Mr. Meijerberg,[2] former inspector of primary schools in Stockholm, who during his twenty-five years in that position made many improvements along pedagogical lines. In rural districts instruction is given five days of the week and Saturday is reserved for manual training or Slöjd in some form; in other localities from four to six hours a week are devoted to Slöjd.

[1] In the early part of 1891 a bill was passed by Parliament by which a new subject, that of the effects of alcoholic drink on the human organism, was to be introduced in the schools.

[2] Carl Jonas Meijerberg was born on October 8, 1816, in Brumflo-Jämtland. He was educated at Upsala; became a school inspector at Bohuslän in 1861, thence to Stockholm in 1863, where during his years as inspector he saw the schools increase from 59 to 480, teachers from 60 to 500, pupils from 2,500 to 16,000. Mr. Meijerberg was Swedish Commissioner to the Philadelphia Exhibition in 1876.

	Instruction each week.					
	Preparatory divisions or Småskolor.		Elementary schools.			
	Hours.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	*Hours.*
Catechism			3	3	3	3
Biblical history	5	5	2	2	2	2
Reading	6	7	6	5	4½	4
Orthography			2½	2	2	2
Caligraphy	6	4	2½	2	1½	1
Geography			2	2	2	1
History					2	2
Natural history				2	2	2
Object lessons	1½	1½				
Arithmetic	3½	4	4	4	3	3
Geometry						2
Drawing		1	2	2	2	2
Singing	1	1	2	2	2	2
Gymnastics			2	2	2	2
Total	23	23	28	28	28	28

TRAINING IN SLÖJD. [1]

Sweden occupies an important position in a movement which, during the past twenty years, has made manual labor a factor in all national education, a movement directed against the old-fashioned one-sided system of mental overwork. The great interest in such movement manifested by many persons led to the introduction of Slöjd in the Swedish schools; definite steps were also taken in the early seventies to establish special schools for a similar purpose. At first individuals, provincial councils, and agricultural societies supported the work, but in 1877 Parliament voted $4,000 per annum for advancing Slöjd instruction, which amount was increased to $30,000 in 1891, in addition to that which was given by provincial councils, agricultural societies, and parish authorities. The schools receiving the benefit of governmental stipends increased as follows:

Year.	Schools.	Year.	Schools.
1873	103	1885	727
1879	163	1886	872
1880	234	1887	991
1881	300	1888	1,167
1882	377	1889	1,278
1883	463	1890	1,392
1884	584	1891	1,492

As many schools are not aided by governmental subsidies it is considered that the number reaches about 1,800 in all. Slöjd is only obligatory in a few schools, but is generally encouraged by inspectors of the public schools and by special examiners.

The "Swedish Slöjd system" is that form of Slöjd worked out at the Nääs Normal College, or Seminary, which is a private institution

[1] Described by O. Salomon, director of the Slöjd Seminary at Nääs, in "Swedish Catalogue, II, Statistics prepared by Dr. Löfström for the World's Columbian Exposition at Chicago in 1893."

founded and maintained by August Abrahamson, near Göteborg. Many of the teachers of this branch in the public schools are graduates therefrom, and hence have introduced this form of manual work, although no particular system is enforced in the schools. Instruction at Nääs is gratis. It consists of lectures and discussions concerning the methods, system, and history of educational Slöjd, and also the making of a series of models in wood. There are now four courses a year at this Seminary, of six weeks' duration each, attended by 270 students. From 1875 to 1892 there were 1,808 teachers on the rolls.

The aim of educational Slöjd is not so much to impart technical skill as to develop certain powers, physical, moral, and mental; to increase the pupil's love for work, his love for independence, and to strengthen his physical powers; to teach precision, cleanliness, order, and attention, and to give him a knowledge of the value of manual labor. The Swedish system has limited itself in a measure to Slöjd-carpentry, although in some of the Swedish public schools instruction is given in paper and metal-Slöjd, wood-turning and wood-carving; it is intended for children between ten and fourteen years of age. Under the Slöjd system small objects or models are made, and the so-called "form-work" offers opportunity for the development of the eye, for it becomes in reality a modeling in wood, which like that in clay or wax is a complement to free-hand drawing. In Slöjd-training the knife, the ax, the spoke-shave, and the shave-iron are used, the knife being especially characteristic of Slöjd. The positions and movements required in Slöjd exercises unite it in a measure with gymnastics, so that specialists in both lines have aided each other materially in producing a series of exercises which insure a harmonious development of the body. The pupil is made to use the tools in Slöjd alternately with the right and left hand, so that the muscles of both sides of the body are equally exercised. Thoroughness is one of the requisites of Slöjd-training, and the pupil is expected to work not only with exactness but with independence of reflection and execution. He is taught to think about what he is doing, and the teacher is not allowed to put his hands to the work, so that habits of self-reliance are also inculcated.

The Nääs series of exercises are 88 in number, and the intention is to have the models combine practical utility and æsthetic form. The pupil is taught to make objects which are useful at home, and as the natural development of the individual is the chief aim, all artificial competition is to be assiduously avoided. The methods employed in teaching Slöjd according to the Nääs system have made this phase of "teaching" in the primary schools a most attractive one, and the same system has already been introduced in three or more normal schools.

Girls are not neglected in this kind of training, although the skilled handiwork takes a different form. The aim of the instruction in feminine Slöjd (as described by Miss Hulda Lundin, who is the inspectress of feminine slöjd in the Stockholm schools, and who has made

this almost a life work) is, as stated in the prospectus, to exercise hand and eye, to quicken the power of thought, to strengthen love of order, to develop independence, to inspire respect for carefully and intelligently executed work, and at the same time to prepare girls for the execution of their domestic duties. Miss Lundin states that the desired results may be reached by practical demonstration of the subject, by progressive order with regard to the exercises, and class instruction. The practical demonstration is accomplished by means of a sewing-frame; in knitting, by means of large wooden needles and colored balls of yarn; by blackboard drawings. Progress from the simple to the complex may be best observed by a study of the work in the class divisions in the public schools of Stockholm with girls from 7 to 14 years of age. There are seven standards: in the first, two hours a week instruction in needle-work is given; in the second, third, and fourth standards, four hours a week; in the fifth and sixth standards, five hours; in the seventh, six hours a week. Standard I covers plain knitting; II, plain knitting, and practice in different kinds of stitches, such as running-stitching, hemming, and overcasting; III, simple darning on canvas, making aprons; IV, plain and purl knitting, plain sewing; V, knitting stockings, drawing patterns, and cutting out undergarments; VI, patching on colored material, stocking-darning, making button holes, and making thread buttons, sewing on tapes, hooks, and eyes; drawing patterns and cutting out undergarments; VII, fine darning and marking, drawing dress patterns, cutting out of articles mentioned under II–IV, cutting and making dresses. The models are frequently drawn upon the blackboard by the teacher in charge of feminine Slöjd; the girls receive the materials necessary for the work, and they copy the designs furnished, the teacher simply overseeing them to see that the ideas are properly carried out. In the lowest classes the ordinary teacher carries out the so-called Lundin method, but in the higher-grade primaries there are special teachers employed for the teaching of feminine skilled handiwork. There are 14 courses or standards before completion of this class of work, and a series of models is found in each school, in addition to those in charge of the inspectress of feminine Slöjd. The pupils receive the work done in standards I to VI, II to XIII free of charge, and in the other standards only have to pay for the thread, material furnished, etc.

THE SCHOOLS OF STOCKHOLM.[1]

The school laws are the same for all parts of Sweden and yet, as heretofore stated, there are city schools which are governed somewhat differently from those of the country at large. For this reason the organization of the Stockholm schools is here presented. The number of districts or parishes in Stockholm is eight, each parish has its school, and its school council appointed by the inhabitants. In the

[1] Revue Pédagogique, October, 1893.

rural districts the conformation of the country requires, in general, the establishment of various schools; in the city a parish may have its one educational center with all grades under one roof, or whenever there are as many as 4,000 pupils in a single parish a subdivision is made by which the preparatory divisions, or småskolor, were in separate buildings regarded as annexes to the central school. A central school board or higher council, composed of a dozen members, including one member from each of the eight subsidiary councils, a member appointed by the administrative authorities, a physician, and a member of the consistory, has the general control of school affairs. The school board of each parish is presided over by a clergyman; its duties are to keep the school buildings up to the proper standard, to watch over the school attendance, and to suggest to the central board what reforms are needed. All expenditures are decided by the central board; the parish board proposes the candidates for teachers, the central board appoints them; the central board also appoints an inspector who submits to it the most important questions appertaining to elementary education. It is noticeable that the central board has the controlling voice in Stockholm school affairs, while the parish boards are subordinate to it.

The school year is of forty-one weeks, from August 15 to December 20 and from January 8 to June 15. The school day is from 8 to 1 o'clock, or a five hours' period. The youngest children have four hours. In all there are sixty minutes' recreation, three times amounting to ten minutes each, with a thirty minutes' period for lunch. Each class has its own instructor or instructress who teaches the different branches and supervises the discipline of that class. The highest classes, however, have special teachers for singing, drawing, and feminine Slöjd. Mr. Meijerberg brought women teachers into the corps of instructors, an innovation which has had noticeable results, as far as the training of the youngest pupils is concerned, and to-day there are five women teachers to one man in the teaching corps of Stockholm schools. In the lower classes especially the woman teacher is preeminent, as well as in the classes for girls. If she has shown herself to be a good disciplinarian there is no hesitancy in placing her in charge of the classes for boys of 10 to 12 years of age. In leaving the schoolroom for recreation the children march two by two, and a monitor chosen from the ranks, keeps order; in leaving for home after school hours the children are formed into squads, according to the district, a corporal has the squad in charge and each boy drops out near his home. The course of study differs only in extent from that given for the same grade of school throughout Sweden. In history, for instance, class three has ancient history, class four, the history of Sweden from 1060 to 1611; class five, from 1611 to 1818; class six, from 1818 to the present with a repetition of ancient history and that of the Middle Ages; class seven, repetition of history since the Reformation, also universal history.

Slöjd instruction has already been touched upon under that heading. The schools of Stockholm have 92 men and 431 women as regular teachers, all of whom have normal school diplomas, and each one of whom gives thirty hours' instruction a week. At the head of each school is a director who gives from eight to a dozen hours instruction a week. Special teachers number 14 (7 men and 7 women) for singing and drawing, and 16 teachers for feminine Slöjd. The salaries are graduated as follows:

	Men teachers.			Women teachers.	
	Crowns.*	Crowns.	Crowns.	Crowns.	Crowns.
When first appointed	1,400	1,800	2,000	1,100	1,400
After five years	1,600	2,000	2,200	1,200	1,500
After ten years	1,800	2,200	2,400	1,300	1,600

* 26·8 cents to a crown.

The director (or principal) receives in addition to his salary a supplementary amount which varies according to the number of pupils in school, from 500 to 1,300 crowns ($134 to $348).

The number of pupils in Stockholm schools is about 20,000 (20,312 in 1892);[1] in 1862 there were only 2,500. In 1890 the proportions of absentees from various causes were: Sickness, 4·9 per cent; no causes assigned, 2 per cent; lack of shoes or garments, 0·7 per cent; authorized absence, 3 per cent. This last enumeration comprises the children who are required to be at home to care for younger children, or who, during the warm season are sent into the country for their health. In 1890 there were 1,800 pupils in night schools, their services being required during the day by their parents.

The authorities attend to the school attendance, requiring the owners or landlords of houses to furnish the police with information (presented on January 1 of each year) regarding the age, profession, or trade of their tenants. The police registers have consequently detailed knowledge of the people. The principal of each elementary school obtains from this source the number of persons of school age in his district, and information being also furnished as to the attendance at private schools, the necessary measures are taken for school attendance.

Expenditures in 1890.

	Crowns.
Men and women teachers	664,588
Slöjd instruction	61,886
School material (or apparatus)	56,351
Baths	9,000
Heating and lighting	98,243
Pension fund	12,418
Pensions	7,450
Inspection, secretaries, cashiers	13,000

[1] Stockholms Stads folkskolor: Berättelse för år 1892.

Rentals (for the directors and central boards)	2,400
Extras	10,154
Total	935,493
For school houses	260,000
Grand total	1,195,493

NOTE.—The totals do not always agree with the amounts given, but it is impossible to know wherein the variance lies.

That is, the sum of $320,392 was spent for the Stockholm schools, the Government contributing $58,156 towards that amount.

The new school buildings are most luxuriously arranged; particularly is this said to be the case with the Frederic Adolphus and the Catharine schools, which resemble museums in their inner decorations. Each pupil has a separate desk, and neatness is observable everywhere, not the slightest ink spot being visible to the casual observer. The buildings are several stories high, all class rooms open upon the same broad corridor, the windows being at the opposite sides. Bath rooms are so arranged that more than 4,500 pupils can be bathed every two days, each pupil receiving a douche and a warm-air bath. In all the parishes the poorest school children receive free dinner. In the Catharine parish 200 boys dine at school on Mondays, Wednesdays, and Fridays, and 200 girls the intermediate days. The extremely impoverished receive also a glass of warm milk and a bit of bread. Cooking schools or classes are connected with some of the schools; in these regular instruction is given in simple diet.

Vacation colonies (due to Mr. Meijerberg's initiative), comprising each from 20 to 30 pupils, and in charge of a society with the princess royal as president, are sent into rural districts, near the sea if possible, during the vacation period, between June 15 and August 15. Each group has an instructress in charge, or the family of an instructor. There are daily occupations for both boys and girls; the district physician looks after the health of the children. Stockholm districts support 44 of these rural homes, and in 1890 there were 498 children sent out. The expenditures were $4,288, not including gifts.

SECONDARY EDUCATION.

The secondary schools "do not form a direct continuation of the primary schools as in the United States,"[1] although they are preparatory to university education. These schools are all complete in their organization, although they are usually considered to be of two kinds, the higher or complete schools with nine classes, and the lower or incomplete schools with two, three, or five classes. Yet "the teaching in these classes agrees precisely with that of the corresponding classes of the complete secondary schools." The secondary schools consist of the

[1] Information obtained from a thesis of Dr. N. G. W. Lagerstedt, Ph. D., of Stockholm, presented at the International Congress of Education in Chicago in 1893.

classical and "modern" (Real) schools. The curriculum comprises nine years and the boys (girls are not admitted to these schools) must be 9 years of age before entering. The plan of instruction is the same for the first three years; during that period German is the only foreign language taught. Then a bifurcation takes place, some pursuing the Latin (classical) course, others the English (modern) course. "Still, in all subjects other than Latin and English, instruction is as a rule the same for the two following years. French is taken up in the fifth year, both in the modern and the classical side." The last four years, the sixth to the ninth, the pupils of the modern and classical lines are separated, and at the same period—the sixth year—a new division takes place on the classical side. Greek is taken up by some, English by others—that is, there is "a full classical section and a half classical section." At the close of the secondary course the maturity, or graduation, examination takes place; the diploma attained, the student may then pass to the university, to military or forestry schools, or to low-grade positions in the Government service. This maturity examination is quite a severe one, and the boys of the modern (Real) side, not having studied Latin, must give special evidence "of greater knowledge in mathematics, natural sciences, and modern languages than the boys on the classical side."

The question has been broached in Sweden of bringing the elementary and secondary schools into closer connection by eliminating one or more of the lower classes of the secondary schools, and making the elementary directly preparatory to the secondary school, thus, in a measure, forming a common school for all classes. Further reforms have been suggested which will take Latin and Greek out of the secondary schools to a great extent, and will place them in the university as a special department. Secondary education for girls was formerly almost entirely of a private character, or was the result of aid from municipal authorities, but the present progressive movements have brought about State subsidies for such schools.

As an outcome of the discussions concerning the great influx of students at the universities, and the need of more practical instruction of a secondary character for both boys and girls, the Palmgren Practical Work School was founded in 1876. While Slöjd is a main feature of its curriculum, the aim of the school is to train both sexes in those studies which lead to practical life, and there is no special limit as to the elementary or secondary character of the school, nor as to the age of applicants for admission. The æsthetic side is not neglected, for the schoolrooms are ornamented with art works of various kinds, and even the desks and chairs have the style of the old Norse, the Gothic, or the German Renaissance period. The success of the school has been noticeable, and, in 1888, the maturity examination was successfully passed by two boys and two girls. The school has two divisions, the one for a cultivation of manual dexterity and the other for studies tend-

ing towards intellectual progress; in its preparatory classes children from 6 to 9 years of age having no previous schooling are admitted. After passing through three classes they are fitted for the lowest classes of the Real schools or the gymnasia. The next division is that of a Real gymnasium with nine classes, then there is a seminary or normal school for the training of teachers of Slöjd.

The course is most comprehensive in character, giving, as it does, a liberal education and a most thorough training in Slöjd. Slöjd is obligatory upon all, and it includes feminine Slöjd as well as that in which boys particularly are trained. Pupils who do not attend the school are admitted to Slöjd instruction at a moderate fee. The three-months courses for the training of Slöjd teachers include also lessons in drawing and the pedagogics of Slöjd[1].

The number of secondary schools is 70, of which only about 30 fulfill the requirements as preparatory schools to the universities. The instruction is nearly free, amounting to only about $8 or $10 for each pupil. In 1891 there were 14,474 students, and in the same year 650 students had passed the required examination for admittance to the universities, among them 15 women. The expenditures for secondary education amount to nearly $1,000,000 a year.

Students who wish to pursue a mercantile career attend the commercial schools (or colleges) of Stockholm and Göteborg, which have two-year courses and an average of more than 100 pupils, and which receive governmental subsidies as well as private donations. The students pay tuition fees also. Then there are private commercial schools which give excellent instruction.

UNIVERSITY EDUCATION.

The presentation of the public educational system of Sweden would be incomplete without mention of the university, which is thus aptly described by Dr. Lagerstedt:

The public universities of Sweden are two, the University of Upsala and the University of Lund. Besides these there is a faculty of medicine, or a "medical college," in Stockholm. There are two other universities of Sweden, those of Stockholm and Göteborg. They are only a few years old, and were founded and are maintained wholly by private means without aid from the state. But they will both, in all probability, soon be brought into the system of education. It is proper, therefore, that they be mentioned in this place.

Each of the old state universities, the universities of Upsala and Lund, comprises four faculties or departments, the faculties of theology, law, medicine, and philosophy. The faculty or department of philosophy is divided into two sections, one for literature, history, philosophy, philology, and allied branches of knowledge; the other for mathematics and the natural and physical sciences.

The original and chief object of a university is the promotion of knowledge. The teachers have to disclose and elucidate to the students the treasures of literature and the results of scientific investigation, as well as to direct the students' own study. It is also expected of the professors that they shall themselves contribute to the advancement of human knowledge by observation and research. The proficiency of

[1] *See* Palmgrenska Samskolan i Stockholm.

students in Swedish universities is, as elsewhere, ascertained by examinations, which are of a twofold character.

The universities of Europe, generally, are expected to fill certain requirements demanded by the state. The state requires from its officials and from private citizens proposing to enter certain important vocations—that of medicine, for instance—that they give evidence of possessing the knowledge and skill necessary to their special calling. Now, in some cases, the university teaching and the ordinary examinations have been considered as serving this additional public end. In other cases the universities have had to undertake the organization of courses of instruction required by the state for the purpose just mentioned, and the testing of proficiency therein by special examinations—civic or state examinations, as they may be called. This part of university work naturally has a less scientific character, it is more elementary, and the object of the examination is to ascertain that the students have attained certain fixed standards of knowledge rather than to ascertain the results of deep scientific study. The practical importance of this part of the universities' work may sometimes offer temptations subordinate to their strictly scientific work, and make the higher examinations, the university examinations proper, by technicalities or regulation, too much like the civic or state examinations. The present regulations and arrangements of the Swedish universities seem to avoid this danger.

The faculties of theology and of law have both kinds of examinations, scientific and civic. Most of the students of theology and of law pass the civic examinations only, and thus become entitled to enter the service of the state as judges or other officials of that of the state church as ecclesiastics. Some, however, of the law and theological students take the university examinations proper, success in which, in some cases, gives them a preference in the matter of appointments over those of their colleagues who have been content to pass the civic examinations only.

The department of medicine offers examinations of the higher grade only. As may be inferred from this, the studies of the Swedish medical students are very thorough. Generally it takes students eight to ten years of hard work after matriculation to complete their university studies. There are two examinations in the faculty of medicine. The first is merely preparatory to the second.

The fourth of the faculties or departments is that of philosophy. Like the faculty of medicine, this faculty has no civic examinations. Neglecting some minor preparatory examinations that are passed by students wishing to enter the other departments, there are two examinations in the faculty of philosophy, namely, the examination for the rank of candidate of philosophy and that for "licentiate of philosophy." To become a candidate of philosophy the aspirant must be examined in five different subjects, at least. These subjects may be chosen quite freely among the branches of knowledge that belong to both sections of the department of philosophy. The candidate must give proof of complete mastery of one of these subjects, or, if he so prefer, of excellent attainments in two.

If a candidate of philosophy wishes to obtain the rank of licentiate, he must be examined in at least two branches of knowledge, quite freely chosen from the curriculum of the department, and he must give evidence that he has acquired a deeper and scientific knowledge of them. A student is, however, not obliged to be a candidate of philosophy before he attempts to obtain the licentiate's degree, but may proceed immediately to the latter degree, though in this case he has to give evidence of his scientific study of at least three sciences or branches of knowledge.

A licentiate of philosophy wishing to become a doctor of philosophy, in lieu of further examination, has to publish a scientific treatise, based on his own independent researches, and to defend this treatise publicly. If the thesis and the defense of it are considered to be satisfactory, the licentiate is admitted to the degree of doctor of philosophy.

Each of the two university examinations may be considered to demand, as a rule, three or four years of study in preparation.

There are two points to which attention is especially directed. The first is the

absolutely unlimited choice of studies open to the students within the limits of the department. It is quite lately that the examinations now in question have been so arranged as to permit such choice. Formerly some subjects were optional, others remaining compulsory, and there were rather intricate regulations with regard to the combination of subjects; some might be combined, others not. The allowing of this unlimited choice of subjects is considered in Sweden to be a decidedly progressive step, and one that will prove of great use in advancing deep and true scientific study.

The other point is the regulation permitting students who have passed the entrance examination to the university without Latin to be nevertheless admitted to the examinations for candidates and licentiates of philosophy, provided that the subjects chosen for examination are chiefly mathematics and natural sciences. This is quite different from the plan at the German universities. But Latin is still required in Sweden of all who wish to pass other university examinations.

Most of the students who pass the examinations for candidate or licentiate of philosophy afterwards become teachers in the secondary schools. There are two classes of such teachers—a higher and a lower one. The former class chiefly instructs the senior students in the secondary schools; the latter teach the lower classes. The teachers of the higher order must be licentiates or doctors of philosophy; those of the lower class at least candidates.

It is required, moreover, of both that they so pass their examinations that a certain number of the school subjects, four or five, shall have been included, in accordance with special regulations, which need not now be specified.

The two younger universities of Sweden, those of Stockholm and Göteborg, will probably in a short time be allowed to hold examinations of the same kind as the old state universities, and students passing such examinations will have the same rights as if they had passed those of the old universities. No applicants but those who have passed the maturity examination will be admitted to these university examinations, just as is now the case in the other and older universities. There will, however, be an important difference between the old state universities and these new independent ones. While the former admit no other students than such as have passed the examination of maturity, the latter will also admit other students, such as are called in America special students. These are only required to give some proof, generally by a special examination, that they are capable of receiving the instruction in the subject or in those subjects which they propose to follow. After having completed such a special study at the university, the student, if he wishes, is examined therein, and, if successful, receives a certificate indicating the result of his work. To this kind of examination, as a matter of course, every student of the universities may be admitted.

It may be seen, then, that it is the aim of the young universities to compete with the old ones as centers of higher scientific teaching, and, at the same time, to make their instruction and resources accessible to wider circles of students.

Women have been admitted to the Swedish universities for about twenty years. The number of women students, however, has been, and still is, comparatively small, and only a very few, hardly ten, have left the universities after having passed a complete university course.

The number of students at Upsala may be estimated at from 1,800 to 2,000; at Lund from 900 to 1,000; at Stockholm, 200; in Göteborg, 100.

The university at Göteborg has, at present, a department for the humanities. The one at Stockholm also has the humanities, departments of mathematics and natural sciences, and will soon start a department of law.

The Pharmaceutic Institute in Stockholm imparts the knowledge requisite for practicing pharmacy. Its students average about 70. In order to practice dentistry the so-called student's examination has to be passed, also two special examinations in the presence of examiners appointed by the Royal Medical Board. The course is about three years. There are dental colleges in Stockholm and Göteborg.

TECHNICAL SCHOOLS.

In Sweden the interests of technical education are promoted by means of many colleges of greater or less importance, as is stated by Herr Rector V. Adler in the "Swedish Catalogue, II, Statistics, by Dr. S. A. Löfström, World's Columbian Exposition, at Chicago, in 1893."

The Technical High School stands foremost in this work, and the noted Technical School of Stockholm holds a place of its own. For the training of engineers, possessing, however, fewer resources than the high school, are Chalmer's Technical Institute in Göteborg and the four state elementary technical schools in Malmö, Norrköping, Örebro, and Borås. To these intermediate schools must be added the Technical Professional School at Eskilstuna, and the 29 lower technical professional schools, which are supported by the state. There are, besides, the Slöjd Society's School in Göteborg and a newly-established school in Luleå, which, to date, have worked without Government support.

The Technical High School at Stockholm, which is the principal polytechnic institute in Sweden, has for its object the scientific training of young students who intend to devote themselves to some technical occupation.

"The subjects of instruction at this high school are: Mathematics, geodesy, topography, descriptive geometry, elementary mechanics, higher theoretical mechanics, descriptive mechanics, the theory and practice of machine construction, mining mechanics, the study of steamship construction, mechanical technology, general and applied physics, general and analytical chemistry, chemical technology, laboratory work, mining chemistry, general and special metallurgy (of iron, etc.), metallurgic laboratory work, mineralogy and geology, mining, building, building estimates, architecture, history of architecture, construction of roads and waterways, linear drawing, free-hand drawing, ornament modeling, political economy, and factory work."

The high school includes the following five technical departments, viz.: (I) Machine construction and mechanical technology, with from three to four years' course; (II) Technical chemistry, with a three years' course; (III) Metallurgy, in three subdivisions, the first for mining mechanics, with a four years' course, the second for metallurgy and smelting, the third for mining; the two latter divisions being courses of either three or four years; (IV) Architecture with a course of four years; (V) Road and waterway construction, with equal courses of four years' duration. The course of instruction during the first year is the same for all the ordinary pupils at the school; then special studies are pursued.

The students at the high school are: (1) Ordinary, who attend until they have acquired the amount of skill requisite to the obtaining of a full certificate after a complete course; (2) Special, who, when they show themselves possessed of the skill required by the directors, enjoy instruction in a lesser number of subjects, and may obtain certificates of their attainments in those branches; and (3) extra pupils who need not give any previous proof of their ability by passing an entrance examination, and who may enjoy the instruction, but are not entitled to receive any testimonial from the college as to their attainments. For ordinary students the instruction is free; special and extra pupils pay a fee fixed by the directors and varying between 10 kr. and 50 kr. ($2.68—$13.40) per term. The management of the high school is under the direction of a governing body appointed by the King.

The high school has, moreover, a library of about 23,000 volumes, and above 500 manuscript reports of technical matters furnished by traveling students, and it owns in addition a valuable collection of models, instruments, etc., used at lectures on the various branches of study.

The Technical School in Stockholm has for its aim to give a clear and practical training in the knowledge requisite for an intelligent and accurate execution of

industrial work, and by this means to further Swedish handicrafts and the development and improvement of art industry. The departments are five in number, viz: (1) The Technical Evening and Sunday School, intended for pupils (above 14) and men, more particularly those who are already engaged in factories and handicrafts. The pupils have free choice of subjects, and the scheme of study is so arranged that they may make a selection from eighteen branches of industrial education; (2) the Technical School for Women (students above 14 years of age) seeks to develop that intelligent and artistic insight and skill which are the bases of such technical employment as may be most profitably pursued by women. The subjects of instruction are nine in number, and are according to the students' choice; (3) the Higher Art Industrial School for both men and women students (above 16 years of age), and the three years' course of instruction demands the whole or the greater part of the school day during the term. In the first section of this school is taught pattern drawing (both for cabinetmaking and artistic metal work, etc.); in the second, the branches pursued are decorative painting, lacquer work, etc; in the third, modeling, ornament, etc.; in the fourth, wood carving, chasing, engraving and work in the finer metals; and in the fifth section are trained the future teachers of drawing, modeling, and lettering in the schools for secondary instruction, technical elementary schools, and normal colleges for teachers; (4) the school of building, with a three years' course and an obligatory scheme of instruction, gives the training requisite for the strict accuracy demanded in the preparation of building plans; it receives pupils above 16 years of age; (5) the school for machine work (founded 1890) gives such instruction as is required for the extremely accurate knowledge demanded by mechanical technical work, and it receives pupils who are above 16 years of age. The first section is for the training of chief engineers, machinists, and draftsmen in mechanical workshops; in the second, foremen of mills receive instruction; the third deals with assistant engineers and machinists, workers of metal plate for steam boilers, smiths, makers of mechanical instruments, makers of clocks and watches, etc.; in the fourth, shipbuilders receive their training; the fifth gives instruction to metal plate workers for house, bridge, and railway construction, and to constructors of water and gas systems, etc.; the sixth, to founders, and the seventh is for the training of electro-machinists. An additional day school gives daily instruction in professional and decorative painting.

"The ordinary subjects of instruction at the technical school are: Geometrical construction, descriptive geometry, linear drawing, perspective and free-hand drawing, industrial art designs, figure and landscape drawing, painting (after ornamental and detached objects, bas-reliefs, drapery, plants, animals, etc.), modeling (from ornaments and figures), arithmetic, algebra, geometry, analytical and applied mechanics, mechanical drawing and mechanical technology, experimental physics, chemistry and chemical technology, knowledge of commercial objects, instruction in tools, building construction, architecture and design, elements of field surveying and leveling, composition, bookkeeping, ornamental lettering, together with caligraphy, advanced industrial art designs, wood carving, embossing, chasing, engraving, making of plaster casts, elementary history of art, estimates and (since 1887) special designs and applications for embossed leather work and painting on porcelain and glass. Of no small importance is the instruction in the extraordinary subjects of training, for which division of work a special Government grant of $1,070 is received. The subjects taught include knowledge of styles and ornamental design, decorative and professional painting, art needlework, photography, hygiene of dwelling houses and workshops, and gymnastics."

The lecture rooms contain valuable collections of such models and engravings as are of illustrative importance in the instruction. The library numbers 10,000 volumes, mostly technical literature, and a well-arranged collection of more than 18,000 design engravings. The school museum embraces many thousand models, consisting in great part of plaster casts and metal castings from famous monumental construction; a collection of copies of Italian decorative paintings, models for wood

carving, fine metal work, art textiles, etc., a technical collection of dyestuffs, metals, weaving material, all the kinds of wood usually employed in various branches of carpentry, etc.

Chalmer's Technical Institute in Göteborg is for the training of such young students as are intended for those industrial professions which demand a knowledge of natural science and especially an acquaintance with technical chemistry; the institute gives such teaching in a higher and in a lower division. The higher or technical scientific division embraces three classes of a one year's course and then divides after the first year's training into four different sections, viz: the mechanical-technical, that for technical chemistry, the section for construction of roads, waterways, and buildings, and, finally, that for shipbuilding. The lower division, in which the teaching is of a general comprehensive and practical character, embraces two one-year classes.

There are, besides, in Sweden, four technical elementary schools—in Malmö (founded 1853), in Norrköping, Örebro, and Borås. Their object is to impart elementary technical knowledge to young pupils wishing to fit themselves for industrial occupations. The subjects taught are mathematics, mechanics, physics, chemistry, mineralogy, and geognosy, the Swedish language, the principal modern languages, according to choice, commercial bookkeeping, architecture, free hand drawing, modeling, and factory work.

The technical school in Eskilstuna consists of two departments. The older of these, the Sunday and evening school, is intended for instruction in the most necessary elementary technical knowledge, of such persons who are already engaged in industrial pursuits, especially in the iron and steel manufacture. The subjects of instruction (all optional) are mathematics, descriptive geometry, linear drawing, general mechanics, mechanical technology, practical mechanics, machine drawing, physics, chemistry, freehand drawing, modeling, professional drawing, good handwriting, the Swedish language and bookkeeping. The instruction is given in a higher and in a lower course, both of two years. The Sunday and evening school is in yearly receipt of a grant of $2,144. The second department is for instruction in finer smith's and metal work; it receives (since 1889) a yearly grant of $402 from the town of Eskilstuna, and an annual grant from the Government of $1,072. The subjects are freehand drawing, modeling, wood carving, engraving in metal, metal casting, chasing, embossing, etching, galvanizing, smithing, filing, turning, lettering and knowledge of styles.

In 1892 there were 29 lower technical work schools in various large towns, and intended principally to give young people, engaged in handicrafts and manufactures, the necessary instruction in their native language, good writing, arithmetic, freehand drawing, linear drawing, professional drawings, modeling, and various forms of instruction in professional painting, building design, machine and building drawing.

The number of teachers and pupils at the technical schools during the spring term of 1892, and the amount of Government and communal subsidies in the same year, is shown in the following table:

Schools.	Subsidy for 1892.		Pupils.		Teachers.
	Government.	Communal.	Men.	Women.	
Technical high school, Stockholm	$39,316	.....	272	.....	26
Chalmer's Technical Institute, Göteborg	10,666	.....	212	.....	13
Technical school, Stockholm	25,212	$2,010	981	451	70
Technical elementary schools (4 in number)	25,406	*a* 134	240	.....	38
Technical school at Eskilstuna	3,216	402	155	4	11
Technical professional schools (29 in number)	9,326	17,500	2,915	851	201
Total	113,142	20,046	4,775	1,306	359

a Besides free local.

Besides the above-mentioned subsidies, the schools had the use of donated funds as follows: Technical high school, $33,500; Chalmer's Technical Institute, $93,800; technical school at Stockholm, $16,884; technical school at Eskilstuna, $7,370.

AGRICULTURAL, DAIRY, FORESTRY, AND MINING SCHOOLS.

There are twenty-five agricultural schools in different parts of the kingdom which are aided both by the Government and by agricultural societies. They give practical education to young men, such as will enable them to carry on farms of their own. There are also higher schools of agriculture at Ultuna, near Upsala, and at Alnarp in Skåne, connected with both of which are extensive farms. Instruction in gardening is also given at all these schools, at the normal schools, and there are school gardens in connection with the common schools, the parish granting the necessary ground.

The Government also supports a dairy college, which is intended to train teachers and dairymen in the management of a dairy; this college has a twelve months' course. There are also two dairy schools having yearly courses, and 18 stations with two-year courses for training dairymaids.

A higher grade forestry school was established in Stockholm, in 1828, with the object of diffusing more general knowledge of the economy of forestry and the chase, and also for giving practical training to foresters. Tuition is gratis, and the requisites for admission are a strong physique and the passing of the university-entrance examination with a preparatory one-year course at the Omberg School of Forestry. The course of study is two years. The teaching corps consists of a director, two professors and five teachers; the students numbered 22 in 1892. The Omberg school is preparatory to the Stockholm school, and there are five other schools devoted to the training of foresters or rangers. Total number of students, 60 in 1892.

Mining schools are three in number. The higher grade school forms a division of the technical high school in Stockholm; the lower grade mining schools are in the mining districts of Falun (dating from 1822) and Filipstad (from 1830). The Government and the Association of Ironmasters defray the expenses; the association provides for the practical instruction in the Stockholm school, and there is an equal division between the Government and Association as regards the cost of teaching in the other schools.

TRAINING FOR THE ARMY AND NAVY.

The Royal Military Academy, founded in 1796, has as its object the promotion of military science. Then there are the staff and military colleges, the military riding school and the artillery and engineering school. The staff college in Stockholm has a two-year course and is chiefly designed to train staff officers; it numbered 38 pupils in 1892. The high school for the royal artillery and engineers in Stockholm numbers 51 pupils; the military college at Karlberg, near Stockholm,

trains young men who desire to become officers in the army. Fifty-six pupils passed their final examination in 1892. The military riding school at Strömsholm, and schools for corporals, cadets, noncommissioned officers, and gunnery schools complete the army training.

The Royal Naval School in Stockholm trains officers for the navy and had 73 students under instruction in 1892. For the ordinary forms of navigation and engineering there are schools of navigation in Stockholm, Göteborg, Gefle, Malmö, Kalmar, Hernösand, Visby, Karlshamn, Vestervik, and Strömstad, the aggregate number of pupils being 338 in 1892. During the year 126 pupils passed the mate's examination, and 74 that of master; 55 passed as ordinary engineers, and 32 as chief engineers.

THE DEFECTIVE CLASSES.

By law of May 31, 1889, the education of deaf-mutes of school age is made compulsory, and Sweden has been divided for this phase of education into seven districts, each one being responsible for the education of the deaf-mutes within its jurisdiction. Prior to such law the deaf were educated at the Manilla Institute in Stockholm, which was founded in 1809. For adult deaf-mutes there are asylums in Vadstena, Bollnäs, and Skara. A governmental subsidy of $53,600 is granted annually for the education of the deaf-mutes. The census of 1890 enumerated 5,307 deaf-mutes in Sweden—2,952 of them men, 2,355 women.

The blind are under instruction at the Royal Institute for the Blind at Tomteboda, near Stockholm, and in two smaller institutes which also receive governmental aid ($3,000 in 1891). The Royal Institute receives an annual subsidy of $13,500 and has to date 76 pupils. For the printing of reading matter for the blind $700 was granted during 1891 and $300 for the support of pupil teachers. The blind people of Sweden numbered 3,948 in 1890—males, 1,880; females, 2,068. In Skara an asylum for blind and deaf-mute children had 11 pupils.

The more seriously afflicted—the idiot—is also well taken care of, for there are 16 educational institutions, with 432 places, for this class, 6 industrial homes capable of housing 84 pupils, and 8 asylums affording place for 106 children, besides a number of private asylums. The school for idiots in Stockholm has a training department for female teachers and nurses. The number of idiots of school age, according to a late estimate, is 2,000.

PUBLIC AND PRIVATE CHARITIES.

The Swedes take good care of their poor, for, in addition to what is done for the adult population, there are special regulations for the care of poor children of school age, as heretofore mentioned; and more, there are children's homes and institutions for the relief of the poor. The

public hospital for infants in Stockholm is especially noteworthy for its furnishings and general arrangements, and there are other public hospitals which may be counted among the charitable institutions, as they admit poor people at public expense. Private charities are conducted by private societies, among which may be named the Charity Organization Society of Stockholm. The Masonic fraternity also supports a large orphan asylum in Stockholm. Charitable institutions, endowments, etc., bring the amounts contributed for the help of the poorer classes to about $130,000 annually, and nearly twice that sum is given for infant education and care.

Counted among the aids to the poor are the people's kitchens, where, when there is scarcity of work, plain and substantial meals are given for nothing, or for a merely nominal sum, to those who are in need of assistance.

EDUCATIONAL AIDS.

Under this heading may be grouped the libraries, museums, art and archæological societies, conservatories of music, academies and learned societies, college of antiquities, and anthropological and geographical societies.

For the higher development of civil engineers there are the Royal Boards for Public Buildings and for Road and Water Works, which under governmental contracts give opportunity for technical advancement. The Economic Survey of Sweden and the Royal Board of Land Surveying furnish accurate knowledge as to the land area, boundary lines, etc., of the country. The Topographical, Geological, and Hydrographic Surveys are each in turn carrying on technical work of great value, but which can only be touched upon incidentally here.

There are lectures in schools and associations upon the development of photographic art, and there are clubs and societies which have exhibitions of photography. This art is also taught in the technical schools, and for technical execution there are special schools of photography established, from which selected pupils go to the Academy of Fine Arts.

The public libraries of Sweden, dating from 1886, have, under the auspices of the Royal Library in Stockholm, annually issued a catalogue which includes the foreign accessions to the libraries in Stockholm, to those of the universities at Lund and Upsala, to the Academy of Sciences, the Academy of Literature, History, and Antiquities, to the Academy of Fine Arts, to the Academy of Agriculture, to the Caroline Medico-Surgical Institute, the Swedish Society of Physicians, the Technical High School, the Stockholm Technical School, the Central Bureau of Statistics, Library of Parliament, and to the libraries belonging to the students and to the Society of Sciences in Upsala. This catalogue is furnished, in accordance with the Swedish copyright law, to the first three libraries, and by means of this cooperation the value of all these libraries is greatly enhanced.

The Royal Library in Stockholm numbers 230,000 volumes, 7,800 MSS., and thousands of portfolios containing maps, engravings, etc. In 1892 there were 1,194 foreign works received and 13,162 from the Swedish press. The libraries of the universities number 220,000 volumes at Upsala, and 130,000 volumes at Lund; of late years they have received increased subsidies for purchase of new works, and have enlarged their reading rooms. The Academy of Sciences owns about 50,000 volumes. There are school libraries in Strengnäs, Vesterås, Skara, Linköping, and Vexjö. Popular and parish libraries are developing rapidly both in Stockholm and in rural parishes.

The museums and collections may be enumerated as follows: The National Museum in Stockholm, with 1,450 oil paintings, 100,000 engravings and sketches, 850 works of sculpture of marble and bronze, besides antique vases, terra-cottas, Egyptian antiquities, a historical division and a cabinet of medals; the Museum of Natural History, divided into six sections and under the supervision of the Royal Academy of Sciences in Stockholm; the Historical Museum of the University of Lund, with 10,000 objects on exhibition, the Stone Age being especially well represented; the Nordiska Museum, with its Scandinavian ethnographical collections; the College of Antiquities, which cares for manuscript antiquities, with special interpretation of Icelandic manuscripts concerning Scandinavian history; collections of art, historical portraits, etc., at the royal castles of Gripsholm and Drottningholm; important collections of natural objects at the Universities of Lund and Upsala, in Göteborg, and in many of the schools for secondary education.

The academies and learned societies include the Swedish Academy, established in 1786 for the purpose of giving the Swedish language a definite form, and which commenced "the dictionary of the Swedish language" in 1893—this dictionary to be completed in forty years; the Royal Academy of Sciences, established in 1739 by Linné and other scientists, and which has for its object the promotion of physical sciences and mathematics; the Royal Academy of Literature, History, and Antiquities, founded in 1753, and dealing largely with archæological matters; the Royal Academy of Fine Arts, founded in 1735, for the development of painting; the Royal Academy of Music, founded in 1771, which receives a governmental subsidy of $12,000, and $1,600 for encouraging composers, and which has a conservatory of music connected with it; the Royal Academy of Agriculture, and the Royal Military Academy, both described previously. The learned societies are: The Royal Society for Publishing Manuscripts Relating to Scandinavian History, founded in 1817 at Stockholm; the Royal Society of Sciences, in Upsala, founded 1710; the Royal Physiographical Society, at Lund, in 1778; the Royal Society of Sciences and Belles Lettres, at Göteborg, founded in 1778; and the Royal Naval Society, at Karlskrona, in 1771; the Society for Publishing Swedish Mediæval Literature, the Swedish

Society of Physicians, the Society of Apothecaries, the Pedagogical Society, the Society for Promoting Fine Arts, the Anthropological-Geographical Society, which annually presents a medal to a geographical explorer; the Geological Society, and the professional unions at the universities.

SWEDISH GYMNASTICS.[1]

One of the most important adjuncts to education is conceded by the Swedish people to be that of gymnastics, and so many have been the adherents in Sweden and other countries to the system now in vogue as to give it the title of Swedish gymnastics. Training of this kind is obligatory in every school, and its influence is noticeable in the fine bearing of the Swedish children.

The Swedish system was founded by P. H. Ling[2] (1777–1839), a patriot, gymnast, and poet, who was inspired with a desire to revive the ancestral spirit in the Swedish people by the help of sport and song, to draw out once more the great qualities, the strength, the courage, and the will, which, in old times, had distinguished the Scandinavian race. After a hard struggle he succeeded, in 1814, in founding the state institution, known as the Royal Central Gymnastic Institute, where all teachers of gymnastics throughout the country receive their training. To this establishment are due the uniformity and homogeneity which mark Swedish instruction in this subject. The institute has a threefold purpose: it teaches ordinary gymastics for pedagogic purposes, as well as military and medical gymnastics. A complete training in all three branches entails a course of three years. Ling's creative genius produced a system based on ordinary physiological laws, which was afterwards developed by his pupils and successors. The great end and aim of the system was general social education from a physical, moral, and disciplinary point of view. Its distinguishing qualities are simplicity, naturalness, and truth. Its exercises may be adapted to every individual disposition and measured so as to suit varying degrees of strength, even the sickly and deformed being able to take part, as special exercises are arranged for them. Daily exercises, according to the Swedish system, are intended to promote a symmetrical growth of the body, and only such movements permitted as, according to anatomical and physiological laws, would bring about this aim. Bodily health and a harmonious development are the end and aim of instruction in this branch. For this reason the movements are divided into classes according to their effect upon the human body, while the individual movements of each class are arranged in order of progression to follow the growing strength and proficiency of the pupil.

The same system is followed throughout the country in public and private schools alike, as well as in the army and navy. In the state schools, in which the teaching of gymnastics is required by law, the instruction is subject to the inspection of the Central Institute. The larger towns have gymnastic clubs and associations, which enable young men to continue their exercises after they have left school. These clubs are generally under the guidance of instructors who are graduates of the Central Institute, and, while the same system is followed as elsewhere, they often extend their practice to what may be called applied gymnastics, the object being to introduce a more sporting and recreative element and to obtain information as to the

[1] Information obtained from the article by Capt. V. Balck, Dr. A. Wide, and Dr. A. Levertin, as presented in "Swedish Catalogue II, Statistics, 1893," prepared by Dr. Löpstrom for the World's Columbian Exposition in Chicago, 1893.

[2] Gymnastikens Allmänna Grunder af Ling.

individual development and strength. Fencing, sword, and bayonet exercises are practiced in the army and navy[1] and in the schools attached to both services, as well as in the amateur clubs of the larger towns. Fencing and sword exercises are taught in the higher grade public schools. Medical gymnastics and the art of massage have served to bring the Swedish system to the knowledge of the people of other countries. Of late years gymnastic associations for women have been formed, and among those especially to be noticed are the associations for women of the working classes.[1]

The mode of treating diseases according to Ling is derived from and founded on his pedagogical system, and this special form of training is taught both in the Central Gymnastic Institute and the Gymnastic Orthopedic Institute (both in Stockholm), the latter a state institution since 1827. The course for the kinesipathists—embracing educational gymnastics also—occupies a three years' period for men and two years for women; the requirements for admission being, for men, the prescribed course for matriculation at a university, and for women a corresponding high school examination. For physicians there is a twelve months' course. At the Gymnastic Orthopedic Institute physicians and medical students are instructed, special educational courses being held for this purpose in the autumn and spring. As about 30 persons can attend each course, every Swedish physician becomes versed in medical gymnastics. In addition to the two state institutions there are institutes for manual gymnastics in almost every town, and during the summer at every watering place in Sweden. Every kinesipathist who has passed his final examination and been acknowledged by the Royal Medical Board may open a kinesipathic institute in conjunction with a physician. The Swedish kinesitherapy, or movement cure, embraces active, passive, and so-called resisting movements; it embraces the usual massage treatment—massage being simply an integrate part of the movement cure. According to Ling's system it is more especially used in treating nervous disorders; it is also used by young people of weak development, who possibly can not endure educational gymnastics, and it is regarded as an excellent therapeutic agent.

To further develop the study of gymnastics there is the Scandinavian Gymnastic Instructors' Association, meeting monthly in Stockholm from September to May, when lectures and discussions are held in regard to all branches of gymnastics. Every two or three years there are also special meetings in Stockholm or some one of the towns of Sweden. The endeavor is made to bring about the development of national gymnastics as a science, and the organ of the association—Tidskrift i Gymnastik—published since 1874, is an important factor in this matter.

GENERAL TREND OF EDUCATION.[2]

The following gleanings from periodicals serve to indicate the latest educational movements in Sweden. At date of November, 1891, the appointment of Mr. Gilljam as minister of ecclesiastical affairs was announced. He was for the usual ten years' period head teacher of the complete gymnasia of Stockholm and afterwards sat in the upper house. His natural bias is said to be in favor of classical studies rather than

[1] Reglemente för Gymnastik, Gymnastik-Reglemente.

[2] Svensk Läraretidning, 1892, 1893. Revue internationale de l'enseignement, 1891–1893. Allgemeine deutsche Lehrerzeitung, 1892, 1893. Oesterreichische Schulbote, 1893.

the more modern branches, so that, in the reform movements appertaining to secondary education, the weight of his influence may be assumed to be against the modern-language movement. He, in cooperation with other members of the governing bodies, has the weal of the teacher at heart, so that his appointment as head of the educational department will be of benefit to that profession. Of the 375 members of the Storthing in 1891–'92, six had formerly been teachers.

University examinations.—A reorganization of the system of examinations in Swedish universities was reported in the winter of 1891–'92: (1) Latin ceased to be an obligatory part of the examination for admittance to the faculties. (2) The number of obligatory studies was essentially reduced, and the candidates were allowed to choose between certain special studies. (3) A curious custom had been permitted in connection with university examinations, namely, the so-called *tentamina privata*, or examination at the professor's house, the public examination becoming, then, a mere formality. Now, all examinations will be public and before a competent board of examiners.

Education of women.—For the secondary education of young girls the subsidies heretofore allotted were generally from the municipalities, and there were also donations from private individuals. But within a few years the Government has accorded assistance, and by request of the minister of ecclesiastical affairs (education being a division of this ministry) the subsidy now amounts to 70,000 to 100,000 crowns ($18,760 to $26,800). The committee which has ben engaged in discussing the subject of secondary education of girls, especially pointed out the need of hygienic regulations and the necessity of avoiding overpressure. It also stated that the course of study should be especially adapted to the special vocation of woman, and hence should include rules of hygiene and sanitation, and theoretical and practical lessons in domestic economy.

School organization.—On the 18th of June, 1892, was celebrated the anniversary of the establishment of the present system of education in Sweden. It owes its gradual development to the compulsory obligation and to that of free instruction, to the combined financial interest of State and local authorities, and to the fact that the State has taken measures to establish normal schools for the proper preparation of teachers. The whole country celebrated this auspicious event, and at Göteborg the rejoicing was especially manifest on account of the establishment of a university there.

Coeducation.—An association was formed in the early part of 1893, with the object of establishing a coeducational school, on the American plan, in Stockholm. The intention is to employ the very best methods, to lay stress on developing individuality, to limit the number of recitations, to give practical instruction in skilled handiwork, and to have regular gymnastic training. The school is to include children between 6 and 16 years of age, and is to give training similar to that of

a burgher school. A higher division is to train for the higher educational institutions of Sweden. This *nya samskola* (new coeducational school) is to avoid what may be considered to be useless studies; it is to develop the self-reliance of the pupils; practical work and physical training are to take precedence of mere text-book instruction; the classes are to contain a limited number of pupils, and there is to be a gradual blending together of studies so as to form a complete whole. Whether a commencement has in reality been made is unknown to date of going to print.

Training of teachers.—At a meeting of normal-school directors in Stockholm in June, 1893, four questions were discussed: (1) Should there be any change in the statutes concerning the organization of normal schools, so far as the statutes relate to time required in military service? (2) Should there be any change in regard to examinations for graduation from the normals? (3) Should examinations for admittance be made more rigid? (4) Is a revision of the programme of study in the normals desirable, and to what extent?

The second question was answered in the negative. The third question called for lengthy discussion, and it was decided that in natural sciences, writing, and singing there should be no change; in arithmetic knowledge of common fractions should be the criterion; in geography that of Sweden, with a general oversight of European and universal geography; in history, more general questions as to knowledge of Swedish history. The fourth question was discussed even more fully, as follows: As far as religious instruction was concerned, it was decided that in the first class it should be from five to six hours a week, the reading of the history of the apostles should be placed in the third class, the letters to the apostles in the fourth class. Reading of select pieces from Swedish literature should come in the third class. Compositions, as a means of bringing about uniformity in the various seminaries, should be written (between eight and twelve of these each year) in the recitation rooms and not at home. The number of hours for the study of the mother tongue was decided upon as seven in the first class, five in the second class, four in the third and fourth classes. For arithmetic and geometry the number of hours was to be four in the first class, four in the second, three in the third, and two in the fourth class. Penmanship should be finished in the second class. History of pedagogy and methods should be taught in the third and fourth classes. The principles of composition should be taught in the fourth class. In connection with natural sciences, instruction in regard to anatomy and physiology should be finished in the first class; in the third and fourth classes the chemical properties of the body should be taught. In regard to military exercises it was not deemed advisable to increase the amount, but one-half hour's "turnen" would be required. The question of adding German to the curriculum was decided in the negative, as the programme was full without additional matter.

Teachers' institutes were held during the vacations (commencing in

June) in all districts, and pedagogical questions were discussed. The public and the press manifested great interest in the meetings. One of the questions discussed, in Solleftea, was whether the catechism, in its present form, was a text-book for children. Most earnest was the discussion, and a resolution was adopted that religious instruction should not be limited to head and mind, but should be a matter of heart and soul. A revision of the catechism was deemed necessary. At Linköping the subjects discussed were vacations, amount of instruction, right of teachers to punish, teaching of temperance principles in the common schools. It was decided to carry out the decree of November 4, 1892, which required the teaching of the nature and effect of intoxicants upon the system, by instructing the children in every grade as to such matters—a time period to be set apart for this. In Stockholm it was decided to introduce the principles of domestic economy into the Swedish schools for girls.

Vacation study.—Summer courses for advanced study are held in different parts of Sweden. The aim is to train more thoroughly in special lines of study. These courses, in 1893, covered general subjects for the benefit of the people at large, more specific subjects for teachers of the common schools and for those in attendance on the higher schools for girls. The reports, as presented in the Svensk Läraretidning, indicate great interest among those under instruction. Excursions were undertaken in the interests of geological study; museums, libraries, and general fine-art collections were visited.

Lecture course.—University lectures[1] at Upsala in 1893 covered ancient history (*Israels älsta historia*); Scandinavian history; Sweden during the Reformation period (*Sveriges Statistik under Reformationstider*, 1520–1611); the earth's evolution from the geological standpoint; psychology; the mother tongue, from the grammatical and scientific standpoint; the Reformation period; mammalia; evolution at different periods of the earth's history. The time plan included the dates August 14 to 26, and, after the general presentation of the thesis, there was discussion. These lectures seem also to include visits to museums and other points which would add to the general understanding of the subject presented.

EDUCATIONAL LITERATURE AND REPORTS.

The publications of each year add to the general educational progress of a nation, and the regular reports furnish information for special study. Classed among the pedagogical works for the years 1889–1893 are the following:

Avhandlingar och program utgivna vid Svenska och Finska Akademier och skolor under åren 1855–1890. Bibliografi av Aksel G. S. Josephson. (Bibliography of publications of Swedish and Finnish academies and schools, 1855–'90.) 4°. Upsala, 1891.

[1] Grundlinger till föreläsninger, 1893.

Foreläsningar och öfningar vid Kongl. Universitet i Upsala, höst-terminen 1892. (Lecture course in Upsala University.) 8°. Upsala, 1892.

Föreningen för skollofskolonier. Centralstyrelsens berättelse för år 1890. (Vacation-colony associations.) 12°. Stockholm, 1891.

Gymnastika dagöfningar för folksskolan af C. H. Liedbeck. (Gymnastics for people's schools.) 4°. Stockholm, 1891.

Inbjudningsskrifter till de högtidligheter hvarmed trehundraårsminnet af Upsala möte kommer att firas i Upsala den 5-7 September 1893. (Tercentenary at Upsala.) 4°. Upsala, 1893.

Kants transscendentala deduktion af kategorierna. I. Akademisk afhandling af Hans Larsson. (Kant's Categories.) 8°. Lund, 1893.

Nääs modellserier. Metodiska anvisningar för modellernas utförande till tjänst för lärare och vid självstudium, af Alfr. Johansson. (Slöjd according to Nääs methods, for home study.) 8°. Stockholm, 1890.

Normalritningar till folkskoleträdgårdar jämte beskrifning och kortfattade anvisningar rörande trädgårdsskötsel såsom undervisningsämne i folkskolan, utgifna på föranstaltande af Stiftelsen Lars Hiertas minne. (On teaching of horticulture in the public schools.) 4°. Stockholm, 1890.

Palmgrenska Samskolan i Stockholm. (Description of Palmgren's School.) 12°. Stockholm, 1892.

Rationella gymnastiköfningar och sund idrott inom landets olika uppfostringsanstalter, af Kapten C. H. Norlander. (Rational gymnastics and their effect.) 8°. Lund, 1893.

Utlåtande af fakulteter och sektioner samt det större konsistoriet vid Universitet i Upsala angående den s. k. Universitetskomitens förslag och betänkande. (Faculty examinations.) 8°. Upsala, 1889.

The reports issued regularly are quite numerous. Among them may be mentioned:

Acta Universitatis Lundensis, 1891–'92. 8°. Lund, 1892.

Beskowska skolan i Stockholm, läseåret 1891–'92. (Report of Beskowska School.) 8°. Stockholm, 1892.

Inbjudning till öfvervarande af årsexamen vid högre reallläroverket i Stockholm, vårterminen 1893. (Realschool report.) 4°. Stockholm, 1893.

Inbjudning till öfvervarande af årsexamina vid högre Latinläroverket å Norrmalm samt Jakobs och Östermalms lägre allmänna läroverk, vårterminen 1893. (Latin and secondary school reports.) 4°. Stockholm, 1893.

Kongl. tekniska högskolan i Stockholm. Program för läseåret 1892–1893. (Technical school report.) 12°. Stockholm, 1892.

Nya elementarskolan i Stockholm. Årsredogörelse, 1892–'93. (Secondary school report.) 4°. Stockholm, 1893.

Redogörelse för verksamheten vid högre lärarinne-seminarium och den därmed förenade normalskolan för flickor under läseåret 1892–1893. (Normal school report.) 4°. Stockholm, 1893.

Redogörelse för Kongl. Universitetet i Upsala under det akademiska året 1890–1891. (Report of University at Upsala.) 8°. Upsala, 1891.

Stockholms stads folkskolor. Berättelse för åren 1890, 1891, 1892. (Report of Stockholm's people's schools.) 8°. Stockholm, 1890–1892.

Sveriges officiela statistik. Berättelse om statens allmänna läroverk för gossar, läseåret 1889–1890. (Burgher school reports.) 4°. Stockholm, 1893.

Sveriges offentliga bibliotek, Stockholm, Upsala, Lund. Göteborg: Accessionskatalog 7, 1892. (Accessions to public libraries.) 8°. Stockholm, 1893.

Upsala Universitets katalog för vårterminen 1891. (Catalogue of Upsala University.) 8°. Upsala, 1891.

CHAPTER XIII.

PHYSICAL TRAINING.[1]

1. *Historical sketch.—(I) Physical training in Greece—(II) In Rome—(III) In ancient Germany; the Middle Ages; the period of neglect, and the transition from ancient to modern gymnastics; the renascence of physical training in Germany and other European countries; gymnastics in Saxony—(IV) In America in general; in three typical cities, viz, St. Louis, Cincinnati, and Boston.*
2. *Essential features of the principal systems of physical training represented in this country, viz, the Swedish system, the German system, Dr. Sargent's system, and the Delsarte system.*
3. *Suggestions concerning school gymnasiums.*
4. *Statistics of physical training in American city school systems, including (a) cities which have regular systems and employ specialists (Tables 1 and 3), (b) those which employ no specialist, but require instruction by class teachers (Tables 2 and 4), and (c) those which formally permit gymnastic exercise (Table 5).*

I.—IN GREECE.

THE OLDEST DESCRIPTION OF ATHLETIC GAMES.

During the siege of Troy, when Achilles had slain Hector after a mighty combat and had stripped from him the bronze armor which he had taken from the body of Patroclus, Achilles' first thought was for his dead comrade, who still lay unburied and unbewailed. Dragging the corpse of Hector with them, the Greeks proceeded to their ships, and there made lamentations around the dead Patroclus, Achilles leading their mourning.

A funeral feast was prepared, and oxen, sheep, goats, and boars were killed until blood flowed on all sides of the corpse. After they had eaten their mournful meal, they retired to their tents to rest. The dawn of the morning found the Grecian chiefs once again weeping around their dead. Agamemnon sent men and mules to gather wood, and built a funeral pyre, to which the body was borne with extravagant manifestations of woe, the flowing-haired Greeks cutting off their locks and heaping them upon the corpse.

After the pile had been consumed by fire and the bones of Patroclus had been gathered up and placed in the urn, Achilles detained the multitude there and from his ships brought forth, as prizes for the

[1] This paper was prepared by Mr. James C. Boykin.

funeral games, caldrons, and tripods, and horses, and mules, and strong oxen, and fair-girdled women, and shining steel. For the first in the chariot race he offered a maid of peerless form and an eared tripod; for the second, a 6-year-old horse, unbroken; for the third, a goodly caldron yet untouched by fire; for the fourth, two talents of gold; and for the fifth, a two-handled urn. As the prize in the boxing match he promised a 6-year-old mule, and to the vanquished a goblet. Next in order came the wrestling match, in which the victor was to be rewarded with a tripod for the hearth, which the Greeks valued at 12 oxen, and the vanquished was to receive a damsel, skilled in household arts, whom they esteemed to be worth 4 oxen. For the winner in the foot race there was set forth a silver-wrought bowl, in beauty by far the best in all the earth; for the second, an ox, and for the third, half a talent of gold. Then Achilles brought into the ring a ponderous spear and a caldron embossed with flowers; for these the throwers of the javelin contended.

The contests which these prizes and this occasion evoked were of the most exciting description, and anything less than a full transcription of Homer's stirring lines would fail to do them justice. Such fullness is impossible, but a few of the details may be given to further indicate the antiquity and character of the funeral games.

In the chariot race Eumelus, Diomedes, Menelaus, Antilochus, and Meriones took part, but the fifth prize was not claimed. Achilles placed it in Nestor's hands as a memento of the games, since age lay heavy on Nestor's limbs and forbade him to contend. He took the prize and said:

> Son, thou hast spoken rightly, for these limbs
> Are strong no longer; neither feet nor hands
> Move on each side with vigor as of yore.
> Would I were but as young, with strength as great,
> As when the Epeians in Buprasium laid
> King Amarynceus in the sepulcher,
> And funeral games were offered by his sons.
> Then of the Epeians there was none like me;
> Nor of the Pyian youths, nor yet among
> The brave Ætolians. In the boxing match
> I took the prize from Clytomedes, son
> Of Enops, and in wrestling overcame
> Ancæus, the Pleuronian, who rose up
> Against me. In the foot race I outstripped,
> Fleet as he was, Iphiclus, and beyond
> Phyleus and Polydore I threw the spear.
> Only the sons of the Actor won the race
> Against me with their chariot, and they won
> Through force of numbers. * *
> * * * Such was I once. Now feats like these
> Belong to other younger men, and I,
> Though eminent among the heroes once,
> Must do as sad old age admonishes. [1]

[1] The translation is that of William Cullen Bryant.

In the boxing match the unsuccessful contestant against the skilful Epeius was

> Euryalus, whose father was the king
> Mecisteus of Talaion's line, the same
> Who went to Thebes and overcame of old,
> In all the funeral games of Œdipus,
> The sons of Cadmus.

Such is Homer's description in the twenty-third book of the Iliad of the first athletic games of which we have a record; and such were their surroundings.

Nor is this the only instance in which sports of this character are mentioned in the Iliad. In the second book it is related that Ajax "lay idle among his seafaring ships, in sore wrath against Agamemnon, Atreus' son, shepherd of the host; and his folk along the shore sported with quoits and with casting of javelins and archery; and the horses, each beside his own chariot, stood idle, * * * while the men yearned for their warrior chief and wandered hither and thither through the camp, and fought not."

The mention of quoits, which are certainly nonwarlike implements, shows that even at that early period the Greeks had games whose only objects were amusement and diversion. Nevertheless, the loud lamentations and doleful surroundings generally of the games described in the other passages, together with references to the games in honor of King Amarynceus and those of Thebes, in which Mecisteus was the victor, clearly show the solemn aspect of the more formal contests. Indeed, among the Greeks all the regularly organized games partook of a religious character.

THE PERIODICAL GAMES.

Though the earliest instances of the celebration of the games were in connection with the obsequies of great men, there is no reason for the belief that they were confined to such occasions, but, on the contrary, it appears that they were employed to add dignity and interest to all important ceremonials. The establishment of the regularly recurring games, which were the most conspicuous feature of Greek life, probably occurred at a time not much later than that in which the Trojan war is supposed to have taken place, and none of the traditions relating to their origin connect them with funeral rites. These traditions are useful to us in indicating some of the connections in which formal games were customary, and it is important to know the stories which found general belief.

The Olympian games, the oldest and most famous of them all, were said by some to have been established by Zeus after his success over Chronos in the contention over the sovereignty of heaven. But the more general belief, according to Pausanius, was that the Idæan Hercules, the eldest of the five brothers to whom Rhea confided Zeus after his

birth, instituted the contests and gave them their name. Wild olive trees were abundant in their vicinity, and the victor was crowned with a branch of it. The games were, according to this account, held at the beginning of every fifth year[1] because Hercules and his brothers were five in number.

The Delphian, or Pythian, games were believed to have been instituted by Theseus in honor of Apollo in thanksgiving for his safe return from his encounter with the Minotaur of Crete.

The contests held near Corinth, called the Isthmian games, were in honor of the boy Melicerta, or Palæmon, who was said to have been carried by a dolphin to the Isthmus of Corinth after his mother Ino had thrown herself and him from the Molurian rock to escape the wrath of Athamas.

The Nemean games were originally introduced by Adrastus, but fell into desuetude and were restored by the Epigoni. They were held in honor of Zeus and Hera.

All these games arose from very simple beginnings. The first of the Olympian contests consisted of a foot race, to which Hercules playfully challenged his four brothers. The most ancient of the contests at Delphi was the singing of a hymn in honor of Apollo.

The straight-away foot race continued to be the only Olympic game till the fourteenth Olympiad, when a second contest, the "double course," was introduced, i. e., to the end of the course and back again. In the eighteenth Olympiad they added wrestling, and the pentathlon, a five-fold contest in leaping, throwing the discus, wrestling, and hurling the javelin.[2] Twenty-five years later boxing was made part of the exercises, and four-horse chariot races, the pancratium,[3] and riding races were introduced soon after.

To the hymn that was the beginning of the exercises at Delphi there were added in the forty-eighth Olympiad the music of instruments and singing with the pipes. Athletic contests were introduced at the same time or soon after, making the games very nearly the same as those of Olympia, excepting that the competitions in music and poetry always retained their preeminence. Valuable prizes were at first awarded in the Pythian games, but after the second or third celebration a crown of laurel only was awarded, in imitation of the practice at Olympia. Similarly, the victors at Nemea were crowned with parsley, and those at the Isthmian games with pine. In fact, so little difference was there in the

[1] They were, therefore, four years apart.

[2] In the pentathlon all the contestants were first admitted to the leaping contest, and those who crossed a certain space proceeded to throw the javelin. The four most successful in this took part in the foot race. The last man in the race dropped out and the best three threw the discus. Again the least successful retired and the better wrestler of the two remaining won the prize.

[3] In the pancratium almost any method of throttling an opponent and of compeling him to acknowledge himself vanquished was permitted. Wrestling, boxing, hugging, choking, and even the deliberate breaking of bones were allowed.

essential features of these festivals, for such they became, that a description of those at Olympia will suffice for all.

They were held every four years, and all the exercises originally took place in one day, but in the twenty-seventh Olympiad, after the decisive victory over the Persians, the Greeks, desiring to do greater honor to the gods, so extended the games as to fill five days.

The games had already acquired great celebrity, and this extension of their scope added immeasurably to their popularity and to the wonderful hold which they had gained upon the people. Contestants gathered from all parts of Greece and the colonies as well, and men of the highest rank were found striving for the olive wreath that was the pinnacle of Greek ambition.

The month during which the celebration took place was a holiday time throughout all Greece, and even hostile armies disbanded and attended the games as brothers. The names of the victors began to be recorded about 776 B. C., and soon it became customary to reckon time by Olympiads. No more striking proof can be found of the transcendent importance of the contests to the Greek than this, for all peoples have used as their basis of reckoning time that event which is to them the most momentous. Christians refer all time to the beginning of the Christian era, Mohammedans to the flight of their prophet, Romans to the founding of their city, but the historians of Greece used expressions like this: "This battle was fought in the fourth year of that Olympiad in which Eurybotus, the Athenian, won the prize in the course;" or, "This war came to an end in the first year of the fourteenth Olympiad, in which Dasmon, the Corinthian, was victor in the stadium." A war and its attendant circumstances might soon be forgotten, but the Olympic foot race, never! And it was only necessary to mention the name of the victor at any particular celebration to instantly recall to the Grecian mind the exact period to which reference was made.

Naturally the honors accorded to the victors in games of such importance were of the most extravagant description. They were escorted to their homes by their enthusiastic countrymen amidst unbounded expressions of delight; they received the first seats at the games and theatrical performances; poets of the highest merit sang their praises; they were exempt from taxation; they were accorded the posts of honor on the battle field; the cities in which they lived were proud to erect statues in their honor, both at home and in the sacred groves of Olympia. So numerous did these become that, though the conqueror Mummius had sent to Rome all he cared to carry away and had ruthlessly destroyed many more, there still remained such a number that Pausanias, in his chapter on Elis, describes 230, and even then he says that he mentions "only those who had more renown or finer statues than others."

When victory meant so much, it is not surprising that dishonorable

means were sometimes used to secure it. But the games were religious ceremonies; unfairness was sacrilege, and the guilty ones were not only contemned by all those whose praise they sought, but were subjected besides to heavy penalties in money, and for some offenses to scourging in addition. There are several instances of attempted bribery on record, but in every case the fine was promptly imposed and collected. With the money so obtained, statues were erected to Zeus, upon which were placed inscriptions of denunciation and warning.

Deliberate wounding and other species of brutality were not unusual and do not seem to have been severely condemned, since Pausanias mentions one man who, though an inferior wrestler, won several contests by breaking the fingers of his opponents. Nevertheless, he who killed his antagonist forfeited the prize. In the pancratium on one occasion a contestant hugged his opponent to death with his legs and arms, but the dead body was crowned victor, though the other had suffered no other injury than a broken finger.

Damoxenus, the boxer, was likewise deprived of his prize because he had struck Creugas under the ribs with his open hand with such force as to pierce his side and drag his bowels out, immediately killing him. Iccus, of Epidanous, was killed also in boxing, by Cleomedes, who, in a frenzy of grief at being deprived of the expected prize, pulled down the roof of a schoolhouse upon the 60 pupils inside.

THE GREEK GYMNASIA.

The influence of the national games upon the Greek character was incalculable. The periodical congregation of the people of all the states and their friendly competition in the games gave rise to a feeling of brotherhood and of mutual interest that would otherwise have been impossible between independent states.

The games from the first naturally gave a great impetus to the interest in physical exercises generally, and this interest, together with a realization of the necessity for thorough and intelligent preparation for the contests, gave rise to the establishment of the gymnasia, which in time became "the center-points of Greek life," and the sources from which emanated, directly or indirectly, all that was best in Greek civilization.

Being the place at which the most intelligent men spent a great part of their time, they fostered conferences and an interchange of ideas whose effect was the general spread of intelligence the highest type of which is seen in the dialogues of Plato and Socrates and the teachings of Aristotle. Naturally these discussions, held in the gymnasia by men who were themselves enthusiasts in physical exercises, largely turned upon gymnastics and led to the wonderful perfection of the Greek system of bodily culture. The ideal toward which their efforts were directed was the perfection of the intellect, the moral

nature, and the body, and they considered the last but little less important than the other two. How high their ideal was of physical perfection, and how well they attained it, is attested by the marble and bronze statues of their gods, heroes, and athletes that have survived the ravages of time. They did not understand the true functions of the muscles and they knew nothing of the circulation of the blood. They were, in fact, totally ignorant of the science of physiology in its true sense. But they were close and intelligent observers, and were aided by an artistic sense more strongly marked in them than in any other people under the sun. Undoubtedly the gymnasia did much to foster art by supplying models that closely approached perfection, and the artists in turn exercised a strong influence over the gymnasia by selecting the most perfect parts of different individuals, and uniting them, presented new ideals of truer perfection toward which the practice of the gymnasia might tend.

The gymnasia at first were kept by private persons only and were simply open spaces for exercising. Later, buildings especially designed for the purpose were used. They were originally very simple in their character, but finally they became state affairs, carefully planned for the purposes in view, and minutely regulated by law.

In Athens there were three only that acquired great celebrity, the Academy, the Lyceum, and the Cynosarges, but there were others, at least four, of less note. Every city of importance in Greece had at least one gymnasium, and no doubt every hamlet was provided with a palestra or wrestling place, if nothing more.

Naturally the gymnasia differed in completeness and elegance, but the following description, taken from St. John's History of the Manners and Customs of Ancient Greece, conveys an excellent idea of the general plan, which was common to all:

The gymnasia were spacious edifices, surrounded by gardens and a sacred grove. The first entrance was by a square court, two stadia in circumference, encompassed with porticoes and buildings. On three of its sides were large halls, provided with seats, in which philosophers, rhetoricians, and sophists assembled their disciples. On the fourth were rooms for bathing and other practices of the gymnasium. The portico facing south was double, to prevent the winter rain, driven by the wind, from penetrating the interior. From this court you could pass into an enclosure, likewise square, shaded in the middle by plane trees. A range of colonnades extended round three of the sides. That which fronted the north had a double row of columns, to shelter those who walked there in summer from the sun. The opposite piazza was called the Xystos, in the middle of which and through its whole length they continued a sort of pathway, about 12 feet wide and nearly 2 deep, where, sheltered from the weather and separated from the spectators ranged along the sides, the young scholars exercised themselves in wrestling. Beyond the Xystos was a stadium for footraces.[1]

The principal parts of the gymnasium were: (1) The porticoes, furnished with seats and side buildings where the youths met to converse. (2) The Ephebeion, that part of the edifice where the youth alone exercised. (3) The Apodyterion, or undressing room. (4) The Konisterion, or small court in which was kept the haphe,

[1] This paragraph is taken from the Travels of Anacharsis.

or yellow kind of sand sprinkled by the wrestlers upon themselves after being annointed with the ceroma, or oil tempered with wax. An important part of the baggage of Alexander in his Indian expedition consisted of this fine sand for the gymnasium. (5) The Palestra, when considered as a part of the gymnasium was simply a place set apart for wrestling; the whole of its area was covered with a deep stratum of mud. (6) The Sphaeristerion, that part of the gymnasium in which they played at ball. (7) Aleipterion or Elaiothesion, that part of the Palestra where the wrestlers annointed themselves with oil. (8) The area, the great court and certain spaces in the porticoes were used for running, leaping, or pitching the quoit (9) The Xystoi have already been described. (10) The Xysta were open walks in which, during fine weather, the youths exercised themselves in running or any other suitable recreation. (11) The Balaneia, or baths, where in numerous basins was water of various degrees of temperature, in which the young men bathed before annointing themselves or after their exercises. (12) Behind the Xystos and running parallel to it lay the stadium, which as its name implies, was usually the eighth part of a mile in length. From the area below, where the runners performed their exercises, the sides, whether of green turf or marble, sloped upwards to a considerable height and were covered with seats, rising behind each other to the top for the accommodation of spectators.

The gymnasium and all the proceedings therein were under the control or supervision of a number of officials, of whom the gymnasiarch was the chief. Each of these had his special duties to perform, one being especially deputed to look after the conduct of the boys.

THE EXERCISES PRACTICED.

As would be naturally inferred, the exercises of the gymnasium closely followed the contests of the national games, but there were others useful in affording muscular development and agility, which were accorded a full share of attention in the gymnasia but very little in the games. Of these, the most important were the games at ball, for which, as we have seen, a special space was reserved in the gymnasia. These games were played according to fixed rules, but were very simple and spiritless as compared with our modern ball games. They were practiced by both sexes, but men accustomed to such vigorous exercises as wrestling and leaping probably played ball for a reason similar to that which would prompt an athlete of our time to "skip the rope."

Dancing as a physical exercise was frequently extolled by the Greek philosophers, but it was never generally practiced for that purpose. The following conversation is reported by Xenophon in The Banquet, and is introduced in support of both these statements:

The boy then began to dance, and Socrates remarked: "See how this boy, naturally beautiful as he is, nevertheless appears still more beautiful when he puts himself into graceful attitudes than he appeared when he was at rest." "You seem to me," rejoined Charmides, "to be inclined to praise the master who taught him to dance." "Such is the case, indeed," replied Socrates, "for I was thinking of even something more; I mean that no part of the body is inactive in dancing, but that the neck, and the legs, and the hands, are alike exercised, so that he who would have his body improved in suppleness should learn to dance; and I," he continued, addressing himself to the Syracusan, "would gladly learn the movements of the

dance from you." "What profit, then, will you gain from them?" asked the Syracusan. "I shall dance, certainly," replied Socrates. At this reply all the company laughed. But Socrates, with a very serious countenance, said, "Do you laugh at me? Is it then for this reason that I wish, by exercise, to enjoy better health, or to eat and sleep with greater pleasure, or because I desire such a kind of exercise, that it may not be with me as with the runners in the foot race, who become stout in the legs and narrow in the shoulders, or as with boxers, who become broad in the shoulders and thin in the legs, but that, exercising my whole body, I may render every part equally strong? Or do you laugh at this, that I shall be under no necessity of seeking for a companion in my exercise, or to unrobe myself, being an old man, before a number of people, but that an apartment which will hold seven couches will be large enough for me (as this apartment has now been sufficient for this boy to heat himself even to perspiration), and that I shall exercise myself under a roof in the winter, or when heat in the summer is excessive, in the shade of the trees? Or do you laugh at this that, having a belly somewhat larger than is becoming, I wish to reduce it to a more moderate size?"

In the gymnasia, as well as in those games, the athletes in performing their feats were entirely naked. Some recent writers appear to doubt this, but numerous vase paintings and references by ancient authors conclusively prove it to be true. The following paragraph of Thucydides would be sufficient even if no other evidence were available:

The Lacedaemonians were the first to undress themselves in public in the gymnastic exercises and smear themselves with grease. And formerly, even at the Olympic games, combatants contended with girdles around their middle, and it is not many years since it ceased to be so. Nay, even now amongst some of the barbarians, especially those of Asia, prizes for boxing and wrestling are given, and they wear girdles when they contend for them.

MEDICAL GYMNASTICS.

The medical side of gymnastics was not overlooked. Galen declared him to be the best physician who was the best teacher of gymnastics. Herodicus, of Selymbria, was the first to discover the relation between exercise and health, and by a happy combination of exercises prolonged his own life to a ripe old age though he suffered with a mortal disease. Plato described the treatment as "educating the disease," and testifies to its efficacy by the complaint that Herodicus was unstatesmanlike in keeping alive persons who ought to die because they were no longer able to pursue their vocations. Hippocrates claimed the honor of being the first to bring the system of medical gymnastics to perfection.

GYMNASTICS FOR THE YOUNG.

It is uncertain at what age gymnastic exercises were begun by the Greek youth, but undoubtedly the beginning was made very early. Plato even expresses the belief that the bodies of unborn infants should be exercised by the shakings and movements that may be imparted by the mother in walking and riding.

Very young children, too, [he says] should be constantly moved about by day and night, and the younger they are the more they will need it. But at 3, 4, 5, and 6

years the childish nature will require sports. * * * Children at that age have certain natural modes of amusement which they will find out for themselves when they meet. * * * But after the age of 6 years the time has arrived for the separation of the sexes, the boys live with boys, and girls in like manner with girls. Now they must begin to learn, the boys going to teachers of horsemanship, and the use of the bow, the javelin, and the sling.

In the thirty-seventh Olympiad prizes were instituted in the Olympic games for boys in running and wrestling, and in the following Olympiad the pentathlon was also introduced for them. The latter was soon discontinued, however, because it was deemed inadvisable to subject the youth to the severe training necessary. Boxing was added to the contests for boys in the forty-first Olympiad, and the pancratium in the one hundred and forty-fifth.

One of the first steps in the gymnastic training was to accustom the youth to endure, naked, the cold of winter, which, by the way, is by no means so severe in Greece as with us, and the fiercest rays of the summer sun. The Spartans carried this hardening process to extremes, and were accustomed to send their boys, clad in a single garment, to the mountains to hibernate.

THE TRAINING OF WOMEN.

The Spartans, too, paid more attention to the physical education of women than did the people of any other Grecian state, their central idea being to train men to be soldiers, and women to bring forth soldiers. Lycurgus, accordingly, instituted gymnastic exercises and contests for the women no less than for the men.

Aristophanes gives us an example of an exercise in free gymnastics practiced by the Spartan women in the following: Lysistratê, complimenting Lampito's beauty, says: "My beloved Lampito, how handsome you are; your complexion is so fine, and your person so full and healthy; why you could strangle a bull." "Yes," replies Lampito, "I fancy I could, for I exercise myself in jumping till my heels touch my back."

Such strength and such exercises were probably not universal, but the statement that no Spartan woman was permitted to marry until she had given public evidence of her proficiency in gymnastics is all that should be necessary to show that they pursued their exercises with great energy and success.

Plato was a strong believer in gymnastics for women, and frequently calls attention to its importance. In his Laws he says:

Many things have been said by us about dancing and about gymnastic movements in general; for we include under gymnastics all military exercises, such as archery and all hurling of weapons, and the use of the light shield, and all fighting with heavy arms, and military evolutions, and movements of armies and encampments, and all that relates to horsemanship. Of all these things there ought to be public teachers, receiving pay from the state, and their pupils should be the men and boys of the state, and also girls and women, who are to know all these things. While

they are yet girls they should be practiced dancing, in arms, and the art of fighting. When they are grown-up women, applying themselves to evolutions and tactics, and the mode of grounding and taking up arms, if for no other reason, yet in case the whole people should have to leave the city and carry on operations of war on the outside, that the young who are left to guard and the rest of the city may be equal to the task; and on the other hand (what is far from being an impossibility), when enemies, whether barbarian of Hellenic, come from without with mighty force and make a violent assault upon them, and thus compel them to fight for the possession of the city, great would be the disgrace to the state if the women had been so miserably trained that they could not, like birds, fight for their young against some fierce animal, and die or undergo danger, but must instantly rush to the temples and crowd at the altars and shrines, and pour upon human nature the reproach that of all animals man is the most cowardly.

THE DECLINE OF GREEK GYMNASTICS.

But Greek gymnastics, though one of the most wonderful of human institutions in its rise, progress, and effects, was nevertheless a human institution, and finally perished.

To assign a cause for its decay is not a difficult task, for its birth and its death had their origin in the same source, the Olympic games. The glory of the victor and the substantial rewards that followed victory became too great.

The crown of green leaves, indeed, was still the only reward directly given, but that was an empty honor compared with the substantial ones showered upon the victor by his fellow-citizens. It then transpired that men gave themselves up wholly to preparation for the games, and three distinct classes of exercises came to be recognized, namely, the gymnastic, which had in view simply the development of the body or of any of its parts; the agonistic, in which two or more persons contend against each other; and the athletic, whose sole object was the preparation for the national games.

We have Plato's authority for it that those who practiced for the Olympic games had no time for anything else. In short, participation in them was reduced simply to a profession, the votaries of which were by no means of a type which commended itself to the more intelligent of the Greeks.

The games in which kings and nobles had been proud to contend were at last contested only by men "who never cultivated the muses, and having no taste of any sort of learning or inquiry, or thought of music, even that intelligence which may have been in them became feeble and dull and blind, because never roused or sustained, and because the senses were not purged of their mists. And they ended by becoming haters of philosophy, uncultivated, never using the weapons of persuasion; they were like wild beasts, all violence and fierceness, and knew no other way of dealing, and they lived in all ignorance and evil conditions, and had no sense of propriety and grace."

The better class of the Greek youth, therefore, gradually withdrew from the contests, and, being thus deprived of the strongest incentive

to bodily exercise, neglected it. And that neglect paved the way for the successive conquests that made Greece a subject nation from the time of Philip of Macedon until the treaty of Adrianople in 1829.

With the spread of the Macedonian influence over Greece the decline of gymnastics was a question of only a short time, for the Macedonians, more like Thracians than Greeks, were fond of the chase and warlike sports and despised culture for the sake of culture alone.

The Olympic games continued, indeed, until they were prohibited by an edict of Emperor Theodosius in A. D. 394, but the spirit in which they were latterly conducted was far different from the spirit that prevailed when warring states reconciled their differences under the fraternizing influences of the festivals of old Greece in her prime.

The spectators witnessed the games merely as professional shows, feeling no interest in the combatants further than the desire for an exciting spectacle.

The most commendable of their contests, the pentathlon, fell into disuse, and boxing, the most barbarous of all, became the favorite.

The old rule that none but men of pure Greek blood should contest was disregarded, and any who were able to amuse the populace were freely admitted. If men in power chose to enter, the other contestants would servilely allow themselves to be beaten with scarcely an effort in their own behalf. The Roman Emperor Nero, in one celebration, was thus permitted to take every prize offered.

It is no wonder that Theodosius considered the games unworthy to continue.

II.—IN ROME.

ORIGIN OF THE ROMAN GAMES.

That the Romans and the Greeks sprang from kindred stock is indicated in nothing more clearly than in the similarity of their religions and in the coincidence of many of their offerings and ceremonies.

It is not necessary to dwell upon an enumeration of these coincidences, but among the most important of them is that the *agones* of the Hellenes and the *ludi* of the Romans were alike acts of worship.

The occurrences that led to their establishment as periodical events were, however, of different character. In the early days of the city the Roman generals, in starting out upon a campaign, always performed certain religious rites, such as the offering of sacrifices, etc., to gain the favor of their gods. At last an old general, more shrewd than his predecessors, conceived the idea that the gods might be more attentive to his welfare if, instead of tendering all his offerings at the beginning of his campaign, he would promise them other acceptable ceremonies as a reward in case of his success.

His campaign was a victorious one, and, true to his promise, he hon-

ored the gods with games and festal processions as soon as he returned to the city. The artifice, for such it undoubtedly was, commended itself to other commanders, and the vow to celebrate games upon the successful issue became a regular part of the ceremonies at the opening of every campaign. The Roman armies were usually victorious in those days, and in time the games at the end of a summer's campaign came to be a matter of course, and were celebrated whether a signal victory had been achieved or not. Finally they became a fixed and legalized institution, called "ludi Romani," and to provide for such a contingency as a peaceful year, in which there would be no departing general to make the usual promise, the vow was made on the 1st of January of every year by the newly elected consuls.

EARLY CHARACTER OF THE GAMES.

The games themselves in many respects resembled the Grecian *agones*, as the following description of them shows:

A festal procession proceeded toward the circus staked off between the Palatine and the Aventine, and furnished with an arena and places for spectators; in front all the boys of Rome, arranged according to the divisions of the burgess force, on horseback and on foot; then the champions and the groups of dancers, each with their own music; thereafter the servants of the gods with vessels of frankincense and other sacred utensils; lastly the biers with the images of the gods themselves. The spectacle itself was a counterpart of war as it was waged in primitive times, a contest with chariots, on horseback, and on foot.

First, there ran the war chariots, each of which carried in Homeric fashion a charioteer and a combatant; then the combatants who had leaped off; then the horsemen, each of whom appeared after the Roman style of fighting, with a horse which he rode and another led by the hand, and lastly, the champions on foot, naked to the girdle round their loins, measured their powers in racing, wrestling, and boxing. In each species of contest there was but one competition, and that between not more than two competitors.

A chaplet rewarded the victor, and the honor in which the simple branch which formed the wreath was held is shown by the law permitting it to be laid on the bier of the victor when he died. The festival lasted only one day, and the competition probably still left sufficient time on that day for the real carnival, at which groups of dancers displayed their art and above all exhibited their farces; and, perhaps, other representations also, such as competitions in juvenile horsemanship, found a place.

The honors won in real war also played their part in this festival; the brave warrior exhibited on this day the equipments of the antagonist whom he had slain, and was decorated with a chaplet by the grateful community just as was the victor in the competition.[1]

Notwithstanding the likeness of the exercises of the Roman games to those of the Grecian, they differed radically in the character of the participants. In the first days of the existence of the games these were undoubtedly Romans of the better kind, but as soon as the festivals began to be events of more than ordinary importance the professional element became prominent.

[1] Mommsen's History of Rome, book 1, Chapter XV.

Dancing became a common trade at a very early period, and dancers were employed at all important religious ceremonials, marriages, and funerals. The games being called into requisition upon similar or even the same occasions, it was perfectly natural that the performers should soon acquire a professional status similar to that of the dancers.

This prevented the games from attaining the preeminently social aspect that they presented in Greece, and led the Romans to despise the training whose sole object was, according to their idea, the preparation for puerile games that were beneath the dignity of a warlike people.

MARTIAL EXERCISES.

Their youth indeed did not lack vigorous muscular development, but it was attained incidentally in the practice of military exercises, and not by reason of any appreciation of a symmetrically developed body for its own sake. The Roman boys ran, wrestled, threw the spear, and learned to swim, to fence, and to manage horses, simply because these things were useful in battle or in a campaign. After reaching manhood and entering the military life for which the earlier education had been a preparation, their training began in earnest.

The Romans regarded it as requisite that the soldiers of the legion should be furnished with arms, both offensive and defensive, which were heavier and stronger than those of any other people whatever.

In order that they might be able to wield arms which were heavier than those of other men, it was necessary that they should render themselves more than men. This they accomplished by incessant labor, which increased their strength, and by exercises which were calculated to give them dexterity—which is nothing other than a just application of the natural force with which men are endowed.

They were accustomed to the military step; that is to say, to make 20 miles in five hours, and sometimes 24. During these marches they had to carry weights of 60 pounds. They were inured to the habit of running and leaping fully armed. In their exercises they used swords, javelins, and arrows which were double the ordinary weight, and these exercises were continual.

The camp was not the sole military school. There was a place in the city where the citizens assembled for martial exercises. This was the Campus Martius. After the exercises were over they threw themselves into the Tiber, in order to acquire the habit of swimming and to free themselves from dust and sweat.[1]

It was not until toward the end of the Republic, when the Romans began to understand Grecian customs, that their ideas of physical education underwent a change. Aemilius Paulus, the conquerer and despoiler of the Macedonian Empire, was one of the first to provide specifically for the physical development of his sons upon a plan not strictly military. He was not, indeed, so fully converted as to adopt the Greek gymnastic exercises, but he secured the same end by careful and systematic instruction in the chase. In other respects he adopted Grecian methods in the education of his boys, and even employed Greek philosophers, sculptors, and painters to instruct them. His example

[1] Montesquieu's Grandeur and Decadence of the Romans, Chapter II.

had much to do with the popularity of Hellenic culture which followed.

Greek slaves were soon universally employed by the wealthier Romans to instruct their children, not only in the language of the Greeks, but in their literature and general culture as well.

INTRODUCTION OF GREEK GYMNASTICS.

Under the influence of this new fashion the contempt for gymnastics rapidly passed away and small gymnasia were frequently attached to the villas of well-to-do citizens. The first public gymnasium after the Grecian plan was erected by the Emperor Nero, and another was built by Commodus. The public *thermæ*, or baths, were, however, the favorite places of resort, and it was in them that the leisure class of Romans passed a great part of their time. These *thermæ* were among the finest structures of Rome, and in the magnificence of their appointments surpassed even the Athenian gymnasia. All of them had spaces reserved for running, wrestling, walks, and games at ball, etc., and men, as well as youths, were expected to take part in the exercises, unless some good reason existed for not doing so.

GROWTH AND LATER CHARACTER OF THE GAMES.

Notwithstanding all this the essential character of the public games as sources of amusements was not changed. Even their religious features became less prominent, and finally were a mere pretext on the part of the rulers for catering to the absorbing passion of the people for ceremonials and amusements.

Every important event in the progress of the city was assigned as a reason for adding to the length of the celebration of the "ludi Romani." A day was added after the expulsion of the Tarquins in 509 B. C.; another after the secession to Sacred Mount in 494 B. C., and still another, making four days in all, after the great revolution of 397 B. C. The occasions for extending the time still further are not precisely known, but evidently no opportunity for doing so was lost, for in the second century B. C. they occupied ten days, and this number had been still further increased to sixteen during the life of Cicero.

This festival, be it remembered, occurred every autumn, and though the most extensive of all, was, nevertheless, but one of many of similar character. The regular festivals established by law occupied even in the time of the Republic no less than sixty-four days every year. Among these the most important were the *ludi plebei*, the Apollinares, the Cereales, the Megalenses, the Floralia, and the *ludi victoriæ Sullanæ*, none of which was of less duration than five days.

In addition to these permanently-established games every extraordinary event, public or private, was made the occasion for the giving of shows and the celebration of games which the whole people witnessed.

The birthday of the emperors, victories in battle, funerals of great men were marked in this way, and in later times not even these occasions were required to unlock the coffers of the state for the amusement of the populace. One hundred and seventy-five games were celebrated in the year 354 A. D. alone.

The paragraph on a preceding page showing the order of exercises in the earlier celebrations is very inadequate as a description of the games as they were conducted in later times, and utterly fails to convey any idea of their character as they appeared when the passion for such exhibitions was at its height.

The old Etruscan belief that human blood should be spilt on newly-made graves led eventually to combats between condemned victims as a part of the funeral games, and these developed into the well-known gladiatorial contests that became the favorite amusement of the Romans.

Hares and foxes had often been chased in public for the entertainment of the spectators, but such tame sport was not relished long after the people had grown accustomed to the bloody fights of gladiators, and the *venationes* were transformed into desperate encounters between men and wild beasts brought from all quarters of the world to gratify the passion for variety in methods of shedding blood. Julius Cæsar introduced sea fights upon artificial lakes, and each such exhibition that followed surpassed its predecessor in magnitude, until the climax was reached in the games of Claudius on Lake Fucinus, in which there fought 19,000 men with 100 ships, 50 on each side.

Probus, in the search for novelty, made an artificial forest in the circus and filled it with a thousand ostriches, a thousand stags, a thousand deer, and a thousand wild boar. The whole people were then admitted and allowed to capture and carry away what they pleased.

Chariot racing never lost its place as a favorite spectacle, and after the gladiatorial combats had been suppressed by the Christian emperors it became the absorbing passion of the multitude.

The races were always between the chariots of "factions," which were legalized corporations of undetermined origin, which owned the chariots, bred the horses, and trained the charioteers. Each faction was known by the color of its livery, and the people espoused the cause of their favorites so eagerly that they formed themselves into parties which took the names of the colors of the several factions. So immoderate was their enthusiasm and so fierce was the enmity between the parties that serious conflicts often took place. The most remarkable of these occurred in Constantinople, the capital of the Eastern empire, in the reign of Justinian. It lasted five days, and in that time caused the loss of 30,000 lives, and but for the spirit and firmness of the Empress Theodora would have deprived Justinian of his throne.

With such intemperate ardor for professional exhibitions and with the love of luxury and ease that followed the increase of national wealth, the desire for personal physical power on the part of the great mass of

the Roman people dwindled away. And this must receive a prominent place among the causes that led to the decay and downfall of the Roman Empire.

III.—THE MIDDLE AGES AND MODERN GYMNASTICS.

BODILY EXERCISE PRACTICALLY UNIVERSAL.

To enumerate the other nations of antiquity that valued and practiced physical exercises would be not only a difficult but a fruitless task. War was the principal occupation of those days and individual skill and bodily strength were the most important elements of success in battles, which consisted almost wholly of series of individual conflicts. That people was most powerful whose soldiers possessed these qualities in the highest degree. Defeat and national extinction followed the lack of them just as surely. It naturally followed that he who displayed the greatest prowess was favored with the most conspicuous honors which his people could give, and the broadest avenue open to ambition lay in the cultivation of martial skill and of physical strength, which was its necessary concomitant.

It is therefore reasonably certain that among all, or nearly all, ancient peoples bodily exercises of a warlike kind were practiced with more or less enthusiasm, although their physiological aspect was of minor concern.

Sports and games, too, requiring to a greater or less extent bodily activity may be assumed to have existed among the youth of all races and all times. Child nature is the same, whether it is seen in the aboriginal forests or in the refinements of modern civilization, and play is the natural instinct of childhood. The games of the children of the forest are, to be sure, simple and rude, but they nevertheless perform as important a part in bodily development as the more complicated sports of the British or American boy. Then, since "men are but children of a larger growth," there have been few nations in which the sports of childhood have not been continued in some form in the diversions of maturer years. This is especially true of nations in the earlier stages of civilization, for civilization is but the process of removing man from the state of nature, and man in his natural state is essentially child-like in many of his characteristics.

But in all sports and games the primary object in view was amusement, and the effects upon the physique, although considerable and in the main beneficial, were accorded even less attention than were the physiological effects, as such, of martial exercises.

In many cases undoubtedly the influences of Hellenic ideas were seen among tribes which had been brought by war or commerce in contact

with the Greeks,[1] but these influences were probably only temporary, for there could be no true and lasting appreciation of Greek gymnastics where there was not Greek civilization and Greek love of the beautiful.

On account, therefore, of their practical universality and the general lack of a definite and rational plan, it is not necessary to the present purpose that an extended description be sought of the methods of martial training or of games pursued for diversion among any other of the earlier nations.

ANCIENT GERMANY.

But a brief mention of some of the customs of the warlike tribes of Germany is not only necessary to an understanding of the transition to the peculiar institutions of a later period, but possesses a value of its own.

Tacitus is, of course, our principal source of information concerning the early Germans, and it is to him that we must turn.

The Germans, he says, were men of large bodies, powerful in sudden exertions, but impatient of toil and labor, deeming it base and spiritless to earn by sweat what they might purchase by blood. So warlike was their character that they transacted no business, public or private, without being armed, and quarrels that arose amongst them generally ended in bloodshed.

It was not customary for anyone to bear arms till his ability to use them had been approved by the state. Then in the presence of the assembly he was formally invested with a spear and javelin by the chief, or his father, or a near relative. By this ceremony he gained a position as a member of the tribe and was no longer considered merely one of his father's household.

There was only one kind of public spectacle among them, and that was characteristic of a warlike people, namely, the dancing by naked young men amid drawn swords and presented spears. Women were treated with consideration, almost amounting to adoration. Their advice was freely sought and usually followed, even in such matters as joining battle or declaring war. They were not exempt from the dangers and privations of war, nor did they desire to be, for it was their custom to attend their husbands and sons in battle, encouraging them to feats of bravery, binding up their wounds, and sometimes even actually taking part in battle themselves.

It was the custom for each chief to surround himself with a large body of young men, the flower of the tribe, who devoted themselves constantly to his service. They deemed it their duty and their privilege to aid and protect him in battle, to ascribe to him all their gallant deeds, and to deliver to him the fruits of their victories.

[1] Such instances may be found in the gymnastic games at Chemmis, in Egypt, mentioned by Herodotus, and the games of the Asian tribes mentioned by Thucydides.

The chief armed his companions, for such they were called, but their only pay consisted of repasts, homely indeed, but plentiful.

After the invasion of the Gallo-Roman territory many of the customs of the Germans underwent a gradual change. Most of the companions left the chiefs and occupied lands allotted to them, but were nevertheless expected to render military aid when called upon. Some were expected to serve on horseback, equipped with a coat of mail, and were called "caballarii."

CHIVALRY.

From these practices arose the feudal system and the institution of chivalry, the name of the latter being obviously derived from the term applied to the mounted companions of the German chiefs.

During the crusades chivalry acquired its full vigor, and its connection with the feudal system gradually ceased, while the religious and moral features became prominent.

The investiture of the knight was a survival of the old ceremonial, but its nature was changed in accordance with the change that the influences of religion had wrought. The candidate for knighthood was bathed and clad in a white robe as a symbol of purity; was required to fast, to make confession, receive communion, and attend mass; he was then questioned as to his purpose in entering the order. The answers being satisfactory, his arms were blessed and put upon him. The officiating lord then gave him three blows upon his shoulder, saying, "In the name of God, of Saint Michael, and of Saint George, I dub thee knight."

Along with the strong element of religion that crept into the supposed principles of knighthood the old German veneration for women was retained, and an extravagant devotion to the ladies was inseparably associated with the love of God in the duties of a knight. But these two were but the beginning of a long series of noble qualities that were enjoined. Guizot recites no less than twenty-six oaths that were imposed at different times between the eleventh and the fourteenth centuries, covering altogether nearly the whole gamut of human perfection, but insisting more than all else upon bravery, the defense of the weak, faithfulness, courteousness, humility, and truthfulness under all circumstances.

EDUCATION OF A KNIGHT.

A regular scheme of education was a necessary accompaniment to such an institution. Here, too, may be seen the remains of an ancient German custom. As soon as they reached the age of seven years the sons of gentlemen were placed in the castles of the superior lords to be reared in the very atmosphere of chivalry. They learned the lessons of love from the ladies of the court, and received from them and from the castle chaplain whatever of intellectual and religious training was deemed

fitting and necessary for them. They rendered constant personal service to the lord and his lady, waiting upon them at the table, and accompanying them in their excursions, whether of pleasure or of war. During the same time a beginning was made in the training for the military life that lay before them.

They were taught to leap over trenches, to launch or cast spears and darts, to sustain the shield, and in their walk to imitate the measured tread of the soldier. They fought with light staves against stakes raised for the nonce as if they had been their mortal enemies, or met in encounters equally perilous their youthful companions of the castle.[1]

This course of life continued for seven years, during which the boys were called pages or valets; after the age of 14 they bore the name of squire. The domestic duties of the squire gradually grew less exacting, and as he approached manhood they were entirely laid aside, and his military exercises were assiduously pursued.

He practiced every mode by which strength and activity could be given to the body. He learned to endure hunger and thirst; to disregard the season's changes, and like the Roman youths in the Campus Martius when covered with dust, he plunged into the stream that watered the domains of his lord. He accustomed himself to wield the sword, to thrust the lance, to strike with the ax, and to wear armor.

The most favorite exercise was that which was called the Quintain; for it was particularly calculated to practice the eye and hand in giving a right direction to the lance. A half figure of a man, armed with a sword and buckler, was placed on a post and turned on a pivot, so that if the assailant with his lance hit him not on the middle of the breast but on the extremities, he made the figure turn round and strike him an ill-aimed blow, much to the merriment of the spectators. The game of Quintain was sometimes played by hanging a shield upon a staff fixed in the ground, and the skillful squire riding apace struck the shield in such a manner as to detach it from its ligatures. But of all the exercises of chivalry, none was thought so important as horsemanship.[1]

TOURNAMENTS.

The tournaments, however, are the features of chivalry around which the most of romance dwells. These were elegant pastimes of Europe through all the centuries in which chivalry pervaded it, and as "splendid and graceful shows" they continued to animate and delight the on lookers long after the decadence of the institution that gave them birth.

Tournaments may be considered to have risen about the middle of the eleventh century; for though every martial people have found diversion in representing the image of war, yet the name of tournaments and the laws that regulated them can not be traced any higher. Every scenic performance of modern times must be tame in comparison with these animating combats.

At a tournament, the space inclosed within the lists was surrounded by sovereign princes and their noblest barons, by knights of established renown, and all that rank and beauty had most distinguished among the fair. Covered with steel, and known only by their emblazoned shield, or by the favors of their mistresses, a still

[1] Mills's History of Knighthood.

prouder bearing, the combatants rushed forward to a strife without enmity but not without danger.

Though their weapons were pointless, and sometimes only of wood, though they were bound by the laws of tournaments to strike only upon the strong armor of the trunk, or, as it was called, between the four limbs, those impetuous conflicts often terminated in wounds and death. The church uttered her excommunications in vain against so wanton an exposure to peril; but it was more easy for her to excite than to restrain that martial enthusiasm. Victory in a tournament was little less glorious, and perhaps at the moment more exquisitely felt, than in the field; since no battle could assemble such witnesses of valor. "Honor to the sons of the brave" resounded amidst the din of martial music from the lips of the minstrels as the conquerer advanced to receive the prize from his queen or mistress; while the surrounding multitude acknowledged in his prowess of that day an augury of triumphs that might, in more serious contests, be blended with those of his country.[1]

DECLINE OF CHIVALRY AND OF PHYSICAL EXERCISE.

Chivalry continued to command the respect of Europe until the fifteenth century, during which a number of causes conspired to accomplish its downfall.

The most potent of these was undoubtedly the invention of gunpowder, or, to be more accurate, the appreciation of its importance by the nations of Europe, for at least two centuries elapsed after its invention before it was effectively employed in European warfare.

But even before the days of firearms chivalry had passed the zenith of its usefulness, for the English archers had demonstrated the vulnerability of the lighter armor and had compelled the adoption of suits of massive steel plates that well nigh rendered the knights powerless to strike a blow,[2] while the Swiss and Bohemian pikemen had proved the faultiness of their mode of attack. Further, the high character of knighthood had been lowered by injudicious sovereigns who conferred the order promiscuously upon civilians as well as soldiers. Standing armies of mercenaries, too, had arisen, to the great detriment of the system whose soldiers had fought for love and glory.

In conjunction with these circumstances, which deprived the occupation of war of so much of its romance and attractiveness, came the revival of ancient literature and the invention of the art of printing to turn men's minds into new channels. A reaction followed, and physical strength received as much contempt as it had been accorded honor. It was associated with the victories of the flesh when the time demanded the conquests of the intellect.

The system of education that arose under the new order of things was characterized by an ardent pursuit of classical literature. Latin

[1] Hallam's Middle Ages, Chap. IX., part II.

[2] The truth of the remark attributed to King James I, that "armour protected its wearer from injury, but at the same time prevented him from injuring anyone else," is demonstrated by numerous instances in history of warmly-contested battles in which the loss was insignificant. In an action between Neapolitan and Papal troops in 1486, lasting all day, not a man was killed.

was the means of communication between the learned of all nations, and the knowledge of Latin that one possessed was his measure of education.

In the school of Sturmius, the most famous pedagogue of the time, "the boys gave five years to the acquirement of pure Latin style; then two years more were devoted to elegance; then five years of collegiate life were given to the art of Latin speech."[1] Greek received somewhat less attention, but little else was thought of than literary instruction, and bodily exercises were utterly neglected.

SATIRES OF RABELAIS.

Among the first to protest against this order of things was François Rabelais, the French satirist, whose writings are barred from polite society by their unrestrained grossness, but whose serious utterances place him in the front rank of early educational reformers. His work, Gargantu a and Pantagruel, was first published in 1532. The hero, Gargantua, is first confided to the care of tutors who instruct him after the manner of the time in Latin and the arts of disputation. Gargantua studies hard, but for all that profits nothing and becomes a fool, a dolt, and a blockhead. His father, therefore, engages the wise Ponocrates as his tutor. Ponocrates administers a drug which causes his pupil to forget all that he had learned under his former preceptors, and proceeds with his training after his own fashion.

That portion of his system which is concerned especially with the mind is not applicable to our sketch, and must be omitted. The description of Gargantua's physical exercises embraces not only Rabelais's ideal of physical culture, but, in the author's usual pedantic style, a catalogue, apparently, of all the gymnastic exercises known at that time. After the morning lecture Gargantua and Ponocrates "went forth into a field near the university, called the Brack, or into the meadows, where they played at the ball, tennis, and the pelitrigone, most gallantly exercising their bodies, as before they had done their minds. All their play was but in liberty, for they left off when they pleased, and that was commonly when they did sweat all over their body, or were otherwise weary. Then they were well wiped and rubbed, shifted their shirts, and, walking slowly, went to see if dinner was ready."

After the afternoon's lectures had been heard they again proceeded to the fields, this time in company with a young gentleman named Gymnast, under whose direction Gargantua practiced exercises on horseback, in armor, in running, hunting, throwing, climbing, etc.[2]

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[1] See Sturmius in Quick's Educational Reformers.

[2] The exercises in detail were as follows:

"He rode a Naples courser, a Dutch roussin, a Spanish gennet, a barbed, or trapped, steed, then a light fleet horse, unto whom he gave a hundred carieres, made him go the high saults, bounding in the air, free the ditch with a skip, leap over a stile or pale, turn short in a ring both to the right and left hand. There he broke

Thus was Gargantua governed, and kept on in this course of education from day to day, profiting as you would understand such a young man of his age and good sense, so kept to his exercises, may well do, which, though at the beginning seemed difficult, became a little after so sweet, so easy, and so delightful that it seemed rather the recreation of a king than the study of a scholar.

MONTAIGNE'S ESSAYS.

Rabelais's ideas on education bore little fruit, if any, at the time, so far as their practical application was concerned, but in the essays of Montaigne, published a few years after, we find many of them divested of the filth with which Rabelais overwhelmed them, and placed in sur-

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not his lance; for it is a greatest foolery in the world to say I have broken ten lances at tilt, or in fight; a carpenter can do even as much; but it is glorious and praiseworthy action with one lance to break and overthrow ten enemies; therefore, with a sharp, stiff, strong, and well-steeled lance would he usually force up a door, pierce a harness, beat down a tree, carry away the ring, lift up a cuirassier saddle, with the mail coat and gauntlet; all this he did in complete armor from head to foot. As for the prancing flourishes and smacking poppisms, for the better cherishing of the horse commonly used in riding, none did them better than he. The great vaulter of Ferrara was but an ape compared to him. He was singularly skillful in leaping nimbly from one horse to another, without putting foot to ground, and these horses were called desultories; he could likewise, from either side, with a lance in his hand, leap on horseback without stirrups, and rule the horse at his pleasure, without a bridle, for such things are useful in military engagements. Another day he exercised the battle-ax, which he so dexterously wielded both in the nimble, strong, and smooth management of that weapon, and that in all the feats practiceable by it, that he passed knight of arms in the field, and at all essays.

"Then tossed he the pike, played with the two-handed sword, with the backsword, with the Spanish tuck, the dagger, poniard, armed or unarmed, with a buckler, with a cloak, with a target.

"Then would he hunt the hart, the roebuck, the bear, the fallow deer, the wild boar, the hare, the pheasant, the partridge, and the bustard. He played at the balloon, and made it bound in the air, both with fist and foot.

"He wrestled, ran, jumped, not at three step and a leap, not at the hare's leap, nor yet at the almanes; 'for,' said Gymnast, 'these jumps are for the wars altogether unprofitable, and of no use;' but at one leap, he would skip over a ditch, spring over a hedge, mount six paces upon a wall, ramp and grapple after this fashion up against a window, of the full height of a lance. He did swim in deep waters on his belly, on his back, sideways, with all his body, with his feet only, with one hand in the air, wherein he held a book, crossing thus the breadth of the river Seine, without wetting it, and dragged along his cloak with his teeth, as did Julius Cæsar; then, with the help of one hand he entered forcibly into a boat, from whence he cast himself again headlong into the water, sounded the depths, hollowed the rocks, and plunged into the pits and gulphs. Then turned he the boat about, governed it, led it swiftly or slowly with the stream and against the stream, stopped it in its course, guided it with one hand, and with the other laid hard about him with a huge great oar, hoisted the sail, hied up along the mast by the shrouds, ran upon the edge of the decks, set the compass in order, tackled the bowlines, and steered the helm. Coming out of the water he ran furiously up against a hill, and with the same alacrity and swiftness ran down again; he climbed up trees like a cat, and leaped from one to the other like a squirrel; he did pull down great boughs and branches like another Milo; then with two sharp, well-steeled daggers, and two tried bodkins, would he run up the wall to the very top of a house, like a rat; then

roundings better calculated to influence the minds of later and more refined generations. Montaigne has this to say of physical education:

Mothers are too tender and their natural affection is apt to make the most discreet of them so overfond that they can neither find in their hearts to give them due correction for the faults they commit nor suffer them to be brought up in those hardships and hazards they ought to be. They would not endure to see them return all dust and sweat from their exercises, to drink cold water when they are hot, nor see them mount an unruly horse, nor take a foil in hand against a rude fencer, or so much as discharge a carbine, and yet there is no remedy; whoever will breed a boy to be good for anything when he comes to be a man must by no means spare him, even when so young, and must very often transgress the rules of physic. It is not enough to fortify his soul; you are to make his sinews strong, for the soul will be oppressed if not assisted by the members, and would have too hard a task to discharge two offices alone. I know very well, to my cost, how mine groans under the burthen, for being accommodated with a body so tender and indisposed as eternally leans and presses upon her. * * *

Our very exercises and recreations, running, wrestling, music, dancing, hunting, riding, and fencing, will prove to be a good part of our study. I would have his outward fashion and mien, and the disposition of his limbs, formed at the same time with his mind.

Tis not a soul, tis not a body we are training up, but a man, and we ought not to divide him. And, as Plato says, we are not to fashion one without the other, but make them draw together like two horses harnessed to a coach. * * * Inure him to heat and cold, to wind and sun, and to dangers he ought to despise. Wean him from all effeminacy and delicacy in clothes and lodging, eating and drinking. Accustom him to everything, that he may not be a Sir Paris, a carpet knight, but a sinewy, hardy, and vigorous young man.

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suddenly came down from the top to the bottom with such an even composition of members, that by the fall he would catch no harm.

"He did cast the dart, throw the bar, put the stone, practice the javelin, the boar-spear, or partisan, and the halbert; he broke the strongest bows in drawing, bended against his breast the greatest cross-bows of steel, took his aim by the eye with the hand-gun, and shot well, traversed and planted the cannon, shot at but marks, at the papgay from below upwards, from above downwards, then before him, sideways, and behind him, like the Parthians.

"They tied a cable rope to the top of a high tower, by one end whereof hanging near the ground he wrought himself with his hands to the very top; then upon the same track came down so sturdily and firm that they could not, on a plain meadow, have run with more assurance. They set up a great pole, fixed upon two trees, there would he hang by his hands, and with them alone, his feet touching at nothing, would he go back and fore along the aforesaid rope, with so great swiftness that hardly could one overtake him with running; and then, to exercise his breast and lungs, he would shout like all the devils in hell.

"Then, for the strengthening of his nerves or sinews, they made him two great sows of lead, which they called alteres; those he took up from the ground, in each hand one, then lifted them up over his head, and held them without stirring with an inimitable force.

"He fought at barriers with the stoutest and most vigorous champions; and when it came to the cope, he stood so sturdily on his feet that he abandoned himself to the strongest, in case they could remove him from his place, as Milo was wont to do of old, in whose imitation likewise he held a pomegranate in his hand, to give unto him that could take it from him. The time being thus bestowed, and himself rubbed, cleansed, wiped, and refreshed with other clothes, he returned."

But the wisdom of Montaigne was as ineffectual as the satire of Rabelais to check the tendency of the time toward verbalism. The teachings of Sturmius and the Jesuits molded the education of that period, and in that education all the attention that the body received, aside from negative precautions for the preservation of the health, consisted of walks and occasional excursions.

MULCASTER AND THE MERCHANT TAYLORS' SCHOOL.

There were, to be sure, a few exceptions to this general rule, the most notable of them being the Merchant Taylors' School in London, during the time in which the famous Richard Mulcaster was at its head; that is, from 1561 to 1586. If the ideas of the master were even partially carried out, and it is reasonable to suppose that they were, as they are expressed in his Positions for the Training up of Children, his pupils must have received a course of physical training that would compare favorably with anything that is offered in the present generation.

Mulcaster's book seems to have been heretofore entirely overlooked by students of physical training, although it is one of the most remarkable of the early works upon the subject. It is more directly in the line of modern thought and practice than any contemporary work, since it relates especially to exercises for schools and scholars. It is the pioneer work on school gymnastics. Mulcaster was no more learned in classic literature than many other pedagogues of his time, but strangely enough of all those who perused the descriptions and praises of the ancient gymnastics he was the only one who appreciated their force sufficiently to reecho the suggestions and recommend their application to the schools. He devised no new system of exercises, and most of the best ideas are quoted directly from Galen, Hippocrates, and other ancient authors, but in the application of them he certainly deserves the credit of originality. His plan of treating the subject is set forth as follows:

> First, I will note somewhat generally concerning all exercises. Secondly, I will choose out some special exercises which upon good consideration I do take to be the most proper and propitious to schools and scholars. Thirdly, I will apply the circumstances required in exercise to every one of them so near as I can, that there be no error committed in the executing. For the better the thing is, if it hit right, the more dangerous it proveth if it miss that right. Last of all, I will show the training master how to furnish himself thoroughly in this professed exercising, because he must both apply the mind with learning and the body with moving at divers times, refreshing himself with variety and changes.

Under the first head the author showed, as well as his deficient knowledge of medical science permitted him to show, "where in health doth consist and how diseases do come; then how health is maintained and disease avoided, and how great a part is appointed for exercise to play in the performance thereof." He divided all exercises into those

that are athletical for games, martial for the field, and physical for the health.

For health [he says] it is most manifest that exercise is a mighty great mistress, whether it be to confirm that which we have by nature, or to procure that which we have not by nature, or to recover that, by industry and diligence, which we have almost lost by misfortune and negligence. The exercises which do serve to this healthy end do best serve for this my purpose, and though an healthy body be most apt and active, both for gaming to get wagers and warring to win victories, yet in my exercises I neither mean to dally with the gamester nor to fight with the warrior, but to mark which way I may best save students who have most need of it, being still assailed by those enemies of health which wax more eager and hot the more weak and cold that exercise is.

Mulcaster recognizes three degrees of exercise: First, the preparative, which served to qualify the body by degrees for the main exercise; second, the post-parative, following the main exercise to reduce the body by gentle degrees to the normal quietness, and, third, the main exercise itself, which is inclosed between the two preceding. It does not require very keen discernment to see in this the similarity to the more modern Swedish practices!

From "the whole heap of exercises named by Galen and other writers" he picks out these as best suited to his purpose for indoor use: Loud speaking, singing, loud reading, talking, laughing, weeping, holding the breath, dancing, wrestling, fencing, and scourging the top.

For out of doors he selects: Walking, running, leaping, swimming, riding, hunting, shooting, and playing at ball. To each of these exercises he gives a full chapter, detailing the benefits to be derived, and showing what injuries might follow injudicious use.

The author then considers in the same thorough manner the six circumstances which are to be considered in exercise, namely, "the nature of the exercise which ye intend to use; the person and body which is to be exercised, the place wherein, the time when, the quality how much, and the manner how."

The last chapter, that deals with physical education, is headed—

An advertisement to the training master. Why both the teaching of the mind and the training of the body be assigned to the same master. The incongruities which ensue where the body and soul be made particular subjects to several professions. That whoso shall execute anything well must of force be fully resolved of the excellency of his own subject. Out of what kind of writers the exercising masters may store himself with cunning. That the first ground would be laid by the cunningest workman. That private discretion in any executor is of more efficacy than his skill.

Throughout, the work is distinguished by a clear comprehension of the subject and a close attention to detail that betokens a practical acquaintance that must have been obtained in his school, although no direct statement to that effect appears, and the indications are that the Merchant Taylors' was the first school in the modern sense in which physical training found a place.

But Mulcaster left the school after a serious disagreement with the Merchant Taylors' Company, and even if he had placed gymnastics in

the curriculum, it is evident that his successor was not disposed to follow up the innovation, for the effects of his labors in that direction were certainly not permanent.

OTHER DEFENDERS OF PHYSICAL TRAINING.

Martin Luther earnestly advocated physical exercise for the people, principally on the ground that it tended to prevent them from falling into habits of drunkenness, vice, and gaming. Melancthon and Zwingli were also believers in gymnastics, and in Trotzendorff's school at Goldberg the boys were permitted to wrestle and to run, but, strangely enough, were forbidden to go upon the ice or throw snowballs in winter, or to bathe in cold water in summer.

Other writers appeared occasionally in defense of gymnastics, the most notable being Sir Thomas Elyot (1495–1546), Hieronymus Mercurialis (1530–1606), and John Milton (1608–1674).

Sir Thomas Elyot's "Boke named the Gouernour" appeared in 1531, and, as its title indicates, treats of "the education or fourme of bringing up of the childe of a gentilman, which is to haue authoritie in a publike weale" [commonwealth]. After describing at length the mental curriculum which he would have his pupil pursue, the author says:

> All thoughe I haue hitherto aduaunced the commendation of lernyng, specially in gentilmen, yet it is to be considered that continuall studie without some manner of exercise, shortly exhausteth the spirites vitall, and hyndereth naturall decoction and digestion, wherby mannes body is the sooner corrupted and brought into diuers sickenessis, and finallye the life is thereby made shorter: where contrayrye wise by exercise, whiche is a vehement motion (as Galene prince of phisitions defineth) the healthe of man is preserued, and his strength increased.

The exercises he especially commends as most fitting for gentlemen are wrestling, running, swimming, the handling of weapons, especially the sword and battle axe, and horsemanship. He speaks favorably of hunting, hawking, and dancing of the proper kind, and praises archery as the best of all exercises for every class of people.

Mercurialis was an Italian physician whose reputation was already great before the publication of his greatest work "De Arte Gymnastica."[1]

This book is a perfect mine of information relating to ancient gymnastics. It was written in advocacy of exercise as a hygienic measure, and its arguments are enforced by facts and testimony from no less than one hundred and twenty-three classical authors.[2]

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[1] The first edition of this book was issued before the publication of Mulcaster's "Positions," since that writer quotes freely from it. Other editions bear the imprint of 1587, 1601, and 1672, the edition of 1601 being the fourth.

[2] The character and scope of the work may be shown by the following chapter titles:

Book First: Chapter 1, concerning the beginnings of medicine; chapter 2, concerning hygiene, and what may be drawn therefrom; chapter 3, what gymnastics is, and how many kinds; chapter 4, concerning the subject of gymnastics, and the praises of it; chapter 5, at what time and in what way gymnastics may be taken; chapter 6,

Milton's idea of physical training related principally to preparation for warfare, as this extract from his Treatise on Education shows:

This institution of breeding which I here delineate shall be equally good both for peace and war; therefore about an hour and a half ere they eat at noon should be allowed for exercise and due rest afterwards. * * * The exercise which I commend first is the exact use of their weapon, to guard and to strike safely with the edge or point; this will keep them healthy, nimble, and strong, and well in breath, is also the likeliest means to make them grow large and tall, and to inspire them with a gallant and fearless courage, which being tempered with seasonable lectures and precepts to them of true fortitude and patience will turn into a native and heroic valor and make them hate the cowardice of wrong doing.

They must be practiced in all the locks and gripes of wrestling, wherein Englishmen were wont to excel, as need may often be in fight to tug or grapple and to close. And this, perhaps, will be enough wherein to prove and heat their single strength. * * *

About two hours before supper they are, by a sudden alarum or watchword, to be called out of their military motions under sky or covert, according to the season, as was the Roman wont; first on foot, then, as their age permits, on horseback, to all the arts of cavalry; that having in sport, but with much exactness, and daily muster, served out the rudiments of their soldiership in all the skill of embattling, marching, encamping, fortifying, besieging, and battering, with all the helps of ancient and modern strategems, tactics, and warlike maxims, they may, as it were, out of a long war, come forth renowned and perfect commanders in the service of their country.

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concerning the gymnastics of the ancients; chapter 7, concerning the various kind of men who may be gathered together in a gymnasium; chapter 8, concerning the different parts of gymnasiums; chapter 9, concerning the palestra and other parts of the gymnasium; chapter 10, concerning the baths of the gymnasium and also concerning the stadium; chapter 11, concerning the reclining at the feasts of the ancients, and to this extent concerning the origin of the custom of feasting together in the day; chapter 12, concerning the authors of gymnastics and the attendants of gymnasiums; chapter 13, concerning the differences between the three kinds of gymnastics: the warlike, the legitimate, or medical, and the vicious, or athletic; chapter 14, concerning the vicious, or athletic, gymnastics; chapter 15, concerning the manner of living of the athlete.

Book Second: Chapter 1, what exercise is, and in what it differs from labor and gesticulation; chapter 2, concerning the division of medical gymnastics; chapter 3, concerning dancing; chapter 4, concerning the game of ball; chapter 5, concerning the game of ball as played by the Latins; chapter 6, concerning pantomime, or the third division of dancing; chapter 7, concerning the end of dancing and the place; chapter 8, concerning wrestling; chapter 9, concerning boxing, the pancratium, and cestuses; chapter 10, concerning running; chapter 11, concerning leaping; chapter 12, concerning the discus and the halteres [dumb bells]; chapter 13, concerning throwing.

Book Third: Chapter 1, concerning the progress of the work and the reason for presenting the treatise; chapter 2, concerning walking; chapter 3, whether it may be an exercise to stand erect; chapter 4, concerning the kinds of hand-to-hand fights; chapter 5, concerning some other kinds of exercise; chapter 6, concerning the holding of the breath; chapter 7, concerning crying aloud and other exercises of the voice; chapter 8, concerning the cricilasia [the whip-top], the trocus [the trundling hoop], and the pilamálleus [a game played with wooden balls and mallets, the source from which modern croquet sprang]; chapter 9, concerning horsemanship; chapter 10, concerning chariot riding; chapter 11, concerning riding in the litter and the chair; chapter 12, concerning shaking made by hanging beds and cradles, and

JOHN LOCKE'S UTTERANCES AND INFLUENCE.

But the influence of each of these authors was at best only temporary, and none of them was a link in the chain that connected the ancient with modern gymnastics. After Montaigne the next writer that may be so considered was John Locke, whose Thoughts on Education was published in 1693.

Locke's ideas were undoubtedly influenced by the writings of Rabelais and Montaigne, and possibly those of Elyot, but whatever may have been their source, it is certain that he set them forth in a clear and philosophical style peculiarly his own, and though some of his recommendations are at variance with the teachings of modern medical science, he must be considered as one of the most conspicuous advocates of rational physical training. His utterances upon the subject relate more to the preservation of the health than do those of either of his

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concerning the couch; chapter 13, concerning sailing and fishing; chapter 14, concerning swimming; chapter 15, concerning hunting.

Book Fourth: Chapter 1, concerning the reason for proceeding, and concerning the use of exercise; chapter 2, confutation of the opinion of them who condemn exercise for the healthy; and concerning the necessity of exercising and the advantages; chapter 3, disapprobation of them who suppose that all men should be exercised; chapter 4, they are confuted who wish the accustomed only to be exercised; chapter 5, concerning the varieties of exercises; chapter 6, concerning the degrees of health and disease; chapter 7, whether diseased bodies may come together to be exercised in any way; chapter 8, concerning the exercising of the infirm and of old men; chapter 9, concerning the exercising of the healthy; chapter 10, concerning the places in which the exercises should be done; chapter 11, concerning the proper time for exercises; chapter 12, how much exercise should be taken; chapter 13, concerning the manner of exercising.

Book Fifth: Chapter 1, concerning the order of the progress, and concerning some things deserving to be known; chapter 2, concerning the various effects of exercises; chapter 3, concerning the effects of dancing; chapter 4, concerning the effects of games of ball; chapter 5, concerning the advantages and disadvantages of wrestling; chapter 6, concerning the capabilities of boxing, the pancration, and the cestuses; chapter 7, concerning the nature of running; chapter 8, what leap may be best; chapter 9, concerning the conditions of the halteres [dumb-bells]; chapter 10, concerning the effects of the discuses and of throwing; chapter 11, concerning the qualities of walking; chapter 12, again concerning the qualities of walking.

Book Sixth: Chapter 1, the effect of standing erect; chapter 2, concerning the effects of boxing; chapter 3, concerning the qualities of certain other exercises; chapter 4, concerning the virtues of holding the breath; chapter 5, concerning the virtues of the exercises of the voice, and first concerning crying aloud and singing; chapter 6, concerning the qualities of reading aloud, conversation, laughter, and weeping; chapter 7, concerning the qualities of the cricilasia, the trochus, and the pilamalleus; chapter 8, concerning the virtues of horsemanship; chapter 9, concerning the qualities of riding in general; chapter 10, concerning the particular qualities of riding in the carriage, the litter, and the chair; chapter 11, concerning the virtues of being borne in a hanging bed, a cradle, and a ship; chapter 12, concerning the effects of swimming and fishing; chapter 13, concerning the conditions of hunting.

predecessors, and in this he was influenced, like Montaigne, by his own bodily ailments. In his Essay on Study he says:

> The principal end why we are to get knowledge here is to make use of it for the benefit of ourselves and others in this world; but if but gaining it we destroy our health, we labor for a thing that is useless in our hands. * * * He that sinks his vessel by overloading it, though it be with gold and silver and precious stones, will give his owner but an ill account of his voyage.

His treatise on Education opens in the same strain, the first sentences being:

> A sound mind in a sound body is a short but full description of a happy state in this world. He that has these two has little more to wish for; and he that wants either of them will be but little the better for anything else.

Locke followed directly in Montaigne's footsteps in earnestly opposing "cockering and tenderness" by which he believed most children's constitutions are spoiled, or at least harmed. He would have them accustomed to endure extremes of heat and cold, and to illustrate the possibilities of the human body for endurance cites the Scythian philosopher who used to go naked in frost and snow, and the children of Malta who are reconciled to the heat by being kept stark naked from their cradles till they are 10 years old.

He believed in the efficacy of swimming and open air exercises generally, enforcing his argument with the observation that "if my master be always kept in the shade and never exposed to the sun and wind for fear of his complexion, it may be good to make him a beau, but not a man of business." The recommendations concerning the body and the health are summarized in "these few and easy observable rules: Plenty of air, exercise, and sleep; plain diet; no wine or strong drink, and very little or no physic; not too warm or strait clothing, especially the head and feet kept cold, and the feet often used to cold water and exposed to wet."

Locke considered dancing, music, fencing, "riding the great horse," and wrestling to be mere accomplishments, and tolerated them only because custom made them necessary parts of the breeding of gentlemen.

As to diversion, he offers the following hint:

> The weakness of our constitutions, both of mind and body, requires that we should be often unbent; and he that will make a good use of any part of his life must allow a portion of it to recreation. At least this must not be denied to young people, unless whilst you with too much haste make them old you have the displeasure to set them in their graves or a second childhood sooner than you would wish. * * *
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> Perhaps, as I have above said, it would be none of the least secrets of education to make the exercises of the body and mind the recreation one to another. I doubt not but that something might be done in it by a prudent man that would well consider the temper and inclination of his pupil. For he that is wearied either with study or dancing does not desire presently to go to sleep but to do something else which may divert and delight him.

After Locke the number of champions of physical exercise increased perceptibly, though their efforts were confined largely to the writing of books, most of which were devoted to medical gymnastics.

CHILD LIFE IN THE EIGHTEENTH CENTURY.

About the middle of the eighteenth century, however, evidences of general dissatisfaction with the prevailing methods of education became apparent. It is true that bodily exercises were abundant in the schools, but, unfortunately, it was the teachers who received the benefit, and the pupils served merely as parts of the "apparatus" with which the "movements" were connected. The following paragraph indicates what manner of exercises were most practiced:

> About this time died Hauherle, collega jubilaens, at a village in Suabia. During the fifty-one years and seven months of his official life, he had, by moderate computation, inflicted 911,527 blows with a rod, 124,010 blows with a cane, 20,989 blows and raps with a ruler, 136,715 blows with the hand, 10,235 blows over the mouth, 7,905 boxes on the ear, 1,118,800 raps on the head, and 22,763 nota benes with the Bible, catechism, singing book, and grammar. He had 777 times made boys kneel on pease and 613 times on a three-cornered piece of wood; had made 3,001 wear the jackass, and 1,707 hold the rod up; not to enumerate various more unusual punishments which he contrived on the spur of the occasion. * * * He had 3,000 expressions to scold with, of which he had found about two-thirds readymade in his native language and the rest he had invented himself.[1]

Next to the excessive tendency to verbalism in instruction and the form of corporeal exercise just mentioned, the most conspicuous feature of child life was the costume that the fashion of the time inflicted upon them. "Hair frizzled with powder and smeared with pomade, embroidered coats, knee breeches, silk stockings, a sword at their sides" completed a dress that was wholly inconsistent with the natural activity of children and the cause of untold distress to them.

JEAN JACQUES ROUSSEAU.

The absurdity of these practices had not escaped observation, and the time was ripe for the advent of the philosopher whose works were destined to wield a wider influence than any other writer who has ever appeared in the field of education—Jean Jacques Rousseau.

The paths previously trodden by Rabelais, Montaigne, and Locke were also followed by Rousseau, but where they stopped was but his starting place. In the preface to Émile he says:

> Among so many writings, which, as it is pretended, have no other end than the public utility, that which is of the most important use, the art of forming man, is still forgotten. My subject was entirely new, even after Mr. Locke's treatise, and I am much afraid it will be so after mine. * * *
>
> With respect to what may be called the systematical part of this essay, it is nothing more than the progress of nature.

In these sentences is the key to the whole of Rousseau's philosophy. He contemplated nothing less than a revolt against all the accepted practices in education and recourse to the "progress of nature."

The care and training of the body necessarily occupied a conspicuous

[1] Quoted in Barnard's Journal of Education from Pedagog. Convers.

place in the "natural" system that was the antithesis of the artificial methods of the time.

The following are extracts from the first and second books of Émile, and it was in them, as an essential part of the scheme of Rousseau, that modern gymnastics had its origin:

Experience shows us that a great many more children die who have been bred in delicacy than others. Provided they do not exceed the measure of their strength there is less risk in using them to exercise, than to inaction and indolence. Inure their bodies to the intemperance of the seasons, climates, and elements; to hunger, thirst, and fatigue; dip them in the waters of the Styx.

To strengthen the body and make it grow nature has her ways and means which ought not to be opposed. You should not compel a child to abide in a place when he wants to be gone; nor to be gone when he is desirous to stay. If children be not spoilt by ourselves they never have any useless desires. They ought to be suffered to leap, to run, and to hollow when they have a mind. All their motions are so many wants in their constitutions, which is endeavoring to gather strength.

The body must be vigorous to obey the soul; a good servant ought to be robust. * * * The weaker the body the more it commands; the stronger, the more it obeys. * * * A feeble body weakens the mind; this gave rise to physic, an art more pernicious to mankind than all the disease which it pretends to remove.

If you desire your pupil should improve in mental abilities, let him improve that corporeal strength which is to be subject to their direction. Let his body have continued exercise; let him grow strong and robust, to the end that he may improve in wisdom and reason; let him labor and toil; let him halloo out loud, and be in constant motion; let him show himself a man by his vigor, and he will soon become such by his reason. * * *

It is indeed a lamentable mistake to imagine that the exercise of the body should prejudice the operations of the mind, as if these two actions were not to move in concert, and one ought not always to direct the other. * * *

As for my pupil, or rather disciple of nature, being accustomed to depend as much as possible on his own stock he does not apply incessantly to others for advice, much less does he make a parade of his knowledge. * * * Incessantly in motion, he is obliged to observe a great many objects and to know a variety of effects, he acquires experience betimes, he takes his lesson from nature, not from man; he gains instruction so much the easier, as it comes unperceived. Thus his body and mind are trained to exercise at the same time. Acting up to his own ideas, and not to the notions of others, he constantly unites two different operations; the stronger and more robust he grows the more he improves in abilities and judgment. This is the way to attain to perfections which many consider as incompatible, yet are generally possessed by all great men; namely, vigor of body and strength of mind; philosophic reason with athletic agility.

Those who have reflected on the method of living among the ancients attribute that vigor of body and mind, for which they were remarkably distinguished from the moderns, to gymnastic exercises. The manner in which Montaigne supports this opinion shows that he was fully convinced of it. * * * The sage Mr. Locke, the good M. Rollin, the learned Fleury, the pedant Cronsaz, though they differ widely from each other in everything else, agree, nevertheless, in this single point, that it is necessary to use children to a great deal of exercise. Of all their precepts, this is the most judicious; and yet it still is, and ever will be, the most neglected.

A growing body ought to be a full liberty in every part; nothing ought to check the motion or increase of the limbs; nothing should be too tight or fit very close, and there should be no ligatures

There are some kinds of exercise, merely natural and mechanical, which contribute to bodily strength without impairing the mind; swimming, running, leaping, whipping a top, throwing stones, all that is very well; but have we nothing more than legs and arms? Have we not also eyes and ears, and are these organs altogether superfluous in the use of those limbs? You are, therefore, not only to exercise your bodily strength, but the organs of sense by which that strength is directed.

The publication of Émile, which occurred in 1762, created a profound sensation throughout Europe. Its revolutionary tendencies and its inclination toward atheism were such that Rousseau was obliged to flee from Paris to escape arrest, was forbidden to enter Geneva under pain of incarceration, and his book was burned by the common hangman. He was driven from Motiers, a village in Neufchatel, by a mob, and finally sought refuge in England. The continental press rose against him with unexampled fury. He was called an "impious person," "an atheist," "a mad man," "a wild beast," "a wolf."

Nevertheless his teachings did not pass unheeded, and in time they wrought a wonderful change in the education of Europe.

BASEDOW'S PHILANTHROPIN.

Their first practical application was in the Philanthropin, an educational institution established in 1774 in Dessau, by Johann Bernhard Basedow, under the patronage of the Prince of Anhalt-Dessau.

Here it was that the beginning was made in the abandonment of mediæval methods of instruction, and here it was that physical exercise first found a place in a modern school.

In the order of exercises prescribed were dancing, riding, turning, planing, carpentry, and walking. All these were under the care of teachers who conducted them in the earnest spirit that may have been looked for in institutions under the influence of the philosophy of Rousseau. The boys also ran foot races, wrestled in the open air, etc.

The preposterous costume of the period was discarded and the pupils were clothed in easy and convenient sailor jackets and pantaloons, while their hair was cut short and entirely innocent of powder and pomade.

SALZMANN AND GUTSMUTHS, AND THEIR FOLLOWERS.

The Philanthropin attracted wide attention and was visited by "many skillful men, citizens of the world, most of whom had come from abroad for the purpose." Other institutions modeled after it arose in all quarters. The most notable was that of Salzmann, who had been a teacher in the Philanthropin, but left it in 1784 to found the institute at Schnepfenthal. Salzmann himself did not enlarge the circle of exercises which had been practiced at Dessau, but in 1785 he associated with him Johann Gutsmuths, and to him confided the direction of the gymnastics.

Gutsmuths, with great care and judgment, worked out a system of discipline in the fullest detail, and at Schnepfenthal there was serious earnestness in the department

of physical training. The children played, not only for the sake of relaxation from the labor of the school, but their bodily exercises were made a necessary part of their intellectual training and an indispensable department of instruction in the school.[1]

After seven years' experiments in which he made use, as he says, of all that he found out from ancient usages, from the historical remains of earlier and later antiquity, all that reflection and sometimes chance offered to him, Gutsmuths published the first edition of his work on Gymnastics for the Young. This book, the first manual of German gymnastics, gained a wide influence and was translated into Danish, French, and English.[2]

In comparing Gutsmuths' book with Mulcaster s Positions the similarity between them is striking. Both drew freely from classical sources, both were written for schools, and both regard the preservation of the health and the attainment of a higher type of manhood as of paramount importance. The Englishman lived over two hundred years before the German author, and his writings contain many of the fantastic errors of the age, but in the judgment shown in the application of the movements to the special needs of his pupils, and in the sound common sense displayed in the conduct of the exercises generally, Mulcaster is not one whit inferior to Gutsmuths. The influence of Gymnastics for the Young was far greater than that of the Positions, but it was only because its publication came at a more opportune time.

At Dessau in the meantime physical exercises were still continued in the original Philanthropin, and in 1794 Vieth, then rector, published an Encyclopædia of Bodily Exercises, which was also widely circulated, and was, with Gutsmuths' book, the source from which the most of Jahn's ideas were derived.

Another of the most influential of the earlier advocates of gymnastics was the famous Meierotto, rector of the Joachimsthal Gymnasium in Berlin, who in 1790 provided a large area for the practice of gymnastics, and induced King Frederick William II to contribute thereto a sum equal to about $22,500.

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[1] Raumer's History of Pedagogy.

[2] In the English edition the work is erroneously ascribed to Salzmann, and his name is placed upon the title-page as its author. It is hard to account for so egregious an error. But the probable explanation is that the translator was acquainted with Salzmann's Elements of Morality, and knowing that he was principal of the Schnepfenthal Institute, imagined, when he saw so excellent a book ascribed to "Gutsmuths, Erzieher zu Schnepfenthal," that Salzmann had written it under a pseudonym. The peculiar name Gutsmuths, which means "good courage," no doubt aided to deceive the translator.

The translation is "free" to a degree. The translator says, "I have ventured to take some few liberties, partly to render it more English, partly to adapt it more to the use of the boys themselves, at the same time that I have endeavored to increase its practical utility by occasional condensation, alteration, or addition."

It is, therefore, no wonder that even such an historian as Charles Henry Schaible should fall into the error, and make separate mention of a book by Salzmann and another by Gutsmuths, when in reality there had been but one.

Nachtegall, stimulated by the work of Gutsmuths, opened a private gymnasium in Copenhagen in 1799, and so popularized the exercises that they were enthusiastically practiced throughout Denmark. As a result of his work, it was in Denmark that gymnastics was first formally adopted for the schools and the army. Its introduction in the schools was decreed in 1828, and before 1831 all but 174 schools were provided with facilities for gymnastic exercises.

PESTALOZZI.

Pestalozzi, too, was moved to take up the cause of physical education, and he did it in this wise:

It is such a bodily training as the children of our ancestors had and enjoyed that must be given to our children, and the spirit of their popular gymnastics must be raised up again. But this is no partial spirit, it submits to no influence from the popular festivals. On the contrary, these, if genuine, are only the expression of the prevalence of it. It must be just as universally active and visible in households, in schools, in the labor of the field, in Sunday sports, and in amusements, as on the Alps and at the shepherds' festivals. It must appear in the opinions of the people respecting their corporeal necessities, and in the care for them. The attainment of this object is entirely impossible, unless there is awakened in the young, from childhood up, and made universal, a lofty, active, and independent sense of power, and this will inspire the child of itself to all which is desirable for the salvation of the fatherland.[1]

Pestalozzi introduced physical exercises in his famous institute at Yverdun in 1807. As sensible as his views were on the general utility of gymnastics, when he came to reduce them to a practical system his methods were, to say the least, unique. All the movements were directed, not to the muscles, but to the joints. He says:

The essence of elementary gymnastics consists in nothing else than a series of exercises for the joints, by which is learned, from step to step, all that a child can learn with respect to the structure and movements of his body and its articulations. * * * He can acquire this knowledge in the quickest and easiest way by means of these questions: What motions can I make with each separate limb of my body and with each separate joint of it? * * * How can the movements of several limbs and several joints be combined together?

FELLENBERG'S SCHOOL AT HOFWYL.

Physical training received a prominent place in the "Principles of Education" of Fellenberg, whose agricultural school at Hofwyl is declared by Henry Barnard to have exerted a wider influence than any other one institution in Europe or America during the present century. Fellenberg says:

A great variety of exercises of the body and the senses are employed to prepare our pupils for the fulfillment of their destination. It is by means of such exercises that every man should acquire a knowledge of his physical strength and attain confidence with regard to those efforts of which he is capable, instead of that foolhardiness which endangers the existence of many who have not learned to estimate their own powers correctly. * * * Pure air, a suitable diet, regular exercise and

[1] Barnard's Journal of Education, vol. 8, p. 193.

repose, and a proper distribution of time are the principal means of physical education. It is as essential that a pupil leave his studies during the time appropriated as that he may study during the hours devoted to that purpose.

Voluntary exercise is to be encouraged by providing suitable games, by affording opportunities for gardening, by excursions, and by bathing. Regular gymnastic exercises should be insisted on as a means of developing the body. A healthy action of the bodily frame has an important influence on both mind and morals.

FRIEDRICH LUDWIG JAHN AND THE TURNERS.

All these things—the discussions concerning Rousseau, the work and the writings of the "Philanthropists," the books of Gutsmuths and Vieth, the reports of the institutions of Pestalozzi and Fellenberg, and the efforts of Nachtegall in Denmark—served to "advertise" bodily exercise, and to educate the public mind to an appreciation of its value. There was still lacking, however, that popular enthusiasm and that general participation in its practice without which it might soon have relapsed into its former state of somnolence. But the way was prepared for the "Father of Modern Gymnastics," Friedrich Ludwig Jahn. This man was of rugged, aggressive nature, but withal possessed of a strong personal magnetism that gave him a wonderful hold over his disciples and made him one of the most popular men of his time. The story of his work is best told in his own words:[1]

During the beautiful spring of 1810 a few of my pupils[2] began to go out with me into the woods and fields on the holiday afternoons of Wednesday and Saturday, and the habit became confirmed. Their number increased and we had various youthful sports and exercises. Thus we went on till the dog days, when the number was very large, but very soon fell off again. But there was left a select number, a nucleus, who held together even during the winter, with whom the first turning ground was opened in the spring of 1811 in the Hasenheide.

At the present time many exercises are practiced in company, in open air, and before the eyes of all, under the name of turning. But then the names turning system, turning, turner, turning ground, and the like, came up all at once and gave occasion for much excitement, scandal, and authorship. The subject was discussed even in the French daily papers. And even here in our own country it was at first said, The ancient German ways have brought forth a new folly. But this was not all. Unfavorable opinions sprang up from time to time as numerous as the sands of the sea. They had never any reasonable ground, and it was laughable to see how they opposed with words that whose works were speaking so plainly.

During the winter we studied whatever could be got on the subject. And we reflect with gratitude upon our predecessors, Vieth and Gutsmuths. The stronger and more experienced of my pupils, among whom was my present assistant and fellow-laborer, Ernst Eiselen, made a very skillful use of their writings, and were able during the next summer to labor as instructors in turning. Among those who then devoted themselves especially to swinging exercises, and afterward assisted in the full and artistic development of them and even became thorough masters in them, were Pischon and Zeuker, who fell, on the 13th of September, 1813, at the Gohrde.

In the summer of 1812, both the turning ground and system of exercises were

[1] In Die deutsche Turnkunst, published in 1816. The translation is as it appears in Barnard's Journal of Education, vol. 8, p. 196.

[2] Jahn was then a teacher in one of the city schools of Berlin.

enlarged. They became more varied from turning day to turning day, and were mutually developed by the pupils in their friendly contests of youthful emulation. It is impossible to say in detail who first discovered, tried, investigated, proved, and completed one or another exercise. From the very beginning, the turning system has shown great community of spirit, patriotic feeling, perseverance, and self-denial. Every extension or development of it was used for the common good. And such is still the case. Professional envy, the absurd vice of selfishness, meanness, and despair, can be charged to no turner. August Thaer, the youngest brother of a turning group of three, at that time invented sixty exercises on the horizontal pole, which he afterward increased to a hundred and thirty-two. While Thaer, was taking care of a sick brother in the field during the war, the same epidemic carried him off, in 1814, of which his brother recovered. He had before that time assisted in the establishment of a turning ground at Wrietzen, on the Oder. Toward the end of the summer exercises of 1812, a sort of association of turners was formed for the purpose of the scientific investigation and artistic organization of the turning system in the most useful and generally applicable manner. This lasted during the whole of that winter in which the French were frozen up during their flight from Moscow. In this association the place of manager was, according to my wish, filled by Friedrich Friesen, of Magdeburg. * * *

On the King's proclamation of February 3, 1813, all the turners capable of bearing arms entered the field. After long persuasion, I succeeded, at Breslau, in inducing Ernst Eiselen, one of my oldest pupils, to take charge of the turning institution during the war. * * *

I myself accompanied Eiselen from Breslau to Berlin, at the time when the Prussian army commenced its march and the capital was already freed from the French, and introduced him to the authorities and the principals of schools, who promised him all manner of cooperation, and who have ever since shown confidence in him. Since that time Eiselen has been at the head of the turning institution during the summers of 1813 and 1814 and the intervening winter, and has conducted the exercises of those who were too young to carry arms.

At the end of July, 1814, I returned to Berlin and passed the rest of the summer and the first part of the winter in laboring industriously for the improvement of the turning ground. During the autumn I had erected a climbing pole, 60 feet high, a useful and necessary apparatus for climbing, and, in a level country, indispensable for training the eye to long distances. In winter, when the volunteers returned, bringing many turners with them, the associated discussions upon the turning system were renewed. The exercises of all the summer were considered and discussed, and the subject elucidated by argument.

On the escape and return of Napoleon all the turners able to bear arms volunteered again for the field, only two who had fought during the campaigns of 1813 and 1814 remaining at home, from the consequences of those campaigns. The younger ones, who remained behind, now took hold of the work again with renewed zeal. During the spring and summer of 1815 the turning ground received still further improvements and enlargements.

In the following autumn and early part of winter the turning system was again made the subject of associated investigation. After the subject had been ripely considered and investigated in the turning council, and opinions had been compared, experience cited, and views corrected, a beginning was made in collecting in one whole all the results of earlier and later labors on the subject, and all the separate fragments and contributions relative to it, a labor which has lastly been revised by my own pen.

Although it was only one architect who at first drew the plan, yet master, associates, pupils, and workmen have all labored faithfully and honestly upon the structure, and have all contributed their shares to it.

Jahn made the turning association far more than a mere gymnastic

organization. The fatherland held the first place in his heart and German nationality was his fondest dream. He threw all the warmth of his passionate nature into his utterances when he addressed his turners. A high standard of morality he insisted upon, but the love of Germany was to him the one virtue besides which all others were trifles.

The following is characteristic:

Bold, free, joyous, and pious is the realm of the turner. The universal code of the moral law is his rule of conduct. To dishonor another would disgrace him. To become a model, an example, is what he should strive after. His chief lessons are these: To seek the utmost symmetry in development and cultivation; to be industrious; to learn thoroughly; to intermeddle with nothing unmanly; to permit himself to be enticed by no seduction of pleasure, dissipation, or amusement, such as are unsuitable for the young. And such admonitions and warnings should be given in such terms as to insure a school of virtue from becoming one of vice.

But, again, it should not be concealed, that the highest and holiest duty of a German boy or German youth is to become and to remain a German man, that he may be able to labor efficiently for his people and his fatherland, and with credit to his ancestors, the rescuers of the world. Secret youthful sins will thus best be avoided by setting before the young, as the object of attainment, growth into good men. The waste of the powers and years of youth in enervating amusements, animal riot, burning lust, and beastly debauchery, will cease as soon as the young recognize the idea of the feeling of manly life. But all education is useless and idle which leaves the pupil to disappear, like a will-o'-the-wisp, in the waste folly of a fancied cosmopolitanism, and does not confirm him in patriotic feeling. And thus, even in the worst period of the French domination, love of king and fatherland were preached to and impressed upon the youths of the turning association. Anyone who does anything foolish or insulting to the German manners or language, in words or action, either privately or publicly, should first be admonished, then warned, and, if he does not then cease his un-German actions, he should be driven away from the turning-ground in the sight of all men. No one ought to enter a turning association who is knowingly a perverter of German nationality, and praises, loves, promotes, or defends foreign manners.

VARYING FORTUNES OF THE TURNERS' ASSOCIATION.

The turners rapidly increased in number, and their organization spread over all northern Germany, and even penetrated the southern states. Its original direct connection with educational institutions was gradually lost, but its members continued to be young men, and for the most part students. The strong patriotic impulse with which Jahn imbued his followers led them into the agitation for constitutional government that was then rife over Europe, but in their youthful enthusiasm their zeal outran their judgment, and they carried their boasted devotion to the fatherland to the extent of attempting reform where reform was not demanded. Their services to Germany had been valuable, but they conceived such exaggerated notions of their importance that they seemed to imagine that the continuance of the German nation depended upon them. This did not fail to arouse enmity, and bitter controversies sprung up.[1] The reactionist ministers, too, realized the political power

[1] Raumer's History of Pedagogy.

of the turners' association, and when Metternich, the Austrian statesman, presented to the King of Prussia, in 1818, a set of recommendations for the management of Prussian affairs, this was among them:

> The revolutionists, despairing of effecting their aim themselves, have formed the settled plan of educating the next generation for revolution. The gymnastic establishment is a preparatory school for university disorders. The university seizes the youth as he leaves boyhood and gives him a revolutionary training. This mischief is common to all Germany, and must be checked by the joint action of the governments. Gymnasia, on the contrary, were invented in Berlin, and sprang from Berlin. For these palliative measures are no longer sufficient. It has become the duty of state for the King of Prussia to destroy this evil. The whole institution in every shape must be closed and uprooted.[1]

The Prussian Government, however, was disposed to favor the gymnasia and the recommendation was not immediately followed. An official inquiry was made into the turning system as it then existed, and in the scheme of national education then in preparation by Süvern bodily exercise once more found a place. A plan was drawn up for providing the public schools with turning grounds in 1819, but this had not received the signature of the King when Kotzebue, the Russian agent who had been particularly active in his opposition to liberalism, was assassinated by a turner named Carl Sand. This occurrence so enforced the arguments of Metternich that the approval of the King was withheld from the proposed scheme, and instead, the closing of all the turning establishments was ordered, and Jahn himself was imprisoned. After a few years the restrictions were removed, but the political activity of the turners caused their organization to be again repressed in 1832 and once more in 1848, but since 1860 the association, divested of its political aspects, has enjoyed continued prosperity and steady growth. Its members now number nearly four hundred and fifty thousand, and about half of them are "active turners."

SCHOOL GYMNASTICS IN PRUSSIA.

Popular gymnastics was, as we have seen, at an early period in its history, divorced from the schools; school gymnastics therefore did not suffer all the vicissitudes of the turning association.

The introduction of bodily exercise in the state schools of Prussia was first discussed in 1804, when Massow made it an essential feature in his proposed plan of national education. In 1808 Scharnhorst, Stein, and Humboldt were all favorably inclined to a similar scheme, but the wars with the French intervened and prevented the accomplishment of any permanent results in either case. The failure of Süvern's scheme in 1819 has just been noted.

In 1836 a heated discussion was aroused by a paper by Dr. Lorinser, published in a medical journal, in which he attacked the methods of instruction that prevailed in the gymnasien, or higher school for boys. He charged them with overloading the mind of the youth with a mul-

[1] Fyffe's History of Modern Europe, vol. 11, p. 137.

tiplicity of subjects at the expense of their cheerfulness of temperament and of their bodily health. The effect of the agitation was favorable to gymnastics, and on October 24, 1837, a cabinet order was issued permitting gymnastics in the schools once more. In 1842 the King of Prussia on the combined recommendation of the ministers of education, of war, and of the interior, approved a cabinet order that "bodily exercises should be acknowledged formally as a necessary and indispensable integral part of male education and should be adopted as an agency in the education of the people." The same order authorized the establishment of gymnastic institutes in connection with the "gymnasien, the higher middle schools, the training schools for teachers, and the division and brigade schools in the army."

The first active step taken by the Prussian Government in the direction indicated by this permissive order was the ordinance of 1844, which directed the establishment of in and out door gymnasia in sufficient numbers to supply the requirements of all the higher schools for males. It provided that Wednesday and Saturday afternoons should be devoted to gymnastics, and that if practicable the pupils should exercise for an hour every day. A normal school for teachers of gymnastics was opened in 1848, but was discontinued after a brief existence. In 1851 the Royal Central Gymnastic Institute was established for the instruction of army officers and schoolteachers, but in 1877 the two branches of its work were divided and a separate school was established for each class of its students.

In the people's, or elementary, schools the introduction of physical exercises was first decreed in 1860, and in 1862 another order made participation obligatory upon all males unless excused by reason of a physician's certificate that the pupil's health would be injured thereby. Girls are not so generally provided for, but in many cities the exercises are compulsory upon them as well as the boys. At the present time about two-thirds of the schools in Prussia have gymnasiums of their own and nearly all the others have some provision for exercising.

Gymnastics in the Kingdom of Saxony.

A historical review by Prof. Moritz Zettler, of Chemnitz.

[Translated from the German by L. R. Klemm.]

The beginnings of organized efforts in behalf of gymnastics in Saxony may be traced back to the year 1818, when a club of about one hundred students of the university of Leipzig devoted two evenings per week to exercises in gymnastics. They did this during the summer in a garden. During the earlier part of the third decade several academic gymnastic societies were formed, the founders of which were students who had come from Berlin, having been Jahn's pupils. But in

Leipzig, as in other parts of Germany, the agitation against demagogues (Demagogenhetze) caused by the assassination of Kotzebue in 1819, which for a time tyrannized entire Germany, destined the first organized efforts in behalf of gymnastics to an early death. In order to uproot this "evil dangerous to the state," the police of Leipzig, in 1825, ordered the parallel and horizontal bars and other apparatus of the societies to be sawed off. This did not prevent the disciples of Jahn from continuing their exercises in secret. It is important to note that in 1824 the educational institute, established by Hander in Leipzig, mentioned gymnastics as an integral part of its course of study. All indications point to the fact that this institution was the first school in Saxony in which gymnastics was fostered. For the further development of physical education in Leipzig, the two, afterward very distinguished physicians, Bock and Schreber, were especially active. They familiarized the people, by means of example, the spoken word, and the press, with the aims and efforts of bodily exercise.

In Dresden a few army fencing masters had made use of parallel and horizontal bars in their instruction, but with little effect. The conditions changed, however, when Joh. Ad. Ludwig Werner (a retired army officer) opened a gymnastic hall in 1831 in Dresden, and conducted it with great skill. Most of the private and public schools aided the enterprise, so that the number of its pupils soon rose to several hundreds. Also girls' gymnastics found much favor. It can not be denied that the instruction in gymnastics given by Werner contains much charlatanism, but the fact remains that he induced many noted people of authority and influence to examine into the educational merits of physical exercise, a thing that had been despised heretofore.

Almost at the same time (in 1833) Otto Heubner established in his native city, Plauen, in Vogtland, a gymnastic hall that was well patronized. As a consequence, in other cities of the Vogtland similar institutions were opened.

Werner in 1836 submitted to the Saxon chambers of deputies (*Ständekammern*) two of his works, with the request "to take suitable measures to secure for physical education of the youth the same consideration that is given to intellectual education." The matter caused considerable discussion in both chambers. The result was the passage of a resolution "to introduce gymnastics into all the high and normal schools in the Kingdom, and to appropriate 1,500 reichsthaler ($1,125) per annum for that purpose."

Without delay gymnastics was introduced (in 1837) into all state high schools (gymnasia) and training schools for teachers. Though it took some time before satisfactory results could be shown, the resolution referred to had established something which was destined to be of lasting influence. Many years after that, namely, in August, 1876, gymnastics was made an integral branch of the course of study in all secondary schools (in gymnasia, "real schools," and seminaries), oblig-

atory for all students, except cripples and invalids. Two hours per week was the time appointed for regular gymnastic exercises. At present the faculties of these schools have each a teacher who has passed the state examination in gymnastics for high schools and conducts the exercises. Every secondary school of whatever kind in Saxony has a gymnastic hall and suitable grounds. A state inspector of gymnastics appointed by the minister of education supervises the work of physical training in secondary schools of the Kingdom.

The first institutions for gymnastics were intended for male youth only, but from the very beginning men of riper age became interested in physical exercise, and hence boys, youths, and men exercised together. When a boy had succeeded by means of good results to become a "Vorturner" (a section-leader), he was in some institutions by virtue of his position allowed to take part in the deliberations of the members. This led in many towns of Saxony, shortly after 1840, to the formation of gymnastic societies for adults only, who, however, made it a special object to facilitate and foster physical exercise among the boys of their town. They offered special instruction for boys in their gymnastic halls, or in some cases placed their own teachers at the disposal of the public schools. Soon followed efforts to draw the girls into the movement by interesting the parents in the matter, and appointing special hours for girls' gymnastics. The societies which did most in this direction were those of Plauen, Leipzig, and Dresden. In these cities gymnastics for children reached a high standard of excellence.

Gymnastic societies developed in Saxony especially during the period from 1843 to 1848. Fifty-four flourishing societies sent delegates to the convention of gymnasts who met November 1, 1846, in Dresden. At this time the society at Dresden was the largest; it assumed a leading position by affording an example for imitation in its admirable organization to all other societies in the Kingdom. Many of its members aided energetically the periodical, The Gymnast (*Der Turner*), which was first issued in January, 1846. This publication was so well conducted and found so much favor that during the "second German gymnastic festival," held in Frankfort-on-the-Main in 1847, the paper was made the official gymnastic organ of entire Germany. The society in Dresden also arranged for two courses for the training of gymnastic teachers. The society's propositions to the minister of education concerning the establishment of a state training school for gymnastic teachers found official approval. The minister announced as early as March 16, 1849—

> That he considered it his imperative duty to give gymnastics a place of equal importance with other branches of public education; that, therefore, he had concluded to establish a training school for gymnastic teachers who could conduct such exercises in the light of pedagogic science, and that he had ordered the necessary preparation for the opening of such a school.

At Easter of 1849 the institution was to be opened, but the insur-

rection which took place during the following May prevented the execution of this plan. Not until October 23, 1850, was the institution formally opened, and the principal, Moritz Kloss (who afterward became favorably known through his tireless and meritorious exertion in behalf of gymnastics), was introduced into his new office.

The insurrection mentioned was the cause of preventing the contemplated introduction of gymnastics into the lower schools. Many noted gymnasts from the different societies for physical culture had participated in the insurrection (popularly styled the revolution of 1848–'49), and after it was quelled an undiscriminating reactionary movement against gymnastic societies was inaugurated, so that the heretofore remarkable development of gymnastic art was checked. At many places it was entirely destroyed, and its practitioners were pursued with relentless severity. At the close of the sixth decade life in gymnastic societies took a fresh impetus. When preparations were made for the third "national gymnastic festival," to be held in Leipzig in 1863, the Saxon societies for physical culture began a vigorous activity, which secured the success of the national festival and the societies' subsequent existence. The wars of 1864 (with Denmark)) and 1866 with Austria) impaired the activity of the gymnastic societies in Germany but little, and the glorious war of 1870 offered the Saxon gymnasts opportunities, both in the field and at home, for giving energetic expression to their patriotism.

Political discussions have been prohibited on principle in the Saxon gymnastic societies. This has enabled them to grow undisturbed by police authority. At present there is in Saxony no city or good sized village without at least one gymnastic society; even many small settlements have a society of that kind. A statistical enumeration of January 1, 1892, records 615 cities and towns with 757 gymnastic societies that have 87,388 members over 14 years of age. Of these, 51,901 are active gymnasts, led by 4,597 *Vorturner* (leaders of sections). If we consider the fact that the entire empire had at the same date 4,567 societies with 447,046 members, of whom 227,628 were active gymnasts, it is seen that the Kingdom of Saxony occupies the sixth place in regard to the number of societies, the fifth place in regard to the number of members, and the fourth place in regard to the number of active gymnasts.

The royal government approached the question of gymnastics again in the year 1857 by adopting a set of rules for the examination of teachers of gymnastics, and in 1863 it permitted the introduction of gymnastics into lower schools by "recommending it to the local authorities most urgently." But it is to be regretted that few cities and villages availed themselves of the opportunity, for, according to the statistical report of the German gymnastic union of 1869, the schools of only 27 cities and 3 villages, and 4 State schools situated in villages, had obligatory gymnastic exercises in their courses of study. Hence not 10 per cent of the school population received gymnastic training.

The new school law of April 26, 1873, admitted gymnastics as a "dietetic means of education for boys as well as for girls" among the essential branches of study in all the schools. The school authorities now began to introduce gymnastics into elementary schools where hitherto it had not been done. Since the law fails to state at what year of age the exercises in gymnastics are to begin, the curricula of the different schools and cities vary on this point quite considerably, but it comes very near the truth to say that, as a rule, gymnastics begin with the fourth year of school, or the tenth year of age. Also with respect to the time devoted to physical exercises some differences are noticeable. In some communities only one hour per week is given to gymnastics, while in the majority two hours are given.

The transitional regulations issued to secure an effective execution of the new school law of 1873 permitted the postponement of the introduction of gymnastics until 1878 in communities where the necessary institutions could not at once be established. The local authorities of many country schools took advantage of this privilege, and after the transitional period of five years was passed numerous petitions asked the minister and the house of deputies for a further extension of the time. Statistical material gathered by the president of the Saxon gymnastic teachers' society from the reports of the school inspectors, confirms the fact that only one of the school districts of Saxony has introduced gymnastics in all its schools; that furthermore in 23 districts a number of schools is still without gymnastic apparatus. In 17 of these districts no less than 50 per cent (the highest was 93·8 per cent) of the schools fail to live up to the law.

It is the rule in elementary schools (Volksschulen) to have gymnastics conducted by the regular class teachers. Very few of these schools employ special teachers. In extensive institutions, such as city ward schools in Leipzig and Dresden, it has been found expedient to place this instruction in the hands of specially trained and experienced teachers.

IV.—PHYSICAL TRAINING IN AMERICA.

For the first suggestions made in this country relating to physical training one must search far back into colonial history. But it seems to be certain that a statesman who as much as any other made our national existence possible was the first American to propose that physical training be made a part of the curriculum of an educational institution. That honor appears to belong to Benjamin Franklin.

Dr. Franklin was fond of exercise from his childhood, swimming being the sport in which he excelled and in which he delighted most. When a young man in London he distinguished himself by his aquatic

feats, and seriously considered remaining there to open a swimming school. An advantageous offer from a Philadelphia merchant influenced him to return to America, and led to the career of usefulness with which every well-informed American is familiar. In regard to his residence in Philadelphia, Dr. Franklin afterwards said:[1]

I had, on the whole, abundant reason to be satisfied with my being established in Pennsylvania. There were, however, some things that I regretted, there being no provision for defense, nor for a complete education of youth; no militia, nor any college. I, therefore, in 1743, drew up a proposal for establishing an academy; and at that time, thinking the Rev. Richard Peters, who was out of employ, a fit person to superintend such an institution, I communicated the project to him; but he, having more profitable views in the service of the proprietors, which succeeded, declined the undertaking, and, not knowing another at that time suitable for such a trust, I let the scheme lie awhile dormant.

In 1749, the circumstances being favorable, he again turned his thoughts to the establishment of an academy. His first step was to secure the cooperation of a number of active friends; the next was to write and publish a pamphlet entitled Proposals Relating to the Education of Youth in Pennsylvania. In this he proposed that some persons of leisure and public spirit be incorporated with power to erect an academy for the education of youth, to govern the same, etc.

That a house be provided for the academy, if not in the town not many miles from it; the situation high and dry, and, if it may be, not far from a river, having a garden, orchard, meadow, and a field or two.

That the house be furnished with a library, maps, mathematical instruments, and philosophical apparatus.

That the boarding schools diet together, plainly, temperately, and frugally.

That, to keep them in health, and to strengthen and render active their bodies, they be frequently exercised in running, leaping, wrestling, and swimming.

As to their studies it would be well if they could be taught *everything* that is useful and everything that is ornamental. But art is long and their time is short. It is therefore proposed that they learn those things most useful and most ornamental; regard being had to the several professions for which they are intended.

And all this, be it remembered, was written before Rousseau's great work appeared and before either Fellenberg, Gutsmuths, or Jahn was even born.

"This pamphlet," said Dr. Franklin, "I distributed among the principal inhabitants gratis, and as soon as I could suppose their minds a little prepared by the perusal of it, I set on foot a subscription for opening and supporting an academy."

Thus, by his own personal efforts, was founded in the same year the academy which a few years later became the University of Pennsylvania. One feature upon which the founder laid great stress was the "English school," and the first years of the institution were marked by discussions as to the relative merits of English and classical education. In the course of time the classics gained the ascendency and Franklin's favorite scheme of an English school was neglected. His later writings

[1] In his Autobiography.

referring to the institution, which have been preserved, were devoted principally to this departure from the original plan. His indignation on that account probably diverted his mind from the dereliction of the managers in other respects, for he does not mention their failure to follow his ideas as to the exercises necessary "to keep the boys in health, and strengthen and render active their bodies." But he was chairman of the board of trustees upon its organization, and was a member for forty years. During the first part of that time, at least, it is reasonable to suppose that the physical needs of the pupils were not entirely neglected. But if anything was done it was probably unsystematic and ineffective, as judged by later standards, and it is certain that it was not long continued.

Franklin's interest in physical exercise did not wane as his years increased, and he referred to the subject several times in his Autobiography and other writings. He wrote two papers upon the art of swimming which show no diminution of his enthusiasm in that sport, and which were liberally used by Gutsmuths and the other founders of the German gymnastics.

THOMAS JEFFERSON.

Benjamin Franklin was not the only one of the giants of those days who advocated abundant exercise in connection with education.

Thomas Jefferson insisted as strenuously upon it. In 1785 he wrote a letter to a young man (Peter Carr) concerning his reading and studies, in which he said:

> In order to assure a certain progress in your reading, consider what hours you have free from the school and the exercises of the school. Give about two of them, every day, to exercise; for health must not be sacrificed to learning; a strong body makes the mind strong. As to the species of exercise, I advise the gun; while this gives a moderate exercise to the body, it gives boldness, enterprise, and independence to the mind. Games played with the ball, and others of that nature, are too violent for the body and stamp no character on the mind. * * * Walking is the best possible exercise. * * * There is no habit you will value so much as that of walking far without fatigue.

To another young man, also a student, he wrote:

> With your talents and industry, with science, and that steadfast honesty which eternally pursues right regardless of consequences, you may promise yourself everything—but health, without which there is no happiness. An attention to health, then, should take place of every other object. The time necessary to secure this by active exercises, should be devoted to it, in preference to every other pursuit. I know the difficulty with which a studious man tears himself from his studies at any given moment of the day. But his happiness and that of his family depend on it. The most uninformed mind with a healthy body is happier than the wisest valetudinarian.

Jefferson did not forget bodily exercise when he came to draft the plans for the University of Virginia, in whose establishment he was the leading spirit. He wrote the report of the famous "Rockfish Gap

Commission," which was appointed in 1818 by the Virginia legislature to determine the site and character of the future university. In that report he says:

> We have proposed no formal provision for the gymnastics of the school, although a proper object of attention for every institution of youth. These exercises with ancient nations constituted the principal part of the education of their youth. Their arms and mode of warfare rendered them severe in the extreme; ours, on the same correct principle, should be adapted to our arms and warfare; and the manual exercises, military maneuvers, and tactics generally should be the frequent exercises of the students in their hours of recreation. It is at that age of aptness, docility, and emulation of the practices of manhood that such things are soonest learned and longest remembered. The use of tools, too, in the manual arts is worthy of encouragement by facilitating, to such as choose it, an admission into the neighboring workshops. To these should be added the arts which embellish life—dancing, music, and drawing—the last more especially as an important part of military education. These innocent arts furnish amusement and happiness to those who, having time on their hands, might less inoffensively employ it. Needing, at the same time, no regular incorporation with the institution, they may be left to accessory teachers, who will be paid by the individuals employing them, the university only providing proper apartments for their exercise.

The university was not opened for students until March, 1825, and the matter of exercise being thus left to the volition of the students received no attention worthy of note until the impetus was received many years after from sources foreign to the university itself.

GYMNASTICS FOR THE EARLY MILITIA.

Mention has previously been made in this paper of the obvious connection between training in the exercises of war and bodily development. That connection was apparent to those concerned in the conduct of the armies of the Revolution, and we frequently find references in the writings and recommendations of the founders of the Government to the importance of encouraging in the people at large, as well as in the soldiers of the armies, an attention to bodily vigor which is so essential to an independent nation. Thomas Jefferson's suggestions are an instance.

Schemes for the better training of those actually in the military service were early to appear. As soon as the British left our shores and it became possible to disband the American armies, the question of a military peace establishment became an important one. As a part of his plan, the Secretary of War under the confederation proposed the establishment of military academies.[1] A committee of Congress, with Alexander Hamilton at its head, opposed this, being "of the opinion that the benefits of such institutions rarely compensate for the expense." This was in 1783. In the course of time Hamilton's opinion changed,

[1] This office was held by Gen. Lincoln. It is stated by Maj. E. D. Mansfield, in his history of the U. S. Military Academy, that Col. Pickering proposed the establishment of a military academy in 1783. That officer was then connected with the board of war, and it is not improbable that the proposition mentioned in the text originally emanated from him.

and several years later was earnest in his advocacy of the idea that he had opposed as being not worth the cost.

In 1790, Henry Knox, the first Secretary of War under the Constitution, matured a scheme for the organization of a national militia which President Washington transmitted to Congress "for their information."

In the introductory remarks, extolling the value of a thoroughly organized militia, the following occurs:

All discussions on the subject of a powerful militia will result in one or the other of the following principles:

First. Either efficient institutions must be established for the military education of the youth, and that the knowledge acquired therein shall be diffused throughout the community by means of rotation, or

Second. That the militia must be formed of substitutes, after the manner of the militia of Great Britain.

If the United States possess the vigor of mind to establish the first institution, it may reasonably be expected to produce the most unequivocal advantages. A glorious national spirit will be introduced, with its extensive train of political consequences. The youth will imbibe a love of their country, reverence and obedience to its laws, courage and elevation of mind, openness and liberality of character, accompanied by a just spirit of honor, *in addition to which their bodies will acquire a robustness greatly conducive to their personal happiness as well as the defense of their country;* while habit, with its silent but efficacious operations, will durably cement the system."

The proposed plan divided the citizens of the United States subject to military duty into three classes, of which the first, called the "advanced corps," and comprehending the youth of 18, 19, and 20 years of age, was designed not only as a school in which the youth of the United States were to be instructed in the art of war, but also for actual service in all cases of exigence. "Annual camps of discipline" were to be held in each State. One of the rules proposed for the regulation of these provided that "No amusements should be admitted in camp but those which correspond with war, the swimming of men and horses, running, wrestling, and such other exercises as should render the body flexible and vigorous."

Congress took no effective action upon this recommendation, but in 1792 an act was passed providing for the establishment of a uniform militia throughout the United States. Another discussion relative to the reorganization of the militia began in 1816. The Acting Secretary of War presented a plan therefor to the House of Representatives, which was the subject of a well-considered report of a committee whose chairman was William Henry Harrison. One paragraph in this report is worthy of notice: "A corps of military institutions should be formed to attend to the gymnastic and elementary part of education in every school in the United States, whilst the more scientific part of the art of war shall be communicated by professors of tactics, to be established in the higher seminaries."

This suggestion was renewed in 1819, by another committee under the same chairman, but nothing was done toward putting it into effect.

EARLY PHYSICAL TRAINING AT WEST POINT.

In referring to the act of 1792 establishing the militia system, at the time of its passage or soon after, President Washington pointed out the lack of "opportunity for the study of those branches of the military art which can scarcely be attained by practice alone."

In his annual message to Congress in 1796 he recommended in direct terms the establishment of a military academy. The original draft of this message was written in the hand of Alexander Hamilton, but whether Hamilton was the real author of the suggestion is not determined, though it is significant that his interest in the proposed military academy was subsequently shown in many ways. In November, 1799, Hamilton drew up an elaborate plan for its organization which contemplated the establishment of an academy of five schools, one to be called "The Fundamental School," another "The School of Engineers and Artillerists;" another, "The School of Cavalry;" another, "The School of Infantry;" and a fifth, "The School of the Navy." The course of instruction proposed included the theory and practice of gunnery, the tactics and police of cavalry, equitation, the use of the small and broad sword, and the tactics and police of infantry. He forwarded this plan to James McHenry, then Secretary of War, with a suggestion as to its fitness for legislative action. McHenry embodied it almost in toto in his scheme for the reorganization of the Army, and as a report of the Secretary of War it was transmitted to Congress by President John Adams. This plan, too, was rejected by Congress.

In 1802 an act creating a new corps of engineers provided that the corps, consisting of not more than twenty officers and cadets, "shall be established at West Point, in the State of New York, and shall constitute a military academy."

In all these years the idea of a military academy had reference principally, if not entirely, to the better training of persons who were already a part of the effective force of the Army, and it was not until the passage of the act of April 12, 1812, that the academy became what it now is, an institution for training youths to become officers of the Army. That act raised the number of cadets in all branches of the service to 250, and provided that all might be attached as students to the Military Academy at the discretion of the President. The military exercises that have been pursued at the Academy are such as would naturally be expected at such an institution, though they were at first limited by the lack of proper facilities. The first formal course of study, prescribed in 1816, comprehended "a general course of tactics; a knowledge of infantry duty, to commence with the elementary drill of the soldier, and to include the discipline and police of the battalion and platoon in all their parts; a knowledge of artillery duty, including the artillery drill; practical gunnery; and also all the performance of all the regular duties of the camps. Under sword exercise shall be

included the broad sword exercise and the cut and thrust, or small sword, either or both, according to circumstances."

This was practically the course pursued for many years. No horses were provided for the use of the cadets until a much later date, although urgent requests for such provision were constantly made after 1824. The Secretary of War in 1825, James Barbour, in his annual report urged the purchase of horses for the Academy, stating that "as the cadets are confined four years to the Point without horses, the art of riding itself must be greatly impaired, if not lost. *United with its military advantages will be the exercise it furnishes, so friendly to the health of the cadets.*"

Notwithstanding this lack, however, the drills and other exercises to which the cadets were constantly subjected had an exceedingly beneficial effect. The Board of Visitors for 1825 certify that "the youthful form nowhere exhibits a finer physical development than it does at this seminary, where the appearance of vigorous health and muscular energy affords the best testimony of the existence of those regulations which were adopted to promote them."

Gymnastic exercises other than military drills were not introduced at West Point until a much later period. The first official mention of the desirability of such exercises occurs in the report of a committee of the Board of Visitors in 1826. The committee said:

> Your committee believe that a building is wanted for gymnastical exercises, which will serve at the same time for a riding school, a fencing school, and military drill. A thorough and careful physical education is of importance to a military officer more than to any other person. But it is not yet offered at this Academy. The drill during the summer months is sufficient to give the cadets healthful exercise, and no more; but during the winter this resource fails, and their spirits and activity fail with it. It is proposed, therefore, that a plain building, merely sufficient to afford shelter, be erected, and that a systematic exercise of the whole person be there diligently practiced during the winter, under a gymnastical teacher, who shall be provided to superintend it.

In the report of the full Board of Visitors the same recommendation is made at somewhat greater length.

This report was written by the secretary of the board, George Ticknor, and is said to have embodied the views of the Superintendent of the Academy, Col. Sylvanus Thayer.

The suggestion did not move Congress to immediate action, and the Board of Visitors for 1828 renewed the recommendation, enforcing it with some of the startling statements that were common at that time as to the physicial condition of pupils in educational institutions. They say:

> It is well known to all who have attended to such inquiries that severe mental labor without corresponding corporal exercise will undermine the strongest constitution. The cause of this need not be here investigated. The fact is notorious, and has been observed in this place as well as elsewhere. True it is that many of the cadets do not die, the mortality being as low as one-sixth of 1 per cent. But it is believed that some, after leaving the school, have ultimately fallen victims to the sedentary habits which have unavoidably been acquired at this establishment.

Even this did not secure the desired result.

The next Board of Visitors used still stronger language, and instead of confining themselves to the remote results of the lack of the $6,000 building they desired, they plunged into the subject of the present health of the students.

> We learned [they say], that although the cadets are not liable to violent and fatal diseases, yet their general health does not appear to be as good as would be expected from the salubrity of the place in which they live, and the attention paid to their food, cleanliness, etc. A very great amount of medicines, such as are administered in a torpid state of the digestive organs and in other diseases incident to persons of sedentary and studious habits, is used at this post. The proportion is believed to be much greater than that required for any other military station belonging to the United States. We esteem this to arise from a want of sufficient bodily exercise, and that it exists principally during the winter season and in the spring. In summer and autumn the daily drills and other excitements to bodily exercise are sufficient for the purpose of health, and the beneficial result is very obvious; but for nearly half the year the military exercises are suspended, and the severe winter climate in some measure precludes those of a voluntary nature. The young men are consequently obliged to pass at once from an active state to habits sedentary and studious in a common degree, and the evils just intimated must follow as a matter of course. In order to alleviate or entirely remove them, we are convinced that a building should be erected adapted to winter drills and gymnastic exercises, and that these should be regularly required.

And still this did not avail. All these recommendations evidently emanated directly or indirectly from Col. Thayer, and after he was succeeded as superintendent of the academy by Col. De Russey in 1833, the cause of gymnastics at the academy slumbered peacefully.

CAPT. PARTRIDGE'S LECTURES AND ACADEMIES.

Col. Thayer's predecessor was Capt. Alden Partridge, a man of great energy and greater ambition, whose superintendency covered nearly two years, and terminated in 1816, in consequence of dissensions. Capt. Partridge was a man of considerable ability, and his life's work was distinctly beneficial to the country in many respects, especially in relation to physical education. In 1820 he first delivered his famous "Lecture on Education," embodying the plan which had occupied much of his attention during the ten years previous. In this lecture are set forth what the author conceived to be the defects of the existing plan of instruction. Among them is this:

> Another defect in the present system is the entire neglect in all our principal seminaries of physical education, or the due cultivation and improvement of the physical powers of the students. The great importance and even absolute necessity of a regular and systematic course of exercise for the preservation of health, and confirming and rendering vigorous the constitution, I presume must be evident to the most superficial observer. It is for want of this that so many of our most promising youths lose their health by the time they are prepared to enter on the grand theater of active and useful life, and either prematurely die, or linger out a comparatively useless and miserable existence. That the health of the closest applicant may be preserved, when he is subjected to a regular and systematic course of exercises, I know from practical experience; and I have no hesitation in asserting

that in nine cases out of ten it is just as easy for a youth, however hard he may study, to attain the age of manhood with a firm and vigorous constitution capable of enduring exposure, hunger, and fatigue, as it is to grow up puny and debilitated, incapable of either bodily or mental exertion.

Military discipline and military instruction were foremost among the remedies suggested; as to the rest, he proposes that—

First, the course of classical and scientific instruction should be as extensive and perfect as at our most approved institutions. * * * Second, a due portion of time should be devoted to practical, geometrical, and other scientific operations in the field. The pupils should frequently be taken on pedestrian excursions into the country, be habituated to endure fatigue, to climb mountains, and to determine their altitudes by means of the barometer as well as by trigonometry. These excursions, while they would teach them to walk (which I estimate an important part of education) and render them vigorous and healthy, would also prepare them for becoming men of practical science generally. * * * Third, another portion of their time should be devoted to practical agricultural pursuits, gardening, etc. Fourth, a further time should be devoted to attending familiar explanatory lectures on the various branches of military science, on the principles and practice of agriculture, commerce, and manufactures, on political economy, on the Constitution of the United States and those of the individual States. * * * Fifth, to the institution should be attached a range of mechanics' shops.

In the division of time he proposed that two hours daily be given to "military and other exercises, fencing, etc."

Upon this plan Capt. Partridge opened the American Literary, Scientific, and Military Academy at Norwich, Vt., on September 4, 1820. It was for several years signally successful and attracted students from nearly every State in the Union. In 1825 the institution was removed to Middletown, Conn., and in 1828 it ceased to exist. Two other academies similar to it in character were established by Capt. Partridge, one at Portsmouth, Va., and the other at Brandywine Springs, Del. He was influential also in establishing the Norwich (Vt.) University, an institution of collegiate grade, conducted upon the same principles as his academies.

This institution still exists, and is the only one of the institutions directly founded by Capt. Partridge that long survived him. But his work was not in vain. He demonstrated the practicability and value of military drill and physical training in schools not strictly technical, and the number of such institutions that exist to-day is the best evidence of the permanence of the results of his efforts.

AMERICA'S INTRODUCTION TO GERMAN GYMNASTICS.

In all the foregoing, with the exception of Col. Thayer's strenuous efforts for the introduction of gymnastics at West Point, the recommendations that have been recited, originated with Americans and were the result of American experience. Not only were they almost entirely free from the influence of foreign ideas, but in at least one instance they furnished ideas to those who were engaged in constructing gymnastic systems in other lands. But a period was reached when the ideas and

systems of aliens were introduced and enthusiastically disseminated. The wave of popular interest in gymnastics that swept over Europe in the early part of the century spread to this country and bore its first tangible fruit when Messrs. Joseph G. Cogswell and George Bancroft made gymnastics a part of the regular instruction at the Round Hill School at Northampton, Mass., in the spring of 1825. The exercises were directed by Mr. Charles Beck, a former pupil of Jahn, whose connection with the school lasted for several years.

The years 1826 and 1827 were marked by general interest in gymnastics and the establishment of gymnasiums in a number of educational institutions. But few of these were under the direction of qualified persons, and notwithstanding the great enthusiasm with which the exercises were pursued and the implicit confidence with which the results were anticipated, in actual practice the efforts must have been crude in the extreme. The New York High School was one of the most conspicuous of the institutions in which gymnastics was a feature at that time, and the character of their instruction at first may be imagined from the following paragraph, which appears in Dr. John Griscom's "Address" at the opening of the school in 1825:

> So far as exercises of this nature [i. e., gymnastics] can be introduced with advantage we shall take particular pleasure in promoting them; and we anticipate no difficulty in finding among our boys those who will be willing and qualified to become monitors in instructing others in the arts of leaping, climbing, pitching, and in other varieties of muscular skill and exertion.

This method of instruction was not long continued, however, for, in the Second Annual Report (1827) it is stated that the gymnastics had been placed "under the superintendence of an experienced and careful teacher."

At Harvard University, in Cambridge, Mass., a gymnasium was established in the spring of 1826 and was placed in charge of Dr. Charles Follen, who had also been associated with Jahn, and who bore the title of "superintendent of the gymnasium," in addition to his designation as instructor of German in the catalogue of the university for 1827–'28. For the two years, that is, in 1826 and 1827, the gymnasium was favorably looked upon by the authorities of the university, and was considered of sufficient importance to merit especial notice in the very brief catalogues then issued. But in that of 1828 Dr. Follen appears simply as instructor in German, ethics, and civil and ecclesiastical history, and no further mention is made of gymnastics either in the list of officers or in the catalogues.

On July 15, 1826, a meeting of citizens of Boston was held to consider "the expediency of establishing a school for gymnastic exercise." The city council had granted the use for two years of a piece of land "at the westerly end of Boylston street," and it was stated that "the primary object of the gymnastic school would be to furnish opportunity and means of exercise to the youth of the city. At the same

time it would be open to persons of every age who might be inclined to embrace the opportunity for the regular practice of bodily exercise." If the experiment had been successful it was intended to make the gymnasium "a department of public education, under the patronage of the city."

After considerable difficulty in raising the necessary funds the gymnasium was finally opened in September, 1826, but at a location other than that offered by the city. The general direction of affairs was given to Dr. Follen, of Harvard University, but the real work probably fell upon his assistant, Mr. Turner, who was described as "a distinguished gymnast of the establishment at Cambridge."

Dr. Follen soon found it impracticable to direct two gymnasiums and to do justice to his academic duties at Harvard at the same time, for after a few months he was succeeded as the superintendent of the Boston gymnasium by Dr. Francis Lieber, whose coming to America was due to the instrumentality of Mr. John Neal, an American enthusiast over gymnastics, then residing in London. Dr. Lieber bore the cordial indorsement of his friend and teacher, the great Jahn, and was recommended by Mr. Neal as a teacher of swimming, riding, and fencing as well as of gymnastics.

The signal success for the time of the physical training in these four institutions gave great impetus to the interest in gymnastics, and at least three of the neighboring colleges, namely, Brown, Williams, and Yale, soon followed with the provision of apparatus for the "most popular kinds of gymnastics," as it was expressed in one instance. Several schools of secondary or lower grade also followed suit. Most of them were located in New England, but there were three or four in New York, one in Maryland, one in South Carolina, and one in Mississippi, showing that, though Boston was the center of activity, interest in the subject was by no means confined to one locality. But the knowledge of practical gymnastics was in inverse ratio to expectations and enthusiasm. So great was the ignorance that prevailed and so unfamiliar were even the commonest terms connected with the art that one early writer found it necessary to explain at great length what the words "gymnasium" and "gymnastics" meant, and how they should be pronounced.

Dr. Beck published a partial translation of Jahn's book in 1828, and after its appearance that seems to have been the principal source of information as to the details of the subject. But even then the wave of enthusiasm was rapidly subsiding, and in a few years scarcely a trace of it was left. Nor are the reasons difficult to discover.

The only men in America who were really competent exponents of the system of gymnastics then prevailing were the three whose names have been mentioned. A rather diligent search fails to discover that any other institution than the four named even pretended to have a director of gymnastics. Beck, Follen, and Lieber were Germans, and they

found the status of gymnastics here far different from what they had known it to be in their own country. There gymnastics and political agitation had been intimately associated, and enthusiasm for "turning" was affiliated with interest in the spread of liberal ideas in government; here physical training was a thing apart from all political concerns and the manner of its advocacy was in opposition to the demands of mental culture rather than auxiliary to it. The position of a leader in gymnastics, therefore, bore an entirely different aspect in Germany and in America, and men of rare intellectual ability and university training (two of the trio were doctors of philosophy and the third bore the degree of J. U. D.) naturally soon tired of teaching boys to turn somersaults when the rewards for more intellectual work were so much greater and more congenial.

Lieber's fame from the first rested upon his reputation, which had preceded him, of being a "learned professor" more than upon his work in gymnastics. In fact his connection with the Boston gymnasium appears to have been due to embarrassing circumstances in which his political activity at home had placed him, and it was after his failure to secure a hoped-for appointment as professor of German in a London institution that he accepted the offer of the Boston people, undoubtedly as a makeshift to serve till more congenial opportunities were offered. He took up his literary work soon after his arrival in Boston, and was known to later years wholly as the author of the plan of Girard College, as a professor in the College of South Carolina, and in Columbia College, and as a writer upon economic and political topics.

Dr. Follen's mental superiority was soon recognized at Harvard, and he was made a full professor in 1828 or 1829. The scientific features of gymnastics were at that time but little recognized even by its most intelligent advocates, and it is not surprising that a man occupying such an honorable position should gradually rise, as he probably thought, above the drudgery of gymnastics. Dr. Beck was teacher of Latin at the Round Hill School, as well as of gymnastics, and probably lost interest in the latter in the same way that Lieber and Follen did. He, too, became a Harvard professor in 1832.

The rest is soon told. Such extravagant expectations as prevailed concerning the effects of gymnastics must have been followed by disappointment even under the most favorable conditions. But in the absence of all that was necessary to lead to a clear and general understanding of not only the underlying principles, but of the details as well, an utter failure was unavoidable. The experience of the Charleston (S. C.) College, as stated in 1830, was typical: "A system of bodily exercise was adopted three or four years ago, and suitable apparatus was constructed; but it was not found useful, and the apparatus has been destroyed."

Though gymnastics, as it was then understood, or misunderstood, proved a disappointment, the agitation in its favor had not been in vain, for a wide-spread realization of the necessity for greater attention to the physical condition of students in educational institutions had resulted. And as soon as confidence in the power of gymnastics to accomplish the hoped-for improvement began to wane new plans with the same end in view appeared.

The study of physiology and hygiene was brought forward as an important aid to the preservation of health, and the campaign then begun in favor of the introduction of such instruction has been continued, though with occasional lapses of interest, until at the present time it is required by law in nearly all the States of the Union.

Fellenberg's idea of combining manual labor with mental instruction did not gain much headway in this country till the collapse of the gymnastic movement, and then it was taken up with avidity in the apparent belief that in it was to be found the solution of the whole problem of physical exercise in educational institutions. This hastened the decline of gymnastics, for the advocates of manual labor felt bound to destroy the claims of all other systems of exercise before advancing the claims of their own.

Dr. Benjamin Rush, of Philadelphia, was one of the earliest to advocate agricultural and mechanical pursuits in educational institutions, his interest in the matter dating from 1790 at least. The first of the "agricultural" or "manual-labor" schools was founded in 1797 at Lethe, near Abbeville, S. C., by Dr. John De la Howe, but it was not put in practical operation until about twenty years later. Upon a similar plan the Gardiner Lyceum, in Maine, was established in 1823, a "Fellenberg school" was opened at Windsor, Conn., in 1824; and the Maine Wesleyan Seminary at Augusta, was put in operation in 1825.

But the two most conspicuous institutions in which manual labor was a feature were the Oneida Institute of Science and Industry at Whitesboro, N. Y., and the Andover Theological Seminary at Andover, Mass. In the latter the sole consideration that led to the introduction of manual labor was the invigoration and preservation of the health, "without any reference to pecuniary profit," but in the majority of similar institutions the supposed pecuniary advantages of the plan were as weighty as the hygienic in determining its adoption. In most of the institutions the labor provided for was agricultural, and for that purpose farms were secured when practicable. At Andover, however, all the labor was mechanical, namely, carpentry, box making, and common cabinet work, and those schools which followed its example were equipped with shops only; others were provided with both farms and shops, and the students worked in either or both as occasion demanded. The time required for labor was generally between three and four hours

daily, and it was suggested in at least one instance that six hours would be still better, but it is not probable that such a suggestion was ever reduced to practice.

In 1829 the manual-labor movement began to assume considerable proportions, largely because of the earnest advocacy of Dr. Stephen H. Tyng, of Philadelphia, and of Dr. Elias Cornelius, the editor of the American Quarterly Register and secretary of the American Education Society. Being themselves ministers, their first thoughts were naturally turned toward the theological schools, and labor was urged as a necessary part of the preparation for "soldiers of Christ," but their horizon broadened, and they were soon as enthusiastic in urging its claims upon schools for secular instruction as they had been in behalf of the embryo ministers. In a few years there was scarcely a State in the Union in which there was not a school of some description upon which manual labor had been ingrafted as an essential feature, compulsory, or practically so, upon all students.

A meeting was held in the Masonic Hall, New York, June 15, 1831, "on the subject of introducing manual labor into literary institutions as a system of exercise for students." Addresses were made by Rev. Mr. Gale, one of the principals of the Oneida Institute; Rev. Mr. Frost, one of the trustees; Rev. Rufus Anderson, secretary of the American board of commissioners for foreign missions, and by Rev. Edward Beecher, president of Illinois College. The principles of manual labor as connected with literary institutions were explained, and resolutions were adopted declaring that—

> It is indispensable that a well-regulated system of exercise should be introduced into all plans of education; * * * that manual labor ought, as far as possible, to be introduced into literary institutions as a means of promoting health, diminishing the expense of an education, and cultivating all those qualities in a minister of the Gospel, which the nature of his office requires and the exigencies of the present age loudly demands; * * * and that a committee be appointed to consider the subject of connecting manual labor with the pursuit of literature in general, and to take such measures as shall in their judgment be best adapted to promote the establishment of institutions of this kind throughout our country.

As a result of this meeting, in the next month, that is, July, 1831, the "Society for Promoting Manual Labor in Literary Institutions" was formed in New York, the officers being the same men who had been active in the preliminary meeting. They were as follows: President, Zechariah Lewis, esq.; vice-presidents, Hon. Theodore Frelinghuysen, Rev. James Milnor, Seth P. Staples, esq., Rev. Jeremiah Day, Rev. James M. Matthews, Hon. William Jay; treasurer, George Douglass, esq.; corresponding secretary, Rev. Joshua Leavitt; managers, S. V. S. Wilder, esq., Rev. G. W. Gale, W. C. Woodbridge, esq., Rev. Elias Cornelius, Mr. Lewis Tappan, Rev. Samuel H. Cox, Rev. T. H. Gallaudet, Mr. Cornelius Baker, Rev. Stephen H. Tyng, Dr. Alfred C. Post; executive committee, Messrs. Wilder, Tappan, Cox, Douglass, and Leavitt.

A general agent of the society was appointed in the person of Mr.

Theodore D. Weld, who had been connected with the Oneida Institute, and was familiar with the details of the new system and enthusiastic in its advocacy. In accordance with his instructions Mr. Weld visited most of the large towns and leading literary institutions in Ohio, Indiana, Illinois, Missouri, Kentucky, Tennessee, and Alabama, prosecuting his inquiries and calling public attention to the manual-labor system by public lectures and private conferences with the managers of the institutions visited. Wherever he went he was well received, and his labors resulted in a great increase in public interest in bodily exercise in general and manual labor in particular.

Mr. Weld made his first report January 10, 1832, and it was published as the report of the society in pamphlet form the following year, making the most elaborate presentation ever published in this country of the claims of manual labor as a part of an educational system. An enumeration of the points discussed in it furnishes a good idea of the grounds upon which the new idea was advocated:

(I) The present system of education makes fearful havoc of health and life; (II) the present system of education effeminates the mind; (III) the present system of education is perilous to morals; (IV) the present system of education produces an indisposition to effort and destroys habits of activity and industry; (V) the present system of education is so expensive that its practical effects are anti-republican.

From the "facts, reasonings, and testimony presented" he reached these conclusions: "First, bodily exercise is indispensable to man, demanded alike by the necessities of his corporeal, intellectual, and moral nature, his individual happiness and social usefulness; and, second, this exercise should be incorporated into our system of education, and alternated with study in all seminaries of learning."

It was further asserted—

(1) This exercise must be taken daily; (2) the student should spend at least three hours daily in exercise; (3) The exercise should be moderate.

This much being settled to the author's satisfaction, he proceeded to discuss the kind of exercise "best adapted to the student, and most suitable to be incorporated into a regular system."

Walking, riding on horseback, and swimming he allowed to be good, but not adapted to use in connection with an institution. Military exercises were said to be proper for a strictly military school, but out of place in other institutions "until fighting becomes the appropriate vocation of man and human butchery the ordinary business of life." Gymnastics received a greater share of his attention, but was disposed of, because—

(I) It is dangerous; too violent for persons ordinarily leading sedentary lives. (II) It is unnatural; many of the movements required are such as are rarely demanded by human circumstances. (III) It is unphilosophical. An individual can not be permanently interested in any active exercise to produce changes in the state of other objects. * * * No visible effects are witnessed, and the production

of manifest effects is a main element of interest in muscular movements. (IV) Gymnastic exercises excite aversion and contempt in the public mind. The people are disgusted and repelled by the grotesque and ludicrous antics of the gymnasium. They say "leave wooden horses to children and monkey tricks to monkeys."

It was also objected that gymnastics "affords no pecuniary advantage; that the exercise benefits only the student, makes no contribution to the resources of his country, and no addition to the means of human subsistence."

Manual labor was next considered by the author of the report, and was found to be a panacea for all the evils described, because—

(I) The manual labor system furnishes exercise natural to man. (II) It furnishes exercise adapted to interest the mind. (III) Its moral effects would be peculiarly happy. (IV) It would furnish the student with important practical acquisitions. (V) It would promote habits of industry. (VI) It would promote independence of character. (VII) It would promote originality. (VIII) It is adapted to render permanent all the manlier features of character. (IX) It would afford facilities to the student in acquiring a knowledge of human nature. (X) It would greatly diminish the expense of education. (XI) It would increase the wealth of the country. (XII) It would do away with those absurd distinctions in society which make occupation of an individual the standard of his worth. (XIII) It would have a tendency to render permanent our republican institutions.

All these points were elaborated in an ingenious and plausible manner, and the arguments of the author were fortified by quotations from great numbers of writers who had discussed the subject in its various aspects. The objections to the system and the obstacles to its success were treated in the same way.

The preparation of this report was the last official act of Mr. Weld as general agent of the society, for at the end of his term of one year he resigned and entered a Western institution to pursue his professional studies. His place was never filled, and the "Society for the Promoting Manual Labor in Literary Institutions" seems to have done very little if anything in the way of active work afterwards.

The popularity of the subject was of only temporary duration, for the objections and obstacles which were so easily disposed of on paper by Mr. Weld loomed up to formidable dimensions after a few years' experience. One by one nearly all the institutions in which manual labor had been tested found the idea unsatisfactory in practical operation and dropped it.

A few of the semicharitable institutions established during the time of the greatest popularity of the plan still exist and still retain the old manual-labor feature, and a number of schools have been established on a similar plan, within the last few years, for colored pupils in the South. A great many eleemosynary institutions throughout the country require manual labor of their inmates; but in all these cases the old extravagant ideas are laid aside, and the pecuniary gains are always the principal and in many cases the sole object in view.

The causes for the collapse of this form of physical training may be

best told in the words of the same man whose glowing utterances were described on a previous page, namely, Mr. Theodore D. Weld. In a letter to Mr. Henry Barnard written about 1865, he said:

I have modified in some respects my opinions as expressed in the report, and especially as to the amount of pecuniary profit to be expected from the manual-labor system even under the most favorable conditions. The practical difficulty in successfully combining labor and study in an institution also seems to me greater and more complicated. Labor, whether agricultural or mechanical, in order to be pecuniarily profitable to any considerable extent must be more continuous than would be consistent with the best conditions of study. So also the pecuniary results conflict with the best physical and mental. To secure the best result to body and mind, the students' three hours' exercise daily should be divided into half a dozen portions. This with the requisite changes of dress would be impracticable. So too, the exercise should be more diversified than is practicable. From the different kinds of labor such a selection should be made as will mete out to every part of the system that exercise which will best minister to its need. To do this effectually would require more frequent changes in the kind of work than could consist with much pecuniary profit.

THE MOVEMENT FOR PHYSIOLOGY AND HYGIENE.

It was noted in a previous paragraph that one of the results of the agitation for gymnastics during the period of 1825–'28 was the advocacy of the study of physiology and hygiene by school children. Along with this there soon came a closer attention to the sanitary and hygienic conditions of school life on the part of the authorities of the public or semipublic schools of the time which seemed to absorb all the thought which they were able to give to the physical condition of the children. When manual labor fell into disfavor, this phase of the question rose to a prominent position among the live educational topics of the time, and thenceforth, for a number of years, "physical education" was even more frequently and earnestly discussed than during the period of 1825–'28; but "physical education" had then a much wider meaning than gymnastics alone—so wide, in fact, that gymnastics was almost entirely overlooked.

An excellent idea of the meaning assigned to the term "physical education" and the popular attitude toward it at that time may be had from the remarks upon the subject in the report of a committee of the "Western Literary Institute and College of Professional Teachers," who were appointed to prepare a manual of instruction. This report was made to the meeting in Cincinnati in October, 1835, and was signed by Albert Picket, sr., E. Slack, E. D. Mansfield, A. Kinmont, N. Halley, J. Van Doren, D. L. Talbott. It contained the following:

(1) In reference to physical education, there is something in the power of the teacher as well as the parent. (2) What is in the power of the teacher relates to air and exercise chiefly. (3) Air breathed by pupils, as well as all others, should be pure, free, and temperate. (4) For this purpose the school room should be neither very small nor crowded. (5) It should be surrounded by open ground. (6) It should have a free circulation of air in summer, and be moderately heated in winter. In the country there may be too much exposure in the winter, but in towns

overheating is everywhere the prevailing error. (7) As action is a fundamental law of nature, so the exercise of the body is the only counter agent we have for the evils occasioned by studious habits. (8) Play and the free and universal use of the limbs is natural to children, and it is habit and discipline only that restrains them from it; hence, when the hours of study are over they should indulge in this activity of body and renew their strength for coming exertions. (9) The ground about the schoolhouse should, therefore, be extensive enough to permit free, active sports without injury to others. (10) Boys should rather be encouraged to play than to study in the hours of intermission. (11) They should be encouraged to engage in active sports of all kinds rather than sedentary amusements and, if it were possible, to learn some useful handicraft; their exercise should not be one which exercises only one portion of the body. (12) In these respects the teacher can exercise some direct control, but they are not the only ones. By advice and inquiry he can exercise not a little influence over another not less important department of physical education. (13) The due regulation of sleep often makes the whole difference between industry and idleness, and the importance of early rising is illustrated by too many signal examples to be doubted. (14) Over these things—air, exercise, and sleep—the teacher has not the whole control, but he has enough, by advice and suggestions to parents and trustees, by rewards and punishments over the pupils to make it his duty to exert it in a more decided and salutary manner than has hitherto been the case. (15) Over diet and clothing the parent is supposed to be the natural and proper guardian, and with few exceptions they are topics upon which the young should think but little.

One of the foremost advocates in behalf of the study of physiology was Dr. W. A. Alcott, and an expression of his views may also be given as an example of the best thought of the time upon the matter of exercise. Before the American Institute of Instruction in Boston in 1836 he said in effect:

It is very difficult to give rules on the subject of physical exercise which should be applicable to all pupils. To be nice in the matter each pupil should require a different quantity of exercise according to his age, health, habits, and moral constitution. Many rules might be given which would be applicable to a large number of pupils, though the best way is for every teacher to make himself acquainted with physiology, and then he could make his own rules and adapt them to existing circumstances. I would, however, lay down one rule which is applicable to all places, cases, and circumstances. Exercise to be useful to pupils should be such as will call off the mind from its common pursuits or studies. It is not sufficient to exercise the muscles; the mind too must be exercised and even amused. I would not say that it is of no use to saw wood or to walk to a certain corner or a certain post every day. I believe that even this is of some service. But it is of little avail, compared with something which would at the same time interest and excite the mind. The pupil should bury, as it were, all his usual employments, in order to get the full benefit of the exercise.

These extracts are sufficient to show the place which the exercise held in the estimation of the educational leaders of the time. To present an array of the advocates of similar ideas would be useless to show more than the extent of their prevalence, and this may be readily understood without such a category. It is sufficient that Massachusetts early came to the front as a leader in this movement as she had in the gymnastic agitation of 1825–'28, and, in a less degree, the spread of the manual-labor idea. Horace Mann was one of the stoutest defenders and promoters of the study of physiology, and his

reports as secretary of the state board of education teem with recommendations and arguments in its favor.

The desideratum most apparent to one of the present generation who reads the literature of "physical education" of that time was a well-considered system of gymnastics. Physical exercise and recreation were prominent in all the discussions, but during that period it was all physiology and no practice, just as in the twenties it had been all practice and no physiology. The matter of exercise was left either to the pupils themselves, as was apparently the idea of the meeting at Cincinnati, or, as Dr. Alcott and the New England teachers proposed, it was left to the teachers, who can not be supposed to have had more than a superficial knowledge of general physiology, even if they had that.

THE REVIVAL OF GYMNASTICS.

The revival of gymnastics under such circumstances was the most natural thing in the world. Effective exercise was desired, and only a few years' experience had been needed to show how futile it was to expect anything from such arrangements as had been in vogue; manual labor had but recently shown itself to be unsatisfactory as an adjunct to a literary institution; what, then, could supply the need so well as gymnastics?

It is not to be supposed that the cause of gymnastics was dead during the few years' reign of the manual-labor idea, or during the time that physiology held the popular interest; it was sleeping rather soundly, it is true, but an occasional lecture or publication gave evidence that there was still some life in it.

In 1830, one William Fuller published in New York a small book containing a brief dissertation upon the advantages of gymnastics, an account of the London Gymnastic Society, and a description of some of the principal gymnastic exercises. He proposed, in conclusion, to establish a gymnasium in New York as soon as 100 subscribers were obtained at $20 a year each. There is little probability that he ever succeeded.

Gymnastics for females had never received much attention in this country, but a small book published in London in 1827, by an Italian, Signor Voarino, and entitled A Treatise on Calisthenic Exercises arranged for the Private Tuition of Ladies, seems to have had some circulation in this country, for it was referred to in some of the educational journals of the time, and in one or two advertisements of schools for girls mention appears of "calishenics."

Miss Catherine E. Beecher was one of those who favored calisthenics and made it a feature of her school at Hartford, Conn., and afterwards at Cincinnati, Ohio, and still later at Milwaukee, Wis. In 1832 she herself published a book in the form of a series of letters, called A Course of Calisthenics for Young Ladies in Schools and Families. A little

manual on the same subject was published in 1834 by Rev. J. Leavitt, of New York City, who had been one of the executive committee of the Society for Promoting Manual Labor, etc. He claimed for calisthenics:

(1) They bring every part of the system into action. (2) They expand the chest. (3) They bring down the shoulders. (4) They make the form erect. (5) Give grace to motion. (6) Increase muscular strength (7) Give a light and elastic step in walking. (8) Prevent tight lacing. (9) Restore the weakened and distorted members of the system. (10) Promote cheerfulness and bodily activity. (11) Render the mind more active. (12) They are conducive to general health.

The apparatus required were "the oscillator, the triangle, patent springs, wands, weights, and dumb-bells."

These two little books, with other manuals that appeared about the same time, gave a slight and temporary impetus to calisthenics, but achieved no permanent result then apparent.

The Canadians settled upon a plan of practical work sooner than the Americans did; and under Rev. E. Ryerson, the chief superintendent of schools of Upper Canada, a substantial advance was made in the actual work of gymnastics before the new movement, as it might be called once more, had passed the stage of discussion in the United States.

In 1846, Dr. Ryerson made an official report on a system of public elementary instruction for Upper Canada, which contained a strong recommendation of gymnastics. About the same time the government of Upper Canada established a public gymnasium in Toronto. In 1852, Dr. Ryerson published in his official organ, the "Journal of Education," a series of articles in which he gave a short but reasonably complete collection of exercises in free gymnastics and for the horizontal bar and the wooden horse. These were afterward collected in pamphlet form, and distributed from the educational depository at Toronto. He urged the general use of these exercises, and promised the aid of the Government in the purchase of apparatus. When the new normal school for Upper Canada was opened, November 24, 1852, a gymnasium was a part of its equipment, and a "master of the art of gymnastics" was in charge.

There can be no doubt that in all this Canada was in advance of the United States, and, judged by later standards, even Horace Mann's work for "physical education" was far less practical and effective than that of Dr. Ryerson.

After 1850 the discussions and suggestions relating to physical training began to assume a perceptibly different aspect, and were distinctly more businesslike and to the point. This was particularly true of the utterances of the city school superintendents, whose employment was then a novelty. It is well known that to the system of professional supervision of common schools many of the most important improvements in American education are due; the idea of gymnastics for schools can not of course be ascribed to that source, but a very superficial examination of the school reports issued during the decade

of 1850 to 1860 would be sufficient to verify the statement that the superintendents were influential factors in the gymnastic revival of that period.

Mr. Nathan Bishop, to whom belongs the honor of being the first city school superintendent in this country, was also the first superintendent to advise systematic physical exercises in the school room. His experience as a superintendent began in Providence, R. I., but the first expression even reasonably full of his views in this respect is to be found in his second annual report as superintendent of public schools of the city of Boston (1852). He says:

> In addition to the exercise allowed at the time of recess each half day, all the younger children need provision for some gentle exercise as often as once in every half hour, such as riding, walking, marching, accompanied with such motions of the arms as would tend to give fullness and erectness to the chest.

Mr. Bishop lamented the lack of a "manual containing such a series of physical exercises as would tend to promote strength of body and gracefulness of motion;" and it may be assumed therefore that the rule promulgated by the school committee the next year (i. e., 1853) requiring that "every scholar should have daily some kind of physical or gymnastic exercise," contemplated such exercise as "rising, walking, and marching accompanied with motions of the arms." This rule probably amounted to very little; Mr. Bishop did not make any mention of it in his subsequent reports, but it is nevertheless the first rule (so far as the writer has been able to discover) which required gymnastic exercise in the public schools of any American city.

A few years later the reports of the superintendents are noticeably prolific in physical-training literature. Whether this may be ascribed to the influence of the North American Turnerbund, the German gymnastic association which was organized a comparatively short time before, or to the fact that the new public-school system had then reached such a point as to make it possible for the first time for its officers to look beyond the administrative questions that had absorbed all their attention during the period of organization, or to other circumstances not apparent at this time, can not be definitely stated. It is highly probable that causes coming under all these heads were operative; there is certainly every reason to believe that the influx of intelligent Germans into this country after the political disturbances in Europe in 1848 had much to do with the general interest in physical training that was so plainly apparent five or six years afterwards.

The limitations of this paper and the extent of the movement make it impossible to mention even briefly all the important steps that were taken toward the rehabilitation of gymnastics during that period. The work done in the colleges was particularly valuable, but it need not occupy attention at present, both because this investigation relates more particularly to the common schools, and because this Bureau has

already issued a publication in which that phase of the subject received thorough and satisfactory treatment.[1]

Miss Catherine E. Beecher, who has already been mentioned as an ardent and consistent advocate of calisthenics for females, again came into public notice in 1856 through a book called A Manual of Physiology and Calisthenics for Schools and Families. N. W. T. Root's School Amusements, embracing, among many other things, "simple rules for military and gymnastic exercises," appeared in 1857. These two books, the former in advocacy of light movements, and the latter setting forth a series of exercises for the usual German apparatus such as bars, ladders, etc., had a rather extensive circulation and contributed materially to the stock of practical knowledge upon gymnastics. In 1859, Dr. G. B. Winship, of Boston, appeared in advocacy of heavy lifting as a means of physical training, and his lectures and exhibitions excited wide interest.

DIO LEWIS, AND THE "NEW GYMNASTICS."

The climax of the gymnastic movement of the antebellum period was reached when there appeared on the scene the most picturesque figure in the history of American physical training, Dio Lewis. This man had been a public lecturer upon physiology and temperance, and possessed in a remarkable degree the power of arousing popular attention and even enthusiasm. He himself, as one of his pupils said, was a "perfect perambulating galvanic battery of energy and enthusiasm." The beginning of his connection with gymnastics may be told in his own words:

> Educated to the profession of medicine, and mingling for many years principally with those classes who suffer most from nonobservance of the laws of health, I came many years ago to think somewhat seriously of that ounce of prevention which is worth tons of cure. Want of muscular exercise was one of the most obvious defects in our physical life. It was not less obvious that the very structure of town and city society rendered the correction of the evil impracticable, except in the gymnasium. I examined the German gymnasium, the one so much in vogue throughout the United States, with great care. Entering one of these institutions as a pupil, I studied the anatomical and physiological bearings of its many exercises. I found that they were not well adapted to children, women, fat men, or old men, and about eight years ago [i. e., about 1853] I began the attempt to devise something better. During this time I have invented more than 500 different exercises, of which a large experience has fully indorsed nearly 300.
>
> The leading feature of his system [according to the New York Tribune of August 27, 1860] is to use such exercises as will produce hearty merriment, and cause those engaged to enter into them with enthusiasm and great delight. It employs a great variety of positions of the limbs and body, and rapid changes, reminding one of the prompt, rapid, and varied movements of the Chicago Zouaves. His apparatus is of the simplest construction and of trifling expense, and may be easily prepared by any person, and at the same time is adapted for use in any schoolroom or school

[1] Circular of Information No. 5, 1885. Physical Training in American Colleges and Universities, by Edward Mussey Hartwell, Ph. D., M. D. This circular is now undergoing revision, with a view to republication.

yard, and also for the family. He uses wooden dumb-bells weighing not over a pound each, and clubs varying from two to three or four pounds each; air guns, bags of beans weighing from two to three pounds, rubber balls, bows and arrows, chess-ball game, etc. In all these there is great amusement, so that all the benefits of exercise are most admirably combined, and to one who has witnessed them it seems almost incredible that so much can be accomplished in so cheap and simple a manner. * * * Another exercise consisted in the use of sticks, about the size of a broom-handle and the length of a cane. * * * In using these sticks, movements of the arms, shoulders, and chest were accomplished. Then followed the calisthenic movements of head, neck, and shoulders.

Dr. Lewis did not confine himself to exercises of his own invention, but freely and openly borrowed from every system and every author whose exercises could be profitably incorporated with his own system. Miss Beecher's calisthenics he used from the first; he instituted the "Swedish movement cure" as a department of his gymnasium; reprinted the free exercises of Moritz Schreber, of the Leipzig Orthopedic and Medico-Gymnastic Institute; translated the Dumb-bell Instructor of Maurice Kloss, of the Royal Saxon Normal Gymnastic Institute at Dresden, and republished in English Dr. Shreber's work on the Pangymnastikon.

It appears that the first practical application of Dr. Lewis's "new gymnastics," as he called it, was in Mr. N. T. Allen's school in West Newton, Mass., in 1860, though the statement is also made that the Normal School at Framingham was the first in which these exercises were regularly introduced under the personal direction of Dr. Lewis himself.

During the same year he opened a gymnasium in Boston, making the third in the city. About the same time, i. e., in August, 1860, the American Institute of Instruction, then the leading pedagogical organization in the country, held its meeting in Boston. In some way Dr. Lewis attracted the attention of the managers of the meeting, and was invited to appear before it and "explain and illustrate his new system." He did so, and such was the impression he made that at the end of the half-hour allotted him his time was extended and he occupied two hours of the time of the meeting. The next morning he was accorded nearly two hours more, and at noon still another hour. His fame was then assured. The institute unanimously passed commendatory resolutions regarding his system; the newspapers generally published accounts more or less full of it, and it sprang into instant popularity. Mr. D. B. Hagar, the president of the American Institute, declared "the way so long desired has been pointed out," and John D. Philbrick, the superintendent of the Boston public schools, afterward said:

> How can we introduce physical exercises into our schools was an unsolved problem in my mind for many years. The old system of gymnastics, with its bars and swings and ladders, was quite impossible in a great system of public schools, but when I saw that these exercises of the new system might be performed even in a school room, in the midst of the desks and chairs without difficulty or danger, I felt the problem was solved. We shall have them in all our schools. It is only a question of time.

After Dr. Lewis's success before the American Institute he was in great demand as a lecturer upon gymnastics and as a writer for magazines and various educational publications. He himself established a monthly periodical called Lewis's New Gymastics for Ladies, Gentlemen and Children, and Boston Journal of Physical Culture, which lived through two years. His apparatus was in demand far and wide, and schools in all parts of the country began the use of his exercises. Having experienced great annoyance because of incompetent persons who assumed to teach his system, he resolved upon the establishment of a normal school in connection with his gymnasium. This was opened in 1861, the lecturers being Dr. T. H. Hoskins, anatomy; Dr. Josiah Curtis, physiology, and Dr. Walter Channing, sr., hygiene, in addition to Dr. Lewis, who appeared as "professor of gymnastics."

The course of study prescribed covered ten weeks, and at the end of that time the pupils were graduated as competent teachers of gymnastics. They "had a very good time, but accomplished comparatively little in the direction of physical training, and received no instruction at all in the meaning and value of gymnastic exercises."[1] But, bearing the stamp of the master's approval, they readily found employment and were regarded as true representatives of scientific gymnastics.

But even such drawbacks as poorly prepared, though certificated, teachers might not have been fatal had not the excitement of the civil war and the newly-born enthusiasm for military drill, cadet corps, rifle practice, and target-shooting completely upset the calculations of those who labored in behalf of gymnastics. Thenceforward calisthenics and bean bags were relegated to the background and military marching and tactics were pursued to arouse or restore the military aptitude and spirit of the American people. Military institutes were established throughout the country; high schools made military drill a regular feature; pupils of grammar schools organized themselves into military companies, and the National Government endowed colleges, one of whose main purposes was instruction in military tactics. Everywhere the military spirit prevailed and gymnastics suffered.

Dr. Lewis did not long continue his gymnastic labors. He established a school in Lexington, Mass., in 1864, which was burned in 1868. A year later he finally gave up the work and until his death confined his attention to lectures upon hygiene and temperance.

There appears to be a disposition of late years to belittle Dio Lewis and his work. This is unfortunate, to say the least. It may be true that "he was unconventional, sympathetic, plausible, oracular, and self-sufficient," and "not a scientist in any proper sense," as one writer has said. But, notwithstanding all this, he rendered a real service. Even if he had nothing in his favor but the undoubted fact that he gave gymnastics in America a greater impulse than any man before

[1]The words are those of Dr. Walter Channing, jr., who had been a pupil of the school.

him had done, that would be sufficient to earn for him the gratitude of all interested in physical training. But he did more. He first awakened the American public to an appreciation of the fact that the mere development of huge muscles is not the true idea of physical training. His contribution to the list of exercises and to gymnastic material was by no means insignificant, though, to be sure, his claims were out of all proportion to their value; but, more than all else, he lifted the gymnasium above the low plane it had occupied in the public mind as the resort of prize-fighters and bullies, and carried gymnastics into the schoolroom to an extent never before approached in this country, and into the home to an extent that no one else had ever attempted.

THE RECENT REVIVAL OF GYMNASTICS.

After the close of the war the ardor for military exercises naturally declined very perceptibly. Then, since the military exercises had in a great measure supplanted those of the gymnasium, there came a period of comparative quiet in both these lines of physical training. This did not follow immediately after the cessation of hostilities, for such a movement once under headway rarely collapses suddenly; but before ten years had passed popular interest was at a low ebb; then, after a time, it began to rise slowly and gradually, but surely.

To assign as the cause for this any one event, or series of events, would be erroneous. Public sentiment was ripe for a gymnastic revival, and it came.

But it is interesting to note some of its important incidents.

Popular interest in out door sports of all kinds has steadily grown since the war, and to the value of gymnastics as a preparation for athletic games may be ascribed in a great measure the activity in gymnasium building which has marked the last fifteen years. The erection of the Hemenway gymnasium for Harvard University at Cambridge, Mass., in 1879 and the effective work of Dr. D. A. Sargent, its director, has also done much to stimulate effort elsewhere in the same line.[1]

Among our German population the love of gymnastics is perennial. As the German influence was strong in the gymnastic movement of the fifties, so, too, it has made itself felt in the recent events and discussions. As far back as 1876 the standing committee on music, drawing, and calisthenics[2] of the school board of Milwaukee, Wis., adverted to the imperfection of the school system so long as calisthenics was not regularly taught. They recommended "that a sum be included in this year's budget large enough to engage a teacher to take charge of this branch of instruction, especially as Milwaukee has in its midst a man who, if his services can be secured, would soon bring it to a perfection not equaled in any of the schools of this country." This man was Mr.

[1] See page 549, *et seq.*

[2] This word had but recently been added to the designation of the committee.

George Brosius, already famous as a leader in the Turnerbund, and subsequently the head of its normal school for teachers of gymnastics. The members of this committee for 1877 were Messrs. J. A. Becher, F. Schloemilch, W. Schmidt, Jacob Freytag, and J. L. Schmidt. It would have been remarkable if a committee so constituted had not secured the appointment of Mr. Brosius. But they did, and they also accomplished the passage of rules which placed the subject apparently upon a firm basis; namely, providing for teachers' meetings for instruction from the special teacher, requiring definite and fixed times for calisthenics daily, and making such a division of his time as to allow the specialist to visit all classes. The use of the word "calisthenics" in the above connection bears no relation to the "calisthenics" advocated by Miss Beecher, for Mr. Brosius's exercises were plainly those of the German system. The results of his teaching were such as might have been expected from such a man, distinctly beneficial, and the example of Milwaukee was followed by other cities in that section. Mr. Brosius severed his connection with the public schools in 1881, and assumed the control of the gymnastic seminary of the North American Turnerbund. His place was not filled, but physical exercises were still required by the school regulations.

One of the most important centers of the gymnastic propaganda, so far as relates to public schools, for the last ten years has been Kansas City, Mo. The teaching of gymnastics was begun there in a modest way in October, 1885, and Mr. Carl Betz was employed with the title of "instructor of calisthenics."[1]

It is needless to say that Mr. Betz is an exponent of the German gymnastics, having graduated from the Turners' Gymnastic Seminary. Since the beginning of the work whatever opposition there was to it has been almost entirely overcome. Mr. Betz now bears the title of "superintendent of physical culture," and his exercises, so far from being confined to "calisthenics," embrace, as he says, eight distinct branches of gymnastics, forming together, when fully developed, a complete system of educational gymnastics meeting all the requirements of modern physical education.[2]

Mr. Betz has written several manuals of gymnastics, and he has the satisfaction of knowing that they, with the example of his practical work in Kansas City, have materially aided in bringing about the intro-

[1] As in the previous case, the use of the word "calisthenics" was due to a confounding of free gymnastics with the languid movements for females so common in this country a generation ago. That term, by the way, is still frequently applied to free or light gymnastics, especially by the German-Americans.

[2] They are: (1) Free gymnastics, including breathing; (2) light gymnastics, comprising poles, dumbbells, rings, wands, and Indian clubs; (3) tactics, marching and marching evolutions; (4) popular gymnastics, comprising athletics and the gymnastic plays of the playground; (5) heavy gymnastics, exercises on stationary apparatus; (6) gymnastic plays and games; (7) fancy gymnastics, gymnastic composition; (8) outings.

duction of physical training in a large number of American communities.

Among other cities that began the work of systematic physical training early in the history of the recent movement were Omaha, Nebr., in 1885; Chicago, Ill., in 1886; Davenport, Iowa, and St. Joseph, Mo., in 1887; Canton, Ohio, and Holyoke and Lowell, Mass., in 1888, and Denver, Colo., and Washington, D. C., in 1889.

The German system is employed in all these cities, excepting Lowell and Washington, in which eclectic systems are used.

The American Association for the Advancement of Physical Education, which was organized in Brooklyn, N. Y., November 27, 1885, must be accorded a prominent place among the agencies for promoting the work of the last few years. To Dr. W. G. Anderson, then of Adelphi Academy, Brooklyn, the most of the credit is due for the organization of this association, for it was in response to his invitation that about 60 "representatives of various educational institutions and friends of physical culture" assembled for the purpose of permanent organization. The original officers were: President, Prof. Edward Hitchcock, M. D.; vice-presidents, Rev. Edward P. Thwing, PH. D.; D. A. Sargent, M. D.; Miss H. C. Putnam; secretary, William G. Anderson, M. D.; treasurer, Prof. J. D. Andrews; council (in addition to the foregoing officers), Prof. H. J. Koehler, Charles McIntire, jr., M. D., William Blaikie, esq. The association meets annually; its membership embraces representatives of every school of gymnastics, and its discussions cover every phase of physical training. If that great desideratum, an American system of physical training, is ever evolved its development will be the result of such deliberations as are to be heard in these meetings.[1]

After the meetings of the American Association for the Advancement of Physical Education, which deserve the first place on account of their continuity, the next most important gathering has been what is known

[1]The scope of the association and its value to the country may be judged by an examination of its programme for the meeting in Philadelphia, Pa., in 1892. The following are the titles of some of the papers read: President's address—The condition and prospects of physical education in the United States, by Dr. E. M. Hartwell; the influence of methodical gymnastics in increasing chest capacity, by M. Georges Démény; indirect effects of physical exercise, by William T. Harris, LL. D., Commissioner of Education; the influence of bodily exercises upon length of life, by J. Madison Taylor, M. D.; Delsarte and his work, by F. H. Sargent; Americanized Delsarte culture, by Emily M. Bishop; the regulation and management of athletic sports, by D. A. Sargent, M. D.; the influence of habitual posture on the symmetry and health of the body, by Eliza M. Mosher, M. D.; the best system of gymnastics for use in American schools, by Miss Gulli Oberg; the German system of physical education, by W. A. Stecher; reports on physical culture in Washington, D. C., Chicago, Ill., Sacramento, Cal., and New York, N. Y., by the directors of gymnastics in the respective cities; the normal school of the N. A. Gymnastic Union, by W. A. Stecher; physical culture in normal schools, by Dr. C. E. Ehinger; some measurable results of Swedish pedagogical gymnastics, by C. J. Enebuske.

as the "Physical Training Conference," held in Boston, Mass., November 29 and 30, 1889.

This meeting was one of the most significant events of late years, numbering among its participants not only most of the leading lights in the gymnastic world, but also many of the most prominent figures in American education. Its object was "to place before educators different systems of gymnastics, and to secure discussion of the same, with a view to clearly ascertaining the needs of the schools and determining how they may best be met."

It was made possible by the liberality of Mrs. Mary Hemenway, of Boston, whose interest in physical training had already been shown by establishing the Boston Normal School of Gymnastics and in otherwise aiding in the spread of gymnastics. There can be no doubt that the resolution of thanks passed at the close of the meeting expressed the truth in saying that "the whole cause of physical education in America has received a great impetus" from the meeting. It marked an epoch in physical training.

On June 24, 1890, the Boston school committee ordered the introduction of the Swedish system of gymnastics in all the public schools of the city, and the first day of the next year Dr. E. M. Hartwell entered upon his duties as director of physical training in furtherance of that order. A number of cities, especially in the East, have followed the example of Boston in the introduction of the Swedish system, and the Germans have been stimulated by the sudden popularity of the Ling gymnastics to redouble their efforts in behalf of their own system. Up to this time the rivalry between the two systems has been beneficial, because it has brought gymnastics more prominently before the educational public than ever before; but there is danger that their continued sharp competition for public favor will prove injurious to the cause that both serve. The battle for gymnastics is hard to fight at best, but how much harder would it be with its forces divided by internal dissension, and that, too, caused largely by the national feeling of rival peoples, both of which are alien to our soil.

With what confidence can an American board of education adopt the one system of gymnastics when a large and able body of experts pronounce it "without rational or physiological foundation," and with what trepidation will they approach the other system when an even larger number of equally able men assert, with their greatest physiologist, that "only the half-educated are impressed by it?" And what comfort can they gain by turning the eclectic systems when both parties sneer at them as "heterogeneous conglomerations?"

THE PRESENT STATUS OF PHYSICAL TRAINING.

The present status of physical training in the city public schools is best disclosed by an examination of the statistical tables appended. They are self-explanatory, and no remarks are needed in this connec

tion further than to call attention to the fact that they embrace three categories, namely: (1) Those cities which profess to have introduced a regular system of gymnastics and have placed the same under the care of a specialist; (2) cities which employ no specialist, but which require regular instruction by class teachers, and (3) cities in which physical exercises are practiced at the discretion of the teachers, but without the supervision of a special teacher and without an effective compulsory regulation.

It is plain that in the cities as a whole, gymnastics is still in the stage of experiment and inquiry.[1] In a few cities conspicuous and permanent success seems to have been attained, but whether this has been due to the personal efforts and influence of exceptionally efficient directors backed by exceptionally earnest and intelligent school boards, remains to be seen after the lapse of years has brought the usual changes in personnel and policies.

It is not necessary to dwell upon the status of gymnastics in the country at large. The conditions are well known to all who will be likely to read this article; but it is well to recall the extensive and important work and influence in this line of the college gymnasiums and inter-collegiate athletic events; the athletic clubs, some of them of imposing dimensions, that exist in nearly all of our cities; the physical culture departments of the Young Men's Christian Association and similar organizations; and the North American Turnerbund, with its branches in almost every community that contains even a small proportion of Germans, giving instruction to boys and girls as well as to adults.

The number of normal schools, normal classes, and summer schools for teachers of gymnastics is considerable. The Normal School of the North American Turnerbund, established in 1868, and now located at Milwaukee, Wis., under the direction of Mr. George Brosius, is the fountain head from which issues the stream of teachers of the German system; while the Boston Normal School of Gymnastics, established in 1889 by Mrs. Mary Hemenway, with Miss Amy Morris Homans as director, annually graduates a large class of teachers of the Swedish

[1]Since the above was written information has been received of the passage of the following act by the Ohio legislature. This is the first law of the kind that has been enacted in any American State:

"*Be it enacted by the General Assembly of the State of Ohio,* That physical culture which shall include calisthenics, shall be included in the branches to be regularly taught in the common schools in cities of the first and second class, and in all educational institutions supported wholly or in part by money received from the State, and it shall be the duty of boards of education of cities of the first and second class, and boards of such educational institutions, to make provision in the schools and institutions under their jurisdiction for the teaching of physical culture and calisthenics, and to adopt such methods as shall adapt the same to the capacity of the pupils in the various grades therein.

"SEC. 2. This act shall take effect and be in force from and after its passage.

"Passed April 13, 1892."

system. The Young Men's Christian Association maintains a normal school at Springfield, Mass., under Dr. Luther Gulick for training the directors of its several gymnasiums, and Dr. W. G. Anderson is the president of a normal school at New Haven, Conn., which he has recently removed from Brooklyn, N. Y. In addition to these four prominent and regularly organized institutions there are a number of lesser note, and many of the more prominent gymnasiarchs have "normal classes" in connection with their gymnasiums.

Of the summer schools, the most widely known are that of Dr. D. A. Sargent at Cambridge, Mass., and that of Dr. W. G. Anderson, at Chatauqua, N. Y.

CONCLUSION.

A study of the history of physical culture in this country shows very clearly that the American people have never been unmindful of the demands of the body. One form of training after another has been pursued and tested until it has developed elements which have failed to harmonize with American ideas, and then it has been abandoned and another taken up. The interval between has always been short, only sufficient for the effects of the lack to be apparent. Then the popular mind has turned to physical exercise again and the popular ear has been attentive to the claims of any new comer who has been able to advance reasonable arguments in favor of his ideas. Furthermore, each wave of popular interest which the history of physical training discloses has left its impress upon the general character of physical training as it is to-day, and has contributed to make what will be at some future time "the American system of physical training." Such a consummation has not yet been reached, or the "German system," the "Swedish system," and the "Delsarte system" would not enjoy such high favor; but there can be no doubt that in its final development the "American system" will be a composite, not of these three, as the "combination systems" of to-day generally claim to be, but of all combined American experience in the field of physical training. The progress of the evolution toward an American system even in the last few years, may be distinctly seen, especially in school gymnastics; for, have not the Germans begun to adopt the Swedish ideas of the day's orders and systematic progression, and have not the Swedes aimed to make their gymnastics more attractive, even going so far in one case as to use the German bars, and in another to advocate the use of a combination of systems for older pupils; and have not the professed followers of Delsarte adopted exercises that are plainly muscle makers as well grace givers? And do not they all utilize much that comes from the old English sports, from calisthenics, from Dio Lewis, and from Dr. Sargent? And is not all this found side by side and in harmony with military institutes after the plan of Col. Partridge, manual labor and manual training schools after the manner of Dr. Cornelius, and military drill in high schools

after the war-time ideas? And finally, there is reason to believe that until this composition of forces, this amalgamation of systems, does take place, so that a well defined and well established American system is produced, physical training will never rest upon a safe basis in this country.

All the history of the subject shows that the conflict of systems and methods, not popular indifference, has been, next to the inefficiency of teachers, the most dangerous enemy with which physical training has had to contend.

History of Gymnastics in Three Typical American City School Systems.

I. ST. LOUIS, MO.

St. Louis was one of the first cities in the country in which physical training was actually and practically applied in the public schools.

In 1855 Mr. John H. Tice, then superintendent, recommended that "provisions be made at our schools for gymnastic and calisthenic exercises during the recess hours; apparatus for which I consider as necessary fixtures, and indispensable to a perfect system of education." Mr. Ira Divoll, Mr. Tice's successor, was also favorably disposed toward gymnastics, and his report for 1857–'58 urges the purchase for each play ground of "a few simple and inexpensive contrivances for gymnastic exercise, such as a revolving swing, and inclined ladder, horizontal bars, and wooden horses, a perpendicular climbing pole, and swinging rings." Some of the schools were, in fact, soon afterward supplied with nearly all of these machines. He also describes what he calls "manual exercises," that were practiced in many of the primary schools. "It is pleasant," he says, "to see 200 children, all in perfect order, go through with these changes and evolutions, and to witness in their faces the pleasure and happiness they derive from the exercises. All admit that these occasional relaxations from study and recitation are both healthful and profitable." In the next year, 1858–'59, we are told that "exercises in the manual drill and instruction in physical education received considerable attention," and in the same year the first special teacher of physical education was employed for the St. Louis schools in the person of Capt. Hartnett Hammersley. The story of his connection with the schools is thus told by Mr. C. S. Pennell in his report as principal of the high school:

> A few weeks before the close of the year Capt. Hammersley offered to come to the schoolhouse daily to direct a class in orthosomic and hygienic exercises, the object of the exercises being, as the names indicate, to improve the form and carriage of the body and the health. A class of about 20 girls was, by the permission of the high school committee, placed under his direction. The exercises proved pleasant to the pupils, and though the time was so short that no considerable results could be expected, yet visitors were interested and generally satisfied that the exercises were well adapted to secure the objects intended. * * * Capt. Hammersley

believes that, by actual measurement, at intervals of a few months he can show improvement in the capacity of the chest and in the size of the most important vital organs.

The next year Capt. Hammersley received a salary of $500 for his services in the high and normal schools for three days in each week. In the lower grades daily lessons were given in the "positions" and "manual drill" during the same year. The special instructor continued in service for only a year, but the free exercises in the lower grades have continued in different forms and with varying degrees of effectiveness ever since.

The Dio Lewis gymnastics was introduced in the St. Louis schools by Mr. Ebenezer Knowlton, who succeeded Mr. Pennell as principal of the high school in 1862. Mr. Knowlton had just graduated from Dio Lewis's Normal School, and was an enthusiast for the "new gymnastics." Military drill was also employed in the high school during the war period to secure "unity and promptness of action, and erectness and grace of carriage."

After the war but little seems to have been done for physical training. Calisthenics was practiced by some of the teachers, but there was no specialist in charge, and no rule requiring the exercises.

It was not until 1890 that anything really effective according to present day standards was done. At the meeting of the board of education on January 14 of that year Mr. Richard Bartholdt introduced a resolution directing the committee on course of study to prepare a plan for the introduction of physical training in the public schools of St. Louis. The resolution was referred to the committee on course of study, who held a meeting on February 6 to which a number of the officers and teachers of the German turner societies were invited. As a result a communication was presented to the full board on February 11 in which the seven teachers of German gymnastics in the city proposed to give instruction gratis in free gymnastics in seven public schools of the city for the remainder of the school year as an experiment. The only stipulation was that the gymnastic exercises were to be considered a regular branch of study for those schools during the continuance of the experiment.

The offer was at once accepted, and the teachers entered upon their work. In the following July Mr. Bartholdt offered another resolution at the board meeting, declaring that the instruction given had proved a great success, and that the principals of the schools recommended its continuance. It therefore directed the introduction of physical training as a regular branch of instruction. This resolution was referred to the appropriate committee, and at the next meeting its author continued his effort by presenting petitions signed by 14,500 citizens, asking the introduction of gymnastics as contemplated by the resolution. A report was made in October by the committee to which the matter was referred, and on November 11 it was decided by the board to

employ eight teachers of physical culture, and that the system which had been successfully tried in the previous spring be regularly installed in the schools. Mr. George Wittich was designated during the following year as "general supervisor of calisthenic instruction," a position he still holds.

II. CINCINNATI, OHIO.

In Cincinnati, too, the gymnastic ardor began early. Supt. A. J. Rickoff stated in 1857 that "the enterprise and liberality of individual trustees had resulted in the placing of a few parallel bars, horizontal ladders, and circular swings upon the play grounds of four of the schoolhouses."

He proposed that "provision be made at once for instructing all the teachers now employed in the schools in such a system of gymnastics as shall be adapted to the several grades of the schools from the sixth to the first. That the system proceed from the simplest movement to the most complex and difficult exercises. We have now all the appliances necessary. Free gymnastics—that is, gymnastics without apparatus—will, in the various forms practiced, afford a variety for cultivating strength and grace altogether sufficient, if we will only consent to devote the necessary time to them. * * * Gymnastics and calisthenics, in all schools of the sixth grade, ought to occupy not less than half an hour in the morning and afternoon, each five minutes between each recitation, making together an hour per day. * * * The pupils of the fifth grade ought to have scarcely less. The third and fourth grades should each spend not less than fifteen minutes in exercise morning and afternoon. In the intermediate schools, five minutes should be devoted to rapid, vigorous exercise, at the ringing of each bell for change of classes." In these recommendations Mr. Rickoff followed in the footsteps of Dr. Ryerson, the free gymnastics introduced by the latter having attracted Mr. Rickoff's notice during a visit to the normal school at Toronto.

In the next year the board of education ordered frequent recesses in the lower grades "for the better guarding of the health of the pupils," and in 1859 calisthenic exercise for five minutes at the end of each recitation was made obligatory for the pupils of grade D, a requirement that was subsequently extended to the three lowest grades.

In 1861 gymnastics was introduced as a regular exercise under the direction of instructors specially employed for that purpose. The immediate cause of this move appears to have been the report of the special committee of the Boston school committee which had been appointed to consider the recommendations of Supt. Philbrick.[1] This report was directly in the line of the previous experience of the Cincinnati officials, and its recommendations were at once adopted, with minor alterations, the most important of which was that the time given

[1] See page 529.

to gymnastics was made fifteen minutes daily, or half as much as the Boston plan contemplated. It was stated by the president of the board of education in 1862, Mr. Rufus King, that—

> For years we have attested our sense of the necessity of making the physical as well as intellectual and moral training of the youth of both sexes a part of the regular course of school exercises. * * * For some time active encouragement was given to the use of every description of gymnastic apparatus.
>
> It was soon found that the temptations to excess resulted in frequent injuries. We have, therefore, resorted to a simpler method, taught by an accomplished and careful teacher in all our schools, which dispenses almost entirely with apparatus, and by gentler and more natural exercises of the body and limbs, and with but trifling cost, give development and symmetry to the whole frame. For boys it includes some of the elementary exercises of the soldier, and thus proves not only very attractive, but tends in no small degree to infuse them with correct ideas of order and discipline.

Mr. Louis Graeser was the teacher employed, and his connection with the Cincinnati schools in the capacity of instructor of gymnastics continued until 1873. For a great part of that time he was provided with a female assistant, who supervised the exercises of the primary schools. His salary was $1,000 per annum at the beginning of his employment, but was gradually raised to $1,800.

The rules promulgated by the board of education during this period required each teacher to give a lesson in gymnastics of not less than five nor more than ten minutes during each session. The regular teacher was to be present and assist the special teacher in his instruction. Rings and dumb-bells were to be used in the intermediate schools and the highest grade of the district schools. A pupil might be excused from the gymnastic exercises only upon presentation of a physician's certificate that the pupil was suffering from disease or some physical defect. The first of these rules was passed in 1863 and others were added from time to time. They continued in force until 1881, though there had been no special instructor since Mr. Graeser.

How gymnastics gradually dropped out of the schools may be appreciated by noting the changes in the committees of the board which had control of physical training. From 1861 to 1865 there was a standing "committee on gymnastics," consisting of 5 members; in 1865 this number was reduced to 3; in 1878 the "committee on gymnastics" was abolished, and instead there was substituted the "committee on hygiene" of 5 members, to have "supervision of ventilation, light, gymnastics, and everything which pertains to the health of the pupils;" in 1881 the committee on hygiene disappeared, and its place was taken by the "committee on boundaries, statistics, and hygiene" of 3 members, whose duties were indicated by the name. Under the head of hygiene they had "supervision of ventilation, light, and everything which appertains to the health of the pupils." Gymnastics had gone into history.

The effects of the recent discussions throughout the country have been felt in Cincinnati as well as elsewhere, and from the last report of the

superintendent (i. e., for 1890–'91, published in 1892) we learn that "instructions have been given, and oft repeated, to teachers to be constant and faithful in the matter of free gymnastics or calisthenics in the schoolrooms. * * * Exercises of this nature are given twice daily, and in some cases oftener, with as free a circulation of air as possible." Plans have been made for suitable buildings for gymnasiums upon the grounds of the high schools.[1]

III. BOSTON, MASS.

Boston has always been among the first in the discussion if not the adoption of new ideas in education, and one naturally turns to that city in search for light upon almost any subject within the domain of educational thought. This is especially true in the matter of physical training, as the foregoing pages have already clearly shown. In the present instance we are further aided by the habit of the Boston school authorities of reducing to print nearly every important paper connected with the conduct of the schools. The several reports of special committees on physicial training, and especially the first report of Dr. E. M. Hartwell as director of physical training, published in 1891, have made the course of physical training in Boston as easy to follow as the king's highway.

After the passage of the rule by the Boston school committee in 1853,[2] which enjoined "that every scholar should have daily some kind of physical or gymnastic exercise," there was a long silence which will bear no construction favorable to a supposition of effective practice of gymnastics. The next significant utterance upon the subject appears in the sixth quarterly report of Supt. John D. Philbrick, dated September 7, 1858. Mr. Philbrick had just returned from a visit to the schools of New York City, and one of their features that struck him most favorably was the management of the recesses there. "The pupils while in the yard or playground," he said, "were always under the inspection of one or more teachers, detailed for that service. Some of the buildings are furnished with excellent gymnastic apparatus, and in some schools calisthenic exercises were practiced to good advantage."[3]

[1] See foot note on page 522 for new State law requiring physical culture in all large cities in Ohio.

[2] See page 514.

[3] The credit for this belongs largely to Mr. S. W. Seton, then one of the assistant superintendents of the New York schools, whose activity had brought about the practice of calisthenics in a great many of the schools. In 1857 he urged the adoption of a regular system of exercises and the appointment of a professor to instruct the teachers in it. In his report for that year he gave several pages to the subject, and presented a number of exercises for the schoolroom, which he recommended as tending to "expand the chest, lengthen the collar bone, and strengthen the spinal column and the muscles of the back, and serve to give an erect, graceful, and healthful form to the body." So great was his interest in the matter that he brought and distributed among the principals a number of copies of Miss Beecher's book on Physiology and Calisthenics, and even arranged with Miss Beecher to meet the principals and give them practical lessons in her movements.

Five features of the New York schools were considered by him to be worthy of adoption in Boston, and this was one of them. One of Mr. Philbrick's chief characteristics was his readiness in grasping a good idea wherever he saw it and in applying it in his own work. His very next quarterly report contained the following:

> But it [the public school system] is susceptible of much higher excellence than has yet been reached. The first step was necessarily intellectual education; physical will come next, and then moral. This is the historical order of development in systems and nations. We have educated the intellect, but now it is seen that body with mind is necessary to produce high ability. Then it will appear that ability will not produce happiness and enable the possessor to fulfill the ends of his being, unless governed by moral sentiments; and the development of these requires moral education. * * * While the intellect is in training the conscience and the body must not be neglected. * * * I would have the teacher aim to make every exercise contribute as far as practicable to moral and physical improvement. Still, the school is not a church, nor a gymnasium; if it were, it would not be a school. * * * Liberal play grounds ought to be provided for every school, at whatever cost, and they should be used.

Mr. Philbrick did not follow up the matter in his next reports, but being impressed with Dio Lewis's exhibition before the American institute of instruction,[1] he reverted to the idea of adopting light gymnastics for the Boston schools. In his next official report, made in September, 1860, he suggested the "introduction into all grades of our schools of a thorough system of physical training, as a part of school culture," and added that for this purpose, "it might be necessary to employ for a time or, perhaps, permanently one accomplished teacher in this department of education," his idea being that the successful introduction of a system of physical exercises would require the services of a special instructor to aid and instruct the teachers, and to see that the exercises were judicious and proper in themselves and well performed.

These suggestions were referred to a special committee, who reported in December, recommending "the appointment of a teacher of gymnastics, and of a committee on physical training and the passage of an order that 'the teachers in all the public schools be required to devote a part of each school session to physical exercises, not exceeding half an hour and not less than a quarter of an hour.'"

The recommendations were discussed in the full board, but without result, the objections to the recommendations being that they contemplated the creation of a new committee and the employment of an additional teacher; and it was feared that the proposed plan would add to the pupils' tasks instead of relieving them. It was also urged that the desired end could be gained by a general observance of the rule of 1853, still in force, which provided that "every scholar should have daily in the forenoon and afternoon, some kind of physical or gymnastic exercise."

Notwithstanding the failure of the school committee to adopt the plan suggested, Dio Lewis and his influence were abroad in the land, and

[1] See page 516.

in several of the schools there was energetic and fairly efficient practice of gymnastics. In the high school for boys, "one of the ushers, by the help of a simple ladder, Indian clubs, and dumb bells, had made considerable progress in giving flexibility to the limbs and development to the muscles of the members of his class."

In the Eliot School Mr. S. W. Mason, then its master, had already begun to practice the exercises which later attracted wide attention and led to the publication of his "Manual of Gymnastic Exercises." This little book ran through several editions, and has been of great value, especially in the Boston schools. In the Dwight, Mayhew, and Hancock schools there was also a reasonably full compliance with the rules then in force.

Mr. Philbrick and his supporters in the school committee did not relax their efforts, and though they did not accomplish the complete introduction of gymnastics they did succeed in constantly extending the number of schools in which physical exercises were regularly practiced. In 1862, no less than "70 teachers of the primary schools had received special training and instruction in physical exercises with a view to conduct that branch in the schools under their own charge." During the same year the superintendent also states that "marked progress has been made in physical training and in a few it has been carried to a high degree of excellence." "Gratifying progress" is reported the next year also.

But in the meantime the military spirit began to rise. The matter of "military gymnastics and drill" having been previously discussed in the public print, was first brought to the notice of the board in "a petition signed by Edward Everett, C. G. Loring, J. M. Beebe, and others, citizens of Boston, interested in the preservation of public order and the protection of property," praying that instruction might be forthwith introduced into the public schools for boys. At the same time a supplementary petition was presented, numerously signed, which urged the advantages of military drill as the best means of physical training as well as the proper preparation for the Army. These petitions were presented to the school board November 3, 1863, and were immediately referred to a special committee. The committee reported December 8, unanimously favoring the plan "both as a means of physical training, and ultimately of national defense." They recommended that it be tried as an experiment in the two high schools and two grammar schools, and that a suitable instructor in military gymnastics and drill be employed. This report was adopted at a subsequent meeting and the necessary orders were made to put its provisions into execution. At the meeting of the board in March, 1864, the committee on military drill reported the success of the experiment, and the masters of the schools subsequently indicated their approval of the scheme and their satisfaction with the results.

The committee did not propose to confine the new subject to tactical

drill only, but, as their original report clearly expressed, they thought the instruction should begin, with the younger classes, in gymnastics, which they considered well calculated to adapt the pupils for military movements as well as of great utility in promoting their health and their capacity for study. No arrangements were made at once for the gymnastic feature contemplated by the report, but the plans of the committee on military gymnastics and drill were crystallized in a series of orders which were passed by the school board on December 27, 1864. These provided for the constitution of a standing committee of five, on "gymnastics and military drill," to have general supervision of that branch; for the employment of an instructor in vocal and physical gymnastics, at a salary not exceeding $1,500 per annum; for the assignment of twenty minutes in grammar schools and thirty minutes in primary schools to vocal and physical exercises daily; and for the instruction of all male pupils of sufficient size in grammar schools in military drill under the supervision of a suitable instructor. The time to be given to military drill was not to exceed two hours weekly, not including voluntary drills out of school hours.

The standing committee was duly appointed as above contemplated, and they in turn employed as instructor of vocal and physical gymnastics Mr. Lewis B. Monroe, who had already gained a wide reputation as an accomplished gymnast and professor of elocution; and as instructor in military drill they secured Capt. Hobart Moore, who was fitted for the position because of actual service in the Army, and because of his experience as instructor in the infantry department of the Massachusetts Rifle Club.

It will be observed that these orders and the subsequent action of the committee indicate a departure from the original plan of making gymnastics contribute to a military training. The special committee was "on military gymnastics and drill;" the standing committee was "on gymnastics and military drill," and instead of having gymnastics preparatory and subordinate to the drill, the drill was at that time considered to be merely a means of physical training—a phase of gymnastics. As such its beginning was marked with many "difficulties and inconveniences." The masters of some of the schools doubted its utility and practicability, and strenuous opposition was developed in the school committee itself. It is significant that during the entire discussion concerning military drill and its introduction in the schools, Superintendent Philbrick did not utter a word in its favor in any of his reports. The whole matter was referred to the committee on gymnastics and military drill, and during the latter part of 1865 the drill was discontinued in all the grammar schools. In the high schools military drill continues to this day, under the same instructor whose service has been continuous since its inception. Since 1865 no serious effort has been made to abolish it, and the Boston school regiment is now one of the most popular features of the school system. It

is sustained as a means of physical training because (1) of its freedom from accident or injury to the boys; (2) the boys enjoy it; (3) it is a good mental and moral discipline—the boy learns to obey, and that is the first step toward learning to command; (4) it helps to form character, conducing to patriotism, chivalry, love and defense of country and home; (5) it is a powerful aid in maintaining a high order of discipline in the schools, and an incentive to study, as the offices are the rewards of good conduct and scholarship; (6) with limited means for physical training more can be done in the time allotted to the drill, two hours a week, than by any other method yet discussed, for the same number of boys.[1]

Mr. Monroe's work began under much more favorable auspices than Capt. Moore's. Enthusiastically supported by Supt. Philbrick and the school committee, he had apparently everything in his favor. At first he gave but a portion of his time to the schools, and received therefor $1,500 per annum, but later all his time was taken at a salary of $3,000 a year. In 1867, an assistant was employed for him in the person of Mr. A. E. Sloane, at $1,800, which was increased to $2,500 the next year.

In response to repeated requests for some written embodiment of his method, Mr. Monroe published, in 1869, a Manual of Physical and Vocal Training, in which he set forth the method "practised by the writer during the last ten years, and taught in the Boston public schools under his supervision for three years past." This book, then, should be the authoritative exposé of the exercises practiced in Boston during the Monroe period. Its first chapter consists of a few pages lauding physical exercise and gymnastics, and leads one to expect upon the subsequent pages a manual of light gymnastics worthy of the name; but after a few very mild exercises, not more than a dozen, all with the evident aim of strengthening the lungs and throat, the entire book is a text-book of elocution, pure and simple. And this same difference between expectation and realization appears to have occurred in the Boston schools.

The gymnastics which the special committee of November, 1863, wanted was "that preliminary physical training which is practiced in the best European schools and gymnasiums for months and years before the tactics and manual of the soldier with his musket is begun;" the standing committee under the order of December 27, 1864, clearly intended that "vocal gymnastics" should be a subordinate part of the general subject, for they explained its incorporation on the ground that "proper exercises of the vocal organs are necessary in combination with general muscular exercises," and that "since they ought to be included in any proper system, it is rather to call attention to them than to enlarge the field of instruction that they are mentioned."

[1] Dr. J. G. Blake, of the Boston School Committee, at the Physical Training Conference, in 1889.

But of the twenty chapters in Mr. Lewis's Manual, not more than five can be said to be given to gymnastics in any proper sense, and that same proportion probably represents the division of time between gymnastics and elocution in Mr. Monroe's work in the schools. The natural result followed. Mr. Philbrick said in his eighteenth semi-annual report in 1869:

> That our schools have been benefited by the instruction in this department no longer admits of doubt in the minds of intelligent and unprejudiced persons. It is scarcely possible to overrate the value of the improvement in reading which has been produced. * * * The vocal training which has been imparted, besides improving the reading, has done much to contribute to the instruction in vocal music in all the grades of schools. The physical training has not proved * * * a complete antidote for the mischievous effects of high pressure. * * * I rejoice in what has been achieved, but I am by no means satisfied with present attainments in this direction. I frankly confess that I regard all that has been accomplished only as a good beginning. We must not relax our efforts. We must be satisfied with nothing short of a complete revolution in respect to physical education.

At the end of the next school year, that is, in July, 1870, Mr. Sloane's connection with the schools was severed at the instance of the standing committee on physical and vocal training, and at the same time the terms of Mr. Monroe's employment were so changed as to require his services for only three months in each year, and even that ceased in 1871.

For short periods during each of the following four years an instructor was temporarily employed for the work that Mr. Monroe had laid down, but their work was even more on the elocutionary plan, and nothing of permanent value was done in gymnastics. The department of physical and vocal training was finally abolished in 1876.

This experience of the city of Boston furnishes a conspicuous example of the injury to a cause which may be done by an unwise selection of a teacher. With the proper instruction there is no reason why the gymnastics of the grammar schools should not have been as continuous since its introduction and as popular as the military drill has been in the high schools. It is true that there was less popular interest throughout the country in gymnastics in 1871 and 1876 than in 1860 and 1864, but the same is true in an even greater degree of military instruction; the latter was pursued as enthusiastically in Boston in the seventies as in the sixties, and with much greater unanimity of support on the part of the school committee. But what had been called "physcal training" had been tried and found wanting, and the unsuccessful experiment prevented any other attempt in the same direction. In further proof of this, a few isolated experiments, and the frequent references to the desirability of gymnastics, which may be found in the reports of the superintendent, the several committees of the board, and even of the school board itself, clearly show that the disposition of the school authorities toward gymnastics was still such that effective teaching of the subject would not have been treated as Monroe's teach-

ing had been. In fact, Mr. Philbrick's most powerful utterances in favor of physical training are to be found in reports made in 1872, 1874, and 1876. After Mr. Monroe's separation from the schools there was a gradual decline in the practice of even those exercises which he had prescribed, and in the course of time even the regulations requiring them became a dead letter.

During the succeeding years there were occasional isolated and short-lived efforts to reestablish gymnastics in certain schools, as, for instance, the employment of a Swedish lady to teach the Ling gymnastics in the Girls' High School in 1874; and the establishment of a gymnasium according to Dr. Sargent's ideas in the new Latin and English High School building in 1881; but there was no permanent result in either case, and no general movement to restore gymnastics as a regular school subject until several years later, when Mrs. Mary Hemenway took up the advocacy of the Swedish system.

More or less has been known of the Swedish gymnastics in this country from a comparatively early date. Without a special search for such references, laudatory notices of Ling's work and methods have been discovered in educational publications as far back as 1830, and doubtless the medical journals commented upon them much earlier still. Makers of calisthenic "systems" and gymnastic manuals, such as Miss Beecher, Mr. Mason, and Dio Lewis, have drawn largely upon Swedish sources, while Swedish practitioners of the "movement cure" have always had "patients" who took the movements to prevent disease as well as those who desired a cure for disease already contracted. Nothing however, had ever been done on a large scale.

The Swedish system of pedagogical gymnastics in public schools is a plant of recent growth in America, and it was in Boston that the seed was first planted. Mrs. Hemenway may be supposed to have been already interested in physical training, for the famous Hemenway gymnasium was the gift of her son, Mr. Augustus Hemenway, to Harvard University, but her attention, it is said, was first attracted to the Swedish gymnastics by a pamphlet on Medical Gymnastics, by Mr. Nils Posse, a graduate of the Royal Central Gymnastic Institute at Stockholm, who had taken up his residence in Boston. Becoming interested in the new system, she organized in October, 1888, a class of 25 ladies, teachers in the Boston schools, under the direction of Mr. Posse, to test the adaptability of Swedish gymnastics in the public schools. Pleased with the success of her experiment, in May, 1889, she wrote to the school board, stating what had been done and offering to have "trained, without expense to the city, for one year, beginning September 1, 1889, 100 public-school teachers, who were to be permitted to use the system in their school work, thus enabling the board and educators in general to decide upon the merits by actual results produced upon the school children in the schoolroom." This offer was gladly accepted and the class was duly formed. Later she offered to provide for one year a

teacher of Ling gymnastics for the normal school, and still later to provide free instruction "for those masters and submasters who desired to make a thorough study of the Ling system for the benefit of the Boston public schools." These offers were also accepted by the board. The outgrowth of all this was the Boston Normal School of Gymnastics mentioned on a previous page.

In the meantime, and before any of Mrs. Hemenway's offers were made, it had been proposed in the school board to establish a committee on physical exercises. This was not then deemed necessary, but the committee on hygiene already existing was specifically given full powers in the matter of physical exercise, and its members were increased from 3 to 5. In response to a request from this committee the board of supervisors, in conjunction with the instructor in hygiene, made a report in October, 1889, reviewing the several systems of gymnastics and giving their unqualified preference to the Swedish system and strongly recommending its adoption. The committee on hygiene, in turn, urged the adoption of these recommendations by the school board, but no final action was taken, and the entire matter was referred to the school board for 1890.

The physical training conference, also the result of Mrs. Hemenway's liberality, added greatly to the impetus that gymnastics had received, and in January, 1890, a standing committee on physical training was appointed, with Dr. W. A. Mowry as its chairman. This committee made an extended tour through the West and Northwest for the purpose of examining the different systems of physical and of manual training in use in the various cities of the country, and on June 10 they reported the result of their investigations. Like the board of supervisors, they strongly favored the Ling system, and the result of their labors was the passage of the following orders, June 24, 1890:

(*1*) *Ordered*, That the Ling or Swedish system of educational gymnastics be introduced into all the public schools of this city.

(*2*) *Ordered*, That a director of physical training and one or more assistants be employed, the total salaries for the same not to exceed the sum of $5,000 per annum, and that the committee on physical training be authorized to nominate suitable persons for these positions, to commence at the beginning of the next school term.

Dr. E. M. Hartwell, one of the most widely known of the workers in the field of physical training, was chosen for the position of director under these orders, and entered upon his work January 1, 1891. In the following March Mr. Hartvig Nissen was made assistant instructor of physical training, and in September Miss Laura S. Plummer, a graduate of the Boston Normal School of Gymnastics, was assigned to duty as teacher of gymnastics in the normal school. Upon these three persons rests the responsibility for the future of school gymnastics in Boston, and, to a great extent, of Swedish gymnastics in this country.

THE PRINCIPAL SYSTEMS OF GYMNASTICS.

I. The Swedish System.

It would be interesting to trace the progress of gymnastics in other European countries, particularly in Switzerland, France, and England, as well as Sweden, but the time at the disposal of the writer has not been sufficient to complete the work in time for publication in the document for which it is intended.

The prominent place, however, which the Swedish gymnastics has attained in this country in the last few years[1] demands that some mention be made of the origin as well as the character of that system.

As is well known, its originator was Peter Henrik Ling, who was born in the province of Småland, Sweden, in 1776. His father, a curate, was not heavily burdened with the world's goods, and young Ling frequently felt the pangs of poverty. Nevertheless he managed to pursue his studies at Upsala, Copenhagen, and presumably at Berlin and Stockholm, where he resided during the early period of his life. While in Copenhagen he had an opportunity to observe the gymnastics of Nachtegall, whose work was mentioned upon a previous page, and it may be supposed that his attention was also directed more or less strongly to the various efforts making in Germany toward the revival of gymnastics during his residence there. It does not appear, however, that he was moved thereby to attempt anything himself in the same line, but after his return to Stockholm he studied the art of fencing under two French refugees, who had founded there a fencing school.

Ling had been a sufferer from gout in his sword arm, and observed that his practice at fencing was beneficial. It is by no means improbable that he was prompted to make the experiment by a study of Greek medical gymnastics, for in his later writings he makes frequent references to ancient authorities, and the idea toward which he constantly strove was to reproduce in the northern countries that favorable attitude toward gymnastics which existed in the lands and times of Plato, Hippocrates, and Galen.

Whether this be true is a matter of conjecture, but it is certain that the fencing was the practical beginning of the system of gymnastics which he proceeded to elaborate.

He considered anatomy and physiology as essentially necessary as the basis of rational gymnastics, and therefore began in 1805 an assiduous study of those sciences. He conducted his researches with exceeding care, and refused to adopt any movement until he was convinced that its physiological effect was beneficial. His application of gymnastics as a remedy for disease was the principal cause of the public interest that was manifested in his work; but it is as erroneous to ascribe to Ling the invention of medical gymnastics as it would be to credit

[1] See pp. 521 and 534.

Gutsmuths with being the originator of gymnastics as a whole. The basic ideas of both men were derived from ancient sources; these were modified, extended, and improved by the enlightened judgment of modern students. Credit is due them in no small degree for so improving ancient systems as to make them meet the requirements of modern science, but their work was one of popular agitation and of improvement of detail rather than of original invention.

Ling early sought the aid of his Government in the establishment of an institution for the practical application of his idea upon a more extended scale than was otherwise possible. This plan was not favored at first, and in 1812 the minister of public instruction, in replying to a letter from Ling, said: "There are enough of jugglers and rope-dancers without exacting any further charge from the public treasury."

But Ling was a man of indomitable energy, and, so far from being discouraged by this rebuff, set to work to prove practically the value of his ideas. He began the practice of his curative movements upon a more extended scale in 1813, and so plainly apparent were the merits of his system and so wide was the public recognition that in 1814 he succeeded in establishing the Royal Gymnastic Central Institute at Stockholm under the auspices of the Government. This has ever since been maintained as a normal school, which all must attend who desire to be teachers of gymnasts in Sweden. Its work is in three departments, the first for instructors of military gymnastics in the army and navy, the second for teachers in the schools, and the third for the study of medical gymnastics.

In the schools of Sweden the practice of gymnastics is now practically universal and has been for a number of years. This is true not only of the city schools, but of the higher schools, universities, eleemosynary institutions, and country schools as well.

Ling constantly labored to improve his system, and after his death, in 1839, his successors in the Central Institute have continued his efforts for improvement. The essential principles, however, have remained unchanged, and a recital of some of the views and maxims of Ling will go far toward describing the Swedish system as it exists to-day. He divided the entire subject into four parts, namely, (1) pedagogical gymnastics, (2) military gymnastics, (3) medical gymnastics, and (4) esthetic gymnastics.

The first branch named above is defined to be "that by means of which man teaches himself to bring his body under his own will." The three other branches are sufficiently explained by their names. The first only comes within the scope of this paper and the following pages will be confined to that.

Ling, from the first, recognized the importance of placing the practice as well as the theory of gymnastics upon a strictly scientific basis and insisted that the teacher be well equipped for his work, and that nothing be left to chance or the voluntary effort of the child. It

is natural, he argued, for one to desire to do what is easiest for him or what he does best, but such a mode of procedure in gymnastics inevitably results in one-sided development.

Some of his rules or maxims, taken principally from his work entitled Gymnastikens Allmänna Grunder, may be shown as an excellent presentation of Ling's idea of the aim and effects of gymnastic movements.

(1) The aim of gymnastics is the harmonious development of the human body by means of well-defined exercises.

(2) Well-defined exercises are those which are carefully selected with a view to the particular body to be developed by the same.

(3) A body is well-developed when all its parts are perfectly in harmony with each other and when they are developed as much as possible, considering the limitations of the individual's constitution.

(4) The human body can not be developed beyond the limitations set by the constitution of the individual.

(5) The lack of exercise may suppress, but can not destroy the inborn faculties.

(6) These faculties may be still further suppressed by improper exercises, which are more injurious than beneficial for the harmonious development of the body.

(7) Stiffness or immobility in a certain part of the body is usually caused by too much strength of that part, and is always accompanied by a corresponding weakness in other parts of the body.

(8) By means of evenly distributed exercise the excess of strength of one part of the body may be lessened, and the strength of the weaker parts increased.

(9) The outward appearance of certain parts of the body is not a true measure of physical strength or weakness; that is determined by the relative proportion of all parts of the body.

(10) Health and strength in the highest sense are univocal; both depend on the normal or harmonious activity of all parts of the body.

(11) All true health and strength consist of the perfect symmetry of all parts of the body, and as the faculty of moving properly, swiftly, and perseveringly is always in equal relation to the physical strength of the body, each person requires an all-sided training.

(12) To obtain and maintain the highest strength, one must become accustomed to those positions that interfere the least with one's breathing and movements; the power of moving depends upon the power of breathing.

(13) Since it is the purpose of gymnastics to produce harmony among the various parts of the body, it is not sufficient to practice movements of the arms and legs alone; the power of using them well depends upon the strength of the other parts of the body as well as upon their own.

(14) If one commences the gymnastic exercises from their simplest forms one can, step by step, advance to the most difficult exercises without the least danger of injurious effect; the pupil then knows his strength, what he is able to do, and what he is doing.

To carry out the aims thus indicated Ling employed (*a*) exercises without apparatus; (*b*) balancing, walking, jumping, swimming, etc.; (*c*) exercises with apparatus; (*d*) gymnastic games. Of these he gave the preference to the exercises without machinery or apparatus, but with mutual assistance of pupils in some exercises. The following reasons were assigned for his preference:

(1) The forms of these exercises are so simple that everybody can understand them and imitate them at sight.

(2) These exercises can be performed in any place whatever, out-of-doors or in-doors, on the open field or road, and in a schoolroom or gymnasium.

(3) A larger number of pupils can perform these exercises together, thus saving a great deal of time.

(4) No apparatus is required, thus saving a great deal of expense.

(5) Through these exercises the pupils become accustomed to precision and strict attention, as each motion must be executed by several persons at the same time.

(6) The help which one division must lend to the other awakens the sense of aiding others, and to be polite and attentive.

(7) Those who assist also have an opportunity to exercise, so that both the exercising division and the assisting division practice together.

(8) A more refined understanding of the exercises is obtained through living supporters than through lifeless machinery.

A good idea of the Swedish system of gymnastics may be gained from the writings of two gentlemen, graduates of the Gymnastic Central Institute, at Stockholm, who have resided in this country for several years. One of these, Mr. Nils Posse, now of Boston, Mass., in a little pamphlet entitled How Gymnastics are Taught in Sweden, says:

The exercises are chosen for their physiological effects, so that only such are used as are needed for a desired result; all of doubtful or injurious effects are excluded. The development of the respiratory organs being of prime consideration, no movement is allowed to interfere with free respiration, and the utmost care is taken that the exercises should produce a proper carriage of head and thorax. As the movements are practiced for their effects on the body—not on an audience—we do not drill, drill, drill the pupils on a certain movement so as to teach them the "trick" of it, but take each one's ability into consideration, even though we consider that the form of the movement is of utmost importance.

All the exercises are executed to words of command, as that is the only method by which the pupil is enabled to concentrate his whole attention upon one thing at a time, all other methods, such as memorizing, imitation, the use of music, etc., causing him to think of one thing while doing another.

The progression is very strict, so that the exercises not only grow from lesson to lesson, and are made to conform to the differences of age, sex, strength, nationality, etc., but also so that there is progression in every day's lesson. Practical investigation having proved that the exercises could be made stronger, their effects more complete, and progression more rapid, if a certain order were observed in every lesson, this order was made the basis for the classification of the exercises. Thus our movements are grouped as (1) introductions; (2) arch flexions; (3) heaving movements; (4) balance movements; (5) shoulder-blade movements; (6) abdominal exercises; (7) lateral trunk movements; (8) slow leg movements; (9) jumping and vaulting, and (10) respiratory exercises, each lesson containing one or more from each group in the order enumerated.

The system is rational, for there is a scientific reason for everything that is adopted and used; and it is practical, for it is independent of apparatus. It can be applied anywhere and everywhere. The old-fashioned idea that a bath is a necessity after every lesson in gymnastics has been discarded, thanks to a proper use of respiratory exercises; for by providing a greater elimination of water through the lungs, the skin evaporation does not increase to any marked degree; and no excess of perspiration occurring, there can be no need of a bath to prevent taking cold.

The system is one of exercises and not of apparatus; nevertheless, apparatus is desirable, and hence a gymnasium is a much needed addition to every school.

Mr. Claes J. Enebuske, the other gentlemen mentioned above, is connected with the Boston Normal School of Gymnastics, the foremost institution in this country for training teachers of the Swedish system.

In regard to "gymnastic progression," he said before the American Association for the Advancement of Physical Education in 1890:

For a clear understanding of gymnastic progression we must bear in mind the general composition of the Swedish gymnastic drill, or what is termed a "gymnastic day's order" (*gymnastisk dägöfning*). "Gymnastic day's order" is a technical phrase that indicates something more than an ordinary space of time occupied in gymnastic exercises. It is the practical, distinctively formulated expression of a clearly comprehended idea, a practical application of a distinct hygienic and educational line of thought. The "gymnastic day's order" must be adequate to the demands of each day's exercise within given limitations of space and time. It is composed of a certain number of movements succeeding each other in a well-defined order, calculated to produce certain effects in a certain succession, all these movements together being designed to bring about a distinct hygienic and educational result, which is the exponent of what we term gymnastic "unity" and "totality." Hygienic and educational interests are interlaced with each other in the "gymnastic day's order," as may be seen by an analysis of its constituents.

As a further explanation of the "day's orders" we may again quote Mr. Posse. At the conference on physical training in Boston in 1889, he thus explained the meaning of the terms used by him in the article previously quoted:

(1) Introductions. By these we understand some simple exercises used at the beginning of a lesson to gain a little general muscular control to correct the base and general position, etc.

(2) Archflexions, which consist of backward flexions of the trunk. They have the effect of straightening the dorsal region of the spine, of vaulting the chest forward by drawing the lower ribs apart, thus increasing the chest capacity, and of cultivating the extensibility of the upper region of the abdomen.

(3) Heaving movements, which consist of various exercises in a hanging position, and others that have the effect of expanding the upper part of the chest by lifting it upward; incidentally they also develop the arms. * * *

(4) Balance movements. The two preceding exercises are strong, hence they increase the heart beat noticeably. Now, a rest ought to ensue—the word rest not to be understood as meaning inactivity, but changed activity—and the time is conveniently filled by the gentle movements which we call balance movements. These require but little effort from any one of the many muscles brought into play; the heart beat is not increased by them, but it becomes lessened by the mechanical propulsion of the blood into the legs (the more equal distribution of the blood pressure). At the end of a balance movement the pupil is again ready for more specific work.

(5) Shoulder-blade movements consist of arm movements, which have the effect of placing the shoulder blades in correct position. * * *

(6) Abdominal exercises bring into forcible play the abdominal walls. Their effects are to incite peristalsis, to promote digestion, and to shorten the stay of the food in the intestinal canal.

(7) Lateral trunk movements consist of rotations and sideway flexions, etc., of the trunk. They have a far-reaching effect on the general circulation by accelerating the flow in the inferior vena cava, leading the blood off from the abdomen and legs, etc. Incidentally they also expand the chest laterally and strengthen the muscles around the waist.

(8) Slow leg movements. By this time the heart beat is again much increased. The slow leg movements furnish a means of lessening it, for by these the blood becomes mechanically propelled forward through the forcible, passive extension of some muscles, while others are in gentle active contraction. These movements may be conveniently omitted when the previous exercises are not strong enough to make them a necessity.

(9) Jumping and vaulting. These exercises have the effect of cultivating the general elasticity of the body more than does any other form of movement. * * *

(10) Respiratory exercises. These consist of deep inhalation and exhalation, accompanied by some arm movement that will expand and contract the chest in even rhythm with the respiratory act. The movements, which can be conveniently combined with some movements of the legs or trunk, have the effect of restoring free respiration (the jumping putting the pupil out of breath) and to lessen the heart beat. Respiratory exercises are brought in not only at the end of every lesson, but at any time when their effects are needed, and often also at the beginning of a lesson containing strong exercises that require an increased amount of oxygen.

To the above it may be well to add the following from the pen of Dr. E. M. Hartwell, supervisor of physical training in Boston, Mass., and an ardent advocate of the Swedish system—for the elementary schools at least. The remarks quoted formed a part of a lecture delivered in Boston in 1891, and may be found in the Boston Medical and Surgical Journal of December 24, 1891, and in a reprint from the same entitled "The principal systems of physical training compared:"

His natural impulses and the exigencies of his position as an official teacher of teachers and of military cadets combined in leading Ling to adopt simple, direct, and orderly measures. He made use of both free and class exercises before Spiess introduced them into German gymnastics. Apparatus gymnastics, though regularly employed by the Swedes, are given less prominence than is accorded them by the Germans. Certain gymnastic machines, which are favorites with the Swedes, are not used in Germany and *vice versa*. Gymnastic games and fencing are employed both by Swedish and German teachers of school gymnastics. Much less care and attention have been given in Germany than in Sweden to physiological considerations in the selection and arrangement of gymnastic movements; therefore the Swedes reject many forms of exercise as useless or injurious which pass muster in Germany. For example, the Swedes discard exercises that tend to constrict the chest, those that require the breath to be held, and those producing continued pressure on the larger vascular or nerve trunks. One of their most stringent rules is that all movements should help and not hinder full, free, and regular breathing. Swedish gymnastics surpass all other forms of pedagogical gymnastics in the care taken in coordinating the exercises belonging to a "single day's orders" which have been practiced, and the "day's orders" that shall follow. By means of the day's order or table and the principle of gymnastic progression, which they alone have worked out and adopted, the Swedes are enabled to order and vary their school gymnastics from day to day, from month to month, and from year to year in a graded series. By this means continuity is secured in the instruction, and the pupils, of whatever age or condition of health, are advanced from simple, easy, and absolutely safe exercises to those that are complicated, difficult, or comparatively dangerous. Class leaders and memorized drills have no place in instruction of this kind. All exercises, whether by a full class or by a squad, are executed at the word of command. Continuous, progressive, and comprehensive gymnastic training can not be secured by mere imitation of a leader, or by executing memorized exercises over and over again. Change and variety are necessary and must be had. They are best secured in school gymnastics by recognizing the laws of physiology and by following the principles of sound teaching.

The foregoing extracts set forth those features of the Swedish system which seem to be its principal characteristics, but the presentation is of course not a complete exposé of the system. For a thorough understanding of it one must examine not only the theory more care-

fully but the practical details as well. It would be impossible to present these fully here, and the reader is therefore referred to numerous pamphlets and manuals which have been published in late years containing discussions and descriptions of all the phases of the Swedish system. Among those which contain discussions of the theory may be mentioned the published proceedings of the Physical Training Conference in Boston in 1889, of the several meetings of the American Association for the Advancement of Physical Education, the several pamphlets of Dr. E. M. Hartwell, Messrs. Claes J. Enebuske, Nils Posse, Hartvig Nissen, and others. Among the manuals of exercises are Enebuske's Day's Orders (Boston: Silver, Burdett & Co.); Nissens's A B C of Swedish Educational Gymnastics (Philadelphia: F. A. Davis); Posse's Handbook of School Gymnastics (Boston: Lee & Shepard). The Swedish apparatus are but little known in this country, and the only book in English, probably, which describes the exercises upon them is Posse's Swedish System of Educational Gymnastics (Boston: Lee & Shepard).

II. The German System.

The German gymnastics as it exists in America is not in all respects the same as German gymnastics upon its native heath. Certain features which are in the background in Germany are given a conspicuous place in America to meet the criticisms which the system has met in this country, and certain other features prominent in Germany are relegated to the rear here. The German system occupies a position similar to that of the regular school of medicine. Its adherents are always ready to adopt improvements and modifications coming from any source when such are shown to be desirable and beneficial, and they have been quick to modify their practices to meet the demands of American experience. Graduates of the turners' seminary at Milwaukee frequently speak of their system as the "German-American" or "German modified." But the essential principles of the German system still remain. Nevertheless, it is more desirable to show in this paper the German gymnastics as we know it rather than as it is in Germany, and the following extracts, therefore, are from German-American authorities, or from German writings indorsed by them.

Unlike the Swedish system the German was not "made to order." It was not devised to carry into effect a set of previously conceived physiological ideas. It grew first; the minute examination of the physiological aspects of its details came afterward. Following therefore the historical order of its development the extracts presented herewith were selected to show (1) the essential characteristics of German gymnastics and the difference between it and the Swedish system; (2) the methods of German gymnastics; and (3) its physiological aspects.

COURAGE, STRENGTH, CHEERFULNESS, INDUSTRY, AND MORALITY ITS AIMS.

Every turning institution is a place for exercising the bodily powers, a school of industry in manly activity, an aid to education, a protection to health, and a public benefit. It is constantly and interchangeably a place of teaching and learning. In an unbroken circle follow constantly after each other direction, exemplification, instruction, independent investigation, practice, emulation, and further instruction.

Thus the turners learn their occupation, not from hearsay nor from following after some transient expression. They have lived in and with their work; have investigated it, proved it, demonstrated it, experienced it, and perfected it. It awakens all the dormant powers, and secures a self-confidence and readiness which are never found at a loss. The powers grow only slowly; the strength increases gradually; activity is gained by little and little; a difficult feat is often attempted in vain, until at last attained by harder labor, greater effort, and unwearied industry. Thus the will is brought toward the wrong path of obstinacy to the habit of perseverance, in which is based all success. We carry a divine consciousness in the breast when we realize that we can do whatever we choose if we only will. To see what others have at last found possible arouses the pleasant hope of also accomplishing the same.

In the turning association boldness is at home. When others are exercising in emulation with us, all exertion is easy, all labor is pleasure. Each at the same time strengthens the others by his labor, and confirms his own powers, and encourages and elevates himself. Thus the example of each becomes a model for the rest, and accomplishes more than a thousand lessons. No real deed was ever without result.

* * * Bold, free, joyous, and pious is the realm of the turner. The universal code of moral law is his rule of conduct. To dishonor another would disgrace him. To become a model, an example, is what he should strive after. His chief lessons are these: To seek the utmost symmetry in development and cultivation; to be industrious; to learn thoroughly; to intermeddle with nothing unmanly; to permit himself to be enticed by no seductions of pleasure, dissipation, or amusement such as are unsuitable for the young.—["Father" Jahn in *Die Deutsche Turnkunst.*

ITS BASIS NOT NARROWLY PHYSIOLOGICAL.

There are certainly good features in Swedish gymnastics which have been cheerfully adopted by the Germans. It is, however, very curious to note that a system is condemned "as lacking scientific accuracy" which has stood the test of so many years in a country where the scientific spirit of the medical profession ranks so high as is the case with German physicians. To exercise one muscle, or group of muscles, after the other in tedious succession, is certainly not enough to warrant a claim to scientific accuracy, except for medical or curative purposes, as in the case of abnormal, enfeebled, or diseased persons; and as to "elasticity," it is surely the just claim of the German system of gymnastics that it affords a vast amount of possibilities of adaptation to the greatest variety of conditions. It recognizes the living principle in the normal child, and treats this child not as a bundle of muscles, but as a psychic organism whose emotional qualities must be recognized as valuable elements in successful physical development. In other words, it aims at enlisting the interest of the child, its joyful and active spirit, among the agencies for the promotion of its physical development, and endeavors to avoid falling into the error of systematizing the exercises on purely physiological grounds. The difference, in a nutshell, between the Swedish and German systems of gymnastics is this, that the former has a narrow physiological, the latter a broad, psycho-physiological basis.—[Dr. Maximilian P. E. Groszmann, director of the New York Workingman's School. in the School Journal, December 23, 1893.

THE METHODS OF GERMAN GYMNASTICS.

The German system has been diligently built up during almost a century by men of science, especially physicians, physiologists, and pedagogues of high reputation. It is in practical use since that time, and is to-day in vogue in many European countries in a more or less modified form. In the army, as military gymnastics; in the education of the youth, as school gymnastics; in the halls of the German turners, as popular gymnastics.

It is practiced in classes by hundreds at the same time, as well as by single individuals as home exercises.

The German system embraces all the different branches of gymnastics; exercises with apparatus, light gymnastics, or calisthenics, and also those exercises known as out-door sports, as running, leaping, jumping, throwing the stone, and the use of all hand apparatus, as wands, dumb-bells, and clubs.

The German system has three marked features which no other system can claim in so predominant a manner:

I. It aims at general physical culture, and not at the culture of one special branch. Therefore it declines the development of a certain organ or faculty at the expense of others. In regard to this we may call attention to the fact that all who have gone through a regular course of exercise in accord with this system have been thoroughly developed, and rank as high in proficiency as any person educated by another system. The contests among the turners are thus arranged, that exercises in all the different branches must be performed. This is also the case when testing scholars in regard to their proficiency. The numbers gained, added together, decide the grade of development. The strife for specialities is even not permitted, and a partial or one-sided development is therefore unknown. Yet this does not prevent individual skill and inclination from bringing about a greater result in a certain branch; this result, however, is not gained by a loss or lack in any other branch.

II. It allows or rather induces the exercises in classes. The classes are selected by a careful investigation as to strength, ability, age, etc., and for that reason it suits as well those who practice merely for physical development as those who aim at a proficiency of a higher grade. The exercises in classes are a source of endless pleasure, refreshment of mind, and joyfulness, not only to children, but even to adults. They are, furthermore, an inducement for promotion and the ambitious desire to keep step with other scholars. They act as a stimulant for greater exertion. It is undeniable truth that all those who have continually practiced in a German gymnasium, or in a school in which the German system of gymnastics had been introduced, acknowledged that the hours spent there count among the happiest of their childhood or manhood. The variety and great number of exercises of the German system and their scientific arrangement allow new and indefinite combinations. The teacher can always select a certain number of exercises suitable for his class, which are as agreeable, as instructive and interesting to every one of the classmates. Not only the body, but also the mind, is kept in a wholesome and refreshing activity which will keep away all weariness and tediousness which are so often found in other systems. The class exercises of the German system allow also the instruction of a large number at the same time, providing sufficient room is at hand.

III. The instruction begins with the most simple and easy movements and proceeds gradually to a higher degree. All fear of danger or harm to the body is *a priori* excluded. The apparatus used in school practice is not at all complicated or expensive. A number of climbing-poles, ladders, and some light apparatus for the high and long leap are sufficient. They may even be omitted altogether, if the necessary room for such could not be provided for. In this case, however, we can not call the training a complete one, as the aim of training is not only the achievement of a development of muscles, limbs, and organs, but also the achievement of courage and self-reliance.

In the German gymnasia and schools the lessons begin regularly with a series of free and order exercises. Every scholar has to participate in them. The rythmical order in which they are produced calls forth absolute attention, and allows no backwardness. They impress on each a feeling of responsibility toward his associates. The mistakes or errors, or an insufficient execution of any one, injures the good impression of the whole, and thus tends to greater carefulness and prevents negligence on the part of the scholars.

Class exercises on apparatus follow the free exercises. A change of apparatus takes place, and then the lesson ends with some exercises left to individual inclination. The latter, however, are limited to a short time, according to the ability of the scholars, or may be prohibited altogether to beginners. Thus under the eye and control of the teacher a sense of activity and liveliness is exhibited which the educator will look upon with satisfaction and delight.—[Mr. Heinrich Metzner, principal of the school of the New York Turnverein, before the Physical Training Conference.

THE GERMAN VIEW OF THE PHYSIOLOGY OF GYMNASTICS.

Can a satisfactory state of bodily development be reached speedily, or even at all, by exercising certain muscles or sets of muscles? If this question is answered in the negative the Swedish system, of course, can not stand. But even though the answer be in the affirmative, the question would still not be settled, for it would yet be open to discussion which of the two systems should have the preference, since without any doubt the highest degree of physical development is attained by the German system. * * *

First of all the mistaken idea that we can contract certain muscles at will must be set aside. Although we may have a very good idea of the amount of exertion necessary to perform or cut short a movement and for the direction in which this is done, yet in a healthy condition we are not aware that we have muscles. If we contemplate a motion or exhibition of strength toward a certain object, we do this without taking into consideration the muscles which are to be brought into play. This is so true that most people are highly surprised when they discover that the fingers of themselves are motionless, but that the muscles which cause their motion are situated in the fore-arm. But the understanding of the existence and situation of the muscles does not change these conditions. The most thorough anatomist and physiologist, who is as conservant with his body as the watchmaker with the watch, proceeds in the same manner as an uneducated person or an animal. Now it is customary that even the simplest movements, like bending and straightening the hinge joints, is not performed by the action of a single muscle, but by several muscles which are similar in their action. This is also true of the ball and socket joints when we wish to perform an exercise which requires a rotary motion. Therefore, if we design or perform motions, we can do so only by such groups of muscles, but never, as the opinion claims, by a single muscle.

Experience teaches us that muscles become stronger through exercise and, within a certain limit, they increase in size; muscles which are not contracted at times become weakened. The plan of developing the body by exercising certain sets of muscles methodically, giving regular practice to each single one, appears to be at the first glance quite reasonable. A closer examination, however, will show that this plan accomplishes too much on the one hand and not enough on the other.

This method accomplishes too much, on the one hand, because, in order to bring about the development of all the sets of muscles, it is scarcely necessary to exercise each one singly. In the case of a machine as is represented by the muscular system a good result, in a certain direction, can not in a general way be obtained without having many if not all muscles brought into play, even though not simultaneously. How many muscles are there, for instance, which are not brought into play at all in vaulting? The suitable arrangement of several such exercises furnishes an excel-

lent means of avoiding tediousness, which is necessarily brought about by the systematic exercise of all single sets of muscles.

This plan, on the other hand, and this is the principal point, accomplishes too little, for it is not the sole purpose of bodily development to give to all single muscles the highest degree of strength. I can picture to myself a person possessing the muscles of a Hercules who would not be capable of walking or standing, much less of performing complicated exercises. It would only be necessary for me to rob him of the power to properly control his movements—to bring about his intoxication, for instance.

This makes it clear that the work performed by the body as an apparatus of movement is as essentially dependent upon the correct cooperation of the single-muscle groups as upon the strength necessary to contract them. In order to perform a complicated movement, for instance a jump, the muscles must begin to work in the proper order of succession, and their energy, in the sense of Helmoltz, must increase according to a certain rule, sustain itself, and relax in order that there may result a correct position of the limbs, and that the changing of the center of gravity be effected rapidly and in the proper direction.

In addition to this, in all such complicated exercises, the use of the two senses, sight and touch, are necessary to quickly comprehend the situation at any moment, and the mind must be prompt to decide what must be done in accordance with the message of these senses. All forms of bodily skill, such as dancing, skating, riding, swimming, fencing, etc., depend in the end on a complicated activity and on the suitable interaction of impressions obtained through the senses, of which we are only partially conscious. All these accomplishments, therefore, pertain equally as much to the nervous system as to the muscles, and the skill acquired therein, as is well known, bears no relation whatever to the absolute strength of the muscles. The same is true of gymnastics. Most people entertain the erroneous idea that gymnastics never is anything but an exertion and exercise of the muscles, because these are the more noticeable parts of the body in motion and their existence and action are more easily understood. But all gymnastics is as much exercise for the nervous system as for the muscles. The failure to recognize this second feature of all physical culture is the unpardonable fundamental error of the Ling system, and this alone suffices to prove that from a physiological point of view it is worthless. However long anyone might exercise the muscles according to the Ling system of gymnastics, he would be inferior to the average German gymnast, who from the beginning has combined the gymnastics of the nerves with the gymnastics of the muscles, in case they should find themselves confronted by any actual task, the successful performance of which depends upon a suitable use and control of the muscular powers before fence and ditch, on a rock or wall, among the branches of the trees, amidst the rigging, wherever a sharp eye and clear head are required, and where it may be necessary to alternately use the foot in place of the hand and the hand instead of the foot. The body developed according to the Ling system will always remain a mere aggregate of bundles of muscles, resembling an irregular throng of stout warriors; but the body trained according to the German system presents the picture of a well organized, well drilled army, obedient to every command, the single elements of which will not, for that reason, be lacking in strength. * * * If it is true, in the first place, that manifold combined movements suffice to give each single set of muscles an adequate amount of exercise without systematic practice of all of them; if, in the second place, it is true that the mere practice of single sets of muscles does not make the body capable of executing combined movements, but that these, in addition thereto, must receive special attention, then it follows unquestionably that the Swedish system of gymnastics is almost equal to a perfect waste of time in the physical education of the youth.

Ten years before Ling and his system were heard of in Berlin, every lesson was begun in the gymnasium of Eiselin with the so-called exercises of the joints, which

were in reality calisthenics. For beginners these exercises constituted the first course, and for the more advanced they formed a graded introduction for the more difficult requirements, and for all a guide to exercises which could be continued daily, even in the room without apparatus. As these exercises were carried on by many conjointly, they furnished an opportunity of developing prompt obedience in the rank and file of the participants. Finally, inasmuch as they gave systematic training to the human body in the fundamental movements, they served to supply the defects, which were, perhaps, contained in the complex exercises, in regard to the uniform exertion of all the sets of muscles. Such exercises have not only since that time been continually practiced at the different German gymnasiums, but have even been more fully developed, so far as was consistent with the increase in the number of beginners. * * * To the extent demanded by the German system, these exercises fully accomplish the task which is deemed necessary in the Swedish system, namely, to accustom the undeveloped body to the exercise of single sets of muscles before more difficult tasks are required. The German system, however, does not, like the Swedish, keep the scholar forever at this preparatory work, but allows him, even in the first lesson, to pass on to some exercise of a more advanced nature in which he may take a delight.

This brings us to the other fundamental error of the Ling system, which shows the founder to be as poor a pedagogue as a physiologist. "The Swedish system of gymnastics in its purity could not be recommended exclusively for the bodily development of our youth. For delicate children it is too severe; on the other hand, it is not sufficiently animating and fatiguing for older ones. Even boys wish to accomplish something through their efforts and to advance in their work. This is not realized in the practice of the Swedish system, because they can not as yet comprehend the various positions and movements. The Swedish gymnastics may be sufficient to strengthen the single muscles and the entire body; it is not adapted, however, for rendering the youth conscious of his own strength and courage, and realizing that physical dexterity which is of such importance for life." In these words Privy Counselor Langenbeck himself exposes as mercilessly as the most pronounced antagonist of Swedish gymnastics the lamentable psychological foundation of the Ling system. It remains to be added that really only the sick, for the sake of their health and at the command of their doctor, are able to bear the terrible monotony of the "rational gymnastics." * * * My own experience with German gymnastics, extending over a large number of years, has made me conversant with the same, and as a physiologist I have given my special attention to a study of the motions of the body. In the foregoing I have endeavored to show what the conclusions must be concerning the fundamental idea of Swedish gymnastics according to physiology. This idea is wrong in every particular. Should anyone ask me to pass a scientifically critical opinion upon the parallel-bar exercises, from a physiological standpoint, I should have to admit that I would be placed in an embarrassing position. I confess that I am not able to form an adequate conception of the meaning to be conveyed. I can conceive only of this—that Dr. Abel desires every parallel-bar exercise to be analyzed in such a manner that the share of each muscle in the exercise is to be recorded as a function of time, in order that he might therefrom decide as to the suitability and compatibility of such exercises.

Should that be his idea, I doubt in the first place whether he has a conception of the nature and difficulties of such an analysis. The truth of the matter is that such an analysis leads to the most intricate and tedious discussions, even when applied to much simpler movements, such, for instance, as a swing forward or backward on the parallel bars. These discussions would require the most exact knowledge of the anatomist and the most complete understanding of analytical mechanics, and they have been entirely eliminated from the study of physiology because their consideration was not attended by proper results.

In the second place, I doubt whether Dr. Abel could make any use of such analy-

sis, even if there were one. I have at different times exercised with professional anatomists and physiologists through an entire term at the gymnasium of Eiselin. I can't recall that any opportunity presented itself to apply our theoretical knowledge to the exercises in which we vied with each other, because there exists the same chasm between such views and exercises as there is between theory of voice and singing. A knowledge of the muscles and nerves, the combination of forces, and the classification of levers unquestionably assists the teacher of gymnastics in the same manner that an understanding of John Mueller's doctrine of the compensation of the forces of the larynx is of benefit to the instructor of vocal music. The teacher of music is not thereby enabled to tell his scholar how he is to proceed in order to produce a certain tone, and in the same way the anatomic-physiological knowledge is of no avail in the gymnasium. If the apostles of Ling wish to impress upon us that they can accomplish something of importance in this way, it is probable that they deceive themselves; at all events, they will cause professional men, such as Edward Weber, Herman Meyer, Adolph Fick, and others, to laugh incredulously at their assertions. But if this be not the case, why do they never go beyond the use of such commonplaces? Why do they not give us a proof that these exercises on the bars can be classified in a scientifical and critical manner, on a physiological basis, instead of discarding the bars which, of course, is the easier thing to do? * * *

It may seem strange for a physiologist to consider his own science of less practical importance than those who are not proficient therein and that he should oppose any appeal to the same. But a more profound knowledge, if I may be permitted to use this expression, often makes one modest, whereas he who has a smattering only is puffed up with conceit; and that which is revered as of the greatest value we most dislike to see abused for the purpose of giving a weak cause the appearance of solidity and of imparting to empty statements an air of seriousness.

There are two ways, says Abbe Galiani, of determining the contents of a bowl. You will either have to send the bowl to a mathematician, who will make certain measurements and computations, and possibly after a half year will be able to hand you the final equation, filled with unknown quantities which, however, may prove to be incorrect; or you will simply have to place the bowl in a horizontal position and, making use of a measure, fill the same, and you will have the solution.

Many human affairs are like calculating the contents of a bowl, and this is the case with gymnastics. It is laughable to bring forward exuberant theories when simple experience meets every requirement. The discovery and arrangement of bodily exercise does not depend upon theorems, upon anatomy, and physiology. We are endowed naturally with all the knowledge of anatomy and physiology that we need, and this will no more desert us in gymnastics than in any other bodily action in which science is of just as little use.

Nothing can be more foolish than to prohibit any bodily exercise which can manifestly be carried out without incurring any risk because they do not conform with preconceived opinions. I must admit that I agree absolutely with the observations of the gymnastic council of Berlin in its second memoir. That which the body is capable of doing is reasonable, and the body only can set itself limits. In answer to this it has been claimed, on the side of the apostles of Ling that, in language study, practice would be necessary in grunting, snarling, screaming, in fact, in producing all discordant sounds. The inquirer will, perhaps, understand why this is not done if he will make it plain to himself why Swedish gymnastics pays no attention to face contortions, which would be just as reasonable. And, if it be argued further that crimes are just as permissible as the wheels on the horizontal bar for the reason that they would be possible, such a palpable sophism would prove to what straits the opponent is driven.—[Prof. Emil du Bois-Raymond, of the University of Berlin, in Swedish Gymnastics and German Gymnastics.

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The extracts presented are taken from a great mass of material upon German turning. Comparatively little of it has been written or translated into English, especially upon the theoretical side, but there is enough to give a good idea of the merits of the system. The officials of the N. A. Turnerbund are always ready to furnish information, and they have issued a number of valuable pamphlets, which may be obtained gratis by earnest investigators. Mr. J. Rudolf Bollinger, No. 118 North Third street, St. Louis, Mo., is now corresponding secretary of the Bund, and Mr. W. A. Stecher, No. 1830 Papin street, St. Louis, Mo., is secretary of the technical committee. Among the manuals of school gymnastics are: A System of Physical Culture, by Carl Betz, Kansas City, Mo.; Manual of Physical Culture, by Anton Leipold, Columbus, Ohio; Gymnastics in the Schoolroom, by Hans Ballin, Sandusky, Ohio, and the Manual of Henry Suder, Chicago, Ill. These gentlemen are the directors of physical training in the public schools of their respective cities. The Code Book of Gymnastic Exercises, by L. Puritz (Milwaukee, Wis.: Freidenker Publishing Company), relates to heavy gymnastics. A System of Physical Education, Theoretical and Practical, by Archibald Maclaren (London: Macmillan & Co., Henry Frowde, New York), is an English publication and does not strictly follow the German ideas, but it is an exceedingly valuable book, especially for the heavier work of the gymnasium.

III. Dr. Sargent's System.

If the work of Dr. D. A. Sargent, the director of the Hemenway Gymnasium, at Cambridge, Mass., were expunged from the field of gymnastics it would be found that America's original contributions to the cause of physical training have been lamentably few. But with his inventions America is able to make a very respectable showing of originality. His "chest weights" in their various forms, and his other machines in the American gymnasium give it an individuality and a national character that it would otherwise lack.

The athletic clubs, the Young Men's Christian Association, and most of the college gymnasiums have adopted Dr. Sargent's ideas very largely, and the following extracts from his address before the Physical Training Conference are, therefore, useful in describing the practices of those gymnasiums as well as that at Harvard under Dr. Sargent's immediate supervision:

In the fall of 1869 I accepted a position as director of the gymnasium at Bowdoin College, Brunswick, Me.

At that time I began to make measurements of students and to observe the differences in size, strength, and development that characterized different habits and conditions of life.

Two years later attendance at the gymnasium was made compulsory to all classes, and I was called upon to devise a system of exercises that would be at once efficient,

progressive, and popular. In thinking this matter over I could not shut out from my mind the marked difference in physique of the men who had come under my observation. * * *

In looking over the records of the students I had examined I found that the young men who had been accustomed to walk long distances to and from school, and to spend certain portions of the year doing manual labor on farms, in mills, lumber yards, etc., generally showed a superior physique, unless the work had been excessive and begun at too early a period. Moreover, I found that the young men who had been accustomed to special employment, such as blacksmithing, wood-chopping, milking cows, etc., showed a special development in certain parts of the body, as the forearm, upper arm, and back, while they were lacking in the development of other parts.

In this way I went through the list, marking the peculiar development that seemed to accompany the special occupations and exercises to which the boys had given attention before coming to college.

The conclusion that I reached was this: If actual labor will produce such good physical results in certain directions, why will not a system of exercises in the gymnasium, resembling actual labor, accomplish the same result in opposite directions, and in this way be made to supplement the deficiencies of one's occupation and to develop him where he is weak.

With this idea predominating, I began to work for its attainment in 1871.

The nearest approach that I could make to the realization of this idea at Bowdoin College, for lack of funds, was the establishment of a lot of crude pulley-weight appliances of different heights and weights to which I introduced the students as a class exercise.

Pulling window weights over a wooden roller by aid of an iron handle, in a cold, unfinished building four times a week, did not impress the faculty as an exercise that would be likely to add to the popularity of the required system, and I think that they had some doubt as to the expediency of letting an instructor, "who was only a freshman," try the experiment. The experiment was tried, however, and it proved so successful that I was able to leave the department the next year in charge of assistants, who were also students, and spend three months in New Haven trying to introduce the same system at Yale College.

I mention this fact in order that you may see that the success of the new movement was largely due to the peculiarity of the exercise, and not to any personal force or character behind it. In fact, I now know that I hit upon one of the great principles that should govern all artificial exercise, without knowing it. (Of this I shall speak later.)

I ought to add that we used the wooden dumbbells and Indian clubs to alternate with the pulley-weight appliances in class exercises. * * *

After the completion of my medical studies, in 1878, I elaborated my old system of measurements, and had the first patterns of my long-contemplated developing appliances constructed.

These consist of what are familiarly known as chest weights, chest expanders and developers, quarter circles, leg machines, finger machines, etc., to the number of forty different pieces.

These appliances were first used in my private institution in New York City in 1878, and were placed in the Hemenway Gymnasium in 1879. It would seem that this style apparatus met a long-felt want, for it immediately sprang into popular favor.

As it had been publicly announced that these appliances were not patented, but were given to the public for educational purposes, they were soon copied in one form or another by various manufacturers, and have since been generally introduced into the school, college, athletic club, and Young Men's Christian Association gymnasia throughout this country and in different parts of Europe.

To what extent this style of apparatus is now used in the United States may be inferred from the fact that some of it has been put into 350 or more institutions, representing a total membership of over 100,000. * * *

That you may understand what the system is in its present form, as carried out at Harvard University, let me ask you to follow me through one of the physical examinations of a student, and see what we do for him. Every student who enters the university is entitled to an examination, and 87 per cent of the whole number avail themselves of this privilege.

As soon as the student presents himself at the director's office (which is done by application and appointment), he is given a history blank, which he fills out, giving his birthplace, nativity of parents, occupation of father, resemblance to parents, natural heritage, general state of health, and a list of the diseases he has had, all of which information is absolutely necessary in order for the examiner to put a correct interpretation upon the observations to follow. The student is then asked to make certain tests of the muscular strength of the different parts of his body and to try the capacity of his lungs.

He then passes into the measuring room and has his weight, height, chest girth, and fifty other items taken. His heart and lungs are then examined before and after exercise and a careful record made of the condition of the skin, muscles, spine, etc., which the tape measure fails to give.

All the items taken are then plotted on a chart, made from several thousand measurements, and the examiner is then able to know the relative standing of this individual as compared with others for every dimension taken, also his deviation from symmetry and the parts which are in special need of development.

To confirm the plotting of the chart, and to awaken in the young man a genuine interest in his physique a photograph of each student desiring it is taken in three positions, and preserved for comparison with those to be taken of him later.

From the data thus procured a special order of appropriate exercises is made out for this student with specifications as to the movements and apparatus he may best use. At the present time this special order consists for most students of an illustrated handbook, in which the apparatus, the weights for it, and the times to use it are carefully prescribed, together with such suggestions as to exercise, diet, sleep, bathing, clothing, etc., as will best meet the needs of the individual under consideration.

Now I think it will be admitted by all thoughtful persons that one-half the battle for mental education has been won when you arouse in a boy a genuine love for learning. So one-half the struggle for physical training has been won when he can be induced to take a genuine interest in his bodily condition, to want to remedy his defects, and to pride himself on the purity of his skin, the firmness of his muscles, and the uprightness of his figure.

Whether the young man chooses afterwards to use the gymnasium, to run, to row, to play ball, or saw wood for the purpose of improving his physical condition matters little, provided he accomplishes that object.

The modern gymnasium, however, offers facilities for building up the body that are not excelled by any other system of exercise. The introduction of the new developing appliances has opened up the possibility of the gymnasium to thousands to whom it was formerly an institution of doubtful value. The student is no longer compelled to compete with others in the performance of feats that are distasteful to him. He can now compete with himself, that is, with his own physical condition from week to week, and from month to month. If he is not strong enough to lift his own weight, the apparatus can be adjusted to a weight he can lift. If he is weak in the chest or the back, he can spend his time and energy in strengthening those parts without fear of strain or injury.

In fact he can work for an hour, going from one piece of apparatus to another, keeping always within the circuit of his capacity, and adding slowly and surely to

his general strength and powers of endurance. If the heart is weak, the lung capacity small, the liver sluggish, the circulation feeble, or the nervous system impaired, etc., special forms of exercise can be prescribed to meet these conditions.

Gentle running is usually advised as a constitutional exercise for all of those who can take it. This is usually severe enough to start the perspiration and make a bath of some kind desirable. A tepid sponge or shower bath is generally advised; and in my opinion, the bath which regularly follows the exercise at the gymnasium, and the habit of bathing established thereby, is almost as valuable as the exercise itself.

After a period of six months or more the student returns again to the director's office, and has another examination, in order to ascertain what improvement he has made and to receive any new suggestions.

This, in brief, is the educational part of the system of physical training carried on at the Hemenway Gymnasium. * * * Now let me invite your attention to a consideration of some of the theories and principles upon which it is founded.

"The characteristic physiological property of muscular tissue, and that for which it is employed in the body," says Martin,[1] "is the faculty possessed by its fibers of shortening forcibly under certain circumstances." This property is called contractility, and upon the full performance of this function depends not only the healthy condition of the muscles, but of the various parts of the body with which they are connected.

Now, what are the circumstances under which a muscle performs its greatest contraction?

First. There must be a succession of strong and oft-repeated stimuli. Second. The muscle must have a load to carry or resistance opposed to its shortening.

This can be illustrated by the experiment so often conducted in the physiological laboratory. Take a muscle without a weight attached to it, and apply a stimulus. The muscle will contract, say a quarter of an inch. Now apply a weight of 1 pound to it and apply the same stimulus. The muscle will contract half an inch. Attach a still heavier weight, say 2 pounds, and apply the same stimulus, and the muscle will contract 1 inch.

And so the experiment could be carried on until a weight was attached which would cause the contractions of the muscles to be less and less until they finally ceased. "So that up to a certain limit, resistance to the shortening of a muscle makes it more able to shorten, and the greater extension of the muscle due to the greater resistance opposed to its shortening puts it into a state in which it is able to contract more powerfully."

Upon the interpretation of this simple physiological fact depends the foundation of two great systems of physical training—one faction advocating that the antagonizing muscles in free movements, without apparatus, furnish all the resistance that is necessary; while the other faction claim that the resistance afforded by opposing muscles is not sufficient, and that weights of some kind, or apparatus, is necessary to bring out the working force of the muscle used.

I believe that the last conclusion is the correct one. * * *

We saw in the laboratory experiment that when the muscle simply lifted its own weight that it did no work, and that nothing was accomplished when it tried to lift a weight too heavy for it, but that there was an intermediate weight that it lifted to the greatest height and did the greatest amount of work.

What is true of this single muscle is true of all the muscles of the body; there is a certain weight with which the different groups of muscles can do the most effective service in a given time. If the weight is too light or too heavy the best effect of the exercise is not realized.

This may be illustrated by the familiar use of the chest-weights (so called). If you go through the movements without any weight the exercise is insipid. If, on the other hand, you load the boxes up to their full capacity you will find that there

[1] "The Human Body" (Chapter x), by H. Newell Martin, D. Sc., M. A., M. D.

are only one or two movements that you can do, and these only for a minute or so. Now, if you have carefully gauged your strength to about 5 pounds (which is, perhaps, the average weight used in these appliances), you will find that you can go through the full set of exercises (comprising some forty or fifty separate movements) and feel that you have accomplished something that will be a benefit to you. This statement is equally true of all the different developing appliances found in a well-equipped gymnasium, and to the fact that our modern apparatus can be adjusted to the strength of the strong and the weakness of the weak, may be attributed a large part of the value and popularity of those thriving institutions.

But there is another principle now taken advantage of, to which the modern gymnasium owes a great part of its efficiency. In view of the tendency of the times I can not help thinking that it is a valuable one.

In primitive races individuals of the same tribe bear a close resemblance to each other. As they progress in civilization difference of function begins to work a difference in structure, and we begin to get a marked variation in size, form, and feature.

In highly civilized communities the minute division of labor carries this variation still further, so that it is not only possible in many cases to distinguish individuals by their calling, but the particular branch of work in which they are engaged can be easily determined by its influence upon their physical structure. In other words, men are molded by their trades and occupations, and many of the diseases with which they are afflicted arise from physical defects due to faulty positions and want of appropriate exercise. Perhaps no class in the community have their physical characteristics more marked than the student class. The type may be distinguished by a drooping head, flat chest, hollow back, and constricted ribs just over the stomach. It is not necessary to look for the causes of these defects. They are faulty positions while studying, pressure of the desk against the body, the constriction of clothing during the growing period, the relaxed state of certain muscles, and the overstrained condition of others.

Most occupations, including that of the student, tend to overuse the flexor muscles and to compress and constrict the body, thus lessening its internal capacity and interfering with the functions of important organs. Thus, the resistance of the clothing, weights lifted and borne on the back or shoulders, and even the use of heavy dumbbells for health's sake all tend to force the ribs downward and lessen the diameter of the thorax. To remedy this evil a system of artificial exercise is necessary.

Just here we touch upon a principle that has escaped the attention of most teachers. If this deformity is brought about by the natural action of the muscles—that is, by their acting centripetally from their origin to their insertions—surely the remedy is to make them act centrifugally from their insertions to their origins. By grasping a bar or a pair of rings above the head, the parts where the muscles are inserted become fixed, and if the muscles contract, the parts from which they originated must move.

In this case all the diameters of the thorax are increased and the chest capacity enlarged. In this principle lies the value of the rings, trapeze, ladders, parallel and horizontal bars, and, in fact, all of the climbing appurtenances, to those who are able to use them. By the invention of the chest-expander, chest-developer, quarter circle, high pulleys, and inclined planes, traveling parallels, and similar apparatus, the same principle can be applied by anyone, however weak, and the same result can be accomplished. It requires a little more time, but the effect is likely to be more durable.

By the use of the pulley-weight system resistance can be applied to any part of the body from any direction. In this peculiar property lies its great value as a means of enlarging the thoracic cavity and counteracting the cramping and constricting tendencies of modern occupations.

I have dwelt upon these principles at some length because I have reason to believe

they have not been well understood by persons interested in the subject. Some of the other theories that have guided me in formulating a system of exercises I shall state briefly in the form of a summary, together with those I have just mentioned.

As far as I have been able to discover, they are based on sound physiological principles.

(1) The person should be sufficiently interested in the exercise to give it his attention in order to secure the necessary volitional power to start the movement. Whether the exercise is interesting in itself is a matter of little consequence.

(2) There should be a weight or resistance to overcome in order to bring out the working force of the muscle. In using a weight the muscle gradually acquires the force with which it tries to contract.

(3) The exercise must be performed with sufficient vigor and rapidity to engage the energetic contraction of the muscles employed. When this is done, old tissue is broken down and its place is supplied with new material in increased quantity, thus augmenting the size and strength of the muscles. The brain gains the power and energy which the exercise requires it to put forth.

(4) Weak parts must first be strengthened, and then as many muscles as possible must be brought into action in order to secure a full-orbed and harmonious development of the whole body. One-sided development is usually attained by robbing some other part of its just share of the body's nutriment. Most persons in their daily occupations use the flexor muscles more than the extensors, thereby cramping the vital organs and interfering with their functions. To remedy this tendency the muscles should be made to act from the center as far as possible in all forms of artificial exercise.

(5) A sufficient number of muscles should be called into action at one time to stimulate the action of the heart and lungs and increase the circulation and respiration. This is one of the most important considerations to bear in mind in regard to exercise. To keep up this increased respiratory activity and to aid the heart in removing the waste material and hastening forward the new, the limbs and walls of the chest must be absolutely free from any ligatures or constrictions. The slightest interference with the action of the respiratory muscles at this time embarrasses the functions of the lungs and heart. This is the reason why loose clothing is always advised for exercise.

(6) As a latent period precedes the contraction of a muscle, so a momentary period of rest should as far as possible precede movement in exercise. This is best secured where there is an alternation in the movements, as in walking, running, rowing, etc. All tetanized movements, such as holding weights, attitudinizing, standing or sitting in a constrained position, etc., tend to impair the tone of the muscles by interfering with the nutrition of both muscles and nerves.

(7) The exercise of the young should be of such a composite nature as to bring about the co-operation and co-ordination of the muscles. This involves principally the training of the central nerve system. All gymnastic sports and athletic games that require skill, dexterity, coolness, courage, and presence of mind, are included in this list, and are exceedingly valuable to any system of physical training as adjuncts in the development of character.

(8) All vital processes depend largely upon the maintenance of animal heat. But animal heat is now known to be generated in the blood while passing through the muscles, and not in the lungs, as was once supposed. The full contraction of the muscles greatly aids this function, and helps to force the warm blood through the tissues and back again to the heart.

(9) In order to realize the best results from physical exercise and keep up the general nutrition of the body, all muscular effort should be followed by a bath or vigorous stroking and rubbing.

(10) In every kind of physical exercise the qualities at first required are the qualities at length developed. Thus, if the exercise requires strength, strength will be

the result; if courage is exacted, courage will be the outcome; if quickness, quickness; and so through the whole range of faculties exercised.

Knowing what is desired, it is an easy matter to prescribe the appropriate training. * * *

What America most needs is the happy combination which the European nations are trying to effect; the strength-giving qualities of the German gymnasium, the active and energetic properties of the English sports, the grace and suppleness acquired from the French calisthenics, and the beautiful poise and mechanical precision of the Swedish free movements, all regulated, systematized, and adapted to our peculiar needs and institutions.

The highest development of strength, activity, and grace is not compatible in the same individual, and consequently many persons prefer to sacrifice one in order to gain the other. But life's forces are well adjusted and well balanced.

IV. The Delsarte System.

In investigating the so-called Delsarte system of physical training, one is met at the outset by the very formidable obstacle that the system has no authorized mouthpiece. The man whose name it bears never devised a system of physical training, and those that should be most familiar with his plans and purposes, and many of those who profess to have best mastered his philosophy repudiate the idea of connecting his name with any system of gymnastics. His own daughter, Madame Geraldy, is said to have declared, "It is the expression of the emotions through the body that my father taught. If one wishes to study gymnastics let him go to a gymnasium."

To make matters worse, there are apparently radical differences upon important points among even those who claim to represent Delsartism and one no sooner imagines that he has a clue to the whole thing than a discouraging contradiction appears to throw him into worse confusion than before.

There is, furthermore, a certain mysticism with which the Delsartians like to cover their work. They continually state that one can not hope to understand Delsarte without deep study.

What is presented herewith may not, therefore, correctly represent Delsarte physcal training in the opinion of some Delsartians, but the representative value of the extracts will not be questioned any more than it would have been if one of the Delsartians themselves had made the selection, if we may judge from the lack of harmony of opinion between them.

BIOGRAPHY OF DELSARTE.

François Delsarte was born November 11, 1811, at Solesme, France. His father, a physician, died, leaving his family poor. The young Delsarte was sent to Paris, in 1822, to study with a painter on china, but his tastes carried him into other channels. He became, in 1825, a pupil of the conservatory, a Government institution for the instruction in dramatic art, music, and the ballet. Here, for want of proper guidance, he lost his voice. Finding himself thus incapacitated for the stage, he resigned that career for that of a teacher of singing and the dramatic art. Realizing that he had been shipwrecked for want of a compass and a pilot, he determined

to save others from his fate by seeking and formulating the laws of an art hitherto left to the caprice of mediocrity, or the inspiration of genius. After years of unremitting labor and study, study which took him by turns to hospitals, morgues, asylums, prisons, art galleries, etc., patiently unearthing the secrets and methods of past genius, study which kept him enchained by the hour watching the children at play in the great public gardens, weighing humanity everywhere and everyhow, he succeeded in discovering and formulating the laws of æsthetic science. Thanks to him, that science has now the same precision as that of mathematics. He died, without arranging his life-work for publication, July 20, 1871. Many are the names famous in their different careers, that have owed much to his instruction: Rachel, Sontag, Pasca, Monsabre, etc.[1]—[Ascribed to the Abbe Delaumosne in Mrs. Stebbins's Delsarte System of Dramatic Expression.

THE WHOLE THING IN A NUTSHELL.

I will give you in a very simple, very compact form, a complete definition of what the Delsarte system is of which so much talk is made, usually consisting, however, in hollow echoes. The Delsarte system is a careful analysis of the facts of human nature and experience, generalized into laws which dominate those facts and applied in a system of practical rules for the perfecting of the human instrument physically and spiritually, so that our experience may be raised to the highest possible degree of variety, fullness, and harmony. That is the Delsarte system.—[Rev. William R. Alger, before the Convention of Elocutionists, Chicago, 1893.

A LESS CONCISE, BUT MORE SATISFACTORY DESCRIPTION.

There are two widely differing conceptions of Delsartism. One is Delsarte's own, of a method of training for vocal and pantomimic expression, founded neither on tradition, empiricism, inspiration, nor good luck, but on a reverent study of nature's laws. The other is the popular misconception of the man and his mission as a sort of inspired gymnast, the end and aim of whose life was to enable silly girls to attitudinize in public and private, to move in strange and weird curves and spirals, and to wear costumes more or less suggestive of the apparitions in materializing seance. The prevalence of exhibitions of statue-posing, Greek dances, emotive gestures, tableaux vivants, fan drills, broomstick drills, fainting, dying, and grand and lofty tumbling, dignified by the name of Delsarte, and too often given by people who have never mastered even the elements of harmonic poise is responsible for the popular notion of the master whom we reverence.

It is the misfortune, in one sense, of Delsartism that its possibilities in training for physical perfection have been exemplified, in this country at least, much more fully than the expressive side of the work. * * * The gymnastic side, important and interesting as it is, has come to be regarded as the be-all and end-all of the system; whereas Delsarte himself attached very little importance to it. Nevertheless, it can not be denied that the results of following out these principles of physical training, whether they originated with Delsarte, or, as is sometimes claimed, with Mackaye, have far surpassed those of any other system of gymnastics in grace, freedom, and harmonious cooperation of all the parts of the body.

The essential principle upon which they are based may, I think, be summed up in some such formula as this: In any true system of physical training, muscular development must be proportioned to the supply of vital energy in the individual. Or, in the language of Delsarte, the psychic must transcend the physical. The fallacy

[1]Mr. James Steele Mackaye first brought Delsartism prominently before the American public in 1869. Mr. Mackaye had studied under Delsarte, in Paris, and returned to this country to prepare the way for the coming of his master. Delsarte, however, was prevented from coming to America by the Franco-Prussian war.

of all other gymnastic systems with which the writer is acquainted is that they measure results by external growth. Even the tabulations of specialists of the school of Sargent, of Harvard, are devoted mainly to recording differences in size; and their aim seems to be to remodel the external physical shell in accordance with certain hard and fast notions of manly and womanly beauty. While muscle is valuable, it should never be forgotten that mere mass is useless without energy, and that a small arm with a tremendous reservoir of reserve force behind it will win the battle every time against a muscular development, however great, that has been gained at the expense of latent power in the brain.

While Delsarte was probably quite unconscious of the tendency of his teachings in this direction, there is no doubt that this view of the relative value of nerve and muscle has been splendidly reinforced by arguments derived from his theories, and is upheld most forcibly to-day by adherents of the so-called Delsarte system of physical culture.

To harmonize mind and body; to put the soul back in the whole body; to maintain equilibrium of all the functions and principles of being; to render the body plastic; to free all the channels of expression; to remove constrictions that interfere with the flow of emotion to all the parts—this, we were taught again and again, in varying formulas, but with one thought behind the formulas, is the object of harmonic gymnastics. In more accurate language, we could say: To preserve the just proportion between nerve-force and muscle. The physical problem of the future is not how to cultivate muscle, but how to conserve and increase vital energy. Delsartism has helped on the discussion of the problem by example and precept. If it has not furnished a solution, it has at least vehemently asserted the substantial unity of soul and body, and paved the way to a recognition of the undeniable fact that, without in-forming energy, mere physical development is a useless burden to the soul.—[Mr. F. Townsend Southwick, in Werner's Magazine, June, 1893.

FLEXIBILITY, POISE, AND STRENGTH, THE END OF PHYSICAL TRAINING.

I can hardly outline what I consider to be the system of Delsarte, because he would not have claimed that he left a system. It is not a science. It has not been reduced to a science. It is still in a transition condition. Not more than two or three of the so-called laws of Delsarte can be called final laws. Most of them are unfinished rules of expression. But his laws of development, as I understand them, are, first, the training of the body as an instrument of expression; second, the study of the elements of expression; and, third, the application of the principles to the more involved emotional work.

With the latter we have nothing to do at present, but I wish to try to explain what I understand to be the system, as far as it has been developed, in physical training.

The first thing is the cultivation of the physical sensibilities of a pleasure in what we are doing, and with that a cultivation of the various senses. But without an inspiring motive, without some emotion accompanying every act, it seems to me that the physical movement is simply a dead thing, like a body without a soul. Herein lies the danger of reducing it to a mere mechanism.

The principles of Delsarte, the laws, I will pass over and come down to the more tangible work in hand. The first step that Delsarte would undertake with a pupil would be the correction of any mannerisms that he might find. The correction of these mannerisms might be the relaxing of a muscle, if it is very tense, or the strengthening it, if it be over relaxed. The exercises that Delsarte used seem to be derived directly from the common practices that we see in everyday life, the action of the child, the movements of the people in the ordinary healthy state. The first step toward a definite system, I do not think, lies in the principle of relaxation. Before we can relax any part of the body we must necessarily have power to control our body in an equilibrium or balanced state. Therefore the first step toward a

thorough system would be the practice of poise, the resting of the body in its movements in different directions, retaining all parts properly balanced about a common center.

In that matter of poise, to illustrate the absolute necessity of accompanying emotion with movement, I believe it is not right nor proper to practice a swaying of the body in any direction without accompanying it with some intention of thought or of feeling. The general sway or poise of the body, Delsarte taught, should be taken first of all with the intention of acquiring a sensation of comfort, of pleasure And, second, an intention, as a matter of thought, of reasoning, a desire to accomplish something. Physical exercise ought to be resolved at once into a definite expression, a definite attitude or gesture. That is what it is for, not for the sake of developing a certain amount of strength, but it is for the sake of emotional expression. The use of a dramatic speech or situation or intention should be involved in the physical movement. * * *

I do not think it right to practice a relaxing movement, i. e., the surrendering of any part to gravity, like the state that it has in sleep; I do not believe it is right to cultivate that condition of the muscular system without using it at once emotionally. When a child on the street sways its arms and makes other spontaneous movements, it is doing exactly what I understand Delsarte's intention to be in relaxing movements, abandoning itself to spontaneity of gesture. I would take every relaxing movement and resolve it into some gesture, giving all its value, and not make it merely a mechanical thing. The same with controlling movements. I understand relaxing movements to be surrendering the part to gravity, but of controlling all the other parts and relieving them. We are not only relieving one part, but strengthening another.

Beyond the matter of poising, relaxing, and controlling, I think we ought to approach nearer to expression by practicing involution and evolution of movements; we ought to come nearer to the actual expression of daily life, the bringing in the movement in sensitive impression, and the carrying out of movement in forcible expression. These transitions of movement bring us still a step further into something like pantomimic work. The use of the swaying of different parts of the body, taken by themselves, may be in different forms, but always with the intention to resolve them into positive attitude, gesture, or expression of some kind. The opposition of movements, of course, is a very simple thing, and I need not delay upon it. It is a matter of balance, belonging to the law of consistency, that when one part is in use the other part may not be used. The use of any part without the use of another part is contrary to nature, and will result in an unequal development. It is not right to practice one muscle by itself without the cooperative use of the rest of the muscular system. The recognition of the laws of Delsarte, or the relation between the center and the extremities, the necessity of repose being back of every activity, the law of motion which is absolutely final, the whole matter of magnetism, the law of expression, all these need to be understood and applied in purely physical training.

Perhaps I may draw the line there and say, beyond that we go into emotional expression, which is beyond the function of the physical trainer. The use of the voice and the practice of the voice is certainly a part of physical training, as much as the exercise of the general body.

As a resumé, I would say that, as I understand it, the ultimate matter is reached in physical work when we have attained perfect flexibility, poise, and strength, all equally important. Repose is obtained by relaxation. Energy is the part of physical work which is usually taken care of so much by itself. In making a plea here I might go further and deeper, but the time is short. But, as I understand it, finally, the whole object of physical training is to enlarge the scope of our powers, and its principal object is to develop the body as a means of emotional expression.—[Mr. Franklin H. Sargent before the American Association for the Advancement of Physical Education, meeting of 1892.

THE CHARACTER OF THE EXERCISES.

The outline of the systematic physical culture which I shall bring before you is composed of three widely different elements, all in conformity with the basic idea of Delsarte: (1) The so-called aesthetic gymnastics of Delsarte's training; (2) the Swedish or Ling system; (3) the ceremonial forms of Oriental prayer. These, when properly combined and graded into systematic progressive exercises, constitute a perfect system of gymnastics which brings into being and active use each of the three great principles of François Delsarte. We have sequence, opposition, and correspondence; consequently, we have all the elements essential to evolve beauty of form, graceful motion, and artistic presentation. As will be seen, such a system embraces both physical and aesthetic culture. I shall confine myself now to the purely physical aspect.

I have never searched consciously for trinities; they have turned up of themselves in almost every department of my studies. In my case, I think I may say, that is a way that trinities have. For instance, in physical culture, perfection consists of a judicious blending of relaxation, energizing, and deep breathing.

Relaxation too often has been mistaken for inertia. This is a false conception, and has given rise, in those who do not comprehend its real nature, to the habit of doing things in a semi-lifeless, easy way. Relaxation does not mean acting in a relaxed, lazy manner. It means rest after effort, perfect rest after perfect effort. It implies more than this, for it means the conscious transfer of energy from one department of nature to another, with unaffected ease and grace, after an active tension of body or of brain. True relaxation would mean the resigning of the body to the law of gravity, of the mind to nature, and of the entire energy to a deep, rhythmic breathing. Complete relaxation of the voluntary muscles at once transfers the energy to the involuntary parts, so that, strictly speaking, there can be no such thing as conscious relaxation, except in the voluntary muscles and the brain. But this is quite sufficient. This transfer of energy produces the requisite equilibrium for the renewing of physical strength.

It will, therefore, be seen that the vital principal of relaxation, with the use and processes connected therewith, has been misunderstood by a majority of those who profess to follow the Delsarte system. Nothing can be further from the truth than to imagine that Delsarte's idea of training was to produce a state of devitalized action. It was the very reverse. Delsarte, having the instinctive perception of a true artist, must have known perfectly well[1] that to free the channels of expression so that the whole form should respond to the image in the mind, nothing was more valuable to commence with than the decomposing exercises which enable the trained individual to rest at will. Remember, then, that relaxation means the ability to rest, and, in resting, to recuperate dynamic power through repose. In all truly graceful action there must be an expressed consciousness of force in reserve and not an evidence of devitalized easiness. * * *

The second principle of our system is energizing. It is based upon the well-known physiological law that use and friction of the parts attract thereto a flow of blood and nerve force. Action means waste, and this waste calls for fresh supplies of molecular energy to renew the cellular tissue. Growth and an increase of muscular strength is the natural result when the energy supplied is fully equal to the demand. The amount of energy is determined by the dynamic capacity of the brain and lungs; and this, in the system under notice, is obtained from the oxygen stored through the rhythmic breathing which accompanies each particular movement.

To energize the parts so as to obtain the greatest possible benefit from the amount

[1] Whether it can be proved that he taught the decomposing exercises or not, the fact remains that, as he certainly did teach to his pupils the spiral motion of the arms, he must have taught relaxation in some form, as decomposing exercises are absolutely necessary as a training for spiral motion.

of energy expended there should be a slow increase of muscular tension as the mind directs the flow of nerve force to the parts and an equally slow relaxation. Nothing increases the nervo-magnetic power of the physique more than this method of energizing. Then comes the energizing series of gymnastic exercises which brings each muscle of the body into play in its turn. Much discretion, however, is necessary in such work. Different temperaments require slightly different treatment. Many individuals are physically out of proportion, and, therefore, need special exercises and direction for developing the weak or immature parts. * * *

Every Delsartian should possess a sound knowledge of physiology and the physiological effects of different forms of motion. With such knowledge there is not the slightest difficulty in translating the angular motions of the Swedish system into those which develop grace equally with physical strength. I am a firm supporter of brawn and muscle; but, at the same time, I insist that the same physiological effects and consequent physical development can be obtained in a system which evolves grace and beauty as in a system which produces an angular, jerky, inartistic presentation. A beautiful physique, with graceful strength in every action, is the Delsartian ideal.

The third element in physical culture is breathing. To breathe, one would think, is one of the most natural things in the world. So it is, in a way. But to breathe correctly, healthfully, in other words, to breathe hygienically, is just as much of an art as is anything else in human nature, and requires long practice and careful training. What is more natural than to talk? And yet how many people do you meet in any one day who speak correctly or who express their thoughts in a pleasing tone and a natural manner? Speaking correctly is a matter of grammar and accent, but speaking in a clear tone, with a sweet voice, is largely a matter of proper respiration.

In physical culture, then, breathing occupies a most important place. It is the basis of mental life and physical activity. It is the grand foundation pivot, around which every other form of culture must revolve.—[Genevieve Stebbins, in Werner's Magazine, January, 1894.

GYMNASIUMS FOR CITY PUBLIC SCHOOLS.

The use of apparatus is not essential to an effective system of physical training, and the lack of funds to equip a gymnasium is no reason for a refusal to begin systematic work in that line. But whatever may be done between the desks in the schoolroom must be regarded simply as a makeshift to serve only in the absence of a regular place for exercising, and none will deny that the work may be prosecuted to still better effect when a sufficient supply of gymnastic appliances is provided.

This is especially true of schools for older pupils, for their interest is more easily enlisted in apparatus work than in the free exercises. There is another consideration that seems to be even more weighty than any of those usually urged in favor of the use of apparatus. The free exercises depend for their effectiveness largely upon the action of the antagonistic muscles. Now, if there is such a thing as muscular training, and if physical power is an object to be desired, it would seem that the muscles should not be deliberately trained to act in opposition and therefore to interfere with the movements of each other, even if the appearance of strength is the result. The required resistance to the muscular movement should come from external objects rather

than from antagonistic muscles. Of course not all free exercises are subject to this objection, nor is it necessarily fatal even where it does apply, for other exercises tend to counteract these ill effects; but the tendency is bad and the theory is worse.

Free gymnastics usually come first when physical training is begun in city school systems; light hand apparatus is next, and the fully equipped gymnasium is the last step in the introduction of a well-developed system of gymnastics. A number of cities are now ready for the second and third stages of development in this order, and information concerning the apparatus ordinarily used in this country can not be amiss. In securing this information the aid of the manufacturers of such apparatus was sought. Letters were written to the Narragansett Machine Company, Providence, R. I.; John Gloy, Chicago, Ill.; Fred. Medart, St. Louis, Mo.; A. G. Spalding & Bros., Philadelphia, Pa., and to the Schumacker Gymnasium Company, Akron, Ohio. These gentlemen were asked for information concerning (1) the building of new school gymnasiums; (2) the conversion of halls, attics, basements, etc., into gymnasiums; (3) the apparatus required and its uses; (4) the improvements made in the same by their respective firms, and (5) the cost. All of them responded fully and satisfactorily. There was necessarily a great similarity in their answers, and all minutely described the mechanical improvements in their own wares. The writer is convinced that the American manufacturers excel all others in the finish and in the mechanical excellence of their apparatus, but they have made but few changes that affect the essential character of the apparatus or the exercises to be performed. The following pages contain as many of the facts of general interest brought out by the replies mentioned as can be conveniently published. Repetitions and references to purely mechanical improvements have been omitted as far as possible.

From the Narragansett Machine Company, Providence, R. I.

[Prepared by Wm. L. Coop, Providence, R. I., assisted by Miss Ellen Le Garde, superintendent of physical training in the Providence public schools.]

A school gymnasium when best placed is in a separate building, which might be situated in the rear of the school buildings or in the center of a quadrangle formed by them and connected with the schoolhouses by passages. The edifice could then be constructed specially for gymnasium work and should be from 18 to 22 feet in height, the collar beams of the trusses supporting the roof. It could be rectangular in form, with sides in a proportion of 2 by 3 or thereabouts. If the room is less than 50 feet wide allowance should be made for at least 40 square feet of floor space for each scholar exercising.

If a separate building can not be had the next best situation is in the upper part of the school building. In many cases the peak of the roof can be utilized. If possible, a clear height of 18 feet should be secured at the center of the room for such suspended apparatus as traveling rings, flying rings, climbing ropes, etc. The side walls need not be over 6 feet high. Light can be obtained from dormer windows or from thick ground glass set in the roof. The floor of such a gymnasium should be

suspended entirely separate from the ceiling and partitions of the rooms below. Tie-rods from the trusses can be used for this purpose, although they are somewhat of an obstruction in the gymnasium room, and should not be put in if the floor could be otherwise supported without great expense. The best possible means of deadening the floor, to prevent sound, should be employed, and, in any case, such a gymnasium can not be used for heavy jumping or fast running without the resulting noise disturbing the schoolroom below when in session. The position, however, is preferable to any other in the building, on account of light and ventilation and the opportunity to secure the necessary height without great expense.

Gymnasiums *may* be placed in a basement. If, however, the room can not be 16 feet or more high the traveling rings would not be of much use and climbing apparatus would also be limited in its value. Some form of ventilation that would be sure to thoroughly change the air of the room after each class had exercised should also be adopted. Care should be taken to drain under the floor thoroughly, that the floor may be absolutely dry. It should also be ventilated underneath to prevent dry rot of the floor timbers. Any swinging apparatus that is attached to the ceiling should be insulated or provided with roller bearings to prevent noise. School audience halls could often be used to advantage for a wide range of gymnasium work without any of the apparatus at all interfering with other uses of the hall other than the temporary removal of seats. On the side walls could be placed pully weights and racks for calisthenic apparatus. If suspended apparatus is demanded it could be so arranged as to be quickly hoisted out of the way. If the floor of the hall is not specially constructed to avoid the transmission of sound to the rooms below, such exercises as jumping, running, or stamping will necessarily have to be avoided while these rooms are being used. Where liberal halls (passageways) are provided in school buildings these may be used for gymnasium work. Racks for Indian clubs, dumb-bells, bar bells, poles, wands, hoops, fencing sticks, etc., can be secured to the walls, and even pulley weights can be placed to good advantage for class purposes. In a hall 20 feet wide and 50 feet long 25 or 30 children can exercise at one time in the majority of calisthenic movements, and a sufficient number of pulley weights can be arranged for all to take one-hand exercise in class. Low-studded rooms of from 10 to 12 feet may be used for all gymnasium work, except such as is done on apparatus suspended from or attached to the ceiling.

Gymnastic exercises may be performed in the aisles between the desks of the ordinary schoolroom, and in many of the movements the desks themselves can be utilized as a means of support. A device has been invented that can be secured to the ends of opposite desks forming a substitute for a parallel bar. Racks for calisthenic apparatus can easily be attached to the walls of the schoolroom under the windows and in such places as are not occupied by blackboards. This latter plan permits a ready arrangement of the pupils with apparatus in hand to rise from the seats to carry out any series of gymnastic movements.

Out-of-door, or school yard, gymnasiums.—City schools, except those in the largest cities, have generally sufficient yard room to use for gymnasium exercises. In fact, if there is any yard room it can be used to advantage. Games that possess gymnastic features can be taught to classes of 60 pupils, or when such classes are too large for all to play in one game they can be divided in squads of 10 or 15, and all exercise in the same manner. Suitable games are being devised by gymnasium directors and published in gymnastic books now being issued. The children should be encouraged to play these games outside of the school yard, as a great advantage will be derived from the practice of them by the children and the substitution of games that have gymnastic value for those not so beneficial. Many of the games can be played without apparatus, but the addition of apparatus adds to the interest of the game. Rubber balls to be thrown and caught, barriers to be leaped over, objects to be collected or distributed, and other implements that develop skill and agility are desirable. An almost ideal game is very popular at present among gymnasts in the

Young Men's Christian Associations, which is well adapted for outdoor use. It is called basket ball, and was devised by Mr. James Naismith, one of the teachers of the Young Men's Christian Association training school, Springfield, Mass. The implements for the game consist of a large rubber or leather ball similar to a football and two baskets, or rings, that can be suspended at about 10 feet from the ground.

The pupils are formed in two divisions, the object of each division being to throw the ball into the goal of the opposite division, or prevent the opposite division from throwing the ball into theirs. The ball must not be carried or kicked, but must be thrown, and rough playing is prohibited. The game can be played by any number from 10 to 100. It calls for great skill and activity, brings into action all the players, and the chances of accident are very small. Systematized gymnastics can be carried on in the school yard. The calisthenic apparatus used in the schoolroom can with benefit be used outdoors when the temperature and weather permit. Such apparatus as ladders, ropes, poles for climbing, seesaw, giant stride, stilts, balancing beam, vaulting bars, etc., can be arranged to stand exposure to weather and adapted for outdoor use. In primary schools covered sand gardens could be provided. Such school-yard gymnasia should be open to the public during the summer months of school vacation, under a director. The opportunity for exercise and play in crowded localities would prevent a tendency to petty offenses, crimes, etc.; a place of innocent enjoyment would be afforded, and if kept open and lighted by electricity, would afford places of exercises, recreation, and rest for laboring men. The only cost entailed would be that of lighting and the salary of a care-taker, who should be invested with police rights of arrest, etc. These outdoor gymnasiums are provided for by law in all German cities of over 15,000 inhabitants, and the inhabitants are taxed to maintain them. One large central one in the larger cities is used not only for school purposes, but to train instructors. Such a public school outdoor gymnasium was established in Sandusky, Ohio, in May, 1892, under Hans Ballin, director of gymnastic work in the public schools.

School gymnasium outfits.—A simple outfit of apparatus should be selected at first, and if additions are made they can be selected by the director to conform to the course of training adopted.

The following two plans and lists are selected and arranged for a class of not over 60. In calisthenic exercises there is sufficient apparatus provided for each pupil, and exercises on chest weights may be performed with one hand only by the entire class. On the ladders, bars, etc., the class will be divided into four squads. The ladders may be hoisted out of the way and the vaulting bars and posts removed when the entire floor is needed. The uprights of the vaulting bars hold the cord or sticks for jumping and the vaulting bars sustain the free end of the adjustible ladders. Thus, by a judicious arrangement, the same piece of apparatus is made to serve a double use at the same cost.

In the high-school lists two varieties of special pulley weights are introduced (intercostal and back and loin machines) with a view to individual corrective work.

With these outfits the exercises may be progressive in either gymnasium or in passing from one to the other, thus holding the interest of the pupils.

The general arrangement of the apparatus in the exact order indicated is not necessary, except as noted above, but it should be so arranged as not to interfere when in use and to require as little moving as possible. A description of the apparatus in detail is given on the following pages:

List of apparatus suggested for a grammar-school gymnasium.

30 chest weights.
4 adjustible ladders.
4 vaulting bars.
4 sets of cord and pins for jumping.
6 balancing beams.
60 pairs three-fourths pound dumb-bells.
60 pairs racks.
60 pairs three-fourths pound Indian clubs.
60 pairs racks.
60 maple wands.
2 racks for wands.

The cost of this entire grammar-school outfit, erected in the gymnasium, will be nearly $650, in a good grade of apparatus.

Suggested list for a high-school gymnasium.

26 chest weights.
2 chest intercostal machines.
2 chest, back, and loin machines.
4 adjustible ladders.
4 vaulting bars.
4 sets of cord and pins for jumping.
4 jump boards.
4 pairs flying rings.
8 climbing ropes.
2 lines 9-inch traveling rings.
4 mattresses 5 by 5 feet by 2 inches.
60 pairs 1-pound bells.
60 pairs racks.
60 pairs 1-pound clubs.
60 pairs racks.
60 bar bells.
60 racks.
20 poles, 10 feet.
20 pairs racks.

This list of apparatus can be erected in a gymnasium, ready for use, for $1,000.

Classification of gymnastic apparatus adapted for use in city public schools.

- Calisthenic apparatus
  - Lifting, thrusting, and swinging
    - Dumb-bells.
    - Musical bells.
    - Indian clubs.
    - Jumping ropes.
  - Apparatus held by both hands
    - Wands.
    - Bar bells.
    - Hoops.
  - Apparatus connecting or placing pupils in opposition
    - Rings.
    - Poles.
    - (At times:
      - Wands.
      - Bar bells.)
  - Drill apparatus
    - Anderson foils.
    - Guns.
- Pulley weights
  - Direct application of resistance in definite planes
    - Chest weights.
    - Intercostal machines.
    - Back and loin machines.
    - Rowing, neck, and paddle attachments.
- Heavy apparatus
  - For suspension
    - Flying rings.
    - Traveling rings.
    - Ladders.
  - For climbing
    - Ropes.
    - Poles.
  - For leaping and vaulting
    - Jump stands.
    - Vaulting bar.
  - For balancing
    - Balancing beam.
    - Parallel bars.

DETAILED DESCRIPTION.

This description applies to the apparatus made by the Narragansett Machine Company, of Providence, R. I., who make Sargent gymnastic apparatus under the personal direction of Dr. D. A. Sargent, of Harvard College, Cambridge, Mass.; German apparatus under the supervision of C. F. E. Schulz, of Baltimore, Md., a graduate of the Turners' Seminary, and Swedish apparatus under the direction of Mr. Nils Posse, a graduate of the Royal Gymnastic Central Institute, Stockholm, Sweden.

Calisthenic apparatus.—Light apparatus adds to the interest in gymnastic exercises and increases its value.

Apparatus made for toys is generally worthless for gymnasium use, competition having reduced it in price and quality to that point where it is neither properly made nor of such material as to be durable. All calisthenic apparatus made of wood should be finished with shell-lac varnish, and all turned work should be polished in the lathe. Cheaper varnishes, put on with a brush, do not give so smooth a surface and when heated by the hands when in use becomes sticky. In all cases racks or some means of caring for apparatus when it is not in use should be provided and placed so that classes can easily take and replace the pieces they need while marching by in orderly manner.

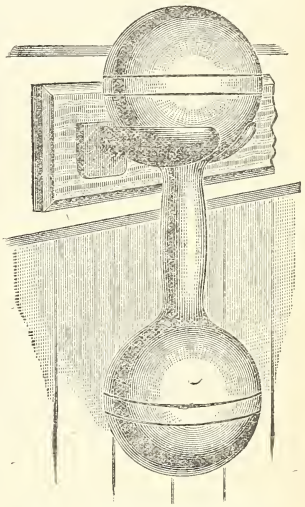

FIG. 1.—Dumb-bell and hook.

Apparatus for lifting, thrusting, and swinging.—This is usually the first used, and light weights should be selected for beginners.

Dumb-bells are generally made of maple, and should weigh from one-half to 1 pound each. The handle should be large enough to fill the hand of the pupil using them and should not have any groove at the end near the bell, as is often found in those sold in the toy stores. Good dumb-bells of the above weights cost from 25 to 35 cents per pair. Iron racks of the form shown in fig. 1 are best adapted for holding the dumb-bells. The cost of these is 15 cents per pair with screws.

Musical dumb-bells, invented by Miss Ellen Le Garde, superintendent of physical education in the Providence public schools, is an admirable form for children. As will be seen by fig. 2, it consists of two pairs of bells connected by a handle. Each pair of

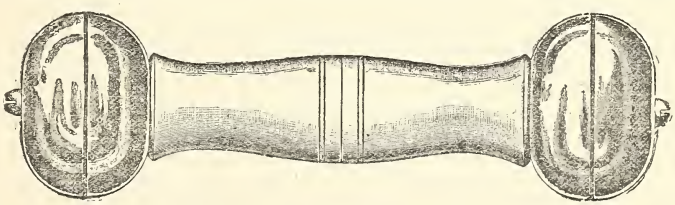

FIG. 2.—Musical dumb-bell.

bells is arranged to hold a clapper or "sounder," which does not ring the bells until they are forcibly turned or shaken. The bells have a clear, sweet tone, are made of highly polished steel durably nickel plated, and have a polished hard-wood handle.

The peculiar value of the musical bell lies in the necessity for sharp, energetic action at the end of each movement to produce the sound, which everyone using

them will want to get, thus forcibly exercising the muscles brought into action. Any of the familiar dumb-bell drills can be readily adapted to the musical bell.

The ordinary child takes kindly to anything that makes a noise, and when this noise resolves itself into harmonious sounds his delight is manifest in face, voice, or act. Drills with this form of bell are learned quickly by children because they like them. They are doing something, and are doing it with a noise. The bells are packed in strong boxes, which can be kept in the school desks and laid open on the desk when ready for the dumb-bell drill. They cost 45 cents per pair in lots of a dozen.

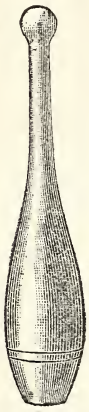

Fig. 3.—School model Indian club.

Indian clubs are made of maple or white wood, the latter being the lightest and best for the purpose. They should be finished the same as dumb-bells, and a similar rack is made for holding them. The school-model Indian club (fig. 3) is specially designed for children's use from 8 to 12 years. It weighs about three-fourths of a pound, and they cost 45 cents per pair. Maple Indian clubs weighing from three-fourths to 1½ pounds can be had from 27 cents per pair upward, according to the weight. Heavier clubs than 1½ pounds are never used in schools. Indian clubs can not be used in the schoolroom with desks.

Jump ropes may be obtained in all the toy stores for 10 cents and upward. Jumping with the rope can only be done in gymnasiums on the ground floor or in those not having schoolrooms under them.

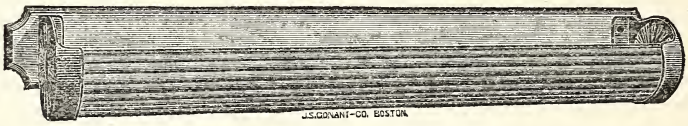

Fig. 4.—Wand rack.

Apparatus held by both hands adds an interesting variety of gymnastic work and places in opposition many sets of muscles, as in pulling the opposite sides of rings or pressing on the ends of a wand.

Wands are usually made of maple or any hard wood. They should be finished with shell-lac varnish and be rubbed down until they are smooth. The size in most common use is three-fourths of an inch diameter and 4½ feet long. These cost $2.25 per dozen. Racks for wands may be made to hold them upright, with a place for

Fig. 5.—Bar bell.

each wand, or in bundles horizontally, as is shown in fig. 4. Wands can be used in schoolroom with desks and to the best advantage. They are light and easier to manage by young children than any other piece of school apparatus. They lead the way and educate young pupils to higher forms.

Bar bells are a combination of a wand and a dumb-bell, or a dumb-bell with an elongated handle, the balls on the ends giving more momentum to the bar bell in the movements performed. The size commonly used is 4 feet 8 inches long and the cost $3.75 per dozen. Short bar bells may be used between the desks in the schoolroom for a few of the common movements.

Hoops, such as are usually sold in the toy stores, may, by being wound with cloth,

be made to answer for hoop exercises, but hoops specially made for the purpose, of selected material, finished with shell-lac, are much better. Such hoops are made in sizes of 24, 30, and 36 inches in diameter. These vary in price from $1.50 to $1.87 per dozen. They are easily hung on a large pin, a dozen or so on each pin.

Apparatus, connecting or placing pupils in opposition, aids in acquiring better rythm, and by varying the direction in which resistance is offered, develops more fully the muscular system. Rings, as used in calisthenic exercises (Fig. 6) are made of maple, the best being made of two or more pieces glued together, with the grain in opposite directions. They can be finished the same as Indian clubs and dumb-bells, and may be held on a large pin the same as those used for hoops. The size usually used are 4½ and 5 inches, inside diameter, and cost 37 cents and 45 cents per pair when glued up, and 30 cents and 34 cents per pair when turned from solid wood.

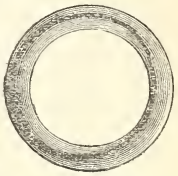

FIG. 6.—Ring.

Poles are made from any strong, straight-grained wood, finished the same as other calisthenic apparatus and cut in lengths of 8, 10, or 12 feet, costing 30, 37, and 45 cents each, respectively. They may be kept in a rack similar to that used for the wands.

Wands and bar-bells may be used at times in exercises similar to those arranged for poles and rings, each pupil holding to opposite ends of the bar-bells or wands, as they do the opposite side of the rings.

Drill apparatus.—Apparatus for executing gymnastic movements similar to those used in military drill always possesses a certain fascination for children.

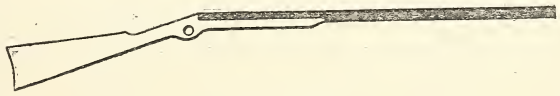

FIG. 7.—Drill gun.

The first in this class is the foil designed by Dr. Anderson. It is made entirely of wood, the blade being straight hickory, capable of standing a good blow, and fixed in the handle so that it can be easily removed. The movements recommended for this foil are similar to those in broadsword exercises, but not so energetic. They cost 45 cents per pair and may be held in similar racks to those for dumb-bells.

The drill gun (Fig. 7) is made according to designs furnished by Dr. Anderson and is of soft or hard wood, as may be desired. The cost is 30 cents each in soft wood, and 37 cents in hard wood. They are finished in shell-lac, with a black barrel, and may be held in racks that hold them vertically in lots of a dozen.

Pulley weights are the best means of exercise for the direct application of exercise to the muscular system in definite directions.

This form is the most generally used of any single class of apparatus in college gymnasiums for prescription exercise or such as are selected by the director for the correction of any physical defects. Some of them are also largely used in class exercise, particularly what is known as the chest weight. These machines were first popularized by Dr. D. A. Sargent in American college gymnasiums, and have since been adopted by the young men's Christian associations and athletic clubs in addition to the educational institutions of all grades.

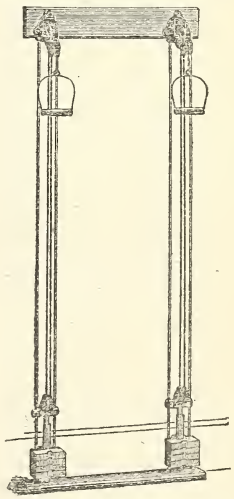

FIG. 8.—Champion chest weight.

Three types are generally adapted to school gymnasiums, i. e., chest weights, intercostal, and back and loin machines. These are illustrated by the accompanying engravings.

The chest weight, which consists of a pair of weights provided with pulleys at about the height of the operators' shoulders, and handles connected with ropes arranged to lift the weights, should be found in every school building.

The champion chest weight, shown in Fig. 8, has been designed specially for

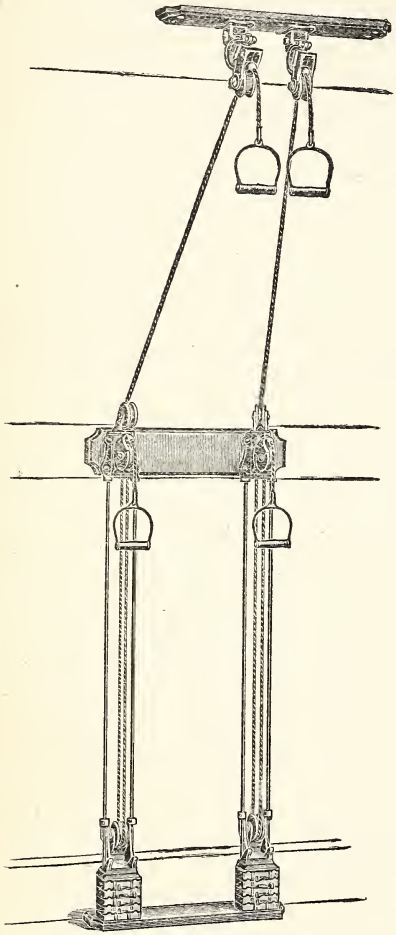

FIG. 9.—Intercostal machine.

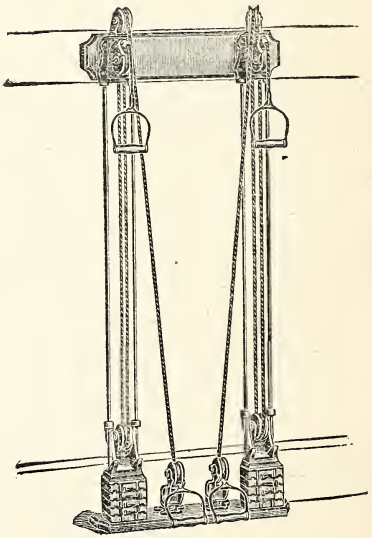

FIG. 10.—Back and loin machine.

school use. It is simple in construction, with no loose parts, except the weights, and is well adapted for use where a machine is to stand rough and careless usage.

Other forms of pulley-weight machines are the intercostal chest weight (Fig. 9) and the back and loin machine (Fig. 10).

Various attachments may be made to these machines, such as a rowing attachment to a back and loin machine, paddle and neck attachments to chest weights, etc.

Heavy apparatus is such as enables the user to lift, swing, or otherwise handle his own weight.

Apparatus for suspension.—Flying rings consist of two rings suspended about 18 inches apart, in such a manner that that the height of suspension may be adjusted.

The form shown at Fig. 11 is adjustable by means of a chain on the sides of the room, or by a strap connecting the rings with ropes. Both means of adjustment are not necessary in one piece of apparatus, and the latter is the one most commonly used on

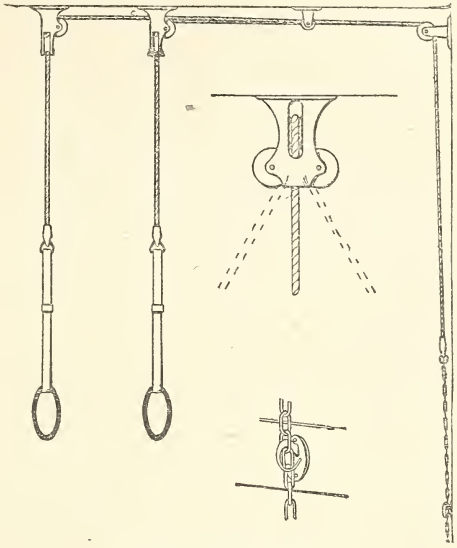

FIG. 11.—Flying rings.

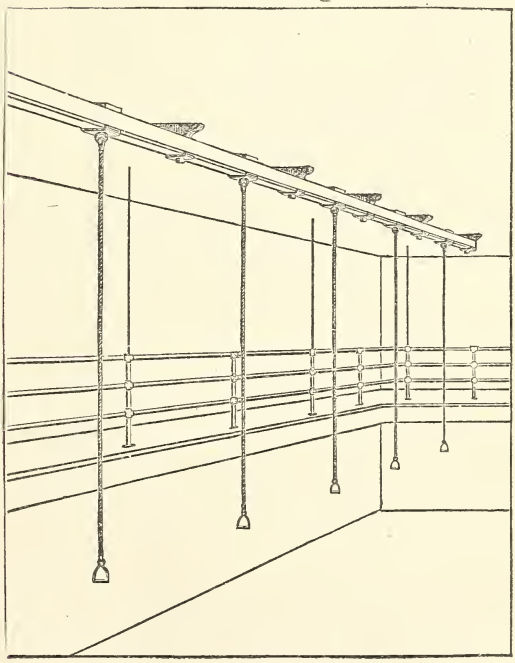

FIG. 12.—Line of traveling rings.

account of its being more economical. Rings should be quite large, 7 or 8 inches in diameter, and covered with leather. The adjustable straps should be of webbing, as leather is liable to become dry and break without warning. The price of flying rings

with strap adjustment is $9; with rope and chain adjustment, $18. Exercises on this piece of apparatus will be found in the Puritz Code Book of Gymnastic Exercise.

Traveling rings, or row of rings as they are sometimes called, consist of a line of rings with ropes attached to points of suspension 16 feet or more from the floor (Fig. 12). The distance apart of the rings depends on the height of the point of suspension from the floor, and should be for average use, as follows:

	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
Height	12	14	16	18	20	22	24	30
Distance apart	4½	4¾	5	6	7	7½	8	9

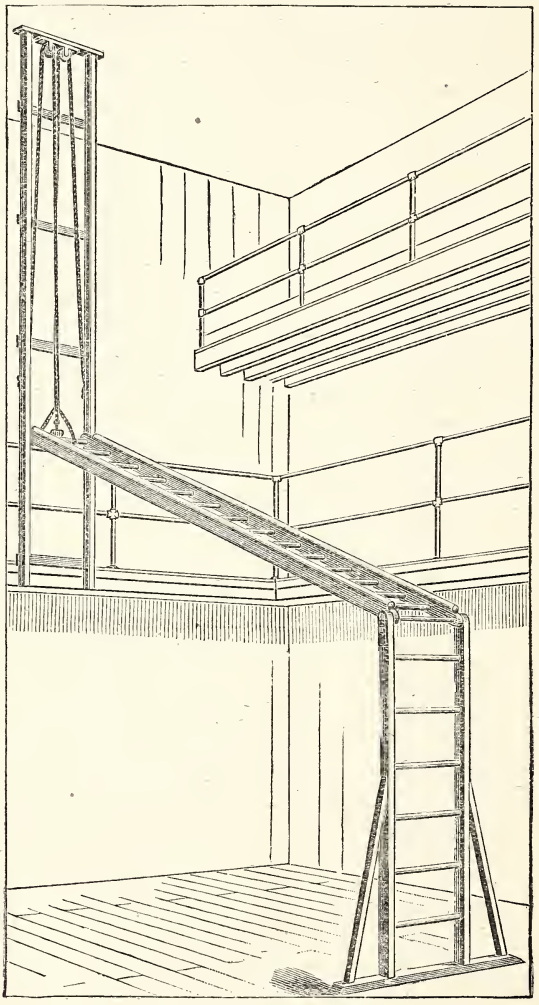

FIG. 13.—Adjustable ladder.

For a woman's gymnasium the distance should be less. For an athletic club, greater. The rings should be leather covered and will cost complete with ropes, hooks, etc., about $4 each.

Ladders are infinite in variety, but the form illustrated herewith (Fig. 13) is well adapted for school work. For class exercises one ladder should be provided for every

12 or 15 pupils. This form of ladder may be set horizontal or inclined, as shown in the illustration. The outer end may be set on the rounds of the stand so that the shorter pupils can easily reach its rounds, or the outer end may rest on the floor and be inclined as desired, so that the ladder may be adopted either for suspension from its under side or balancing movements by walking up the rounds on the outside, or it may be hoisted up entirely out of the way, a desirable feature in gymnasiums.

Climbing apparatus is specially desirable in school gymnasiums. Climbing ropes

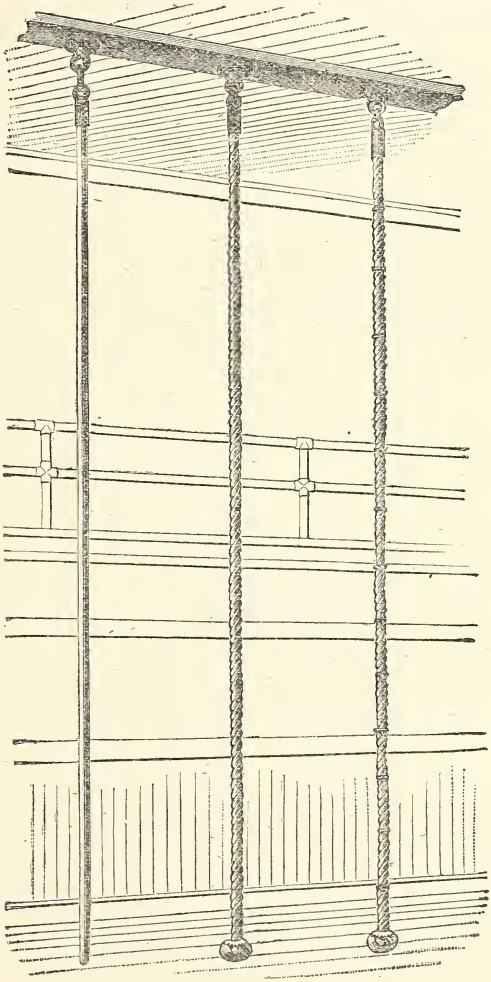

FIG. 14.—Climbing apparatus.

are made of four-strand selected manila, generally finished with a large leather-covered Turk's head on the lower end, although this adds considerable to the expense. They may be smooth or have braided rings or wooden balls secured about 8 inches apart. The plain form is most commonly used. Plain climbing ropes, with knot, 18 feet long, cost $5.62; without the leather knot, $3.75.

Climbing poles are an economical form of apparatus. They should be made of tough, well-seasoned wood, and finished smooth and free from splinters. A pole 18

feet long, with proper fixtures, will cost $3. All climbing apparatus may be arranged to swing up out of the way when the room is desired for other purposes.

Apparatus for leaping and vaulting can be used to its full advantage only on the ground floor. However, with the aid of mattresses, the jar of leaping or jumping may be so far absorbed as to be of little annoyance in other rooms.

Jump stands: Fig. 15 represents upright poles with holes bored one inch apart to sustain a cord having weights on the ends, or a straight stick to gauge the height of the jump. These may be used in connection with flying rings to obtain a swing and jump, or with climbing ropes. A stand 6 feet high and low enough for indoor gymnasium use costs $5.25, with cord and bags. The uprights of vaulting bars may also be used to hold the cord or stick for jumping, thus saving the cost of jump stands.

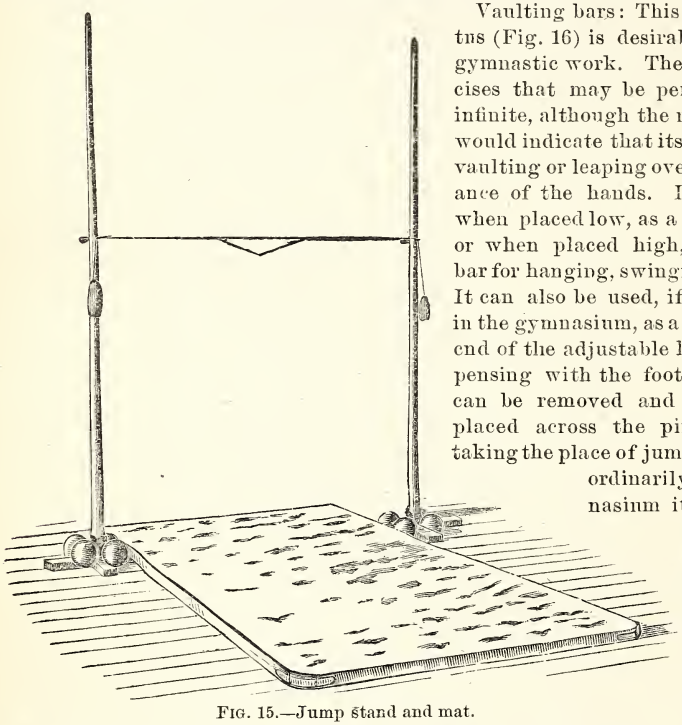

FIG. 15.—Jump stand and mat.

Vaulting bars: This piece of apparatus (Fig. 16) is desirable for advanced gymnastic work. The variety of exercises that may be performed on it is infinite, although the name given to it would indicate that its purpose was for vaulting or leaping over with the assistance of the hands. It may be used, when placed low, as a balancing beam, or when placed high, as a horizontal bar for hanging, swinging, and turning. It can also be used, if properly placed in the gymnasium, as a rest for the lower end of the adjustable ladders, thus dispensing with the foot piece. The bar can be removed and sticks or cords placed across the pins for jumping, taking the place of jump standards. As ordinarily used in the gymnasium it consists of two upright standards fastened at the bottom to the floor, and at the top to the ceiling of the room, or to braces extending from a gallery or the side of the room. It is sometimes arranged to swing up out of the way. For school gymnasium work the standards should be independent of any fastenings but that of the floor, and arranged to be taken out of the way, leaving the room clear for marching and calisthenic drill. The bar is generally made of hickory, with a steel core extending through it from end to end, and has iron caps at the ends arranged to fasten to the uprights by means of pins passing through holes in the caps and the uprights. This is the only form that can be depended on as being absolutely secure, and all frictional means of fastening the bar to the uprights or clamping to the uprights or other ways should be avoided, as they are liable to cause serious accidents. Each bar, with its pair of uprights, will cost from $25 to $40.

Balancing apparatus.—Apparatus for balancing is much used in gymnasiums for girls. Its use makes them sure-footed, and by practice in keeping the equilibrium gives them confidence in their own powers. Its exercises also strengthen the spine and make young girls walk with a graceful poise of body. The adjustable ladder, illustrated previously, in some of its positions, is a desirable piece of apparatus for balancing. A balancing beam is a straight plank, held firmly by feet, with its edge

upward. It is about 12 feet long. Several of them should be provided for a large class. They cost $4.50 each.

Parallel bars are sometimes used in a school gymnasium, although from the difficulty of storing them out of the way, and the fact that the exercises on them are quite arduous, they are not so popular as other apparatus.

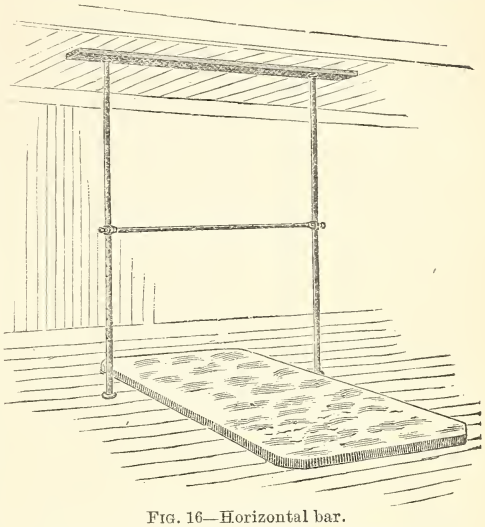

FIG. 16—Horizontal bar.

[It will be observed that the writer of the above omits all reference to the vaulting-horse, buck, quarter-circle, and other machines commonly found in American gymnasiums. The reasons for the omission are probably similar to those indicated in the remarks on the parallel bars.—ED.]

Apparatus for Swedish gymnastics.—Although in the lower grade of schools no apparatus is used for Swedish gymnastics, in the more advanced work apparatus is as desirable as in any system. The apparatus described below is made by the Narragansett Machine Company under the supervision of Mr. Nils Posse.

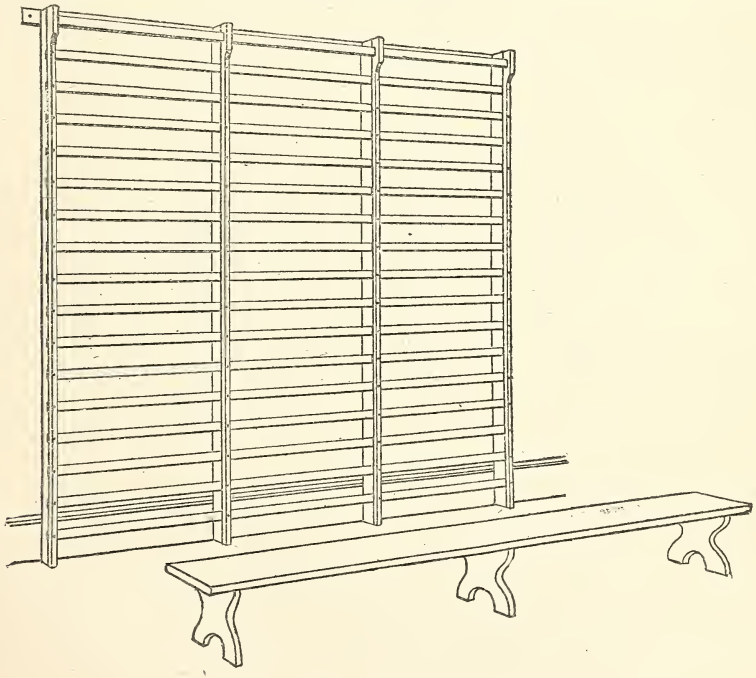

FIG. 17.—Swedish bar stalls and bench.

The following pieces of apparatus would be necessary in furnishing a gymnasium suitable for a high school or smaller institution:

Bom or horizontal bars.—This piece of apparatus is somewhat similar to the vault-

ing bar, but it has two bars, neither of which is round. One of them is in shape nearly like an isosceles triangle with its angles rounded off; the broader edge, the base of the triangle, may be turned upward and used as a balancing beam, while the other edge, the apex of the triangle, affords a better hold for the hands. The other bar is shaped somewhat like a conventional heart, but, of course, without angles. The grooved or double edge may be turned up for those with small hands, or to allow a different grasp. These bars are quite long, from 12 to 16 feet, from 6 to 8 inches deep, and 3 or 4 inches thick. Three or four students can vault, jump, or otherwise exercise on the bars at one time. They are generally arranged so as to be taken down out of the way if desired.

Ladders.—Swedish ladders consist of a series of square openings about 20 inches wide, with rungs generally 3 inches in width, and as long or as wide as space and material will permit. They may be suspended on the ends or at the side, as desired. They are entirely different from the ordinary gymnasium ladder, as are the exercises on them.

Bar stalls.—These are arranged to be fastened against the wall, as is shown in Fig. 17. The bench is used in connection with the bar stalls.

Vaulting box.—This is a box about 5 feet long, having inclined sides and a padded top about 1 foot wide. It is raised or lowered by changing the sections that form the lower part.

FROM A. G. SPALDING & BROS., PHILADELPHIA, PA.

Our idea of school apparatus is that it should be light, strong, and portable. There are very few of the school-houses now built that have been provided with a special room for gymnasium work. In a great many cases the rooms have to perform a dual service of recitation room and gymnasium, or hall and gymnasium. The apparatus designed by us is of such a character that a fully equipped gymnasium can be moved inside of five minutes without marking or destroying the appearance of the room. Where the floors are perforated or drilled into for guys or stay rods we have a plate that is so constructed that as soon as the guy or stay is removed a spring disk fills the orifice.

In regard to outdoor gymnasiums, we have found that the following style of construction has given every satisfaction: To make a frame work of either iron or wood, covering the space set apart for gymnasium use, the height of the frame being not less than 20 feet. From this can be suspended flying rings, traveling rings, rope ladders, climbing and knotted rope, giant stride, and a horizontal ladder. The ladder should be dropped within 8 feet of the ground. For floor apparatus, horizontal and parallel bars could be used; also vaulting horse and buck. As mattresses could hardly be used out in the open air, we find that tan bark makes a very desirable floor, there being enough spring in it to prevent any serious injury from falling. Where tan bark can not be procured sand is the next best thing.

Of course, the number of duplications in the appended list of apparatus would depend largely upon the size of the grounds, the number of pupils, and the amount of money to be spent.

In new school buildings, where it is the intention to build a room purposely for gymnasium use, all possible obstruction should be avoided, i. e., supporting posts and pillars through the center of the room. The heating apparatus should be arranged so that it will not take up valuable wall space. Where it is possible the heat should be conducted from below through registers, rather than using steam-heating coils in the room itself, as the latter takes up a great deal of valuable space and are in the main very undesirable. Another improved feature would be to have the windows not lower than 5½ feet from the floor. By placing the windows at that height from the floor you get the advantage of a solid wall space all around the room, and as wall apparatus of various kinds embodies the fundamental principles of "body building" a great deal of wall space is required. The height of ceiling

should not be less than 20 feet. A gallery encircling the room is very desirable, as the surface or top can be used as a running track. The underneath part can be used for suspended apparatus. The height of the gallery from the floor should not be less than 12 feet. In rooms not originally intended for gymnasium purposes we would suggest the following style of apparatus: Pulley weights; these to include upper and lower chest machines, chest developers and expanders, wrist-rollers, traveling parallels, etc. Where there is an instructor we would include in this horizontal bar; also parallel bar. If there is no instructor we would omit the parallel bar. In addition to the above named we would, of course, include mattresses, Indian clubs, dumb-bells, and wands; also inflated or lively striking bag. Where the room will permit it the suspended disk is preferable. The disk should not be less than 6 feet in diameter, and be made very stiff and strong; 7 feet 8 inches is the proper height from the floor. Where the funds or room will not permit of this style bag the suspended style can be used. This is hung between ceiling and floor, having about 18 inches or 2 feet of rubber at top and bottom. When struck it returns very quickly and affords both exercise and amusement.

Suggested list of Apparatus for a Gymnasium for an average-sized Grammar School.

20 No. 3 Victor pulley weights.
2 No. 2 J Victor pulley weights (with backboard and rowing attachment).
2 No. 8 B Victor pulley weights (chest-expanders).
2 No. 8 Victor pulley weights (giant pulley).
2 No. 8 A Victor pulley weights (back and loins).
1 No. 401 Victor pulley weight (wrist-roller).
1 No. 42 Victor finger machine.
1 No. 48 Victor traveling parallel.
1 No. 50 Victor quarter circle.
1 No. 65 Victor wrestling machine.
1 No. 400 Victor sculling machine.
1 No. 8 D Victor paddle machine.
2 pairs No. 125 swing rings.
7 No. 126 traveling rings.
1 Laflin rowing machine.
1 No. 29 bateau board.
1 No. 0 vaulting horse.
1 McCaffrey striking bag and disk.
1 No. 70 horizontal bar.
1 No. 82 suspended parallel.
1 set No. 104 breast bars.
1 24-foot horizontal ladder.
1 No. 97 climbing rope.
1 No. 93 rope ladder.
1 No. 109 vaulting standards.
1 pole-vaulting board.
1 No. 25 leaping board (for vaulting horse).
1 No. 27 incline board (for traveling rings).
3 No. 101 B mattresses (4 by 6 feet).
2 No. 103 B mattresses (5 by 10 feet).
1 rubber "take-off" mat (3 by 5 feet).
1 rubber jumping mat (30 by 3 feet).
50 pairs 1-pound Indian clubs.
75 pairs 2-pound Indian clubs.
50 pairs three-fourths-pound dumb-bells (wooden).
75 pairs 1-pound dumb-bells (wooden)
6½ dozen 5-foot wands.
100 sections Indian-club, dumb-bell, and wand holders.

The above apparatus will be delivered f. o. b., Philadelphia, for $1,065.

Suggested list of Apparatus for a Gymnasium for a High School.

20 No. 3 Victor pulley weights.
2 No. 2 J Victor pulley weights (with backboard and rowing attachment).
2 No. 8 B Victor pulley weights (chest expanders).
2 No. 8 Victor pulley weights (giant pulley).
2 No. 8 A Victor pulley weights (back and loins).
1 No. 401 Victor pulley weights (wrist roller)
1 No. 42 Victor finger machine.
1 No. 48 Victor traveling parallel.
1 No. 50 Victor quarter circle.
1 No. 65 Victor wrestling machine.
1 No. 400 Victor sculling machine.
1 No. 8 D Victor paddle machine.
2 pairs No. 125 swinging rings.
7 No. 126 traveling rings.
1 Lafling rowing machine.
1 No. 29 batteau board.
1 No. 0 vaulting horse.

For a High School.—Continued.

1 No. 0 B vaulting buck.
1 McCaffery striking bag and disk.
1 No. 70 horizontal bar.
1 No. 76 A horizontal bar.
2 No. 79 parallel bars.
1 No. 82 suspended parallel.
1 set No. 104 breast bars.
1 24-foot horizontal ladder.
1 No. 97 climbing rope.
1 No. 93 rope ladder.
2 No. 96 climbing poles.
1 No. 109 vaulting standards.
1 No. 25 leaping board (for vaulting horse).
1 No. 27 incline board (for traveling rings).
1 pole vaulting board.
4 No. 101 B mattresses (4 by 6 feet).
2 No. 103 B mattresses (5 by 10 feet).
1 all-hair tumbling mat (5 by 15 feet).
1 abdominal mat.
1 rubber "take-off" mat (3 by 5 feet).
2 rubber jumping mat (30 by 3 feet).
2 No. 114 vaulting poles.
1 No. 1 medicine balls.
1 16-pound indoor shot.
2 head harness.
100 pairs 2-pound Indian clubs.
25 pairs 3-pound Indian clubs.
100 pairs 1-pound wooden dumb-bells.
6 dozen bar balls.
100 sections Indian-club, dumb-bell, and bar-ball holders.

The above apparatus will be delivered f. o. b., Philadelphia, for $1,315.

FROM THE SCHUMACHER GYMNASIUM COMPANY, AKRON, OHIO.

Regarding the requirements of the gymnasium and the possibility of adapting rooms designed for other purposes to gymnasiums, it might be said that any room is better than none. Almost any room may be made valuable as a gymnasium, but its value will always be proportionate to its advantages; that is, the more desirable features it possesses the more benefit may be derived from it.

By desirable features we mean first, light, ventilation, facilities for controlling the temperature, etc.; second, appropriate design; third, accessibility.

The same sanitary rules apply here that apply in other schoolrooms, bearing in mind, however, that increased respiration and perspiration demand a greater supply of fresh air and a more frequent complete change of atmosphere.

The walls may be of wood, stone, or brick, but it is preferable that they be of wood, and if not sheathed entirely a desirable arrangement is to have them sheathed from the floor to a height of about 5 feet, being finished at the top with a neat molded board 6 to 8 inches wide, which should be placed so that its center shall be at a height of 5 feet from the floor, as all wall machines will require an attaching-point at that height.

The "wall board" at a height of 5 feet is almost a positive requirement, unless the room be full sheathed, and even then is not out of place. A "base board," say 8 inches deep and three-quarters of an inch thick at the floor line, is also desirable, but not necessary.

The windows are preferably placed high up from the floor.

For heating, steam is entirely suitable, and in school buildings is usually available. Where possible to avoid, however, do not have radiators on the floor; have coils of pipe around the room, high up from the floor, immediately under the running gallery, if there is one. The heat will then be better distributed, pupils working at wall machines will not be exposed to direct heat, and there will be no wall space occupied, as is the case where radiators are used. If, however, radiators are preferred, have them placed high up on the wall on brackets, say 6 feet from the floor, and thus as nearly as possible approach the arrangement suggested.

The ceiling should be of good height where it can be had, and where hanging, swinging, and flying apparatus is to be used, as in schools for older pupils, the ceiling should be 16, 18, or even 20 feet high. No finish is required overhead, except such as may be desired for appearances, and in a gymnasium bare beams are entirely appropriate and afford excellent points of attachment for overhead apparatus.

Of course, if a building might be constructed for a gymnasium, there are several

desirable features that might be introduced, adapting it to its purpose and with proportionately increased results.

If the room is of generous size and a running track may be introduced, much will be added to the value of the gymnasium.

Such a track is best laid on a raised gallery, preferably hung by iron rods from the beams overhead or supported on brackets from the wall; posts or pillars from the floor should be avoided as much as possible. The gallery should be from 4½ to 6 feet in width and about 10 feet from the floor, it should have curves of large radii at the corners and in fact if convenient, might be semicircular at the ends, but never less than 8 feet radius.

Again, if we may dwell on ideal construction, and the building may be supposed to have been constructed expressly for a gymnasium, there should be bathing facilities and locker rooms, which are best placed immediately under the gymnasium floor. They will not require a great ceiling height, but should be as well heated and ventilated as the gymnasium proper and require besides an effective system of drainage.

In many schools an assembly hall is provided for general school exercises and in some cases provisions made for visitors. A gymnasium could be easily designed that would be complete as a gymnasium and yet serve as a hall for the other school work and might have a gallery for a running track and an extension back of the track for visitors, with a physical director's and an examination room below on the main floor and a platform for the physical director near his room.

In case of commencement or other public exhibition the visitors may use the whole gallery as well as the floor, and the director's room become a dressing room and his platform serves the speakers.

But with the present outlook, baths, locker rooms, director's and examination rooms, and perhaps even the examination itself must be omitted and the most good be gotten out of existing circumstances.

As to equipment, it is safe to say that the basis of the outfit (if it extends at all beyond dumb-bells and wands) must be the chest weight which not only provides exercise for almost all the muscles of the body and an infinite variety of movements, but is so completely under control and is so readily adapted to all classes and all degrees of strength, that injury or even failure to benefit is almost impossible.

Of the chest weights, therefore, we advise ample supply and a few special forms of pulley weights for particular groups of muscles; as the intercostal, the name of which indicates the muscles reached; the quarter circle, an excellent device for raising the front chest walls, developing the abdominal muscles and correcting stooping shoulders; as is also the pectoral machine, which is desirable for pupils who bend greatly over their work.

A chest weight, having a "floor attachment" and known as a back and loin machine, provides work for those parts and is readily convertible into a regular chest weight, or one or more may be added.

A neat attachment, called a "neck strap," is manufactured by us, and may be instantly attached to any chest-weight handle, making a complete neck machine for exercising the muscles of the neck and upper back; there may be a number of these straps; they do not in any way interfere with the use of the chest weight, as they may be as quickly removed as attached.

A wrist roll will provide exercise for the forearm and wrist, and is preferably operated by friction and arranged to be adjusted to different powers.

A finger machine, operated by an adjustable spring and provided with a roller finger bar, develops the muscles of the fingers and forearm, relieves cramped hands, and renders stiff fingers supple.

The foregoing machines may be arranged around the walls, all requiring wall attachment; the arrangement will vary with the design of the room, but it will be well to keep apparatus of one kind or class as much as possible together, for convenience in operating as well as for symmetrical appearance.

Note here that chest weights should be placed 6 feet apart in order to permit extended-arm movements.

The above-named pieces are desirable and advisable in schools of all ages, and the list contains nothing that is injurious to a growing child or is liable to misuse tending to be otherwise than beneficial. It is all compact, occupying space close to the wall; and, together with a complement of dumb-bells, wands, and, perhaps, wooden rings, might provide an acceptable list for the younger classes, having sufficient variety to gain and hold the interest and attention of the pupil.

The pieces mentioned may be merely added to for older pupils, as almost all of them are capable of immediate adjustment to greater power, and more difficult or more vigorous work on the other pieces will adapt them to the increased strength and endurance of advanced pupils.

The dumb-bells need not necessarily be increased in weight, those weighing from 1 to 2 pounds will be sufficiently heavy for the entire school course. In the high schools, however, as both muscular power and muscular control are increased, Indian clubs may be introduced, the use of which not only develops muscle and adds grace, but, by the rhythmic beat of the circles, teaches physical judgment perhaps as well as any of the lighter apparatus. There should be a sufficient number of clubs and bells provided to supply the largest class that is to be handled, and hooks and hangers will be required in which they should be kept when not in use.

For the older classes we would also advise the introduction of some of the heavier pieces requiring the support and control of the body by the arms, on which class of apparatus the weight of the body is the resistance to be overcome by the muscles. This class of apparatus is especially valuable for instinctively teaching muscular control, physical judgment, and physical courage, all of which are of such great advantage to the pupil in later years.

Chief among apparatus of the latter class is the regular parallel bars, a piece which provides a great variety of movements calculated to produce agility and grace of movement in addition to the above-mentioned acquirements.

The work on the parallel bars should be vigorous but not violent, although the strain is almost wholly on the groups of heavier muscles.

Mats should be provided for use with these bars to prevent injury to feet and ankles by alighting on the hard floor. The bars are well adapted for class work on the "follow my leader" principle and are in circuit with the vaulting bar, vaulting horse, and traveling or flying rings. If necessary the class may be divided into "squads," each squad to be under the leadership of some more advanced or more proficient scholar who is careful and will command conscientious work on the part of the members of his squad, the director overseeing the whole and having the plan of work laid out and adapted to the class.

The vaulting bar as mentioned might well be a part of the outfit, and as it is adjustable in height, it may be used as one of the introductory pieces to the heavier apparatus. A large number of trunk movements are possible on this bar besides those of direct vaulting and it is considered indispensable in most gymnasia.

The breast bars are also much used and are entirely practicable in a school gymnasium. They are useful for deepening the chest and they also reach the muscles of the back and arms in connection with a "brick or foot block" and a strap (breast bar or abdominal strap) encircling the two bars. Good back and loin work may be done with or without dumb bells in the hands. As to arrangement, they are preferably run to the ceiling, if not too high, or under the gallery, if there is one, but they may be braced out from the wall or run across a corner; one pair is probably sufficient, although two pairs give three spaces.

For hanging or swinging apparatus, first comes the flying rings, the exercise on which is of a recreative character and is excellent for the intercostal muscles and raising the side wall of the chest.

Other hanging apparatus should be traveling rings, a rope ladder, a knotted rope or rosary, and a climbing rope (smooth), and in this connection we would advise, as

adapted to the older classes and requiring less exertion in climbing, the peg pole, not the old wooden post with the slipplery wooden pegs, but the new device, which has overcome all the difficulties previously experienced and removed all objection to this valuable apparatus.

The rope ladder is next, perhaps, and may be even used before the peg poles, as it allows the climber to use the feet as well as the hands. It is a preparatory piece, entirely safe, and teaches confidence to the pupil who is unused to being off the floor.

The rosary is a heavy manila rope 4 inches in circumference, on which at intervals of about 8 inches are arranged sewn-in knots of smaller braided cord, forming holding points for the hands. These knots should be sewn through the rope and not tied in or around it.

The climbing rope is identical with the rosary, with the exception that it is perfectly smooth and has no knots. It is of four-stranded 4-inch manila. The operation of climbing is more severe on this rope, as the hand must grasp the smooth rope and no vantage points are provided.

One each of these climbing pieces will be all that is required, and with an adjustable ladder and perhaps a giant stride will constitute the hanging apparatus, although, of course, there are numerous other pieces of this class, some of which might be introduced in the school.

The giant stride is essentially a school piece, and may be used by the girls as well as the boys. It consists of four (or more) ropes carrying handles or rings, as desired, suspended from the ceiling by a swiveled head or plate. In operation, as many boys or girls as there are handles or rings grasp them and, running in a circle, are swung up by centrifugal force, being kept up by the vigorous pushings of the first one to touch the floor. It is enjoyable, exhilarating, and beneficial, and practically free from danger.

The adjustable ladder is a most valuable piece and your physical director will make excellent use of it.

Among the heavy floor or portable pieces the most desirable is the vaulting horse, on which several hundred distinct and recognized movements are made and which is considered indispensable in a complete gymnasium if a thorough course is to be given; it consists in simple form, of a padded body supported on legs, and has from this been developed into one of the cleverest and most complete devices used in the gymnasium.

A leaping board and, perhaps, a pair of jumping stands would complete a very fair outfit for a high school, for while there is a practically unlimited variety of pieces, all of them may not be advantageously used in the public school, especially if the pupil must exercise without proper gymnasium costume. We would mention here that it would be well to cause each member of the class to have for gymnasium use a pair of soft-soled shoes, both for the preservation of the apparatus and for the freedom allowed the feet, which is denied them by the stiff-soled street shoes.

Much of the foregoing, of course, is based on the ideal school gymnasium, and while practicable and desirable, may not be attainable; in fact it is probable that much of the school gymnasium work will be of a very simple order for the present, and until the public is educated to a knowledge of its value.

A list of apparatus for a grammar school.

40 pair dumb-bells, 1 pound, with hooks.
10 pair dumb-bells, 2 pounds, with hooks.
4 dozen wands or bar bells, with hooks.
20 pair triple (glued) rings.
10 to 15 Boston chest weights No. 1.
2 or 3 Boston chest weights No. 2.
1 giant or intercostal, or both.
1 quarter circle or pectoral machine.
1 dozen neck straps.
1 wrist roll.
1 finger machine.
1 pair breast bars.
1 pair parallel bars, or a traveling parallel.
1 vaulting bar, or a combination vaulting and horizontal bar.
1 giant stride.
1 pair flying rings.
2 mattresses 5 by 8 feet by 2 inches.

Such an outfit would cost about $250, and would be capable of doing all that may be done for the pupil at that stage.

To the above list add, for a high school—

1 "Universal" combination pulley weight.
5 traveling rings.
1 pair peg poles.
1 adjustable ladder.
1 adjustable vaulting horse.
1 climbing rope.
1 rosary.
1 pair jump stands.
1 mattress 5 by 10 feet by 2 inches.
1 mattress 5 by 8 feet by 2 inches.

These additional pieces would cost about $150, and with them all you would have a very good high-school gymnasium.

TABLE 1.—*Summary of statistics of physical training in cities which have regular systems and employ specialists.* (*a*)

State.	Number of cities.	Number of cities employing the several systems of gymnastics.					Number of specialists in physical training.			Number of cities—		Number of school gymnasiums.	Number of cities which employ military drill.	Exercises accompanied by music.			Number of cities which provide ample playgrounds.
		German.	Swedish.	Delsarte.	Combination or eclectic.	Other systems (or not reported).	Male.	Female.	Total.	Which employ no apparatus.	Which have regularly equipped gymnasiums.			Regularly.	In part.	Never.	
United States	83	25	24	4	17	*b*14	65	72	137	34	18	*c*31	23	18	28	29	59
North Atlantic Division	25	2	15	....	4	4	7	26	33	14	7	9	7	5	4	16	18
South Atlantic Division	6	....	4	....	2	....	1	13	14	1	....	....	2	2	1	3	2
South Central Division	1	....	....	1	....	....	0	3	3	1	....	....	....	....	1	....	....
North Central Division	37	18	1	3	8	7	52	20	72	13	7	8	4	7	20	7	25
Western Division	15	5	4	....	3	3	5	10	15	5	4	*c*14	8	4	2	3	14
North Atlantic Division:																	
Maine	1	....	....	....	1	....	0	1	1	....	....	....	....	....	....	1	1
New Hampshire	1	....	....	....	....	1	0	1	1	....	....	....	....	1	....	....	1
Massachusetts	13	....	11	....	2	....	5	15	20	8	3	5	6	1	2	10	9
Rhode Island	1	....	1	....	....	....	0	1	1	....	....	....	....	....	....	1	1
Connecticut	1	....	1	....	....	....	0	1	1	1	....	....	....	....	....	1	....
New York	5	....	2	....	1	2	0	6	6	3	3	3	1	2	1	2	3
Pennsylvania	3	2	....	....	....	1	2	1	3	1	1	1	....	1	1	1	3
South Atlantic Division:																	
District of Columbia	2	....	1	....	1	....	1	9	10	1	....	....	2	....	....	2	....
North Carolina	2	....	1	....	1	....	0	2	2	....	....	....	....	....	1	1	2
Georgia	1	....	1	....	....	....	0	1	1	....	....	....	....	1	....	....	....
Florida	1	....	1	....	....	....	0	1	1	....	....	....	....	1	....	....	....
South Central Division:																	
Alabama	1	....	....	1	....	....	0	3	3	1	....	....	....	....	1	....	....
North Central Division:																	
Ohio	8	3	....	....	3	2	4	5	9	4	....	....	2	....	3	3	6
Indiana	1	....	....	....	1	....	0	1	1	1	....	....	....	....	1	....	1
Illinois	4	4	....	....	....	....	28	0	28	....	1	1	....	1	3	....	1
Michigan	4	....	1	....	1	2	1	3	4	1	1	1	....	1	2	....	3
Wisconsin	3	2	....	....	....	1	5	1	6	2	....	....	....	1	1	1	2
Minnesota	1	1	....	....	....	....	1	0	1	....	1	1	1	1	....	....	1
Iowa	9	2	....	2	3	2	3	6	9	1	2	3	1	3	4	2	6
Missouri	5	4	....	1	....	....	9	3	12	4	1	1	....	....	4	1	3
Nebraska	2	2	....	....	....	....	1	1	2	....	1	1	....	....	2	....	2
Western Division:																	
Colorado	6	2	1	....	2	1	1	5	6	3	3	*c*13	5	3	1	2	6
Washington	2	....	1	....	1	1	0	3	3	1	1	1	1	1	1	1	3
California	6	3	2	....	....	1	4	2	6	1	....	....	2	....	....	....	5

a It must be understood that the figures in this table refer only to cities described in the heading. See Table 2 for other cities that have gymnasiums, military drill, etc.

b Of these, 7 do not report the system employed; 2 use the Emersonian; 2, that of the Boston School of Oratory; 1, Anderson's; 1, Dio Lewis's, and 1, "calisthenics."

c Not including those in Denver (District No. 1), Colo., in which it is reported that "all" buildings have gymnasia.

TABLE 2.—*Summary of statistics of physical training in cities which employ no specialist, but require regular instruction by class teachers.* (*a*)

State.	Number of cities.	Number of cities employing the several systems of gymnastics.					Number of cities which have regularly equipped gymnasiums.	Number of school gymnasiums.	Number of cities which employ military drill.	Number of cities which provide ample play grounds.
		German.	Swedish.	Delsarte.	Combination, (or eclectic.)	Other systems (or not reported).				
United States	81	22	9	9	4	*b*37	9	16	12	59
North Atlantic Division	26	.....	5	2	1	18	3	3	6	17
South Atlantic Division	6	.....	.....	2	.....	4	1	3	1	4
South Central Division	7	2	1	1	.....	3	1	1	2	6
North Central Division	36	17	3	4	2	10	3	8	3	25
Western Division	6	3	.....	.....	1	2	1	1	.....	7
North Atlantic Division:										
New Hampshire	1	.....	1	.....	.....	.....	.....	.....	.....	.....
Massachusetts	8	.....	4	.....	1	3	1	1	3	5
Rhode Island	1	.....	.....	.....	.....	1	1	1	.....	1
New York	11	.....	.....	2	.....	9	1	1	2	9
New Jersey	1	.....	.....	.....	.....	1	.....	.....	1	1
Pennsylvania	4	.....	.....	.....	.....	4	.....	.....	.....	1
South Atlantic Division:										
Maryland	1	.....	.....	.....	.....	1	.....	.....	1	1
West Virginia	1	.....	.....	.....	.....	1	.....	.....	.....	.....
South Carolina	2	.....	.....	1	.....	1	.....	.....	.....	2
Georgia	2	.....	.....	1	.....	1	1	3	.....	1
South Central Division:										
Kentucky	1	.....	1	.....	.....	.....	.....	.....	.....	1
Tennessee	2	.....	.....	1	.....	1	.....	.....	.....	2
Mississippi	1	1	.....	.....	.....	.....	1	1	1	1
Texas	2	.....	.....	.....	.....	2	.....	.....	1	1
Arkansas	1	1	.....	.....	.....	.....	.....	.....	.....	1
North Central Division:										
Ohio	6	2	.....	1	1	2	1	2	.....	4
Indiana	5	1	1	.....	.....	3	.....	.....	1	4
Illinois	6	4	.....	.....	.....	2	1	1	1	5
Michigan	2	.....	1	.....	.....	1	.....	.....	.....	1
Wisconsin	1	1	.....	.....	.....	.....	.....	.....	.....	.....
Minnesota	4	.....	1	2	.....	1	.....	.....	.....	2
Iowa	2	.....	.....	1	.....	1	.....	.....	.....	.....
Missouri	4	4	.....	.....	.....	.....	.....	.....	.....	4
Kansas	6	5	.....	.....	1	.....	1	5	1	5
Western Division:										
Montana	1	1	.....	.....	.....	.....	.....	.....	.....	.....
Wyoming	.....	.....	.....	.....	.....	.....	1	1	.....	1
Utah	1	.....	.....	.....	.....	1	.....	.....	.....	1
Washington	2	2	.....	.....	.....	.....	.....	.....	.....	2
California	2	.....	.....	.....	1	1	.....	.....	.....	3

a It must be understood that the figures of this table cover only the cities described in the heading. For other cities which have military drill, gymnasiums, etc., see Table 1.

b Of these, 23 do not report the system employed; 5 use Dio Lewis's gymnastics; 3, "calisthenics"; 1, Monroe's; 1, Pratt's calisthenics; 1, Smart's; 1, Anderson's; 1, Sargent's; 1, Anna Morris's.

TABLE 3.—*Statistics of physical training in cities which have professedly*

	City.	Director of physical training.	Date of introduction.	Number of special teachers of physical training.		System employed.
				Male.	Female.	
	1	2	3	4	5	6
	ALABAMA.					
1	Birmingham	Mrs. E. N. Allen, Miss M. A. Cahalan, Miss A. R. Klos.	1891	0	3	Delsarte, modified
	CALIFORNIA.					
2	Berkeley	Miss Agnes McLean	1892	0	1	Swedish
3	Los Angeles	C. J. Rodhe	1890	1	0	German
4	Oakland	Paul Uth	1890	1	0	do
5	Sacramento	Hedwig Malmstrom	1891	0	1	Swedish
6	San Francisco	Robert Barth	1892	1	0	German
7	San Jose	L. Weber	1891	1	0	
	COLORADO.					
8	Colorado Springs	Miss Alice C. Holcomb	1892	0	1	German (Betz)
9	Denver (district No. 1)	Jacob Schmidt	1889	1	0	German, modified
10	Denver (district No. 2)	Mae E. Neal	1892	0	1	Anderson's, Delsarte, and Swedish combined.
11	Denver (district No. 17)	Miss Lillian Pike	1892	0	1	Swedish
12	Pueblo (district No. 20)	Miss Carrie B. Palmer	1890	0	1	German, French, and Swedish combined.
13	Trinidad	Miss Rilla Quisenberry	1892	0	1	
	CONNECTICUT.					
14	New London	Miss M. I. Ives	1891	0	1	Swedish
	DISTRICT OF COLUMBIA.					
15	Washington (first six divisions).	Miss Rebecca Stoneroad	1889	1	6	Eclectic
16	Washington (seventh and eighth divisions).	Miss Mary P. Evans	1889	0	3	Swedish
	FLORIDA.					
17	St. Augustine	Miss A. C. Tison	1891	0	1	Swedish
	GEORGIA.					
18	Augusta	Miss M. Wheeler	1889	0	1	Swedish
	ILLINOIS.					
19	Chicago	Henry Suder	1886	25	0	German
20	Freeport	—— Wolfe	1890	1	0	German (Suder)
21	Moline	Adolf Oppenheimer	1890	1	0	do

introduced a regular system, under the care of a specialist.

Apparatus used in class exercises, and grades in which it is employed. *a*	Number of school buildings provided with gymnasia.	Are ample play grounds provided?	Time per day given to recesses.	Are the exercises accompanied by music?	Time given to gymnastics.		If military drill is employed, from what grades are the pupils taken?	
					Number of lessons per week.	Length of each lesson.		
7	8	9	10	11	12	13	14	
None	0	No	15–30 min.	Not uniformly.	6	20 min		1
Dumb-bells, wands, and rings.	0	Yes	20 min	When practicable.	5–10	10–20 min		2
None	0	Yes	30 min	Sometimes	10	10 min		3
Wands, seventh and eigth grades; dumb-bells, ninth grade.	0	Yes	15 min	Sometimes	5	12–15 min		4
Bar, saddle, and ropes, grammar grades.	0	Yes	20 min	No	5	15 min		5
Clubs, wands, and dumb-bells, seventh and eighth grades.	0	Generally.	do	In part			High school.	6
Dumb-bells, upper grades.	0	Yes	do	Yes	5	10 min	All grades	7
None	0	Yes	None	In a few grades.	5	10 min	High school.	8
Dumb-bells, wands, parallel bars, horizontal bars.	All.	Yes	15 min	No	5	12 min	8–12	9
Wands, dumb-bells, Indian clubs, and poles.	12	Yes	30 min	Yes	1–4	10–40 min	High school.	10
None	0	Yes	15 min	No	5	10–15 min	do	11
General apparatus, high school; wands, dumb-bells, grammar school.	1	Yes	30 min	Yes	5–10	10–40 min	5–8, and high school.	12
None	0	Yes	20 min	Yes	5	15–45 min		13
None	0	Generally.	15 min	No	5	10–15 min		14
None	0	Generally.	15 min	No	5	15–20 min	High school	15
Dumb-bells and wands, high school.	0	No	do	No	1–10	12–45 min	do	16
Indian clubs, dumb-bells, etc.	0	No	30 min	Yes	5	15 min		17
	0		30 min	Yes	2	20 min		18
Wands, fifth to eighth grades; wands, dumb-bells, and Indian clubs, high schools.	1	Generally.	20 min	Often in higher grades.	5	10 min		19
Wands and clubs	0	No	do	Yes	2	10–15 min		20
Wands, seventh and eighth grades.	0	Yes	30 min	Where practicable.	5	10–20 min		21

a When military drill is given, it is to be understood that the usual guns and accouterments are used without especial mention in this column.

TABLE 3.—*Statistics of physical training in cities which have professedly*

	City.	Director of physical training.	Date of introduction.	Number of special teachers of physical training.		System employed.
				Male.	Female.	
	1	2	3	4	5	6
	ILLINOIS—continued.					
22	Rock Island	E. A. Poos	1890	1	0	German (Suder)
	INDIANA.					
23	Indianapolis	Miss Ida May Manly	1889	0	1	Combination of systems.
	IOWA.					
24	Burlington	Berthold Seiffert	.....	1	0	German
25	Clinton	Harriet C. Waterhouse	.....	0	1	Delsarte
26	Council Bluffs	Miss Mary D. Davenport	1890	0	1	do
27	Davenport	William Reuter	1887	1	0	German
28	Des Moines (north side).	Miss Maggie McLoney	1891	0	1	Eclectic
29	Mason City	W. A. Hicks	1892	1	0	
30	Oskaloosa		1890	0	1	
31	Sioux City	Miss B. M. Nelon	1891	0	1	Delsarte, Swedish, and German.
32	Waterloo	Laura E. Putnam	1891	0	1	Combination of several systems.
	MAINE.					
33	Lewiston	Josephine Gilbert	1892	0	1	Swedish and Delsarte.
	MASSACHUSETTS.					
34	Boston	Edward Mussey Hartwell	c1864	d3	4	Swedish
35	Brookline	Bessie F. Gordon	.....	0	1	do
36	Everett	Miss Madge Johnson	1891	0	1	do
37	Holyoke	Franz Eger	1888	1	0	Adaptation of German and Swedish.
38	Lawrence	Miss Ethel L. Wellington	1892	0	1	Swedish
39	Lowell	Miss Emma Manning Huntley.	1888	0	1	Eclectic
40	Lynn	Miss Elizabeth F. Gordon	1892	0	1	Swedish
41	Malden	Nina J. Moses	1888	1	1	do
42	Somerville	C. Isabel Livingstone	1890	0	1	do
43	Springfield	Miss Emily Bliss Bryant	1892	0	1	do
44	Waltham	Martha M. Barnes	1890	0	1	do
45	Woburn	Miss Martha McC. Barness	1890	0	1	do
46	Worcester	Anna G. Foley	1892	0	1	do

a When military drill is given, it is to be understood that the usual guns and accouterments are used without especial mention in this column.

b For some buildings.

c Date of first introduction. "Ran downhill in ten years; new interest developed in 1888-'89, and second introduction occurred in 1890-'91."

d Including drillmaster.

introduced a regular system, under the care of a specialist—Continued.

Apparatus used in class exercises, and grades in which it is employed. *a*	Number of school buildings provided with gymnasia.	Are ample play grounds provided?	Time per day given to recesses.	Are the exercises accompanied by music?	Time given to gymnastics.		If military drill is employed, from what grades are the pupils taken?	
					Number of lessons per week.	Length of each lesson.		
7	8	9	10	11	12	13	14	
Wands, bells, clubs, higher grades.	0	Fair	30 min	Sometimes	5	5–12 min		22
None	0	Yes	30 min	Sometimes	5	10–20 min		23
None yet	0		30 min	Occasionally	10	5 min		24
Wands and bells, sixth to eighth grades.	2	Yes	25–30 min	Yes	1–2 4–5	40 min 5 min		25
Dumb-bells, high school.	0	Yes *b*	20 min	Yes	10	10 min		26
Clubs, wands, rings, and bells, higher grades.	0	Yes	30 min	Occasionally	5–10	7–15 min		27
Dumb-bells, fifth and sixth grades; clubs, seventh and eighth.	0	Yes	do	No	2	30 min		28
	1	Yes	do	No			High school.	29
Dumb-bells, wands, and Indian clubs.	0	Yes	do	When practicable.	4	15–25 min		30
Wands, fifth and sixth; wands and bells, seventh and eighth.	0	Yes	20 min	Occasionally	2–5	10–20 min		31
Wands, bells, clubs, etc.	0	No	30 min	Yes				32
	0	Yes	40 min	No	5–10	10–20 min		33
Swedish apparatus in two high schools.	3	No	*e* 10 min *f* 35 min.	No	*e* 1 hour a week *f* 1½ hours a week. *g* 2 hours a week.		High schools	34
Rings, booms, etc., high school.	1	Yes	30 min	No	2–3	½–1 hour	do	35
None	0	Yes	20 min	No	5	10 min		36
Dumb-bells, higher primary and grammar; wands and clubs, high and grammar.	0	Yes	None, except in primary.	In high school.	5	15–20 min		37
None	0	Yes	25 min	No	5	20 min		38
Dumb-bells, wands, etc.: high and grammar.	0	Yes	(*h*)	Yes	(*h*) *g* 1-2	(*h*) *g* ½–1 hour.	High school.	39
None yet	1	Yes	20–30 min	No	5		do	40
Clubs, hoops, and wands, high school.	0	Yes	do	Seldom	5	20 min	do	41
None	0	Yes	15 min	No	5	do		42
None yet	0	Fair	*e* 20 min	No				43
None	0	Yes	None	No	*fg* 1 *e* 2	*fg* 1 hour *e* ½ hour.		44
None	0	No	None	No	5	20 min	High school.	45
None	0	Generally.	30 min	No	5	10 min		46

e In primary schools.
f In grammar schools.
g In high schools.
h In the grammar schools 1⅔ hours and in the primary schools 3⅓ hours are devoted to "physical exercises and recesses."

TABLE 3.—*Statistics of physical training in cities which have professedly*

	City.	Director of physical training.	Date of introduction.	Number of special teachers of physical training.		System employed.
				Male.	Female.	
	1	2	3	4	5	6
	MICHIGAN.					
47	Detroit	Nettie D. Kimberlin	1890	0	1	
48	Negaunee	Miss Mary F. Bradbury	1891	0	1	Electic
49	Saginaw (west side)	F. E. Lazelle	1891	1	0	
50	Sault de Ste. Marie	Miss Adale Sanders	1892	0	1	Swedish, modified
	MINNESOTA.					
51	Duluth	M. E. Alletzhaeusser	1891	1	0	German
	MISSOURI.					
52	Fulton	Miss Halley Richmond	1891	0	1	Delsarte
53	Hannibal	Miss Pauline Cole	1892	0	1	German
54	Kansas City	Carl Betz	1885	1	0	do
55	St. Joseph	Fitz Stoesser	1887	1	0	do
56	St. Louis	George Wittich	c1890	7	1	do
	NEBRASKA.					
57	Beatrice	Ida A. Tew	1890	0	1	German (Betz)
58	Omaha	Henry Kummerow	1885	1	0	German
	NEW HAMPSHIRE.					
59	Concord	Bertha L. Colburn	1891	0	1	Boston School of Oratory.
	NEW YORK.					
60	Albion	Harriett C. Paul	1892	0	1	Emersonian
61	Buffalo	Adella F. Fay	1892	0	1	Swedish
62	Flushing	Katherine B. Peck	1891	0	1	Combination
63	Jamestown	Miss Ruth C. Tousley	1872	0	2	Dio Lewis, modified
64	Saratoga Springs	Abbie W. Sullivan	1892	0	1	Swedish
	NORTH CAROLINA.					
65	Asheville	Miss Annie Allison	1892	0	1	Swedish and Dio Lewis
66	Goldsboro	Miss Marianna Cobb	1892	0	1	Swedish
	OHIO.					
67	Akron		1892			Combination of several
68	Canton	Adolf Riedel	1888	1	0	German
69	Cleveland			0	2	
70	Columbus	Anton Leibold	1892	1	0	German-American
71	Dayton	Robert Nohr	1892	1	0	"Calisthenics"
72	Ironton	Miss Sarah Rogers	1892	0	1	Combination of Swedish and Delsarte.
73	Tiffin		1892	1	0	German
74	Xenia	Miss Jean B. Elwell	1892	0	1	Combination

a When military drill is given, it is to be understood that the usual guns and accouterments are used, without special mention in this column.
b In primary grades only.

introduced a regular system, under the care of a specialist—Continued.

Apparatus used in class exercises, and grades in which it is employed. *a*	Number of school buildings provided with gymnasia.	Are ample play grounds provided?	Time per day given to recesses.	Are the exercises accompanied by music?	Time given to gymnastics.		If military drill is employed, from what grades are the pupils taken?	
					Number of lessons per week.	Length of each lesson.		
7	8	9	10	11	12	13	14	
								47
None yet	0	Yes	30 min	Yes	10	10 min		48
Wands	0	Yes	None	Sometimes	5	15 min		49
Wands, grammar grades.	1	Yes	30 min	In higher grades.	5	do		50
Bells, wands, fourth to eighth.	1	Yes		Yes	5	10 min	4th grade up.	51
None	0	Yes		No	4	15 min		52
None yet	0	Fair	*b* 20 min	In part				53
All except so-called, heavy stationary apparatus.	1	Yes	30 min	Sometimes	5	15 min		54
None	0	No		Sometimes	5	10–15 min		55
None	0	Yes	20–45 min	When practicable.	7	10 min		56
Clubs; high school	0	Yes	*b* 20 min	In part	2–5	10–25 min		57
	1	Yes	20 min	Sometimes	5	10–15 min		58
		Yes	25 min	Yes	1	30 min		59
None	0	Yes	25 min	Yes	2	20 min		60
None	0	Yes	20 min	No	1	10–20 min		61
Bells, clubs, chest weights.	1		15 min	Sometimes	5	20–30 min		62
Wands and rings, seventh, eighth and ninth; clubs, bells, etc., tenth to thirteenth.	1	No	*b* 20 min	Yes; in the gymnasium.	3–10	3–20 min	High school.	63
None	1	Yes	None	No	5–10	10 min		64
Wands, bells, rings, clubs, etc.; higher grades.	0	Yes	30 min	Sometimes	3–5	15–20 min		65
	0	Yes	40 min	No	5	10–15 min		66
Ordinary light gymnastic apparatus.	0	Yes	20–25 min	Sometimes	5	10–20 min		67
None yet	0	Yes	*d* 30 min	No	1–5	10–30 min		68
								69
None yet	0	Yes	15 min	Generally not.				70
None					10	5 min		71
Wands	0	Yes	30 min	No	15	10 min	High school.	72
	0	Yes	40 min	Sometimes	5	5–10 min	do	73
None	0	Yes	30 min	Not yet	5	10–15 min		74

c Calisthenics have been practiced for thirty years.
d None in the highest grammar grade and high school

TABLE 3.—*Statistics of physical training in cities which have professedly*

	City.	Director of physical training.	Date of introduction.	Number of special teachers of physical training.		System employed.
				Male.	Female.	
	1	2	3	4	5	6
	PENNSYLVANIA.					
75	Erie		1890	1	0	German (Betz)
76	Huntingdon	Ellen Phœnix	1891	0	1	Emersonian
77	Lancaster	Carl Zens	1891	1	0	German
	RHODE ISLAND.					
78	Pawtucket		1891	0	1	Swedish
	WASHINGTON.					
79	Seattle	Miss Anna Lee Goodrell	1891	0	1	Modification of Delsarte and Swedish.
80	Tacoma	Miss Lulu S. Lamson	1891	0	1	Swedish
81	Walla Walla	Mrs. Minnie Conn	1892	0	1	Boston School of Oratory, etc.
	WISCONSIN.					
82	Menomonie	Miss Margaret Mitchell	1892	0	1	Anderson
83	Milwaukee		1877	4	0	German
84	Oshkosh	Henry Leemhuis	1892	1	0	do

a When military drill is given, it is to be understood that the usual guns and accouterments are used, without special mention in this column.

introduced a regular system, under the care of a specialist—Continued.

Apparatus used in class exercises, and grades in which it is employed. *a*	Number of school buildings provided with gymnasia.	Are ample play grounds provided?	Time per day given to recesses.	Are the exercises accompanied by music?	Time given to gymnastics.		If military drill is employed, from what grades are the pupils taken?	
					Number of lessons per week.	Length of each lesson.		
7	8	9	10	11	12	13	14	
Wands	0	Yes	35 min	Occasionally	5	5–10 min		75
None	0	Yes	25 min	Yes	3–5	10–15 min		76
Ordinary gymnasium equipment, high school.	1	Yes	30 min	No	5	*b* 1½ hours		77
None	0	Yes	*c* None	No				78
Rings, wands, dumb-bells, in grammar grades.	(*d*)	Yes	None	When practicable.	5	20 min	High school.	79
None	0	Yes	None	No				80
Wands and dumb-bells.	1	Yes	10 min	Yes	2–3	15–50 min		81
None yet	0	Yes	40 min	Yes				82
Dumb-bells and Indian clubs, sixth, seventh, and eighth.	0	Fair	30 min	When practicable.	10	10 min		83
None yet	0	Yes	30 min	No	5	15 min		84

b In high school.
c Except in lowest grades.
d All new buildings are to be so provided.

TABLE 4.—*Statistics of physical training in cities which employ no specialist, but which require regular instruction by class teachers.*

	City.	Date of introduction.	System employed.	Apparatus used in class exercises, and grades in which it is employed.	Number of buildings provided with gymnasia.	Are ample play grounds provided?	Time per day given to recesses.	Time given to gymnastics.		If military drill is employed, from what grades are the pupils taken?
								Number of lessons per week.	Length of each lesson.	
	1	2	3	4	5	6	7	8	9	10
	ARKANSAS.									
1	Fort Smith	1890	German (Betz)	Wands and dumb-bells	0	Yes	30 min	5	10 min	
	CALIFORNIA.									
2	Santa Cruz		Eclectic	Wands and dumb-bells; third to seventh.	0	Yes		5–10	10–15 min.	
3	Stockton			Dumb-bells; second to sixth	0	Yes	40 min	10	5 min	
	GEORGIA.									
4	Atlanta	1891	Delsarte	None	0	No	30–50 min.	2–4	20–60 min.	
5	Brunswick	1887		Dumb-bells, wands, bags, rings, etc.; higher grades.	3	Yes	30 min	5	15–25 min.	
	ILLINOIS.									
6	Belleville	1890	German (Betz)	None	0	Yes	30 min	10	10–15 min.	
7	Cairo	1886	do	None	0	Fair	do	10–20	2½–5 min.	
8	Duquoin	1891		None		Yes	45 min	5–10	5 min	
9	Kankakee		German (Betz)	None	0	Yes	30 min	5	20 min	High school.
10	Kewanee	1890	do	Clubs and dumb-bells; high school	1	Yes	10 min	5	10 min	
11	Pekin		Anderson's	Poles, intermediate grades	0	Yes	30 min	5	30 min	
	INDIANA.									
12	Crawfordsville		Swedish	None	0	Yes	20 min	5	5–10 min.	Above third year.
13	Goshen	1890		Wands; sixth and eighth Dumb-bells; seventh and lower grades			15 min	5	10–20 min.	
14	Greencastle	1891	German (Betz)	None	0	Yes	30 min			
15	Michigan City	1889		None	0	Yes	15–25 min.	5–10	10 min	
16	Wabash	1892	The New Calisthenics	None	0	Yes	30 min	5	15 min	

	IOWA.									
17	Des Moines (East)	1890	Delsarte	None	0	Fair	30 min	5–10	10–15 min	
18	Muscatine	1889	Miss Anna Morris's	Wands, first to sixth; poles, seventh and eighth; clubs, high school.	0	No	None	5	5–10 min	
	KANSAS.									
19	Atchison	1893	German (Betz)		0	Yes	3 min	3–5	5–15 min	
20	Emporia	1891	German (Betz) and Delsarte	None	0	Yes		5–10	5 min	
21	Kansas City	1892	German (Betz)	Dumb-bells and Indian clubs; grammar grades and high school.	0	No	30 min	10	...do	
22	Newton	1890	...do	None	0	Yes	25 min	5	5–10 min	
23	Pittsburg		...do	None	0	Yes	40 min	14	...do	
24	Salina	1890	...do	Wands, dumb-bells, horizontal bars	5	Yes		10	10 min	All grades.
	KENTUCKY.									
25	Frankfort	1892	Swedish	None	0	Yes	20 min	5–10	3–5 min	
	MARYLAND.									
26	Baltimore	1877	Smart's	None	0	Yes	15–30 min			High school
	MASSACHUSETTS.									
27	Cambridge							10	5 min	Do.
28	Clinton	1891	Swedish	None	0	Yes	20 min	10	10 min	
29	Dedham	1891	Swedish (Posse)	None	0	Yes	15–30 min	5–10	5–15 min	
30	Fall River			Indian clubs, dumb-bells, etc.; high school.	1	Yes	15 min	5–10	6–20 min	Do.
31	Haverhill	1889		None	0	No	None	5	15 min	
32	Marblehead	1891	Swedish	None	0	No	None	5–25	5–15 min	
33	Westfield		Eclectic	None	0	Yes		5–10	5–10 min	
34	Weymouth		Swedish	Wands	0	Yes	20–40 min			Do.
	MICHIGAN.									
35	Au Sable	1889	Swedish	Dumb-bells	0	No	None	5	30 min	
36	Ypsilanti	1892	Sargent's	None	0	Yes	2 min	5–10	10 min	
	MINNESOTA.									
37	Minneapolis						30 min	5–15		
38	Red Wing	1892	Delsarte	None	0	Yes	...do	5	10–20	
39	St. Cloud		Swedish	Wands and dumb-bells	0	Yes	...do	5	10 min	
40	St. Paul		Delsarte			Generally	...do			
	MISSISSIPPI.									
41	Greenville	1891	German (Betz)	Dumb-bells, clubs, wands, rings, chest weights.	1	Yes	1 hour	3	15–30 min	Seventh and eighth grammar grades, and high school.

TABLE 4.—*Statistics of physical training in cities which employ no specialist, but which require regular instruction by class teachers*—Continued.

	City.	Date of introduction.	System employed.	Apparatus used in class exercises, and grades in which it is employed.	Number of buildings provided with gymnasia.	Are ample play grounds provided?	Time per day given to recesses.	Time given to gymnastics.		If military drill is employed, from what grades are the pupils taken?
								Number of lessons per week.	Length of each lesson.	
	1	2	3	4	5	6	7	8	9	10
	MISSOURI.									
42	Columbia	1892	German (Betz)	Dumb-bells and wands; lower grades	0	Yes	30 min	5	15 min	
43	Louisiana	1891	do	Dumb-bells, wands, poles, plates, etc	0	Yes	do			
44	Warrensburg	1892	do		0	Yes	10 min		7 min	
45	Webb City		do	None	0	Yes	30 min	7-14	5 min	
	MONTANA.									
46	Butte	1891	German	Dumb-bells	1	Yes	30 min	5	15 min	
	NEW HAMPSHIRE.									
47	Dover		Swedish				20 min	10	5-15 min	
	NEW JERSEY.									
48	Passaic		Dio Lewis	Bars, trapeze, ladders, and parallel bars	(*a*)	Yes	25 min	5	25 min	High school.
	NEW YORK.									
49	Canandaigua	1887	Pratt's calisthenics	Dumb-bells	0	Yes *b*	*b* 20 min	5	5 min	
50	Geneva	1872	Delsarte	None	0	No	None	5-10	5-10 min	
51	Hudson	1889			0	Yes	20 min	10	5-6 min	
52	Lockport	1889		None	0	Yes	None	10	10 min	
53	Kingston		Dio Lewis	Dumb-bells; grammar grades	0	Yes	30 min	10	5-15 min	Grammar and high schools.
54	Oneida	1881	Calisthenics	Dumb-bells, wands, brooms	0	Yes	25 min	5	15 min	
55	Plattsburg	1891	Delsarte, modified		1	No	None	4-30	3-15 min	Eighth to twelfth.
56	Rochester	1874		None	0	Yes	do	10	10 min	
57	Rome	1889	Monroe's	None	0	Yes	15 min	10	do	
58	Sing Sing	1877	Dio Lewis, modified	None	0	Yes	10-20 min	15-35	2-3 min	
59	Whitehall	1891		Dumb-bells, wands, clubs		Yes	30 min	10	10 min	

	OHIO.									
60	Avondale	1868	Calisthenics and free gymnastics.	None	0	Yes		5	10–12 min	
61	Cincinnati							10		
62	Fremont	1891	Combination	Dumb-bells and wands	2	Fair	0–25 min	5	15–20 min	
63	Galion	1889	German (Betz)	None		Yes	None	10	5 min	
64	Oberlin	1891	German (Ballin)	Dumb-bells		Yes	15 min	5	10 min	
65	Salem	1889	Delsarte, modified		0	Yes	*c* 20 min	(*d*)	do	
	PENNSYLVANIA.									
66	Corry	1892		Dumb-bells, clubs, wands; high school	0	Yes	None			
67	Phœnixville		Dio Lewis	None	0	No	20 min	5–10	5–7 min	
68	Shenandoah	1881		do	0	No	None	10	5 min	
69	Wilkesbarre			do	0	Generally	15 min	5	20 min	
	RHODE ISLAND.									
70	Newport				1	Yes	None	10	10 min	
	SOUTH CAROLINA.									
71	Columbia	1883	Dio Lewis	Dumb-bells, wands, Indian clubs		Yes	30 min	5	15 min	
72	Spartanburg	1887	Delsarte	None	0	Yes	do	5	do	
	TENNESSEE.									
73	Knoxville		Dio Lewis	Wands, eighth; dumb-bells, ninth and tenth.	0	Yes	30 min	5	10 min	
74	Nashville	1891	Delsarte	None	0	Yes	20 min	5	5 min	
	TEXAS.									
75	Brownsville	1891		Indian clubs and dumb-bells; sixth to ninth.	0	Yes	40 min	2–5	15–30 min	Fourth grade and upward.
76	Houston			Wands, brooms, dumb-bells; higher grades.	0	Generally	55 min	5–10	3–10 min	
	UTAH.									
77	Provo		Dio Lewis		0	Yes	30 min	2	10 min	
	WASHINGTON.									
78	Olympia	1892	German (Betz)	None yet	0	Yes	None	10	10 min	
79	Spokane		do	None	0	Yes	*e* None	5	5–15 min	
	WEST VIRGINIA.									
80	Huntington			None	0	Fair	20 min	5	10 min	
	WISCONSIN.									
81	La Crosse	1885	German	None	0	No	25 min	5	do	

a Gymnasia have been ordered for all buildings.
b For primary schools.
c In lower grades.
d As often as the school needs it
e Thirty minutes in the smaller buildings.

TABLE 5.—*List of 108 cities in which physical exercises are practiced at the discretion of the teachers, but without special supervision or effective regulations to make the training systematic.*

[This list is undoubtedly incomplete. Many superintendents did not consider such exercises worthy of special mention.]

NORTH ATLANTIC DIVISION.

New Hampshire.—Keene, Nashua, Portsmouth.

Massachusetts.—Hyde Park, Newburyport, North Adams, Northampton, Spencer, Taunton.

Rhode Island.—Providence.

Connecticut.—Bristol, Middletown, New Britain, New Haven, Norwalk, Willimantic.

New York.—Auburn, New Brighton, Amsterdam, Brooklyn, Elmira, Fulton, Glens Falls, Hoosick Falls, Hornellsville, Ilion, Ithaca, Lyons, Medina, New York (regularly introduced in 6 schools), Oneonta, Peekskill, Seneca Falls, Syracuse, Troy, Utica.

New Jersey.—Jersey City, Salem, Bayonne, Elizabeth, Newark, Plainfield, South Amboy.

Pennsylvania.—Allegheny, Archbald, Ashland, Bradford, Bristol, Butler, Dubois, Harrisburg, Hazleton, Mahanoy, Mount Carmel, Norristown, Reading, Washington.

SOUTH ATLANTIC DIVISION.

Delaware.—Wilmington.

Maryland.—Frederick.

Virginia.—Petersburg, Richmond.

Georgia.—Macon.

Florida.—Pensacola.

SOUTH CENTRAL DIVISION

Tennessee.—Johnson City.

Mississippi.—Columbus, Vicksburg.

Louisiana.—Shreveport.

Texas.—Austin, Corsicana, Dallas, Temple, Waco.

NORTH CENTRAL DIVISION.

Ohio.—Fostoria, Lorain, Marietta, Mount Vernon, Nelsonville, Toledo, Youngstown.

Indiana.—Frankfort, Hammond, Lafayette, Muncie.

Illinois.—Charleston, Decatur, Evanston, Paris, Springfield.

Michigan.—Battle Creek, Flint, Grand Haven, Grand Rapids, Ionia, Manistee, Muskegon, Winona.

Wisconsin.—Baraboo, Berlin, Eau Claire, Whitewater.

Iowa.—Dubuque, Lyons, Marshalltown.

Missouri.—Carthage, Marshall.

Nebraska.—Grand Island, South Omaha.

Kansas.—Hutchinson, Parsons.

WESTERN DIVISION.

Utah.—Ogden.

Oregon.—Salem.

California.—Pasadena, Riverside.

CHAPTER XIV.

THE AGE OF WITHDRAWAL FROM THE PUBLIC SCHOOLS.[1]

[In determining to what extent the public schools are utilized, or how many years each child attends school, it becomes important to know the average age of withdrawal, or time of leaving school. Attention was called to prevailing misconceptions on the subject in the St. Louis school report of 1878–'79, and a method, devised by Prof. C. M. Woodward, was there given for computing the average age of pupils at the time of leaving school. In order to bring this method more fully to the notice of the public it has been deemed advisable to reproduce it here.]

In considering the question of the usefulness of public schools, as well as in discussing the propriety of admitting pupils at an early age, it is the custom to have recourse to the statistics of the ages of those enrolled. These statistics show the number who attend school at each age. Nothing seems simpler than to determine from this the average time of leaving school. "If 9 years and 4 months is the average age of those in attendance on school, it shows that the average age of leaving school is less than 10 years." Yet this is wholly fallacious, as will appear from the following consideration: If the course of study in a school lasted for twelve years, and the classes continued throughout the entire course without change of individuals, or diminution in numbers, or loss of grade or rank, an equal number entering every year in the first year's course, would give, in the course of twelve years, an equal number of pupils in each class, from the highest to the lowest. There would be, say 50 pupils in each grade or year's work, and 600 in the whole school. Supposing the pupils to enter at 6 years and graduate at 18 years, there would be 50 pupils at 6 years, 50 pupils at 7 years, etc., and the average of the entire school would be 12 years of age; and yet from this it is clear that we could not infer that the average pupil leaves at 12 years, because each and every one continues until he is 18 years of age. It is clear that this average age is found only by comparing the number of pupils in the graduating class with the same class when it entered. If it entered with 100 and graduated with 100, the course of study of each and every one in the class averages twelve years, and the average pupil of that class will get the twelve years' schooling. If the class enters with 240, and graduates with 20, losing one-twelfth each year, it will follow that the twelve years apiece which the 20 get, will, if averaged, give the whole 240 each one year. The eleven years which the next 20 get will give the 240 eleven-twelfths of a year, etc. The average amount of schooling would be six and one-half years, and the

[1] From the St. Louis school report, 1878–'79, W. T. Harris, superintendent.

average age of leaving school (if entered at 6) would be $12\frac{1}{2}$ years, although the table of ages of a school of 1,560 pupils, arranged according to the supposed scale, would give only one and three-tenths per centum in the senior class, and only two and six-tenths per centum in the class next to the senior class; and under such circumstances some would-be economical reformer might use this argument against the high school department (which would include the last four years of this twelve-year course), and say: "Less than 2 pupils in a hundred ever graduate from the high school; it is for the few only; it is a rich man's institution," etc., and yet of the class of 240 who entered, there were 20 left, or 1 in 12—$8\frac{1}{3}$ in 100 instead of 1.3.

Hence, we may infer * * * on comparison of those of 14 years of age (4 per centum) with those at 8 years (12 per centum), that at least one-third of those at 8 years of age remain in school until they are 14 years of age. But the city is increasing in population rapidly, both by immigration and by the birthrate. The latter item continues to give us larger numbers of pupils in the primary grades. A reliable estimate must take into account all those items of fluctuation—birthrate, death rate among children, access and depletion from migration at different ages, etc.

This topic is so important that I make a long extract from an exhaustive article treating the subject, which appeared in the American Journal of Education (published by J. B. Merwin), St. Louis, May, 1879 (omitting the algebraic table [No. II], in which Prof. Woodward has generalized his results and given a general formula for obtaining the average age at which school children leave school):

AT WHAT AGE DO PUPILS WITHDRAW FROM THE ST. LOUIS PUBLIC SCHOOLS?

1. Before attempting to answer this question, I desire to call attention to the obvious importance of a correct answer. The best planned course of study takes into consideration both the probable duration of a school course and the age of the pupils. The direct bearing of this question is seen in the fact that an estimated average length of the period of pupilage is frequently made the basis of arguments for or against some proposed modification of the course of study, or some other detail of school management.

2. I use the word "withdraw" in this paper in a somewhat restricted sense, and as properly excluding the effect of mortality among school children; that is to say, I exclude from among the number of those who can with propriety be said to "withdraw from school" those whose school course is cut short by death. Fortunately, this allowance in St. Louis is small, but it is not on that account to be ignored. The propriety of omitting those who die, from my calculations, can not be seriously questioned. The practical inquiry is: At what age do pupils leave school to enter upon the active duties of life? and it should not be complicated with the very different question of the age at which pupils die without completing the course of study contemplated. Though nearly one-half of all the children born in this city die without reaching the age of 5 years, we plan for each newcomer on the basis of a probable long life. Again, although the average length of human life in St. Louis appears, from the recorded ages of those who die, to be less than 22 years, our systems of education rest upon the supposition that, among other responsibilities for

the discharge of which children must be educated, the boys, at least, must be prepared for the duties of electors, though such duties do not come till after the age of 21.

3. The value of my results will, of course, depend upon my assumptions, as well as upon absolute data and my methods of calculation. In 1868–'69, I find that 2,917 children were registered at 8 years old. I propose to follow these 2,917 children through their career as pupils of the public schools, noting the number dropping out each year till all are gone; then I shall find the average age at withdrawal. The annual registers of the schools contain, of course, all needed information, but it would be an endless task to follow the pupils as they change from school to school, finally disappearing from the records altogether. I must, therefore, abstract their history from such other records as are at my command. For my data I rely almost entirely upon the annual reports of Superintendent Harris. Each of these reports gives a table of the "number of pupils of different ages registered during the year." With the exception of the last two or three reports the number of children "7 years and under" is given without subdivisions, and in all reports those of "16 years and over" are grouped together. I have, therefore, been obliged to begin my investigation with those who are 8 years of age.

4. I *assume* that in the sense in which I use the word, no child *under* 8 years of age in St. Louis ever "withdraws" from school.[1] The enrollment of names is made when the pupils enter the school, which is generally in September; the enrollment made at other times is very small, the spring registrations being mainly those of young pupils first entering school.

5. I *assume* that those who leave the public schools at the age of 9 years or more stop going to school altogether, though it is well known that many do attend other schools.

6. I exclude from my calculations those children who enter the public schools for the first time when 9 or more years of age. It is quite possible that the entire school period of such is greater than the average, but there are no available data on which to base a determination.

7. I assume that one-half of those reported as "16 years and over" are 16, and that the other half average 17 years of age at the time of enrollment. Actual figures would perhaps show an average somewhat greater.

8. I now call attention to Table I, which needs but a few words of explanation. The figures are taken from the reports of the superintendent without change, except in the case of the report of 1872–'73, from which the suburban schools of the (old) Thirteenth ward have been omitted, and the report of 1877–'78, from which I have eliminated the 16 suburban schools, as they do not appear in former reports. The arrangement of the table is such that the pupils who were enrolled year after year, and appear in different reports under different ages, are here placed in the same column, the age of each class being given in heavy type. Three of these columns are nearly complete, headed A, B, C. I use these columns for three independent calculations. The last two lines contain some estimates which the rest of the table will justify.

9. Let us examine column A. The report of 1868–'69 shows the enrollment of 2,917 children during that scholastic year who were in their ninth year. The next year these children were all in their tenth year and they numbered 3,161. This increase can be accounted for only by immigration of 9-year-old children, and by the enrollment

[1] Some of the later reports may seem to prove this assumption to be not well founded, inasmuch as the number recorded as 8 years old may be considerably less than the number enrolled as 7 years old the previous year. In such an event, it is well to consider the spring enrollment of those who are "7 years old," and who do not become 8 till after September, and consequently are a second time enrolled as "7 years old." The result is the "7 years" list is abnormally large.

of city children who, during the previous year, had either not attended school at all or had attended private schools. But it is not probable that all of the 2,917 returned to school in 1869–'70. Some had died; some had moved from the city; some had gone to private schools; some, perhaps, had stopped going to school. Now, before we can approximate the number of those who had left, we must arrive at a fair estimate of the number of new scholars in the class. For the latter purpose we must compare classes *of the same age* in the two years, i. e., those of 8 years, 9 years, etc., in 1868–'69, with those of 8 years, 9 years, etc., in 1869–'70. We find an average increase of $12\frac{1}{2}$ per cent pretty evenly distributed through all the school ages. It is therefore probable that the addition to our class under discussion was in the same ratio, or $12\frac{1}{2}$ per cent of 2,917, which is 373. Had no pupils left the class it would have numbered, with this increase, 2,917+373=3,290. As the enrollment was only 3,161; it is evident that 129 must have left during or at the end of the year 1868–'69.

A comparison of the classes of 1869–'70 with those of the same age in 1870–'71 shows a growth of 12 per cent. Twelve per cent of 3,161 is 379, which is the growth of the schools in the 10-year-old class. The enrollment of the year shows 3,368; hence the loss during, or at the end of, 1869–'70 was 3,161+379−3,368=172.

In the same way the total loss has been worked out for each of the years in column A. Unquestionably, my figures vary considerably from the facts in individual cases, but it may safely be assumed that the errors balance. The "annual increase" is given in Table I in per cents. The growth of classes, the "possible number" (had the class suffered no loss), and the total loss are given for each year of column A, in Table II.

The annual increase from 1877–'78 to 1878–'79 and from 1879 to 1879–'80 has been assumed as 6 per cent.

10. Let us now consider these columns of "total loss." The 129 lost the first year, column A, were all out of the original 2,917. The 3,161 of the next year contained only 2,788 old scholars and 373 new ones. Now, in the course of a year they lost 172 more. I assume that this loss was distributed among the old and new scholars in proportion to their number. This results in a loss to the original class during this second year of 152, reducing it to 2,636. In the same way I find that of the 573 lost the next year, 448 were from the original class. The seventh column in Table II gives these proportionate losses from the original class, and the eighth column gives the number of the 2,917 with whom we started, remaining in school year after year. The last division left school in June, 1878. Few of that class may be left in the high and the normal schools, but they would only serve to show that my result is too small. Tables III and IV contain similar columns, though the intermediate columns are omitted.

11. I now come to the last correction to be applied to the annual losses, and that is the deduction of the number of those who died while they were virtually pupils of the schools. Reports show that the death rate for school children is about four per 1,000 annually. I have, therefore, assumed that each year a part of the losses are from death, and I have deducted from the loss four-thousandths of the number remaining from the original class during the previous year. The remainders are clearly the numbers "withdrawn" and are entered in the next column.

12. The last column contains merely the products of the number of pupils withdrawing, multiplied by their age. The withdrawals do not always occur at the *end* of the year. I assume that, on the average, pupils withdraw six months from the beginning of the year. The average age, for example, of those registered as 10 years is 10 years and 6 months at the time of registration; those leaving before another enrollment are, therefore, 11 years old. Thus the 117 who withdrew in 1868–'69 were 9 years old, the 141 were 10 years old, etc.

13. The average age obtained from A is 13.7 years; from B, 13.5 years; from C 13.6 years.

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TABLE 1.—*School attendance for 10 years, arranged according to ages.*

Report for								C.	B.	A.								Per cent of annual increase.
1868–'69										8 2,917	9 2,783	10 2,584	11 2,307	12 2,153	13 1,558	14 1,076	15 565	
1869–'70									8 3,357	9 3,161	10 2,939	11 2,481	12 2,383	13 1,789	14 1,214	15 665		12⅛
1870–'71								8 3,549	9 3,305	10 3,368	11 2,949	12 2,674	13 2,110	14 1,414	15 765			12
1871–'72							8 3,679	9 3,497	10 3,680	11 3,051	12 2,909	13 2,260	14 1,713	15 895				7⅜
1872–'73						8 3,944	9 3,507	10 3,474	11 3,260	12 2,974	13 2,324	14 1,645	15 1,088					2½
1873–'74					8 4,175	9 3,733	10 3,461	11 3,190	12 3,247	13 2,524	14 1,784	15 980						4
1874–'75				8 4,462	9 3,899	10 3,740	11 3,085	12 3,040	13 2,639	14 1,908	15 1,110							3⅝
1875–'76			8 4,901	9 4,196	10 3,904	11 3,440	12 3,061	13 2,530	14 1,878	15 1,154	16 679	17 679						5
1876–'77		8 5,042	9 4,723	10 4,227	11 3,534	12 3,298	13 2,389	14 1,735	15 1,123	16 675	17 675							4
1877–'78	8 5,350	9 4,934	10 5,464	11 3,933	12 3,567	13 2,873	14 1,818	15 1,105	16 706	17 706								11⅔
1878–'79								16 780	17 490									6
1879–'80								17 500										6

TABLE III.—*Column B.*

Year.	Age—years.	Actual number, column B.	Of original number.			Year—pupils.
			Present.	Died.	Withdrawn.	
1869–'70	8	3,357	3,357			
1870–'71	9	3,305	2,902	13	442	3,978
1871–'72	10	*a* 3,680	2,889	13	0	0
1872–'73	11	3,260	2,487	12	390	4,290
1873–'74	12	3,247	2,378	10	99	1,188
1874–'75	13	2,639	1,852	10	516	6,708
1875–'76	14	1,878	1,225	7	620	8,680
1876–'77	15	1,123	684	5	536	8,040
1877–'78	16	706	352	3	329	5,264
1878–'79	17	490	223	1	128	2,176
1879–'80	18			1	222	3,996
Total				75	3,282	44,320

(44320÷3282=13.5 years.)

a This number (3,680) is so large, when compared with the numbers before and after it, that it suggests an error in the report. If treated *algebraically* it would give a *negative withdrawal*. An exceptional increase was therefore admitted.

TABLE IV.—*Column C.*

Year.	Age—years.	Actual number, column C.	Of original number.			Year—pupils.
			Present.	Died.	Withdrawn.	
1870–'71	8	3,549	3,549			
1871–'72	9	3,497	3,227	14	308	2,772
1872–'73	10	3,474	3,125	13	89	890
1873–'74	11	3,190	2,744	13	368	4,048
1874–'75	12	3,040	2,522	11	211	2,532
1875–'76	13	2,530	1,973	10	530	7,007
1876–'77	14	1,735	1,274	8	691	9,674
1877–'78	15	1,105	666	5	603	9,045
1878–'79	16	780	430	3	233	3,728
1879–'80	17	500	250	2	178	3,026
1880–'81	18			1	249	4,482
Total				80	3,469	47,204

(47,204÷3,469=13.6 years.)

CHAPTER XV.

CLASSIFICATION IN GRADED SCHOOLS.

[In the following extracts from the reports of the St. Louis public schools, I have brought together the different discussions made from year to year, while the experiment in shortening the intervals between classes was in process of trial. In the Annual Report of this Bureau for last year the statistics from several hundred cities, and opinions from a large number of superintendents, were printed showing the status of this important question in the management of city schools. An extensive correspondence has been carried on with teachers and superintendents in all parts of the country, and there has been frequent occasion to refer to the more elaborate discussion of the problems involved in the shortening of the intervals between classes as found in the reports of the St. Louis schools. Those discussions are here reprinted for convenient reference.]

ADVANTAGES OF THE GRADED SYSTEM.[1]

By the graded system I understand that in which the course of study is carefully arranged in accordance with the natural order of succession in the several branches; lowest in the course, the most elementary studies, followed by those that rank next in complexity, and unfold directly from the preceding, each study so graded as to advance in due proportion to all the others. At a certain stage of the pupil's progress in reading he is allowed to take up arithmetic, soon after that, geography, then grammar, then history. No branch of instruction is to come in before the requisite advance is made in those studies which are introductory to it. With this careful arrangement of the course of study there is also proper classification of pupils. The gradation of the course of study makes this possible. All pupils at a certain stage of advancement in a given branch are in the same class throughout all the others. When the course of study and classification is not thus fixed, there is more or less abnormal culture going on; some pupils taking up studies without learning the rudimentary presuppositions; some pupils studying Latin and algebra before they know English grammar and ordinary arithmetic. The regularity and consequent simplicity introduced into the school system by gradation and classification increases the power of the teacher incalculably. Instead of infinitesimal subdivisions

[1] From the St. Louis School Report of 1868-'69. By W. T. Harris.

of his school, amounting almost to the making of a class for each individual in each branch, and the consequent reduction of the teacher to the office of private tutor to each pupil, in the graded-school system a few classes comprise all the pupils of the school. The consequence is that the corps of teachers divide their labor, each taking two classes nearly of the same grade, and are able to concentrate all their energies on one point. The class can have thirty to forty minutes' time for recitation, whereas, if unclassified, each individual could get two minutes, more or less. But the teacher trains all to the habit of close attention throughout the recitation, so that each individual not only gets his thirty minutes as certainly as though he were the sole member of the class, but he gets far more. The stimulating effect of the exhibition afforded by the struggles of his fellows is the most valuable part. He sees his fellow pupils all striving for the same goal as himself; the lessons of their failures and success give him insight into his own, and deepen indefinitely the impression made by his private study in preparing his lessons. The complete dissipation of all the energy and faculty of the teacher by the nonclassified scheme, renders him unable to produce any grand effect with his school, as a whole, and thus each pupil loses that important culture derived from mingling his individuality with that of the whole, subordinating his own caprices to the will of the community, and finding his pleasure in the effect produced by the organism of which he is a member.

These advantages of the graded-school system are obvious, and the result of their discovery and application is that all celebrated schools, both public and private, are graded in accordance with this scheme. No system of schools, supervised by one head, is possible without such grading—the results of one teacher could never be compared with those of another.

DISADVANTAGES OF THE GRADED SYSTEM.

On the other hand, there is a defect in the graded system which, though not often named and defined by educators, is nevertheless felt by the community at large. What I refer to is not the usual objection made—"that under the system named the work of the schoolroom becomes monotonous and like a treadmill; that it serves as a kind of Procrustean bed to hold back the talented pupil, while it does not benefit his dull companion"—for this can be avoided very easily by a system of promotions; the pupil is stimulated and encouraged by this. The obverse side is the worst—the discouragement produced by placing pupils in lower classes is the disastrous phase of the subject. The pupil who tries his best and then fails is deeply injured, and is apt to endeavor to preserve his self-respect by some sort of subterfuge. He accuses his teacher of partiality, it may be, or attributes the good success of his companions to the assistance of others. The root of all bitterness is loss of self-respect; the man or child who goes about thinking

himself shut out from participation in the highest by his own natural incapacity is like one inclosed in a tomb while yet living. It is easy to see that this is the source of most of the difficulties which the graded-school system has to meet and overcome.

In the first place, there is difference in capacity; the temperaments differ; the relative mental endowments differ; tastes differ. And yet, in the graded school all are to be compared with the same standard. It is not surprising that evil consequences arise. The pupil is "sent over his course" again and again, falling back from class to class. He becomes stolid and lifeless, and reminds one never so much of the burnt-out coal in the grate which we name a "clinker." The teacher loses all patience: "The majority of the class can not be kept back on your account alone."

The closer the grading the better the classification is, and the fewer the "clinkers" developed; i. e., if the classification is made right at the beginning. For where widely different attainments meet in the same class it must needs happen that some will find the lesson that is adapted to the average of the class too easy, others will find it too hard. On the other hand, the severity of the teacher may contribute largely to swell the unfortunate class of pupils referred to. While severity may at times arouse latent energy, it as frequently closes up entirely that unfolding of the faculties which requires a genial, sunshiny surrounding as much as does the bloom of a plant.

When municipal governments are expending large sums for infirmaries and asylums, realizing the Christian humanitarian principle in the State, it is certainly inconsistent to neglect a class of pupils and allow them to make shipwreck of their educational hopes. And yet it must be confessed that a large percentum of the pupils in our graded schools, after falling behind their classes, get discouraged and go, a few to private schools, most of them into spheres of manual labor or mercantile business, and forever renounce an education that would fit them to rise to the higher walks of life. Society recognizes its duty to care specially for all who are unable to direct their own activity in the regular channels of industry. It provides for the poor, nurses the indigent sick in its hospitals, and furnishes a retreat for its insane. In order that the inducement to educate the children may be as strong as possible for the parent, he is taxed by the laws for the support of schools, in proportion to his estate, and free schools are opened for all, rich and poor. But this is not enough. The school system must be made effective in the highest sense, and special provision must be made for weak or abnormal minds. The educational system should have in it the means of correcting any tendencies in the wrong direction.

THE REMEDY—A SPECIAL SCHOOL.

The evils here spoken of may be remedied only by great care on the part of the teacher as to the habits or methods of study which the pupil has. For the reason that the evil becomes serious only in those grades

as high as the grammar school, and is manifested chiefly in the class that passes from the district schools to the high school, it is clear that special classes should be made for such pupils. The regular class can not be kept back for them, nor will it do to degrade them to a lower. Accordingly, when the class is promoted as a whole on examination, one part can go to the high school, one part to the special school, where skillful teachers supervise and correct the habits of study, taking a slow course in the higher branches. Gradually the mental self-reliance increases, and the ability to overcome the full-length lesson is acquired. The pupil is then to be transferred to the high school. On this basis, and to test the truth of this theory, the board have, by a recent act (at the August meeting, 1869), established the "intermediate school." Its results will furnish data on which safe future action may be based.[1]

Public schools have generally been noted for thoroughness. This has been claimed as their greatest merit. Certain it is that very high percentages are required of pupils before promoting them to the next higher grade in the course. It has not been sufficiently considered that there is a limit to the thoroughness desirable; that the time consumed in securing such high standards of thoroughness would have been better used by the pupil in mastering higher methods. Instead of solving the problem of higher arithmetic by arithmetical methods, he could more wisely have "flanked" them through algebra and trigonometry, and these latter studies would have opened up to him new worlds in mathematics. Instead of pursuing topographical geography to exhaustive minuteness, his time would be better employed in mastering physical and commercial geography; and so, instead of exhausting a "compendious treatise on English grammar," after acquiring its general outlines, a few months' study of Latin would give him the culture requisite to make a grammar for himself.

This point is the most important one involved in the present discussion. To what extent should thoroughness be relied on and to what extent should the advance be made by means of higher methods? Have not public schools held too exclusively to the former appliance, and thereby engendered the defect to which attention is here called? Private schools sometimes rely too exclusively on the latter appliance,

[1] At the date this report goes to press the experiment has progressed far enough to justify its establishment. Of the 80 pupils admitted, the greater number were those from the district schools who failed to make the requisite per cent to enter the high school; some were from private schools, and had made more or less progress in the higher English branches or the languages. The result thus far has been such as to encourage the most sanguine hopes. Most were found to have bad habits of study, and these have been improved surprisingly; others were good scholars, but had not been quite long enough in the district schools to fit them for the high school. This class has saved a year's study in the grammar schools, thus seeming to prove that the standard of perfection in the lower branches was unnecessarily high. The name "intermediate school" is not appropriate, inasmuch as it does not convey a correct impression regarding the character of the institution.

and in that case tend to produce smatterers. The true course, it seems, should use both appliances in their due proportion, and this can be determined by experience. This due proportion will be found when no pupil is kept using a lower method of solution after he is able readily to acquire the higher one. It is clear that too much attention can not be given to the formation of correct habits of study. But the discussion of the dangerous tendencies of the graded system should not lead one to suppose for a moment that the evils balance the good; for even where they are most injurious the positive benefits of grading predominate. In fact, most of what are called the evils of graded schools result from the lack of sufficient grading rather than from too much of it.

[From the St. Louis School Report of 1871–'72, by W. T. Harris, superintendent.]

The high-school course is divided into four classes, the work laid down for each occupying one year in its accomplishment. The fact that each high-school class is expected to begin its work in September and complete it in June indicates at once the condition of things that I have already alluded to in this report. Such a course of study is "nailed to the calendar," and its progress is rigid and determined by the lapse of time and not by the progress of the pupil. If a pupil is sick and unable to attend school for ten weeks, he finds, on his return, that there is no class just ready to admit him. The class which he left is now ten weeks in advance of him, and to make up this work and at the same time to do the regular work of the class is too difficult. If it were possible, it would prove a superiority of individual work over work in a class. The pupil is probably obliged to enter the next class below, but this class is thirty weeks behind his present acquirements, and his ten weeks' sickness has thus cost him a year's progress. On entering the lower class, however, he finds himself going over familiar ground and gets careless in his work. By the time his present class arrives at the work from which he was broken off by sickness the previous year he has acquired a loose habit of study, and is likely to fail on the first difficult study that he encounters. Two failures are pretty sure to complete his discouragement and cause him to leave school. Another case: A pupil, for some reason, is not quite able at the close of the year to pass the standard for admission to the next class, and is accordingly obliged to join the class below. He is set back just one year at once. He might have lacked five weeks' study or ten weeks' study—scarcely more than this—of completing the work of his class. But for this he is obliged to lose nearly a year more than was really necessary. It must be remembered that these are not isolated instances, but that the number of each class who ought to be separated, for one reason or another, from the part of the class that does the work of the grade thoroughly, is about one-third of the entire number. In order to avoid this evil of putting back pupils, there

is a strong temptation to let them pass on at a low standard. The consequence of such a course is that each class is impeded in its work by the presence of a number who are not equal to the performance of their tasks.

These evils are not confined to the classes of the high school; they extend to the higher classes of the district schools. Inasmuch as the examination for admission to the high school is to occur in June, the first grade's work of the district school must be completed at that time, and hence must be commenced in September of each year. This fact in turn influences the time of beginning and completing the work of the second grade. The tendency of all this is to produce a system of classification throughout the entire course of the district schools similar to that in the high school. In this case classes would follow each other at intervals of a year, and the difficulty of properly assigning those who should be classified in grades between those established exists throughout the entire system. In many sections of the country—in Ohio and New York, for example—this very practice prevails. A promotion takes place once or twice a year, on occasion of a general written examination by the superintendent. Those who "pass" go on; those who fail fall back to the lower class or leave school altogether. Such a system of grading and classification must be regarded as only one step above the system of unclassified schools. In our St. Louis schools the classification is so arranged in the lower grades of the district schools that classes follow each other at intervals of about six weeks. Should it be necessary to put back a pupil to a lower class, he finds it at just that stage of progress which will enable him to review and strengthen those portions of his course that need it. But this system allows of another advantage. As the highest class loses numbers by promotion, graduation, or otherwise, its ranks are filled with the best pupils from the next lower class. The latter is again recruited by promotion of the best from the next one below it. This process is continued to the lowest class in school. After such a promotion has been made the account stands thus: Each class has sent forward perhaps one-third of its pupils (the best ones) to the next one above it, and has received the best third of the pupils from the class below. There has been no degradation of pupils. What can be said is that two-thirds of each class (including all the fair and middling scholars) were left, and a few of the foremost in rank of those below them admitted with them. Within less than a half-year's work the studious and brilliant pupils will work up to the top of the class. There will always be differences of native power as well as of previous acquirement. Before a half a year has elapsed the two-thirds of a given class who pass for "fair and middling" scholars will be overtaken and, in some instances, surpassed by the brilliant pupils admitted from the lower class. A change of the kind I have mentioned, amounting to a readjustment of all the classes, is desirable as often as four times a year. If made, it

will entirely prevent the collection, in any one class, of the dull and incapable scholars. These, for the most part, are pupils who have not become thoroughly aroused, or, more frequently, such as have become discouraged by degradation in rank. Their defect is not primarily intellectual, but *moral;* they have feeble wills. It is very rare that a pupil has so dull an intellect that he can not, if he possess a resolute will, accomplish any intellectual feat whatever by the aid of industry alone. Those who fail do so through lack of courage or of perseverance. This furnishes the strongest ground of all against manipulating the system of classification in such a manner as to make those who are not promoted feel that they are degraded. By the method here described I think the minimum of discouragement is reached. Two-thirds or more of the class—enough to preserve the identity of the class—remain after any reclassification, and, as this embraces many fair scholars, none need feel that they have been slighted. The change made has elevated the fair in rank to the highest rank in class and those who were poor to the rank of fair—at least for a time. Stimulated by this, they frequently increase in self respect and develop powers that had hitherto lain dormant.

In what has been said the danger of collecting many poor pupils in the same class has been indicated. Our experiments have, I think, fully demonstrated that such a system is pernicious. Some years ago I recommended the establishment of an intermediate school for the purpose of classifying those pupils who fell short of the standard for admission to the high school, and yet who were so far advanced as to be greatly injured by setting back a year, and classifying them with pupils of the next grade. The experiment was continued for two years. It was found that the so-called brilliant pupils, those full of courage and resolution, even if admitted on a very low per cent (I admitted on trial some of this character who made only from 30 to 40 per cent), were soon able to work their way to the top of their classes and to acquit themselves creditably. But those of enfeebled wills, having lost self-confidence or having become listless through disgust, were very slow in manifesting improvement. The practice of giving them short lessons was tried with some success, but a cloud hung over them and hangs over them still. (Some of them have been two years and a half in getting through one year's work of the high school course, and are not able yet to pass their examination at the time this report goes to press, March, 1873.) I think that many of these pupils would have done better if they had been reclassified periodically, in the manner described, with fresh and ambitious pupils pushing up from below. I once compared these pupils to "clinkers," or pieces of coal that do not readily kindle except in a very hot fire, and generally go out before all the carbon is consumed. The "clinkers" are found in our bituminous coal, and need to be burned twice in a hot fire. These pupils, so far as they have any influence, tend to dampen the ardor of

others. Their atmosphere is contagious, and they discourage the teacher and the other pupils when they are numerous in any one class. By the plan of frequent reclassification throughout the school, from the lowest class to the highest, is prevented the collection of these unfortunate pupils in one class. But if reclassification is carried on in any of the higher schools alone the result is to sift down this demoralized element of the school into a class by itself. Hence, whenever any change is made in the higher schools, a promotion of the brilliant pupils should be made from the district schools to compensate. (The board changed the rule for admission to the high school in February, 1873, so as to give an opportunity for the examination of applicants for admission quarterly. This will accommodate the district schools perfectly. There may be enough classes found in the first and second grades to reduce the interval between them to one quarter. Moreover, in the high school the divisions of any one class may be separated at intervals of the same length. At least this may be done with the classes of the first and second years of the high school course.) * * *

There is needed some general plan by which the course of study in our higher grades may be made more elastic, better adapted to the capacities of pupils. The constant danger of all graded systems is that they are liable to become Procrustes' beds. Take the work laid out for any class in our schools—it should be found exactly adapted to the capacities of the average pupil of the grade. The tendency of the teacher of energy and ability is to raise this standard up to what the best pupils can do and to bring sufficient pressure upon the pupils of average or less than average ability to compel them to keep up. In many instances pupils are overworked by this process. Doubtless it more frequently occurs that the teacher grades her lessons by what the poor scholars can do, and the best ones are not given enough to try their powers. In the lower grades this difficulty is not serious, for the reason that the work of reclassification goes on more actively. In the higher grades it is more serious, and there should be some modification of the course of study by which pupils whose rank in the regular course is above a certain per cent should have the privilege of electing some one branch of study which they may carry on in the class above.

[From the St. Louis School Report of 1871-'72, by W. T. Harris, superintendent.]

Whenever the sizes of the schools have been such as to admit of it, a system of classification has been introduced, and the immediate consequences have been: (*a*) great increase in the length of recitation; (*b*) far more thoroughness in the discussion of the lesson, sifting the different statements, and probing the meaning of the same; (*c*) great stimulation of the mental activity of the pupil through trial and competition with other members of his class. These three advantages can scarcely

be overestimated. They multiply the teacher's power just as organization improves the strength of an army. In the unclassified system the teacher is only a private tutor, and the fewer pupils he has the better for each and all. In the classified system the proper quota of pupils is a potent instrument in the hands of the teacher, and he uses the whole class to correct and stimulate each one in it. The lesson, as recited and discussed by and before the class, gets all its phases stated, restated, and criticized as never could be done in the case of a single pupil with a private tutor. The presence of the class arouses the teacher to a high pitch of energy, and each individual in the class is excited by the presence of the teacher and the rest of the class. These circumstances account for the high estimation in which the graded system is everywhere held. So many good things have a tendency to hide some very serious defects. Such defects, already alluded to in speaking of the high school, will be discussed in a summary manner here.

The tendency of all classification is to unite pupils of widely different attainments. Especially is this found in the small schools. The consequence is that the lesson is too long for some and too short for others. The best pupils in the class are not tried to the full extent of their ability; they consequently lose in some degree the discipline which they should gain. The poorest pupils of the class are strained to the utmost. They are dragged, as it were, over the ground without having time to digest it as they should. This develops the result that the overworked pupils are frequently discouraged and drop out of the class and likely enough out of the school altogether. In large systems of schools where classification is very perfect the evil here spoken of need not occur to a serious degree. But it does occur very frequently from the fact that the course of study is laid out in grades (ten, more or less, in number) and all pupils are classified or graded so that each belongs to one of these grades. All the pupils in the grade must be in the same degree of advancement at about the same time. The result is that the school is classified in such a way that there are ten classes separated by intervals of from five to ten months' work. Then promotion is made from one grade to another at set times, annually or semiannually. All who pass the examination commence the work of the next grade; all who do not, continue until the next examination in the work of the grade through which they have just passed.

The effect of this is well known to all teachers who have made experiments in this direction. Both parent and pupil feel very keenly the time lost. The pupil must have been over much of the work of the year, perhaps nine-tenths or three quarters, or perhaps only one-half of it. Yet what he has done entitles him to an advanced position over his fellow-pupils of the next class below him. If he returns to school after being thrust back a year for his lack of less than half a year, he appears in the ranks of a class who were a year's work behind him. He has lost his ambition; he is some time in the class before they come

to work that is difficult enough to arouse him to the exertion of his full energies. Meanwhile he has lost his discipline for hard study, and he is very likely to break down a second time on the work of the year. A second failure for promotion is nearly sure to cause withdrawal from school. The parent has lost faith in the talent of his child and puts him into business or apprentices him to a trade. The youth has lost his own confidence in himself, and is stunted for intellectual growth for the rest of his life.

Was there any advantage in this kind of grading? How could it otherwise have transpired? Instead of the Procrustean bed of grades, the pupils should have been classified into classes of thirty or less each. These classes in all large schools would be separated by intervals of about five weeks' work. As often as these classes, any of them, become too small by the withdrawal of pupils or too large by the assignment to them of newcomers, there should be a new formation of classes. The best pupils of one class are to be sent up to the next, the best from the next below are to be promoted and joined with the pupils remaining. Those not promoted are now united with the best of the class that is five weeks' work behind them. The degradation is scarcely felt. It is rather called, in both cases, a promotion of the best ones, not a degrading of the poorest. It is a process of cutting up the school into classes anew, and, as a matter of fact, the pupils need not have changed rooms to any very great extent.

A set time for examination and promotion is injurious just in the ratio of its infrequency. Annual examinations for promotion and a discontinuance of promotions at other times is an extremely pernicious system, and occasions serious injury to the higher grades of our schools. It is evident that the further advanced the pupil the more unfavorably will it affect him; and yet in our schools throughout the country the system is so arranged that this Procrustean device applies more especially to the advanced pupils. In how many of our cities is there promotion to the high school oftener than once per year? What becomes of the pupils who lack 1 per centum of making the standard required? Are they not sent over the work of the highest grade of the grammar schools again, and thus made to occupy a year in doing what they might do in one-fourth of that time? And do they not leave school at this crisis more than at any other time in the whole course? Are not our high schools arranged in grades or classes just one year apart in their work? And is all this necessary? Not, certainly, where there are pupils enough to make two or more divisions of thirty pupils each. If the pupils from the highest grade of the grammar schools had been classified according to their rank in the examination, the first thirty would have formed the highest division on the high-school work, the next thirty the second division, and so through those who had made a reasonable standard. Then would have come the highest thirty pupils in rank of those not admitted, who should be admitted to a central

school and conditioned to five weeks' work on the studies of the first grade of the grammar school, and then examined again; the next thirty to a longer period, and so on. Pupils thrown back five weeks, and then classified with their own fellows who had been unsuccessful, would find the hardship a very trivial one, and would scarcely think of leaving school.

For schools where the number in any grade fell short of the requisite 30 wherewith to form a new division, of course this plan of subdivision could not be carried out. But so far as the first [highest] grade of the grammar school is concerned this would rarely happen, and still less likely would it occur with classes below the highest grade.

The principle is clearly this: Not a Procrustean bed of grades on which the school is to be stretched so as to reduce the number of grades of advancement to ten or any other special number, but a thorough classification of all the pupils into classes on a certain quota as a basis, whether this be 30 or 25, or whatever other number is considered the best. The endeavor will be to have the classes separated by as small an interval as possible; but four, six, or even ten weeks' work is small enough for all practical purposes; and in order to make this arrangement uniform the pupils in upper grades, when too few to form classes with the required quota, should be brought together in central schools; and this principle should be applied as far as possible: if the highest grade in the high school consisted of 60 pupils or more, the division of it into two classes would be required.

This process of continual readjustment of classification in our schools will render the whole school system elastic and mobile. Like the current of a river there will be everywhere forward motion—in the middle the current is more rapid, at the sides the current flows more slowly. The work of the grade laid down for a year's study will be accomplished in three or three and a half quarters by the brightest; by the dullest and slowest in five quarters. There will be no temptation to push on a slow pupil or drag him beyond his powers; no temptation to promote a pupil to a new grade's work before thoroughly completing what is below him.

By this plan would be checked a pernicious system of holding back pupils from examination for the high school, simply for the purpose of gaining a reputation for the school through the high per cent of its pupils in the competitive examination.

Doubtless there is a certain degree of thoroughness requisite in the lower branches before the pupil can profitably take up the studies of the next higher grade. After attaining this per cent it is possible to keep the pupil drilling over the lower work, in order to secure a certain mechanical thoroughness, so long as to waste much time that might be better expended for the pupil's culture and growth on the higher studies.

There are still some points on which doubts may rest. For example, it may be urged that this system would cause a collection of the dull and stupid pupils into classes by themselves, a deplorable result. But

this is one of the evils which this systen is adapted to correct. The fact that the best pupils from below are allowed to rise through the masses above them as fast as their ability can carry them is surely not likely to prevent the slower pupils, who are their companions, from exerting all their energies and making considerable progress. The stream of bright pupils from below is inexhaustible. From the primary grades it ascends, continually passing fixed points or points that move on more slowly. In every class there will be its quota of bright pupils, some leading the class, and some just sustaining themselves in it, having recently joined it. But in the old system all the bright pupils had attained the top of the class and the dull ones had fallen hopelessly to the bottom long before the needed reclassification took place.

Another may urge that this system causes so rapid a change from teacher to teacher that the very important personal influence of the teacher is materially impaired. But under this system in the higher grades the pupil would hardly change teachers oftener than once or twice per year, and a change as often as this is desirable for the healthy individual culture of the child. The school should not be a family influence exclusively. It is the transition to civil society; consequently the pupil must change teachers often enough to correct any one-sided tendencies of social culture that he may be liable to acquire from the individual teacher. For it must be remembered that reclassification of a whole school of 700 pupils, distributed through twelve rooms, does not imply a change of teachers on a part of more than one-sixth of the pupils, even when one-third of the best pupils in each class are promoted to the next higher. Each teacher having two classes (or, in the lower grades, three classes) will have one-third of the pupils from her advanced class promoted to the lower class in the next room above; she will likewise receive from the next room below one-third of the pupils from the advanced class there. In her own room, one-third of the pupils will be promoted from her second to her first class, but will still remain under the same teacher. In fact, she will have promoted to the next room one-sixth of her pupils, and have received one-sixth from the next lower room—that is to say, in case one-third is promoted from each class; but, practically, this is the maximum, and in ordinary cases a less proportion of the class will be transferred. If reclassification is instituted four times per year, and on each occasion one-sixth of the pupils are promoted to the next room, it will follow that each pupil will be taught one year and a half by the same teacher. But, as frequent transfer is necessary in some schools, to make up for depletion of pupils in higher grades, it will happen that this period will be reduced one-half or two-thirds.

In small towns where the high-school classes do not number over 30 pupils each, such subdivision as I have here described can not be accomplished. But in such places there is ample occasion to apply this system to the district schools, which frequently suffer more than the

high school from the wide intervals between the higher classes. Transfer of the same to the high school as a preparatory class, or to intermediate schools, will be found a salutary measure. Hence, the Cincinnati plan of intermediate schools is an excellent one for purposes of classification. In small towns not only the regular high-school pupils are to be sent to the central institution, but also the higher grades of the district schools whenever the classes are too small for economical instruction. These may form a "preparatory department" and can be graded into divisions of 30 pupils each, in such a manner that there is an interval of ten weeks or less between each and the next higher. But whenever transfer and promotion take place in this school, there should be at the same time promotion from the grammar school in order to prevent the isolation of the dull pupils in the lowest class of the school; when the best pupils are promoted from any one division their places should be made good by the best pupils promoted from the class below. The psychological effect of successful competition has been alluded to before. The moderate scholars of a higher class may find themselves at an advantage as compared with the best pupils newly promoted from the class below, and are likely to take fresh courage.

The question may arise, do these pupils who are promoted from one class to the next omit that portion of their studies gone over in the interval of time between the two classes? It is expected that this will be taken up by a review of the ground embraced in the mentioned interval.

[From the St. Louis School Report of 1872–'73, by W. T. Harris, Superintendent.]

Last year I alluded to our plan of promotion from class to class, and to the elasticity that prevails here in regard to grading. Briefly stated, the theory of our plan is as follows:

1. There is great difference among pupils in the capacity to learn. Children who enter school at eight years of age, can, on an average, make nearly double the progress in primary work that pupils of five years of age can make. Bright, nervous children will make far more rapid progress than children who are stolid and dull.

2. The school must provide for this difference in rates of progress by frequent reclassification; otherwise the school will become a lifeless machine, a Procrustean bed. It must be understood that when bright scholars are kept back for dull ones they acquire loose, careless habits of study; and when pupils of slower temperaments are strained to keep pace with quick and bright ones they become discouraged and demoralized.

3. Besides difference in temperament, there is difference in regard to amount and regularity of attendance upon school. Some pupils are detained from school by sickness; some by the necessity of working for a living. Three months a year is all that can be afforded by the poorest people after the child is able to work. New arrivals in the city, or

departures from the city, occasion a fragmentary participation in the privileges of the school. Moreover, it is a singular fact that nearly one-half of the youngest pupils begin their school life in the spring, having arrived at school age too late the previous fall to enter before the inclement weather sets in. The number of pupils belonging to the school at any one time, in St. Louis, is two-thirds of the entire number enrolled for the year. Hence the accession and loss of pupils during the year equal 50 per cent, or one-half of the average number belonging to school. It should be stated that the statistics of a large majority of other cities show a greater fluctuation than this. The general character of this accession and loss may be stated thus: In the lower grades there is continual accession, in the upper grades continual withrawal of pupils.

4. Combining these two inequalities or differences with a view to restoring equilibrium—the continually developing difference of rate of progress in studies between pupils of the same class with the continually developing inequality of size of classes (in upper grades decreasing, in the lower grades increasing in size)—it is evident that provision must be made for promotion of the pupils who make rapid progress, and that this promotion will, at the same time, restore the proper quota of pupils to the teachers of the higher grades. A promotion made once in ten weeks, or once in a "quarter" or "term," will generally suffice to keep the school in a state of equilibrium.

5. It is clear that frequent promotion should not be made by classes. The few best ones in the class should be united with the class above—it will seem a reward or a recognition of their excellence. After such promotion has been made through all or nearly all of the classes from the lowest, each class will find itself composed of its fair, average, and poor scholars, together with a few of the best from the next lower class in place of the few that it has lost by promotion. For a while, at least, the average and fair scholars in the class will have the stimulus of being the best in the class. The poor ones will rank as "middling," and the new pupils will begin as the poorest and slowly work up toward the top of the class. The advantage to the self-respect of the slower pupils which comes from standing in relation to their classmates as abler and better informed is not to be lost sight of.

6. Classification in a school is never absolute. No two pupils are of exactly the same degree of progress. The entire number in the school may be ranked from the highest to the lowest, and there will be found no wide gaps indicating a natural separation into classes, but the best of the next class below would stand very near the poorest of the class above, no matter where a division were to be made. In dividing into classes, therefore, the proper number in the class is first to be considered, and next the qualifications. But it will not do, even for the sake of having a class of proper size, to combine pupils of widely differ-

ing attainments. As indicated in the above table, the numbers in the various years of the course vary nearly as follows:

First year	30	Fifth year	7
Second year	21	Sixth year	4½
Third year	20	Seventh year	2½
Fourth year	12	High school	3

Provided the classes in the higher grades are to be of normal size, it is clear that the chances for proper grading are only one-seventh to one-tenth as good in them as in the lowest grade. The only remedy for this is to bring together the pupils of the higher grades into fewer schools. There may be very many schools with the lower four grades. There should be only five rooms devoted to instruction of pupils of the sixth year in the course where there are 30 devoted to the lowest grade, or 91 rooms devoted to the five lower years' work. With us those schools giving instruction to pupils in the seventh or highest year of the district school course[1] are called "First class" schools. For purposes of proper grading and classification, there should be one of these for each district enrolling 4,000 pupils per annum, or for an average attendance of 2,500 pupils. Ten such schools would answer our purpose at present. As we have 15 we ought not to increase our number for five years.

7. As systems of schools are generally organized, the higher priced and most experienced teachers have charge of the upper grades of pupils. As their classes suffer depletion throughout the year, unless there is some regular mode of transferring new pupils to the care of those teachers, they will have very small classes the latter half of each year. Thus, while the poorer class of teachers are overburdened, the ablest and best-paid teachers have less than their quota of pupils. It is clear that the policy should be to bring as many pupils as possible under the ablest and best-paid teachers. The practice of frequent transfer of pupils is better for this purpose than the custom of transferring in bulk once per year.

8. The system of frequent transfer does not affect the individual pupil any oftener, on an average, than the system of transfer once a year. The bright pupils, it is true, have frequent opportunity to advance. The system is elastic for them. The slow pupils advance only when ready. The system discards one general epoch of transfer and reclassification at the close of the year, and adopts instead four or more partial transfers so arranged as to accommodate the two-fold demand: first, that the ablest pupils shall not be kept back; second, that the ablest and highest-paid teachers shall, at all times, have their full

[1] At a late meeting of superintendents of western cities (held in November, 1873), it was agreed to adopt a system of eight grades for the work of the district schools, each grade corresponding to a year's work and accordingly subdivided into quarters. The cities of Toledo, Cleveland, Detroit, Cincinnati, Memphis, St. Louis, and Chicago have adopted this standard.

quota of pupils. In the lowest grade, where several rooms in the same building are filled with pupils not advanced beyond the first year of their course, the bright pupil will change teachers perhaps three or four times in the year. In the higher grades the pupil will remain a year or more under each teacher.

9. How to provide for the necessary process of reclassification and transfer from room to room with the minimum of discouragement, and consequent injury to that half of the pupils who fall below the average of attainment, is the serious question. If the sifting of each class for the advantage of the best ones is accompanied with "dropping" the few poorest ones into the class below, we have the maximum of injury. The class, as a whole, is not stimulated but only frightened at the degradation of the few hindmost. Those actually "dropped" are really disheartened. Besides, such sifting down tends to create a movement toward the lower departments instead of toward the higher departments where the vacancies are. When the opposite policy is followed, of promoting the few best instead of degrading the few poorest, the maximum of encouragement is attained. Sift up and not sift down. The school should be a living process, continually readjusting and adapting itself to the want of the organization as well as to the capacities of the pupils.

10. How if the upper classes are quite small and yet the intervals are very large in regard to advancement—in other words, what if the more advanced pupils are very few? Central schools should absorb all the pupils of higher grade, leaving to the other schools only such grades as they find it possible to provide with good classification. Without such combination with central schools, economy and perfect classification are impossible. Small classes and small provision for differences in capacity among pupils naturally result.

11. When promotion is made only once a year into the high school, the district schools are compelled to adapt their upper classes to this condition of things, and accordingly make the work of the first grade begin at the beginning of the year and end with its close. The second grade, likewise, must fall into the same trammels. If a class should finish the work of the second grade before the close of the year, it must not take up first grade work until the beginning of the next year, and if, at the commencement of the scholastic year a class of the second grade has not quite finished its work, it is generally put at once into the work of the first grade, although unprepared. The only alternative would be to let it work a year longer on second-grade studies. The utter want of elasticity in the classification of the upper grades of the district schools, arising from the lack of frequent promotions to the high school, works violence continually to the interests of one-third of the pupils. All those delayed through sickness, the necessities of poverty, or inactive temperaments, either fall back a whole year, or else in a vain endeavor to make up their deficiency, overwork themselves or get discouraged.

12. The advantages of frequent re-classification are in brief:

(*a*) *Economy.*—Filling up the classes of the ablest and best-paid teachers, and making room in the lower grades for new pupils, constantly applying.

(*b*) *Rapid progress.*—The pupils that learn readily are allowed to move forward as fast as their abilities permit, the slower pupils and those irregular in attendance neither allowed to hold back the more fortunate ones, nor obliged to overwork and cram in order to keep up.

The disadvantages alleged are confined to the practice of changing teachers too frequently. To these it is sufficient to reply by a question: Is it desirable to keep a pupil back in his studies simply in order that he may recite for a long time to the same teacher? Every superintendent knows that a change of teachers brings the pupil in contact with a new individuality, prevents the danger of warping the development of character in the pupil, and is desirable oftener than once a year in the lower grades, and at least once a year in the higher grades—where the teachers are maturer and more highly cultured—until the pupil reaches the high school, where he recites daily to three or more teachers.

[From the St. Louis School Report of 1873–'74, by W. T. Harris, Superintendent.]

The theory of grading and classification set forth and defended in my annual report for 1871–'72, has provoked more discussion among the leading educators of the country than I anticipated. Criticism has generally been favorable, but in some quarters strong protests have been made against it by very intelligent men. I believe, however, that a complete statement of the method of reclassification, embodying all of its details, will prove the objections made to be groundless. I propose, therefore, here to present the subject anew, and endeavor to consider the alleged defects in a candid manner.

At the National Educational Association in Detroit, for 1874, Hon. E. E. White, of Ohio, made the following statement and defense of the position.

The pupils in the graded schools are divided into classes, and to secure necessary economy these classes are made as large as practicable. The fewer the number of pupils embraced in the system, the fewer must be the number of classes, and, as a consequence, the greater must be the inequality in the attainments and capacity of the members of each class, and hence the greater the difficulty of the problem now under consideration. If the teacher of a class adapt his instruction and requirements to the maximum capacity of his pupils, the great majority are hurried over their studies and receive a superficial and imperfect training. If he adapt his class work to the minimum capacity of the class, the great majority are held back, and, as a consequence, not only sacrifice time and opportunity, but fall into careless and indolent habits of study. The remaining course is for the teacher to adapt his class work to the medium or average capacity of his pupils, with such special attention to the more and the less advanced pupils as may meet, to some extent, their wants. But here comes in the "per cent system," with its demands. That the class, as a whole, may attain a high average per cent, it is necessary that the lowest members of it may reach a good standard, and this results in the holding back of the bright

and industrious pupils until by iteration and reiteration the dull and indolent may be brought to the required standard. The amount of time and talent thus wasted in some graded schools is very great. This is not always evident to the teacher, since the brightest pupils, being chained to the dullest, soon learn to keep step, scarcely showing their ability to advance more rapidly. This difficulty is greatly aggravated when classes are promoted en masse from grade to grade, the pupils being thus chained to each other year after year, or throughout the course—an efficient process for reducing pupils to the level of mediocrity.

The statement of these difficulties suggests their partial remedy. The brighter and more capable pupils in each class must have the opportunity to work away from the less capable, and to step forward into a higher class, when the difference between them and their lower classmates becomes too great for a profitable union in the same class. To this end there must be a proper interval between the successive classes, and the reclassification of pupils must be made with corresponding frequency.

Experience alone can determine what this interval should be, and the frequency with which pupils should be promoted. It is possible that both of these facts may depend somewhat on the number of pupils included in a graded system, a much more complete classification being possible in large cities than in small towns. While this may be true, it is believed by many experienced superintendents and other intelligent observers, that the universal experience of graded schools condemns the prevalent practice of promoting pupils but once a year, with a year's interval between the classes. This wide interval is a serious obstacle in the way of a needed reclassification of pupils. The more capable pupils can not be transferred to a higher class, since this obliges them to go over the ground of two years in one—a task successfully performed by very few pupils—and the less advanced pupils can not be put back into a lower class without serious loss in time and ambition, if they are not withdrawn from school. It may be well for a few pupils in any system of graded schools to spend an entire year in reviewing the previous year's work, but these exceptional cases are usually the result of an unwise attempt to hold pupils too long together. Large classes of young pupils can not be kept together, even for one year, without serious loss both to those who are held back and to those who are unduly hurried. What is needed is a system of classification and promotion that shall provide for the breaking of classes, at least twice a year, with a transfer of the more advanced pupils, and their union with the less advanced pupils of the next higher class, and also with special transfers of bright pupils from class to class as often as may be necessary, and special provisions for pupils deficient in some branch of study.

We are aware that the system of annual promotions has special advantages. It reduces the number of classes in the smaller cities and towns, and it saves labor and trouble, especially when classes are promoted in a body, on a minimum standard. It is undoubtedly true that a Procrustean system, which puts pupils in classes, reduces them to the same capacity, and moves them regularly and evenly forward, requires little skill to run it, but this can not compensate for the serious losses involved. The highest good of pupils ought never to be sacrificed to secure a self-adjusting mechanism and uniformity of results.

Superintendent Stevenson, of Columbus, Ohio, in his report for 1873–'74, discusses the question in an attitude somewhat hostile to the plan of frequent reclassification. He says:

The course of study assumes one year for the completion of the studies in each grade, and an annual transfer of pupils from grade to grade. The amount of work to be done each year is the maximum for the pupils of average capacity whose attendance upon the school is the average number of days a child of ordinary health may be present during the year. Dull scholars often make up what is lost in natural ability by regular attendance and industry, and bright scholars lose by irregularity of attendance and indolence what they gain by quickness to learn, so that the

larger number of promotions can be and are justly and satisfactorily made at the close of the year.

But differences in the ages and the capacity of children entering the school must, in many cases, be provided for in the classification. To make such provision no classification can be absolute; it must undergo changes from the beginning to the end of the year. A child of 10 years of age having a healthy body and vigorous mind will do more, or is capable of doing more study than a feeble child of 8 years of age; and a bright child whose parents take some pains in home training, who is regular in his attendance, will do much more in a year than the dull child who is neglected at home, and whose attendance is interfered with by the necessities at home, or by bad health. It is also true, that pupils of the greatest ability have frequently less power of application than those less brilliant. What one gains by ability, the others gain by industry and effort. For example, ability is equalized by industry; regular attendance, by irregular; health, by illness; age, by home training; attention, by inattention. These are important factors which must be considered in the solution of the great problem of classification.

By observing closely the progress of children in public schools for a series of years, I have arrived at the following results: In a graded school in which the course of study is made for the average pupil, about 5 per cent will show strength enough to be advanced during the year, and about 10 per cent will fall behind the remaining 95 per cent of the class. This varies a little in the lower and higher grades, but it is a fair and approximately correct average for a course of study requiring eight years for its completion. The question then is, What is to be done with this 15 per cent of scholars? Every teacher will answer, let the 5 per cent go to the next higher grade, and do not permit the 10 per cent to interfere with the progress of the class. Five per cent of the 10 can, without injury to themselves, by a little extra effort, be worked up to the proper standard, and the remaining 5 per cent ought for their own good to pass over the work of the grade again, or so much of the work as will prepare for the next higher. I can not condemn in too strong terms the recommendation of those theorists who would gather into one class or grade all the bright ones, and the dull ones into another; that is, make the basis of classification upon the estimated ability of the pupils, rather than upon what they do, for it is the rule, rather than the exception, that the dull scholars win the race in the long run. The separation of the dull and bright scholars into different classes is unjust and injurious—unjust, because the keenest discrimination can not always discover the slumbering mental power of many children, nor ascertain the outside influences which detract from the manifestations of intellectual ability by the child; injurious, because the dull scholars are deprived of the highest possible standard by which to measure themselves intellectually, and the competition which is necessary to excite interest and enthusiasm. To meet this theory, viz, that the bright scholars should not be chained to the dull ones, promotions of classes in many schools are made semi-annually. The arguments in favor of frequent promotions are, first, the interval between the classes being short, those who fail to reach the required standard for promotion will lose less time; second, it gives an opportunity to the bright and industrious scholars to break away from their dull and indolent associates; third, it brings the scholars in contact with a greater number of teachers. The objections to frequent promotions by classes are: First, frequent changes of teachers; second, the best interests of the majority are sacrificed for the benefit of a very small minority; third, there is no real advantage gained for those who are promoted, either in time or opportunity, for more rapid advancement. These objections are worthy of careful consideration. The teacher, in an interval much shorter than a year, can not become acquainted with the individuality of her pupils, their strong and weak points, their susceptibilities, their physical and intellectual powers, and the outside forces, which more or less control their education and character. The teacher ought to know her pupils thoroughly. This takes time. Will not children do better work and make

more rapid progress with a teacher who has had time enough to win their confidence and love, than they would with one whose name they scarcely know, and whose warm sympathy they have never felt?

Why make a reclassification of a whole school three or four times a year, because 15 per cent have failed to reach a fixed standard at the end of every three, four, or six months, to the disadvantage of the 85 per cent? The amount of work to be done by the pupil in a year is the same, whether it is divided into quarters, halves, or a year, with a promotion at the end of each period.

The plan of promotions in the schools of this city has been by classes annually, except in the lowest, primary grade, in which promotions are made semiannually, to accommodate the new pupils entering in the spring, and by individuals at any time during the term, whenever they are found qualified for a higher grade. A pupil passing into a higher grade at the end of five months, finds no difficulty in making up the subjects omitted in connection with the reviews of the class, if he is apt and diligent. In the practical working of a system of schools, this plan secures all the advantages of frequent promotions with none of the disadvantages of the plan of yearly transfers. In short, it has all the flexibility that the varying circumstances and the differences in children require.

His condemnation of the theory or system which brings together all the bright ones into classes by themselves, and collects the dull ones in a similar manner, is not too strong, in my opinion. I have seen the bad effects of this often. He limits his objection to the system of reclassification recommended here by specifying "promotion by classes." In my discussion of the subject last year, I remarked, in view of much evidence of misunderstanding on this point (Report, 1872–'73, p. 25, section 5):

It is clear that frequent promotion should not be made by classes. The few best ones in the classes should be united with the class above—it will seem a reward or a recognition of their excellence. After such promotion has been made through all or nearly all of the classes from the lowest, each class will find itself composed of its fair, average, and poor scholars, together with a few of the best from the next lower class in the place of the few that it has lost by promotion. For a while, at least, the average and fair scholars in the class will have the stimulus which arises from the consciousness of being the best in the class. The poor ones will rank as "middling," and the new pupils will begin as the poorest and slowly work up toward the top of the class.

It seems that in Columbus about 5 per cent of the pupils "show strength enough to be advanced during the year." One in every twenty pupils has so strong need of promotion that it is found best to place him in the class above, although that class is a full year in advance. If so many are benefited by a leap over so large an interval, it is difficult to see why 10, 20, or 30 per cent of the pupils could not be profited by promotions to classes thirty, twenty, or ten weeks in advance. And if 10 per cent fall behind into classes a year lower in the course of of study, it admits of doubt whether they and many more besides would not have been better provided for by assigning them to classes ten or twenty weeks lower in the course. The other objections will be noticed in their proper place.

It will be noted that Mr. Stevenson believes in promoting "by classes, annually (semiannually in the lowest primary grade), and by

individuals at any time during the term, whenever they are found qualified for a higher grade." "Promoting by classes" evidently refers to changing the work of the class from the course of study laid down for one year or grade to the work of the next year or grade, while "by individuals" refers to actual reclassification.

"Promotion by classes" may be from day to day, or month to month, or year to year, or once in four years, according to the arbitrary standard of division adopted by the one who makes out his course of study. Whenever the teacher sets a new lesson she promotes "by class" to a new stage in the course of study. Whenever one ten weeks' work is accomplished, and a new one begins, there is a promotion "by class," although neither the teacher nor the pupils make any note of it. The course of study with us is subdivided so as to show the average amount of work for ten weeks. Many years ago no accurate measure of the time required to go over the course of study in its various stages was kept in this city, and as a consequence the expression "promotion by class" would not have been used with reference to entering upon the work of a new year, but might have been applied to the promotion of a class to a new text book, or from one school building to another, or from one room to another in the same school, or, finally, from the district school to the high school. Possibly, also, "promotion by class" refers to the change of teacher, in Columbus. But at all events, it is not "reclassification" in the sense that term is used in this report. The promotion "by individuals," since it must refer to a change from one class to another, *is* a reclassification, and this must happen quite frequently even in a school where only 15 per cent of the pupils are thus changed in the course of a year.

Superintendent Stone, of Springfield, Mass., presents his view of this matter, in his report for 1874, thus:

> The perfection of school organization, as I understand it, is reached when every pupil has a chance to do his best. This can be accomplished only by judicious grading; but schools are frequently graded so mechanically that they fall far short of the highest efficiency. In this way arises the objection, sometimes made, that work in graded schools is slow, and that pupils are not unfrequently hindered, rather than carried forward, in their progress. It must be acknowledged that unless grading is done strictly according to proficiency and ability, the advantages claimed for it are not attained. The mistake most frequently made in grading a school is in supposing that a class once formed can be continued, for a considerable length of time, without any promotions or other changes. It can hardly be expected that 50 pupils, even of similar proficiency, at the commencement of a school year, can be placed in a room and kept profitably employed there for a twelvemonth upon the same amount of school work. A difference in ability will soon develop itself, and then if the rate of progress is graduated to the average, or, as is sometimes done, to the minimum capacity of the class, those who are able to do more will soon find themselves with considerable unoccupied time upon their hands. Such a result is especially to be deprecated; for it is an important principle to be borne in mind that pupils do not study to the best advantage, nor accomplish their greatest and best work, unless they feel the necessity of constant effort. They ought not to be hurried, but they should feel that they can not be idle without incurring the danger of falling into the ranks of

the laggards and the drones. Persons of active minds must have employment of some kind, and if they do not find sufficient legitimate work in school, they often, from mere restlessness, occasion the teacher much trouble in the way of discipline, or become disgusted, and leave school altogether. Their minds are dwarfed if they remain under such circumstances; they have little enjoyment in their work, and it is not strange they lose their patience and their interest.

Various plans are proposed and tried for the solution of this difficulty. That of dividing and subdividing pupils of a single room into numerous small classes is, perhaps, the most objectionable, the time allowed to be devoted to each class being wholly insufficient for anything like thorough and satisfactory work.

Another plan is an entire reconstruction and classification of all the grades four times a year. Whatever may be said in favor of such a course, neither theory nor practice gives it a strong indorsement. While it may bring those of the same proficiency together at each classification, a term of ten weeks does not allow sufficient acquaintance to be formed between teacher and pupil to enable both to work to the best advantage before a recast of the school introduces a new class, or one for the most part new. Such frequent changes are found to produce constant confusion, and the advantages of continuous methodical work are almost entirely lost.

Our own schools, as I regard them, seem to need a more discriminating classification at the commencement of the school year, and afterwards more frequent individual promotions. When a class is formed every pupil should be placed there who is able or who can possibly be induced to do the work of the class, no matter how many grades such pupils overleap or what may be their ages. As the class progresses, those who seem capable of advancing faster and are willing to make an extra effort should from time to time, be promoted to the next higher class or grade, provided that it seems probable that such pupils can bridge over the interval thus passed in a reasonable length of time. Where such opportunities for promotion are constantly before the school a laudable ambition for respectable progress is kept up and more and better work is accomplished. At the commencement of the spring term, in April, a reclassification of the lower primary grades may be desirable, as a considerable accession of new pupils is made at that time to those schools. I would also advise that, at the same time, three months before the close of the year a thorough examination be made, in the upper grades of the grammar schools, of those individual cases who seem capable of advancement, that they may be allowed promotion, and thereby gain a year in their course, especially when the age of the pupil seems to render such a step desirable.

Such a system of classification and promotion, carefully watched and carried as far as the health and ability of the pupil will admit, and assuredly no further, will, I feel confident, greatly increase the efficiency of schools. In this way many a disheartened pupil will be incited to interest and effort; many who have despaired of promotion will look forward with hope; many who have anticipated leaving school in the middle grades will be induced to go further; and many, very many I hope, will be able and willing to go beyond the grammar-school grade, and join the classes in the high school—the highest public educational good in our city now within reach of its children and youth.

The plan of "dividing and subdividing the pupils of a single room into numerous small classes," spoken of above as the "most objectionable," is the plan adopted in ungraded schools and for the numerous class of small country schools. While the plan is very objectionable, it is difficult to suggest anything better for the small schools in thinly settled districts of the country. In the lowest primary classes of a city school, where the recitation should not exceed twenty minutes in length, the teacher may profitably divide her sixty pupils

into three or even four classes. But in the grammar school there should not be more than two classes of twenty-four pupils each. "Reclassification of all the grades four times in a year," if it had the effect described, of changing at each time the majority of the pupils from one teacher to another, would certainly fail of "strong indorsement," or at least ought to fail of it. When we read, however, of the "frequent individual promotions" and of the "reclassification of the lower primary grades" at the commencement of the spring and fall terms, we find that the kind of "reclassification" we advocate here is practiced and strongly indorsed in Springfield.

The school committee of Worcester, Mass., present the following remarks on this topic in their recent report on the suggestions made by the mayor of that city:

It should also be borne in mind that any system of grading is necessarily imperfect. The differences between our scholars are not a series of regular and abrupt steps according to the theory of our grades. There are wide differences of attainment by study of physical and mental capacity and of disposition and home influence. In truth, these differences might be more fittingly compared to the slope of a mountain ridge than to either a stairway or an inclined plain; and, if we rightly understand the remarks of the mayor, it is these differences that form the basis of his criticism upon our system of grading. But precisely the same criticism may be made upon the ordinary classification of scholars in an ungraded school; and until the city of Worcester can afford to furnish to each scholar a private tutor especially adapted to the scholar's needs, we are not prepared to recommend the abolition of grading and classification in our schools.

But it is no doubt true that a series of graded schools needs constant supervision and regrading. Many teachers seem unwilling to promote their best scholars except at the termination of the year, and, therefore, some special provision for discovery of cases of exceptional merit and their more rapid advancement is necessary.

The ordinary and regular operation of our system results in the promotion or advancement of the scholars one grade each year. The average Worcester scholar performs the work assigned for him to do with an indifferent sort of success and is regularly promoted.

But there are cases of exceptional dullness and absence, where the work is not done; and there are exceptional cases of meritorious achievement, when promotions might and ought to be made more rapidly than our system in its ordinary working provides for. It is the latter which we suppose the mayor to have had in mind when he called attention to semiannual promotions. Agreeing with the spirit rather than the strict letter of his recommendation, we favor promotions in cases of exceptional merit, at whatever time of year it may be discovered, and recommend the breaking of all rules, if need be, to get at them and do justice by them.

When the present plan of placing each school building under charge of one master or principal was adopted, it was expected that the principals, having all the scholars in the building directly under their own eye, would readily discover and rapidly advance superior merit. Has this expectation been as fully borne out by results as we had right to hope it would be? Do the principals make themselves personally as familiar with the scholarship of each scholar as they might and ought? It seems to us that we have a right to expect that all principals having an assistant in their own room will make frequent visits to each room, hear recitations, and give instruction in each, and make personal examination to such an extent as to become perfectly familiar with the attainments of every scholar, and be prepared at any time to advance the deserving. It is believed that they have abundant time to do this.

We have in mind the case of six scholars at the beginning of the present year promoted from the sixth to the eighth grade, and to-day they are among the very best scholars of that grade. Nothing can be more certain than that it would have been a great injustice to have kept back those six scholars in the seventh grade during the present year.

The provisions of Chapter VII of the rules and regulations of this board well define the duties and confer ample powers upon "principals and assistants" with regard to promotions, and the only change we see reason to recommend is the addition of a rule requiring assistants to make reports to principals, and principals to superintendents, at the end of each term, whether there are any scholars in their school that ought to be promoted, and, if so, why they are not promoted.

Superintendent Harrington, of New Bedford, attacks very earnestly the proposed plan of reclassification and takes a far more radical position of hostility than any other opponent. His first and chief objection to the system is against the supposed frequent change of teachers necessitated by it, and the consequent injury to the thoroughness of the instruction and the healthfulness of the discipline. He very justly contends that the teacher must have time to get acquainted with his pupils, and to plan and carry out a systematic whole of methods and processes carefully arranged, so as to produce important mental and moral results. Perhaps a sufficient reply to this will be found in the subsequent demonstration of the fact that the change of teachers need not and does not occur any oftener under this system than under the system its opponents advocate. But Mr. Harrington seems, like some other opponents, to understand the effect of "reclassification four times a year" to be the change of teachers four times a year. With such a mistaken view of the system one can not be surprised that he opposes it. But he proceeds to indicate his hostility to all systems "in which promotions make one of the customary instrumentalities of influence and progress." "The course of study," according to him, should be "so adjusted as to meet the intellectual demands of a scholar at every step of his progress, following him along until, at 14 years of age, he has compassed a full schedule of elementary study." "Although the well-constructed manual of study presents only the minimum of requirement," he asks: "Do we not expect that minimum to serve only as a skeleton, which the teacher is to clothe with flesh and blood, and round out into full proportions, so as to meet the expectations of the ambitious, satisfy the cravings of the intellectual, and occupy the time of the most proficient?" "The school in which promotions are a customary instrumentality must be addressing itself all the time to mediocrity alone, on a comparatively low level of purpose without stimuli to create a healthful *esprit de corps*, and wanting in the characteristics of vigorous, intellectual life." "Promotions are not provided for in our system—are not asked for—could have no legitimate place. The best scholars, all throughout our grades, find constant and delightful occupation."

By this we are to understand that a vastly superior plan to the one which sifts and classifies and is attentive to close grading has been dis-

covered, and this plan makes pupils and parents indifferent to the grading and classification of the school. It makes no difference how unequal the powers of those who are in the same class—the gifted and mature pupil can use his time in full, while the poorest pupil does as much. "This condition of things, rendering it possible to occupy the time of the superior scholars in fruitful study, and also to give the poorer ones a good wholesome stint which they can accomplish without any undue strain or forcing, while all at the same time work together as a class, is brought about by an adjustment of the studies, which may be described in a homely way as 'a circle within a circle.' The inner circle represents the essential fundamental work which is prescribed to be thoroughly accomplished by all the class. The outer circle represents a broader field of study, either illustrative of or supplementary to that of the inner circle which all are expected nominally to engage in, *but from any test work as to which, the weaker-minded can quietly be released just in proportion to their incompetency to master it.*"

I have italicized the last clause in order to draw special attention to it. "The result," he continues, "amply justifies our method. It is as admirable as it is astonishing to find, by letting the poor scholars work along side by side with their original mates, not souring them by rebuffs, not destroying their self-respect or paralyzing their ambition by keeping them back, how much they will gradually acquire; how often, indeed, their indifference becomes charmed away, their dormant faculties aroused to activity, and an honorable career substituted for one of neglect and demerit." Finally, he concludes that the best plan is "to continue the class of scholars under the selfsame teacher through all the four years of progress, after entering the grammar school, up to the graduating grade." He intimates that the schools under his charge "have comparatively little to do with percentages. We do not believe in them in connection with either large schools or little schools. We believe that a system of marking and per cents exerts a depressing influence over school work. We have stated written examinations (four times a year) at which, for specific purposes, the papers are marked and the per cents obtained. Beyond that we trust in less artificial stimuli to give spirit and life to our schools."

The repudiation of all class records by which the individual pupil and his parents can be provided periodically with a faithful statement of the amount of work done by said pupil, would seem to be quite in harmony with the system described as existing in New Bedford. While I am far from denying that the "let alone" (*laissez faire*) theory of school management will permit some very good work to exist, my experience with very much of it in my youth, beginning with the "red school house" in the woods and extending through several of the private schools called "academies," forces me to say that I believe that under it there is a wholesale slaughter of the time and opportunity of well-disposed youth. I shall never forget the epoch made in my life

upon emerging from this régime and entering the Phillips Academy at Andover, then under Dr. S. H. Taylor. Here a class record was kept, and students were held accountable for the use of their time and opportunities. I can not but believe that the system practiced at Andover does the utmost to develop responsible beings, and to transmute the pulpy substance of impulse and inclination—the undisciplined will—into a self-controlled will, a directive intelligence that can reinforce the moments by the hours, and accomplish something in the world. Most persons that I have known brought up under the *laissez faire* system have seemed to lapse away in after life and recede from the promise which their school life gave, while the strong characters have emanated from the throng of those who were held to a strict responsibility in their school life. A system which classifies the weak and incompetent with the strong and genial minded, and when they diverge in the amount of work accomplished under its instruction—as they certainly will diverge under any instruction which is anything other than an opiate, a paralyzer of the will—still retains them in the same class and relaxes its hold so as to release the weak from the normal responsibility, will be found in nearly every case to be productive of injury to the growth of character in both weak and strong. If pupils of all classes are to be held to a strict accountability for their work there must be a careful system of classification.

I am aware of the difficulty of making any statements regarding schools without the probability of being misunderstood, even by those well versed in educational affairs. When we undertake to describe a system or method, we assume a certain status of things as existing; probably we take for granted that the reader or listener has in mind the organization of the schools in which we are working. If the reader or listener happens to be acquainted with a radically different system only, his attempt to construe our words results in ludicrous misconceptions. Few people have any adequate idea of the diversity that really exists in our public educational systems in the United States. Not to speak of the difference of public school methods from those of private or parochial schools, one may find variety enough within the public schools to explain how such misunderstandings arise. It is not sufficient to state a system in words which have become technical in a particular locality. The reader of a different locality will read such words attentively, but will put his own construction upon them. An example of this has been seen in the different interpretations given to the words "promotion" and "reclassification," used by different writers in different senses, and sometimes by the same writer in the same sentence in two meanings. "Promotion" may mean change of class (*a*) from one book to a higher one; or (*b*) from one room to another; or (*c*) from one teacher to another; or (*d*) from one school to another; or (*e*) from the quantum of work prescribed for one limited time (primary or grammar department, year or grade, term or quarter, week, or single lesson). Or,

again, it may refer to the change of a pupil from a lower class to a more advanced one, etc. "Reclassification" may be used to signify some one of many phases appertaining to the organization of a school. The transfer of a single pupil from one class to a higher or lower one is a reclassification. It is not strictly correct to apply the term reclassification to the transfer of a whole class from one school, teacher, room, book, or grade of work to another; and yet much confusion arises from such application.

In order, therefore, to make this discussion explicit, it will be necessary to have constant reference to systems that stand in contrast to our own, while we are attempting to give an account of it in a report.

1. The germinal school organization out of which all varieties have grown is the country school of one room and one teacher, with from ten to 60 or more pupils of all ages and degrees of advancement, from the stripling of 4 years, who begins at the alphabet, up to the young man of 21, who is likely to study algebra, or Latin, or natural philosophy. The difference in qualifications ranges through eight or 10 years of study. If classes are to be made they are likely to be made on the accidental fact that some of the pupils bring to school the same text books; in the same arithmetic, the same reader, or geography, or grammar, a class being formed with very little regard to the difference in advancement of its members. Not seldom it happens that those of like advancement in the country school happen to have different text books, and for that reason alone are assigned to different classes and mated with other pupils of very inferior attainments, who have the same book. Thus it happens that the function of the teacher in the country school becomes chiefly one of keeping order and hearing lessons, without being able to find time to teach or explain anything, or to become acquainted with the obstacles that arise in the minds of his pupils. His number of recitations per day averages from twenty-five to fifty, and their length varies from two minutes to twenty or thirty, but averaging only five or ten minutes apiece. But the same teacher may remain in the school for years, although this is not usually the case. The pupils then may avoid frequent changes of teachers. A pupil might spend several years under the same teacher. There is no division of labor in this rudimentary type of school, and it is obvious that the continuance under the same teacher possesses but little more advantage than the antiquated process by which a gun was made throughout—lock, stock, and barrel—by one gunsmith, has over the division-of-labor system in the Springfield Armory, or the watch manufactories at Waltham or Elgin, where each manipulation has a different workman to perform it. With small schools of this character which range through so wide differences in age and acquirements in their pupils, but little can be done other than to secure discipline, and lay special stress upon individual industry. Uniformity of text books (now generally established by State laws) renders possible some degree of classification, but at best, such classification is very imperfect for the rea-

son that there can be little transferring from one class to another in case of differences of ability.

2. When the country school grows to be a village school, and the number of pupils increases to 60 or 100, two rooms are opened and two teachers employed. Division of labor may begin here. Primary and grammar department is instituted, and the range of acquirement in each room may be four years by the course of study. Fewer classes and larger ones allow the teacher twice the length of time for each recitation, and he can begin to lay some stress on instruction. The advantages of class recitation over individual instruction begin to appear at this point. Individual instruction is good where the teacher can devote to it as much time as to an ordinary recitation, but it is inferior to class recitation even then. The class should consist of not less than 10 nor more than 30. The length of recitation should vary from fifteen or twenty minutes in the primary grades, to thirty or forty minutes in the grammar department. During recitation there should be the most vivid and constant attention on the part of all the pupils. It is obvious that this can be obtained in the primary grades only for a short time. With increasing discipline and the strength that comes of years' practice, the recitation hour can be lengthened. That a properly conducted class recitation is of far greater value than individual instruction, is obvious from the consideration that the contents of the lesson are stated over and over by different pupils of the class, criticised and discussed, illustrated from the experience of different pupils, and the pupil has the advantage of seeing how his fellows encounter and surmount such difficulties as he himself meets. What we see in the experience of others, our equals, becomes at once our experience by adoption, and it saves us from the pain and consumption of time necessary to acquire its wisdom through personal adventure. Hence education is essentially to be carried on in the form of community. The school is and must be a community; no private tutoring can educate as the school can. But it is evident that the school best subserves this purpose, when it classifies so that each one meets his equals in the recitation. Great inferiority or great superiority in his fellows, mars the force of the lesson which he learns from seeing their work.

The village school of two rooms, as contrasted with the country school of one room, exhibits to us the beginnings of classification and proper recitation. It does hardly more than this. Its separation of the four years of primary work from the four years of grammar school work is a great, but only one, step.

3. When a village comes to have 500 or 1,000 children living within a small area so that they can be brought into a central school of eight to twenty rooms, new developments become possible in grading and classification. Usually the primary work is kept localized in small schools, while only the advanced pupils are brought together into the central school. This is just and proper. The ratio of younger pupils to older ones is large. In St. Louis there were last year in every 100 pupils, 37

in the first year's work; 17 in the second year; 16½ in the third year; 12 in the fourth year; 7 in the fifth year; 4½ in the sixth year; 3 in the seventh year, and 3 in the entire four years' course of the high school. Counting the lowest three years of the course as primary work, we have over 70 per cent of all the pupils in the schools in the primary department, and only about 26 per cent in the grammar department. In Eastern cities, where education for a long time has done its work, the ratio is much more favorable to the higher departments than with us. From these facts it is clear that in order to secure as good results in classification of grammar school pupils, as with primary pupils, the former must be brought together in about one-fourth as many schools as the latter. To explain: There are, in the school children of a given community, about one-half as many in the grammar school department as in the primary. The recitations of the primary pupils should be about two-thirds the length of those in the grammar department, by reason of the undisciplined power of attention of the former. The number of recitations in the primary department will average three-fourths of the number to each class in the grammar department. Hence it is that the number of pupils to each teacher in the grammar department must be considerably less—two-thirds of the number assigned to each teacher in the primary department. The teacher in the primary department can manage and instruct 72 pupils with greater efficiency than the teacher of the grammar department can manage 48 pupils. In the small primary schools located in the different neighborhoods, therefore, the primary teacher may easily manage three or four classes of pupils. These may represent a difference in advancement twice as great as that in any single room of the grammar department.

The question of the proper number of classes to be assigned to a teacher arises in this grade of schools. No one would think of organizing a country school or the 2-room village school on the basis of one class to a room. It is first in the central or "graded" school, with its 8 to 12 rooms, that the question of reducing the classes in number so that each teacher shall have charge of one only. According to our St. Louis system the teachers in the grammar department (fifth, sixth, seventh, and eighth years of the pupil's course at school) have two classes each, and one is engaged in study while the other recites. In the primary department three and even four small classes are formed by the teacher of each room. In these remarks it is taken for granted that the style of building is not the old-fashioned type of a large study room, presided over by a principal, and with small recitation rooms opening out from it, in which the assistants hear the classes recite, when sent to them from the large room. This type of schoolhouse, invented for the purposes of the Lancasterian system has gone out of date. Since 1848 the plan has been adopted of assigning each teacher a room about 32 feet square, with 48 to 64 pupils, who do not leave the room for study or recitation, both being conducted by the teacher in charge of the

room. The gain in humanizing the pupils and in rendering a milder discipline possible has been very great under this system. Formerly the assistant teachers had little to do with the discipline, which was done almost entirely by the principal, who, on the other hand, not learning to know the pupils through their recitations, had to govern them through external authority rather than through the subtle influences which one can wield who knows the characters of his pupils thoroughly. The objections to the plan of having only one class under each teacher are these: (*a*) It makes the class too large, so that either the recitation must be too long or else its members can not all share in the recitation; (*b*) it wastes the possibilities of classification by requiring the whole room to take the same lessons, when, if divided into two classes, one in advance of the other, the class intervals could be lessened one-half throughout the whole school, and as a consequence transfer from one class to another be rendered easier; (*c*) it is apt to destroy the force of the recitations, because the teacher, while not hearing a recitation, is helping scholars to learn their lessons or solve difficulties, and thus, to a greater or less extent, distracting the attention of the pupils from work which they ought to perform by themselves, and with all possible self-concentration and self-reliance—the consequence being that the work of criticism and analyses that should come up in the recitation is anticipated by the ill-timed assistance of the teacher during study hours; hence a tendency to obliterate the lines between study hour and recitation hour, and to confound them.

If, then, we suppose that our village "graded school" is organized so as to give each teacher a room with two classes, the class intervals will be about as follows: Eight rooms devoted to grammar-school work (the second four years' course for the district schools), and 400 pupils in attendance; of these pupils one class would be in the eighth or last year of the course—30 pupils; three classes in the seventh year, the advanced class one-half year behind the highest class in school, the second and third classes, respectively, in the first and second quarters of the seventh year's course—70 pupils; four classes in the sixth year's work, one in each quarter's work of the course—110 pupils; seven classes in the fifth year's work, the class intervals being from five to ten weeks—190 pupils.

The following scheme would indicate the rooms, classes, and grade of advancement of the pupils in this "graded school:"

Room.	First-class pupils.	Course of study.		Second-class pupils.	Course of study.	
		Year.	Quarter.		Year.	Quarter.
I	30	VIII	Second			
II	20	VII	Third	25	VII	Second.
III	25	VII	First	25	VI	Fourth.
IV	25	VI	Third	30	VI	Second.
V	30	VI	First	25	V	Fourth.
VI	25	V	Third	30	V	Third.
VII	25	V	Second	30	V	Second.
VIII	25	V	First	30	V	First.

We have not indicated a high-school course in this school system. Its normal size would be about 70 pupils. These dividing into four classes to correspond to the four years' course, could not be subdivided, for subdivision of classes ought not to take place unless the number in the class is greater than 30, except in those cases where the class intervals would be greater than one year. In the above graded school course, perhaps it would be found necessary to subdivide the class of 30 who are in the eighth year or grade.

In order to explain my use of the technical expressions "year" and "quarter," I will state that at the National Educational Association in August, 1874, a conventional grading scheme was adopted by the school superintendents in order to measure the progress in the course of study, and afford a convenient *technique* for expressing it.

District-school course.								High-school course.			
Primary-school department.				Grammar-school department.							
I year or grade.	II year or grade.	III year or grade.	IV year or grade.	V year or grade.	VI year or grade.	VII year or grade.	VIII year or grade.	I year or class.	II year or class.	III year or class.	IV year or senior class.

4. The per cent of pupils in the entire system that are enrolled in the high-school course of study varies from 2 to 5 per cent (Chicago, 2 per cent; St. Louis, 2¾ per cent; New Bedford, 4 per cent; Boston, 5 per cent). Hence in school systems enrolling 5,000 pupils and upwards, per annum, the high school enrolls 200 or more pupils, as the percentage of high-school pupils is usually larger for small cities. The ratio of pupils who enter the high school and remain to enter the second year, is 57 per cent; to enter the third year, 36 per cent; to enter the senior class, 25 per cent. At this ratio there would be about 100 pupils in the class entering the high school. These could not all recite in one class, and would be divided into three, or, perhaps, four divisions. According to our principle: "Have as many degrees of advancement in a school as there are different classes or divisions for recitations." We may accordingly find our high-school classes ranking as follows:

I. Senior class .....24 members, one division.
II. Third-year class....36 members, two divisions, half-year intervals.
III. Second-year class...56 members, two divisions, half-year intervals.
IV. First-year class.....90 members, three divisions, quarter to half-year intervals.

The only ground that can be alleged for desiring to avoid these class intervals and reduce all to the standard of the year interval is found in the fact that the high-school course usually admits elective courses or studies which are not difficult to arrange when the class is so large that a full division can be made up on any one of the elective studies or courses, but with a small class split up by election of various courses, the arrangement becomes impossible without an extremely large and expensive corps of teachers. This objection may be met by curtailing the elective studies and constructing a rational course of study. Such an attempt has been made by the committee on course of study

in our schools. All pupils are obliged to take Latin during the first two years of the high-school course. Election of studies is allowed to some extent, but is limited by a rule prescribing the minimum number that may form a class in an elective study.

In this organization of schools, the plan of class intervals of less than a year may exist in all the classes except the highest. When the number in the high-school course exceeds 500, the senior class will consist of two or more divisions and should graduate at intervals of half a year. The matter of graduation from the high school is not, however, so important. It is easy to bring all the divisions together in the third year of the course by adding something to the extremely valuable culture studies of that year, so that those who get ready to take the studies of the senior class before the close of the year may take up an extra amount of work to occupy them until the end of the year.

For the first two years of the high-school course the class intervals should by all means be less than a year if those classes are subdivided into two or more divisions.

The question may arise, how shall we introduce the plan of shorter class intervals into the high school. This question would be asked in the presence of a system whose course of study has been rigidly "nailed to the calendar," so that each pupil was supposed to complete the work of his grade just at the time of the annual examination and at no other time, and if he lacked some little time of completing his year's work—say one week or one month—then he should simply be consigned to the next class below, and continue a year longer on the work of the grade. Attention must be called to the fact that this correspondence of the progress of the class in the course of study with the calendar indicates violence. Such correspondence is not natural and can not be reached or maintained, except by holding back pupils already advanced or by cramming pupils who are not up to the standard. If the natural causes are allowed to work, class intervals will appear everywhere, so that no two divisions will be at the same degree of advancement in their work. What I would lay stress on is this: Never try to bring the degree of advancement of any two classes or divisions to the same exact standard or to standards exactly a year or multiple of years apart. Rather encourage the organization of classes at intervals of less than a year apart, so that reorganization of classes for economical reasons, or for purposes of better classification, may be made at any time without inconvenience. This can be done easily when the classes are only six or ten weeks apart, but not easily when they are a year apart.

The actual test of advancement of a pupil is maturity or ability to go on with the work given him. It is safe to say that even in a country school of 60 pupils there are no 2 of exactly the same advancement, although it is probable that there are eight years of school work between the advancement of the highest and that of the lowest. Now, classification is at all times a merely relative and arbitrary affair. In the

school of 60 the first class in arithmetic may include any number from 1 to 10, perhaps. If it has 10 it is likely that there will be a difference in qualifications of from two to three years in actual advancement, and the consequence will be that while the lowest will be dragged beyond their powers, if they are really compelled to do the work, the most advanced will feel no pressure except that of their own caprice. Without looking at their lessons they will easily lead the class. Hence they will lose that valuable discipline of the will which comes of a feeling of responsibility and the necessity of making persistent and regular exertions.

The ever-repeated experience in such schools is the loss of all hold on the pupil's mental habits by the teacher except what he can get by a little individual instruction. Classification in large schools, though still arbitrary, becomes approximately exact. It always happens that there is no strongly marked line between the lowest of the class and the highest of the class next below. Where there is a year's interval of school work between the classes, it always happens that the interval between the highest and lowest in the class is less than the interval between the lowest in rank of the upper class and the highest in rank of the lower. Bearing in mind this relative nature of classification one can easily see the importance of having small intervals between classes. The question of economy here meets the question of classification. The classes ought not to be below a certain size; 20 to 30 pupils should be in each class; the less the intervals between them the better. In a country school of 40 pupils of all grades the size of classes is so seriously limited by intervals of advancement that little else than individual instruction is the result and the time and energy of the teacher is dissipated.

In enumerating the causes which tend to render frequent reclassification necessary, I would lay stress upon the following:

(*a*) Irregularity of attendance caused by sickness, by necessity of working for a living, by change of residence. To show the prevalence of this irregularity, I have taken at random the following statistics from such sources as are before me:

Cities.	Per cent of attendance of pupils on number enrolled.	Cities.	Per cent of attendance of pupils on number enrolled.
Boston	89	Louisville	64
New Haven	80	Cleveland	63
Richmond (Va.)	76	Milwaukee	63
New Bedford	75	Chicago	61
Providence	74	Pittsburg	60
Washington	74	Newark	58
Columbus (Ohio)	72	Rochester	56
St. Louis	67	Kansas City	55
Syracuse	66	Albany	54
Detroit	66	Baltimore	54
Indianapolis	65	New York	54
Worcester	64	Jersey City	48

About two-thirds of the entire number are in attendance at a given time it would seem. Upon return to school, after a period of absence,

the pupil has the opportunity of falling back into a class one year behind or of overtaking the class he left by making extraordinary effort.

(*b*) Time of commencing school. Nearly one-half of the youngest pupils begin their school life in the spring instead of the fall, and consequently their class interval is three-fourths of a year behind the class that entered in the fall before.

(*c*) Then there is the difference in temperament and character—the slow and the swift, the weak and the strong, the careless and the earnest, the mature and the immature, the industrious and the indolent. Start all together, and these causes will soon make a great difference.

It is evident that with small class intervals reassignment of any of these pupils who have lost their standing in their classes is an easy matter. The system of small class intervals only takes advantage of the necessary division into classes, and would not have new divisions formed simply for the sake of making short intervals. Pupils that are irregular in attendance, or that begin school in the middle of the year, or that are immature, have to be dealt with even under the old systems, and is it possible to deal with them satisfactorily? They form nearly or quite one-third of all the pupils enrolled.

There is a perpetual diminution of pupils in the higher grades, occasioned by final withdrawal from school, and, on the other hand, there is a perpetual accession of numbers from below. Not to readjust periodically would leave the classes of the high-priced and most experienced teachers very small, while the classes of the teachers of least experience and smallest salaries would be filled to overflowing, and it often happens that pupils are refused for want of room in these grades when there is much room in the upper grades.

Instead of adjusting this at the end of the year, let it be done as often as needed by promoting a few of the best pupils in each class to the next higher. This will not (*a*) isolate the poor pupils by themselves, for into each class the best pupils will come from below; (*b*) nor will it fill the upper classes with brilliant, superficial, precocious children, for the test of promotion will be maturity—ability to do the work of the higher class, and if any other standard is used the evil will speedily correct itself, inasmuch as the immature pupils thus promoted will remain at the bottom of the higher class, and will not get promoted again until after they are rejoined by the rest of their class; (*c*) nor will it on an average cause pupils to change teachers any oftener than the old system. In fact, unless withdrawal from school in the upper grades makes room for the transfer of pupils, they can not be transferred from one teacher to another, but the readjustment must be effected in part by assigning incompetent pupils to lower classes. The actual depletion of upper grades, including the high school, however, is sufficient to allow of the "sifting-up process" to a sufficient degree to make all needed adjustments. If each teacher has two classes, and

one-fourth of each class is promoted and joined to the next every ten weeks, the average stay of each pupil in her room will be two years; if one-third is promoted each time, one year and a half will be the average stay under each teacher. The maturest and ablest pupils will stay a less time than the average, while the immature and weak will stay for a longer time. The maturest and ablest pupils need less individual help and less psychological study of their idiosyncrasies on the part of the teacher.

Of course it is understood that these promotions are followed by a review of studies on the part of all classes into which promotions are made. Frequent reviews are essential to thorough work and essential to teach pupils how to study.

Under this system of small class intervals and frequent opportunities for promotion, there is not so much high pressure and cramming, nor, consequently, so much danger to the health of pupils. If the pupil does not get into the high school on this occasion, ten weeks more are soon passed, and a review of his studies for that length of time will not seem unreasonable. If he is very thorough he will overtake many of his former companions who will lose ten weeks for one cause or another, in their future course.

This frequency of examinations for admission to the high school is not based on the expectation that every grammar school will graduate a class each quarter, for that would indeed imply too much change of teachers; but each grammar school will send one or two classes a year and at such times in the year as they are prepared, at one time, at the close of the first quarter; and then again perhaps at the close of the third quarter, just as it may happen; but there will be enough pupils admitted to the high school at the close of each quarter to form one or more new divisions.

Reclassification does not mean a thorough reorganization of classes. It may take place on the promotion of one, two, or a dozen pupils from one class to the next. The system here recommended is designed purposely to prevent such complete reorganizations as are necessary when a class changes teachers and is divided and united with other classes. It substitutes a gradual process for such violent measures.

This system has been in practice in St. Louis and Chicago and other Western cities, so far as lower grades are concerned, for at least twenty years. The effect of the high school examination coming once a year was, however, to prevent the application of the system in the highest grades of the district school. The object of the present discussion is to bring out the merits of the system as one to be universally applied throughout all grades of common schools.

[From the St. Louis School Report of 1874–'75, by W. T. Harris, superintendent.]

In St. Louis there is no attempt to bring all classes within the same grade to one standard of advancement, so that, e. g., in January, all pupils within a given grade shall have arrived at just the same point

in a study. At all times there are new classes just beginning the work of a grade, or year's work, in some one of our schools. The classes are not separated by intervals of one year in their work, but by irregular intervals varying from six weeks to twenty. It is considered desirable to have these intervals small, so that reclassification may be more easily managed. Pupils who fall behind their class for any reason (such as absence, lack of physical strength or of mental ability) may be reclassified with the next lower class without falling back a year and thereby becoming discouraged. Pupils who are unusually bright or mature may be promoted to the class above, or form new classes with the slower pupils of the class above who need to review their work. Thus it happens that in a district school there is a continued process going on, the elements of which are as follows: (1) The older and more advanced pupils are leaving school for business or other causes. This depletes the classes of the most skillful and best paid teachers who are usually placed in charge of the most advanced pupils. Again, there is at all times of the year an influx, into the lower grades, of pupils who have just completed their sixth or seventh year and are now anxious to begin their school career. Thus the pupils in the primary rooms of our schools tend continually to be overcrowded. (2) To correct this continued tendency which overcrowds the rooms of the least skillful and poorest paid teachers and gives small quotas of pupils to the most skillful and best paid teachers, from time to time (usually once in ten weeks, but oftener in some schools), each class is sifted and its most promising pupils united with what remains of the next higher class (i. e., with the not-promising portion of it—those who, for absence, or dull intellect, or weak wills, fail to keep up with the best). (3) To make room for this transfer, a portion of the highest class is sent to the branch high schools. (4) The number changed from class to class is usually small. The disturbance in classes is very slight, compared with the advantages gained by the teacher in being relieved of the necessity to drive the laggards and drill and cram them to make them keep up with the average of the class. The teacher was once obliged to spend most of her time upon the dull ones in the useless endeavor to force them to make up lost time or to equal the strides of the more mature, more regular, or more brilliantly gifted pupils, and, of course, these latter pupils lost proportionately, and the net result of the process was to overwork the incompetent and to hold back the competent ones. The teacher, in the vain effort to hold together the extremes of her class, separating more widely every day till the end of the year, became cross and petulant, and sank continually into the abyss of drill-machine pedagogy.

Under our present system we can make room, when needed, in the lower grades, and fill up the classes of our skillful and high-priced teachers.

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