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SURVEY OF LAND-GRANT COLLEGES AND UNIVERSITIES

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CONTENTS

PART I.—ARTS AND SCIENCES

Chapter I.—Introduction

Much of the general pessimism about the present function and the future destiny of arts and sciences in American education centers about conceptions of the college of arts and sciences as a unit of institutional organization. Agitated discussion of the topic has quite frequently forced into the background the more important matter of the functions in higher education of the areas of learning that are included in the vague term, arts and sciences. This review is concerned both with arts and sciences as a unit in land-grant institutional organization and with the functions of the arts and science subjects in attaining the objectives of other forms of land-grant college education. Consideration of these two aspects of arts and sciences in the land-grant institutions may be clarified by a preliminary summary and definition of various conceptions of arts and science education.

It is possible to segregate four points of view: First, arts and sciences is thought of as a unit of institutional organization that includes a body of knowledge designed to provide four years of general higher education; second, arts and science education is thought of in terms of a 2-year junior college unit designed to provide and in a sense to complete general education preliminary to but not necessarily as preparation for vocational or scholarly specialization. This conception differs little from the first except in the length of the period allowed for completion of the process; third, arts and sciences is thought of as a unit in which are assembled for administrative purposes a variety of humanistic, social, and scientific subjects intended to serve the needs of the technical and professional schools and colleges; fourth, arts and sciences is thought of as a unit offering four or more years of preparation for a series of its own specialized vocations. These vocations include those of research or other creative activity in the fields of the several arts or in one or another field of the social or physical sciences.

In the land-grant institutions all these points of view are represented, as in other types of institution, by varying degrees of admixture and confusion. However, the whole arts and science problem is especially interesting and important in a study of the land-grant institutions because of the large influence that they have exercised in creating the complex and embarrassing situation in which arts and sciences now so generally finds itself. The four conceptions of arts and science education already named provide data points for review of the part that land-grant institutions have played in the creation of the college of arts and sciences and in the present confusion of its objectives.

When the Morrill Act was passed in 1862 there was in the United States no college that could properly be called a college of arts and sciences. There were approximately 200 higher educational institutions offering classical courses leading to the A. B. degree but sciences had not yet become a respectable and an accepted part of the body of knowledge that went into the making of an educated man. It is true that science courses were offered and encouraged at several of the older universities but they were generally of the lecture and textbook type with no laboratory requirements. Admission to college was upon the basis of examinations in Latin, Greek, English grammar, geography, mathematics, and sometimes history. In the universities there were practically no professional schools even for the older professions. Law, medicine, and the ministry were "read" with a master already established in the profession. College catalogues had remained practically unchanged in content for years.

It was one of the purposes of the first Morrill Act to set up, beside and in contrast with these classical institutions another type of higher education which should emphasize the sciences and their practical application. Mr. Morrill did not believe that these institutions would interfere with the existing literary colleges. He said in 1857, "We need a careful, exact, and systematized registration of experiments—such as can be made at thoroughly scientific institutions and such as will not be made elsewhere."

By 1872 one-half of the present land-grant institutions were established, and by 1893 every State then in the Union had a land-grant institution. During this period the agricultural experiment stations were established and the land-grant institutions developed the sciences with special reference to their practical application in agriculture and the mechanic arts. In the conflicts that waged between the scientists and the classicists and between science and religion land-grant college leaders took a vigorous part and the institutions championed and were strongholds for scientific investigation and thought. To them alone can not be attributed the

developments that finally made science respectable, but the part that they played was an extremely important one.

Only as science built up its subject matter and began to exercise considerable influence upon men's methods of thinking, did the liberal or classical college gradually accept the sciences as members in the family of learned subjects and become in fact a college of arts and sciences. Thus the college of arts and sciences is a relatively late development of the last quarter of the nineteenth century.

But acceptance was in the spirit and from the standpoint of the traditional conception of the liberal and classical college. Science was valued not for the practical and useful reasons and purposes that dominated the Morrill Act, but as an element in the general body of knowledge that enters into the making of the educated man. The abstract ideal of an educational purpose that concerned itself not at all with vocational and immediately practical objectives was and is sometimes still proclaimed as the sole purpose of the college of arts and sciences. Quite apart from the uses that may be made of the knowledge acquired it was stated that the function of the college of arts and sciences is that of providing a general education for men and women of the intellectual classes.

Is this a function appropriate to the purposes of the land-grant institutions as laid down by the Morrill Act? It makes little difference whether this question is answered upon the basis of legal interpretation or upon the basis of an idealistic conception of the mission assigned by the fundamental charter embodied in the act that bears Mr. Morrill's name. The act itself makes provision for scientific and classical studies, not excluding military training, in order to promote a liberal and practical education.

Mr. Morrill on the twenty-fifth anniversary of the establishment of the land-grant colleges said:

> The design was to open the door to a liberal education for this large class at a cheaper cost from being close at hand and to tempt them by offering not only sound literary instruction, but something more applicable to the productive employments of life. It would be a mistake to suppose it was intended that every student should become either a farmer or a mechanic, when the design comprehended not only instruction for those who hold the plow or follow a trade, but such instruction as any person might need—with all the world before them where to choose—and without the exclusion of those who might prefer to adhere to the classics.

The transformation of the classical course into an arts and science one did not change the fundamental or essential purpose—the provision of a liberal education for the industrial classes. There is in the act itself or in the ideal that is more nearly basic to the original conception of the land-grant college than the language of the law, nothing to forbid and much to command the offering of a liberal

education without definite vocational objectives by the land-grant institutions.

However, the situation is complicated by the organization of the land-grant institutions themselves and by their different positions in the higher educational systems of the various States. Twenty-four of the land-grant institutions are State universities and two additional are Territorial universities. Nineteen are land-grant colleges, institutions separate from the State universities of their States. Seven are in political units which have no State or Territorial universities.

There is no question and there never has been any question that the land-grant university may very properly and is to a considerable degree obligated to offer to students opportunities for the general education which it is the purpose of arts and sciences to give. Perhaps also the land-grant institutions that are maintained in States and Territories that have no State universities might well be expected to provide such general training, but the right of the individual States to determine whether this shall or shall not be done has never been questioned.

The question becomes acute only in those States where separate land-grant colleges and State universities are maintained as independent institutions. Here the conflicts between university and land-grant college tend to become most troublesome, and frequently these difficulties center about expansion of arts and science offerings by the land-grant colleges. These colleges are thought of as strictly technical institutions or even more narrowly and mistakenly as strictly agricultural colleges. Since the essential functions of the liberal and scientific elements in technical education are not very generally understood either by educators or by the public, protests concerning expensive duplication of offerings arise. It is assumed that a considerable body of liberal and scientific courses in the separate technical land-grant institution indicates expansion in these fields beyond technical needs in order that the general educational purposes of the isolated college of arts and sciences may be served. This may sometimes be the actual case, and when it is, the problem is one for State solution rather than for settlement upon the basis of appeal to the provisions or interpretations of the Federal act creating the land-grant institutions. The Interior Department which administrates the Morrill Act has never shown any disposition to restrict State control over the offerings of its own higher educational institutions in the fields of arts and sciences.

Rulings of the Interior Department provide that the Morrill-Nelson appropriations may be spent for such subjects as English, mathematics, astronomy, chemistry, physics, biology, botany,

zoology, geology, mineralogy metallurgy, entomology, physiology, bacteriology, pharmacy, physical geography, meteorology, political economy, commercial geography, sociology, etc., besides agriculture, engineering, home economics, and preparation of teachers. These courses are grouped under the headings mentioned. Although the Morrill-Nelson funds can not be spent for other subjects, the States may make whatever distribution they consider appropriate to meet their respective needs. The proportion is immaterial so long as the terms of the act are met. For comparison the proportions spent in 1908 and in 1928 are shown.

Subject	Percentages in	
	1908	1928
Natural and physical sciences (arts and sciences)	24.9	28.1
Engineering and mechanic arts	27.8	27.3
Agriculture	19.3	20.4
English language (arts and sciences)	10.7	9.7
Mathematical science (arts and sciences)	11.0	7.8
Economic science (arts and science, including home economics)	5.6	5.8
Teacher preparation in agriculture and mechanic arts	.7	.9
Total	100.0	100.0

All but 10 States interpret the Morrill-Nelson Acts to carry as clear an obligation to maintain collegiate instruction in the arts and sciences as to maintain instruction in agriculture or mechanic arts. The foregoing table shows that more than half of the Morrill-Nelson money pays for instruction in arts and sciences, while 48.6 per cent is expended for engineering, agriculture, and teacher training. The distribution of the appropriations between arts and sciences and agricultural offerings and activities are entirely subject to State control. The Federal Government would probably feel justified in interfering with the States' distribution of Morrill-Nelson funds only if State restriction in the fields of arts and sciences reached the point where it became impossible to carry on work of college grade in the technical fields of agriculture and mechanic arts.

In addition to the approach to the problems of arts and sciences in the land-grant institutions from the standpoint of general education without immediate vocational objectives, it is necessary to consider the development with reference to its vocational services and functions. It is sometimes assumed that the old classical or literary college had no vocational purpose or service to perform. This assumption is not in accord with the facts. The classical college afforded direct preparation for the ministry, law, public service, and medicine. The liberal arts were the stock in trade or the immediate intellectual tools of practitioners in all these professions. Nevertheless, there was little specific adaptation of the classical subjects to the

needs of any of these occupations and the vocational purpose was served with the minimum disturbance of or interference with the general educational objectives that the classical college was supposed to have.

When the classical college became the college of arts and sciences without changing its general educational purpose, the newly adopted scientific elements were not motivated by practical use in the older professions to the degree that the arts and humanities had been. The sciences tended to become dilettante and decorative accomplishments so far as these professions were concerned. Gradually also and relatively late in our educational history the traditional professions, ministry, medicine, and law developed their own professional schools. From 1860 to 1874 the number of law schools in the United States increased from 20 to 41, schools and departments of medicine from 38 to 63, and dental schools from 3 to 12. This rapid development during the period that the land-grant institutions were being created is significant although these early professional schools were much less closely related in spirit and purpose to their modern successors than were the land-grant institutions. Nevertheless, direct preparation for these professions was sought increasingly rather than indirect preparation through arts and sciences organized for general purposes without reference to vocational objectives. In other words motivation of the general arts and sciences curriculum by virtue of these professional objectives became weaker as the professions themselves developed their own educational agencies. The emphasis tended to become one of demand for specific service from arts and sciences although this has been much greater in the case of the technical fields.

Paralleling this development, although somewhat prior to it in point of time, the land-grant institutions attacked the study and teaching of the sciences for the direct purpose of applying them to the practical problems of agriculture and engineering. In 1875 the United States Commissioner of Education reported 74 schools of science in the United States, including in the count scientific divisions of colleges and universities as well as separate institutions. Of these, 41 were land-grant colleges. Agriculture and engineering developed a variety of highly technical fields of employment and other new occupations and professions were created upon the basis of scientific knowledge and investigation. Yet recognition of the sciences was slow and acceptance by the classical colleges of general culture reluctant. In 1877, the first American Cyclopædia of Education reported that, "The true importance of a scientific study of nature has not been recognized by the greater part of those who are engaged in education."

By the time that the classical college had accepted the sciences and become the college of arts and sciences intended to serve general educational objectives, the technical professions had progressed so far that the science of the colleges was ill adapted and inadequate to serve the purposes of the newer technical professions. The sciences demanded by these professions went far beyond the needs of a college that was intended to provide only a general cultural education.

Thus, the high development of the sciences and of their application combined with the changed content and viewpoint of the traditional liberal professions and the creation of new social and economic specializations to demand from arts and science types of service courses difficult to assimilate in any arts and science curriculum intended to provide general education through the synthesis of humanistic and scientific appreciations. The college of arts and sciences was compelled to render the service demanded or to lose large areas that it had come to regard as peculiarly its own to the powerful schools of vocational specialization. Six tendencies resulted:

First, the college of arts and sciences attempted to make highly specialized courses in the physical, biological, and social sciences serve its general cultural purposes. The results were not very satisfactory and recently the complaint has been made vigorously that the general educational purposes of the college of arts and sciences have been destroyed by the demands and encroachments of the special schools.

Second, the special and technical schools failing to receive the service they needed from the college of arts and sciences have themselves undertaken to conduct courses in the sciences and humanities suitable to their purposes. Thus, we have developed agricultural chemistry, dairy bacteriology, business English, engineering economics, and a whole series of highly specialized scientific courses conducted by the technical schools themselves. In some land-grant institutions entire fields of science have been brought so completely over from the college of arts and sciences into the school of specialization that the special school offers the work in these areas which the college of arts and sciences requires for the attainment of its general educational purposes.

Third, in some instances the college of arts and sciences tends to break down into independent schools. This is especially likely to be the case in the separate land-grant institutions where technical purposes are dominant. Thus the teaching and administration of arts subjects may be in one division and the sciences in another and in both cases they may be independent of or subordinated to one or more of the technical divisions.

Fourth, during the period of development of the technical specializations there was in the land-grant institutions especially a period of more or less impatience with and neglect of the social and humanistic even as tools for technical purposes. The error in this tendency soon became evident and the need for breadth as a foundation for specialization has led to advocacy of the junior college period as an unspecialized general preparation for subsequent concentration, thus reducing the period of general arts and sciences college training from four to two years.

Fifth, in medicine and law the tendency seems to be toward extending the two years of general arts and science training to three and even four years, thus completing the circle in the evolution of the college of arts and sciences with references to these areas.

Sixth, the college of arts and sciences tends to develop its own vocational objectives. The technical schools become more and more dependent upon progress in the social, physical, and biological sciences as such. This progress comes largely through investigation that is remote from immediate application.

Thus high specialization in the arts and sciences subjects becomes of major interest both to the "pure" scientists in the college of arts and sciences and the "practical" scientists in the schools of application. It is impossible to distinguish "pure" from "applied" science. Hence, the college of arts and sciences tends to emphasize training for research and other forms of creative work which offer occupational opportunities in a whole series of new professions. Obviously these extreme specializations within the college of arts and sciences itself are as incompatible with the purposes of general cultural education as are similar specializations demanded by the technical schools and colleges. This development is well illustrated by the agricultural college. Agricultural education concerned itself in its early period with problems immediately related to farming, use of fertilizers, killing or controlling insect pests, tillage methods, and so on. But these problems soon led into and demanded for solution scientific and social investigation as remote apparently as study of colloidal substances and international relations. The development of these specializations in the college of arts and sciences is inconsistent with the purposes of general appreciation of the world of thought in which we live; but they are entirely consistent with the conception of arts and sciences as the training school for research specialists.

The land-grant institutions share in the current complexity of the arts and sciences situation. The preceding analysis is intended to serve as an introduction to descriptive presentation of arts and sciences in the land-grant colleges. The description that follows is based upon reports from 39 land-grant institutions. The following chapters will present the facts in regard to various aspects of the arts and science situation in these institutions. These facts serve to relate specific problems of arts and science organization and objectives in the land-grant institutions to the various general tendencies and problems that have been described by the preceding paragraphs.

Chapter II.—Arts and Sciences Organization

Administrative organization does not afford an entirely satisfactory basis for estimating the present status of arts and science work in the land-grant institutions but the facts are indicative of tendencies of more significance than administrative convenience. The following detailed record of the major divisions and departmental distributions of arts and science subjects reported by land-grant institutions for the year 1927–28 emphasizes the confusion that now exists with reference to the organization and objectives of arts and science work in the land-grant colleges and universities. The list includes only those institutions that made reports sufficiently detailed to justify the assumption that the actual situation is presented. For the sake of making clear the differing status of arts and sciences in the land-grant institutions of the various types named in the preceding chapter, the record is divided into three sections, first, land-grant universities; second, separate land-grant colleges; and third, land-grant institutions in States that do not maintain State universities.

Universities

1. The University of Arizona has a major division of letters, arts, and sciences which contains a department of chemistry, but agricultural chemistry is in the division of agriculture.

2. The University of Florida has a division of arts and sciences, in which are included departments of chemistry and economics, but in the division of agriculture are also departments of agricultural chemistry and agricultural economics and a third department of chemistry is maintained in the division of pharmacy. In the division of arts and sciences is a department of biology and geology and a department of botany and bacteriology is found both in the division of agriculture and in the division of pharmacy.

3. Hawaii does not distinguish between the faculties of the division of applied science and of the division of arts and sciences. Apparently there is no separation of departments between these two divisions.

4. Idaho has a major division of letters and science in which is a department of chemistry, but the division of agriculture has a department of agricultural chemistry. The department of geology is in the division of mines and psychology in the division of education, not in the division of letters and science.

5. The University of Illinois has a division of liberal arts and sciences, but the department of physics is in the division of engineering.

6. The University of Kentucky has a division of arts and sciences in which are all of its arts and science departments.

7. Louisiana State University has a division of arts and sciences which includes among others departments of botany, economics, English, geology, mathematics, physics and astronomy, and zoology. However, in addition in the division of agriculture are found departments of botany and bacteriology and of zoology and entomology; in the division of commerce, departments of economics, business English, and agricultural economics; in the division of engineering, departments of mathematics, geology, and physics.

8. The University of Maryland has a division of arts and sciences with a department of economics and sociology, but no department of botany. The department of botany is in the division of agriculture, as is also a department of agricultural economics and farm management.

9. Minnesota has a division of science, literature, and the arts and also a school of chemistry which is under the dean of engineering. In the division of engineering and architecture there is a department of mathematics and mechanics in addition to a department of mathematics in the division of science, literature, and the arts. In the division of agriculture is a department of agricultural economics and farm management, and no department of economics is listed in the division of science, literature, and the arts. In agriculture also is a department of rhetoric, although departments of English and speech are found in the division of science, literature, and the arts.

10. The University of Missouri has a division of arts and sciences which contains departments of chemistry, economics, and sociology. Agricultural chemistry, agricultural economics, and rural sociology are given in the division of agriculture.

11. The University of Nebraska has a division of arts and sciences which contains departments of botany and chemistry, but departments of agricultural botany and agriculture chemistry are found in the division of agriculture. Arts and sciences contains no department of economics, but a department of economics is found in the division of business administration and a department of rural economics in the division of agriculture.

12. The University of New Hampshire has a division of liberal arts which in addition to the social and humanistic subjects includes a department of zoology. Botany is in the division of agriculture and chemistry, mathematics and physics in the division of technology, although the division of agriculture also contains a department of agricultural and biological chemistry.

13. In Cornell University the division of arts and sciences contains no department of botany. This is found in the division of agriculture. Departments of zoology are maintained in both the division of arts and sciences and the division of agriculture.

14. Ohio State University has a college of liberal arts. The only science departments included are those of astronomy and geology. The departments of botany and zoology are in the division of agriculture; chemistry, mathematics, and physics are in the division of engineering, although agriculture has a department of agricultural chemistry. The departments of economics and sociology are included in the division of commerce and administration rather than in the division of liberal arts.

15. The University of Tennessee has a division of liberal arts which contains the liberal, social, and scientific departments, including one of economics and sociology. The division of agriculture has a department of agricultural economics.

16. The University of Vermont includes a division of arts and sciences which has a department of mathematics. A second department of mathematics is found in the division of engineering. Departments of botany, chemistry, and zoology are in the division of arts and sciences, but departments of zoology and botany and a department of agricultural chemistry are also found in the division of agriculture.

17. The University of Wisconsin has a division of letters and sciences in which are located departments of chemistry and economics. The division of agriculture has departments of agricultural chemistry and agricultural economics.

18. The University of Wyoming includes a division of liberal arts which includes the departments of the liberal, social, and scientific subjects. Departments of zoology are found in both the division of liberal arts and in the division of agriculture.

Separate Land-Grant Colleges

1. Alabama Polytechnic Institute has a major division of arts and sciences, but chemistry is placed in another coordinate division of chemistry and pharmacy, botany is placed in the division of agriculture, and zoology is grouped with entomology as a department in agriculture also. Although the department of economics is in the division of arts and sciences, the department of agricultural economics is in the division of agriculture.

2. Colorado Agricultural College has a major division of science, but mathematics and physics are included in the division of engineering.

3. Purdue has a division of science in which are located all the liberal and scientific departments of the institution ordinarily placed in a division of arts and sciences.

4. Iowa State College has a division of industrial science in which are located all the liberal and scientific departments of the institution that are usually placed in a division of arts and sciences.

5. Kansas State Agricultural College has a division of general science which contains all its departments that may be classed as arts and science. Among them is a department of economics and sociology, but a department of agricultural economics is found in the division of agriculture.

6. Michigan State College has a division of applied science and a division of liberal arts. The department of mathematics is in the division of liberal arts.

7. Mississippi Agricultural and Mechanical College apparently has a division of science and also a division known as academic. Departmental distribution was not reported.

8. Montana State College has a division of applied sciences which includes a department of physics. Engineering physics is also found in the division of engineering. The division of applied sciences contains none of the social or humanistic subjects. These are independent service departments.

9. North Carolina State College has a division of science and business, but the departments of botany and zoology are in the division of agriculture.

10. North Dakota Agricultural College has a division of science and literature and also a division of chemistry. The former contains a department of social and economic sciences, but agricultural economics is in the division of agriculture. The department of physics is in the division of mechanic arts.

11. Oklahoma Agricultural and Mechanical College has a division of science and literature. It contains no department of economics. Agricultural economics is in the division of agriculture.

12. Oregon Agricultural College has a division of basic arts and sciences, but geology is in the division of mines; economics and sociology and political science in the division of commerce; psychology in the division of vocational education.

13. Clemson Agricultural College has a division of arts and sciences and also a division of chemistry. Departmental distribution was not reported.

14. South Dakota State College has a division of general science which includes the liberal and social as well as the science departments, but zoology, economics, and sociology do not appear in this division. Departments of zoology, farm economics, and rural sociology are in the division of agriculture.

15. The Agricultural and Mechanical College of Texas has a division of arts and sciences which has a department of economics. The division of agriculture includes a department of agricultural economics. No department of sociology is found in the division of arts and sciences, but a department of rural sociology is included in the division of agriculture. Chemistry is in the department of chemistry and chemical engineering in the division of engineering rather than in the division of arts and sciences.

16. Utah Agricultural College has a division of arts and sciences, but the department of botany is in the division of agriculture and the department of psychology is in the division of education.

17. Virginia Agricultural and Mechanical College has a division of science which includes the humanistic and social subjects departments and the departments of science, except botany and zoology, which are in the division of agriculture. In agriculture also are departments of agricultural chemistry and of agricultural economics, although departments of chemistry and of economics are found in the division of science.

18. The State College of Washington has a division of science and arts. However, the departments of mathematics and of physics are in the division of mechanic arts and engineering; psychology is in the division of education; geology in the division of mines and geology; and the department of speech in the division of music and fine arts.

Land-Grant Institutions, No State Universities Existing in Same State

1. Connecticut Agricultural College is not organized upon the basis of major divisions. Departments of resident instruction are all coordinate. However, in addition to the department of mathematics, the college has a department of agricultural mathematics.

2. Massachusetts Agricultural College contains a division of the physical and biological sciences and a division of social sciences. The arts and science

departments appropriate to these titles are distributed between the two divisions, mathematics going to the division of sicences while language and literature are found in the division of social sciences.

3. Pennsylvania State College has a division of liberal arts and a division of chemistry and physics. The departments of botany and zoology are in the division of agriculture; psychology is joined with education in the division of education; mathematics is in the division of liberal arts; geology is joined with mineralogy in the division of mines and metallurgy. Although the department of economics sociology is in the division of liberal arts, the division of agriculture has a department of agricultural economics. In addition to the department of chemistry in the division of chemistry and physics, the division of agriculture has a department of agricultural and biological chemistry.

It is apparent from these data that the general tendencies in arts and science education described by Chapter I are operative in the land-grant institutions. Of the 18 land-grant State universities only 16 have single major divisions, in which are included practically all the liberal, social, and scientific subjects appropriate to the college of arts and sciences which has as its function the provision of a general education. In other words, in only 16 instances do the land-grant universities have arts and sciences colleges as such which may have objectives similar to those of the old classical college dissociated from vocational purposes. Ohio State University and the University of New Hampshire have no unit comparable to the isolated arts and science college.

Of the 18 separate land-grant colleges only 3—Purdue University, Iowa State College, and Kansas State Agricultural College—have so concentrated arts and science departments in a single division as to make it possible that the divisions exercise the general educational functions of the traditional arts and science college. However, none of these institutions grant the degree of bachelor of arts which is characteristic of the general cultural purposes of the college of arts and sciences. In every other case either separate divisions exist for the arts and for the science departments or departments essential to the conception of the unified college of arts and sciences are scattered in technical divisions.

The fact that the arts and science departments are not concentrated in a single major college but are administered in a number of different major units, does not mean, of course, that a curriculum may not be constructed from the offerings of several schools or colleges which will have for its purpose the general education ascribed to the arts and science college. It does mean, however, that the arts and science college does not exist as a unit which has this function for its major objective. It is significant that only 2 of the 18 separate land-grant colleges grant the A. B. degree. In some instances they utilize the curricular device for that purpose, in other instances this degree is granted for work entirely inappropriate to its traditional meaning.

Only three land-grant institutions in States that have no State universities are represented by the data available. In one of these cases

the entire organization of the institution is departmental; no major divisions exist. In the second there is a division of arts and a division of sciences, hence no unit that corresponds to the college of arts and sciences. In the third the departments appropriate to the arts and science college are scattered to several divisions; although this institution grants the A. B. degree, it is obviously not granted as a function of an integrated college of arts and sciences.

It is apparent that among the 39 land-grant institutions for which data are available, there are only 16 that are both organized and granting the degree appropriate to the general educational objective of the traditional isolated college of arts and sciences.

The tendency of technical divisions to develop under their own control and in their own organizations highly specialized social and scientific areas in the arts and science field is manifest even in the 16 land-grant universities that maintain arts and science divisions comparable to the independent college of arts and sciences. This is especially evident in the divisions of agriculture which have frequently developed departments of agricultural chemistry, economics, botany, and zoology in addition to the departments in the division of arts and sciences that represent these fields. In the same way the division of commerce develops its own department of economics, and the division of engineering its own mathematics and physics. Many other similar but less generally used specializations paralleling the departments that exist in the division of arts and sciences in the same institutions will be found in these and other technical schools and colleges.

It is even possible to discover in these State universities certain departments ordinarily found in the independent college of arts and sciences that have been taken over entirely by the technical divisions. Thus geology, psychology, physics, botany, economics, and chemistry departments in some instances exist only in the technical divisions although the institutions in which this is the case have otherwise well-rounded unified divisions of arts and sciences.

In the separate land-grant colleges the conception of the unified, isolated college of arts and sciences has been completely broken down and everywhere is found the tendency to scatter the arts and science departments. This tendency is manifested in the frequent creation of separate coordinate divisions of arts and of sciences and less frequently by general distribution of the departments among a number of technical divisions. In some instances both these methods of disintegration seem to be in use.

Chapter III.—Specialization

The preceding chapter has indicated how the development of technical and professional schools has led to a degree of specialization in organization of arts and science subject matter that tends to break down the conception of the college of arts and sciences as a unit designed to provide general education as its main function. The same process of specialization within the arts and science fields is evident in the rapid division and subdivision of arts and science departments during the past 25 or 30 years. The department of biology has been split into the department of botany and the department of zoology. The department of history and political science has multiplied by division into departments of history, economics, sociology, politics, and business. The department of English language and literature has split into many separate departments, English, composition, dramatics, public speaking, rhetoric, speech, and journalism. Six of 10 institutions that indicated changes that they considered desirable in their organization of arts and science work mentioned increase in the number of departments either by the division of existing departments or by the addition of new ones.

The process of specialization within the arts and science fields tends to transform departments that were nonexistent or relatively unimportant in the independent college of arts and sciences into separate schools or major divisions. Thus the department of chemistry in some of the land-grant institutions has already become a school of chemistry; the department of economics develops on the one hand into a school of business or commerce and on the other into a school of social service or a school of social sciences; the department of education becomes a school or college of education; the department of journalism grows into a school of journalism.

These processes are possible by reason of the demands of technical schools, the increase of subject matter developed by research, and because of improvements in methods of recording and disseminating information. But the incentive to such development is not abstract love of learning. These tendencies are made effective because in

these directions lie opportunities to prepare for profitable occupations. The following comment upon the effect of the scientific work of the land-grant institutions was made in 1877 by the first American cyclopædia of education and is applicable to the general development in all the fields of arts and science learning: "Such rapid strides have been made in some directions within the past few years that a chemist and a laboratory have become a necessary adjunct to many of the agricultural industries, notably to that of the manufacture of cheese, butter, and commercial fertilizers."

The tendency to high specialization is evidenced also in the multiplication of the courses offered in the arts and science fields. The 1903 and the 1928 catalogues of six land-grant institutions,[1] three large universities, and three well-developed separate land-grant colleges were examined to determine to what extent course offerings in botany, chemistry, economics, and English had increased during the 25-year period.

In the six institutions the number of courses offered in botany increased 151 per cent, in chemistry 82 per cent, in economics 330 per cent, and in English 138 per cent. The number of courses in botany increased in both the universities and in the land-grant colleges at the same rate. Courses in chemistry increased in the universities by 82 per cent and in the colleges 134 per cent. Courses in economics increased in the Universities by 240 per cent and in the colleges 766 per cent. The number of English courses increased in the universities by 92 per cent and in the separate land-grant colleges by 266 per cent.

Although these figures are limited to a small number of institutions and a few fields, they probably represent with fair accuracy what happened generally in the land-grant institutions. Transfer of interest from general to specific aspects of single areas and service to technical divisions result in specialization that is reflected in the variety of courses offered.

This multiplication through high specialization of courses is especially significant from the standpoint of their suitability for a general curriculum in arts and sciences. Even though general and elementary courses may be given they are designed not to serve the purposes of cultural education in the humanities and sciences, but as introductions to specializations. Their content and method are determined by this purpose.

The offering of highly specialized courses by different major divisions, each concerned with its own applications, may lead to considerable duplication of content between courses under control of different interests. Thus several land-grant arts and science divisions point out duplications or tendencies to duplications in courses given by different schools in statistics, sociology, English, economics,

[1] Universities: California, Minnesota, and Cornell. Colleges: Pennsylvania State, Kansas, and Iowa.

hygiene, ornithology, bacteriology, physiological chemistry, nutrition, psychology, genetics, and heredity. Whether this duplication is wasteful or undesirable depends of course upon the importance of the real diversity of uses that it serves as compared with the educational obstacles to achievement that would arise if all similar elements were combined in a single service course.

Departure from the general educational functions that are ascribed to the isolated college of arts and sciences is evident also in the training and interests of staff members in the arts and science departments. The land-grant institutions were asked to list the qualifications that were considered most important when teachers of the arts and science subjects are employed. First in order of frequency of mention was "specialized education." Research ability and research experience were high upon the list. Practically all considered the doctor's degree essential or highly desirable for heads of departments and others of professorial rank.

The part that staff members from the technical and special schools and colleges play in the conduct of arts and science work is of importance in this connection. In one institution one-fourth of the staff in the division of agriculture were giving part of their time to the teaching of arts and science subjects. In another institution almost as large a proportion of the engineering staff gives part time to the college of arts and sciences. In still another a large proportion of the staff of the college of veterinary medicine was teaching in the division of arts and sciences. Such examples might be multiplied to show that staff members from many of the technical and professional schools in many land-grant institutions are doing a considerable proportion of the arts and science teaching in these colleges and universities. The proportion is not especially significant; the important thing is that interests and attitudes that are highly technical and specialized from vocational standpoints are not regarded and in fact are not out of place upon the present-day instructing staff of the arts and science division of the land-grant institutions.

The teaching function, moreover, for the heads and high ranking staff members of arts and science divisions does not constitute their major interest or their most effective means of securing advancement. This is especially evident when the academic rank of the teachers of freshmen is examined. Table 1 gives the facts in regard to the instruction of freshmen by the various ranks as reported by the arts and science divisions of 33 land-grant institutions.

TABLE 1.—*Freshman instruction*

Rank of teachers who instruct freshmen	Number of teachers who instruct freshmen		Number of freshmen taught
	Classes	Laboratory	
Head of department	167	35	9,157
Professor	210	38	11,632
Associate professor	183	39	7,774
Assistant professor	321	74	18,507
Instructor	615	173	35,329
Assistant	27	97	4,559
Graduate	99	133	8,119

Only 22 per cent of the freshmen receive instruction from professors, 8 per cent from associate professors, 20 per cent from assistant professors, while 37 per cent are taught by instructors and 13 per cent by assistants or fellows. In other words, nearly four-fifths of the freshmen are instructed by staff members below the rank of professor.

Chapter IV.—Enrollments and Salaries

Specialization, realignment of groupings of subject-matter fields, the creation of independent special schools from arts and science departments, the whole series of developments that have transformed the college of arts and sciences until it is something quite different from its somewhat elusive liberal and nonvocational predecessor—none of these changes means that the arts and science subjects are on the wane in the land-grant institutions in so far as attendance of students and standards of support afford evidence.

More than one-fifth—21.8 per cent—of all resident undergraduate students in the entire United States were enrolled in the 52 land-grant colleges in 1927–28. This does not include students in summer schools, secondary divisions, or extension or correspondence courses. More students are enrolled in arts and science courses than in any other department or division in the land-grant colleges. Practically one-third of all land-grant students have been enrolled in arts and science courses in the past 10 years. Enrollments in arts and science courses over a period of years show that the land-grant colleges have experienced a continual growth in this field. Table 2 shows the enrollment in land-grant institutions of arts and science students in comparison with enrollments in the colleges of engineering and agriculture in the same group of colleges and universities.

TABLE 2.—*Enrollments in land-grant colleges by certain courses of study*[1]

Year	Arts and science		Engineering		Agriculture		Total students in all undergraduate courses
	Number	Per cent	Number	Per cent	Number	Per cent	
1	2	3	4	5	6	7	8
1920–21	35,635	32.0	29,065	27.0	15,434	14.0	109,683
1921–22	37,613	32.0	26,931	23.0	14,577	13.0	115,396
1922–23	38,192	31.0	27,698	22.0	14,615	12.0	123,650
1923–24	42,626	33.0	27,567	22.0	13,685	10.0	126,582
1924–25	45,733	34.0	28,562	21.0	13,206	10.0	133,931
1925–26	48,377	34.0	29,182	21.0	12,957	9.0	142,111
1926–27	52,352	34.6	30,037	19.8	12,710	8.4	151,438
1927–28	53,803	34.9	30,921	20.0	13,149	9.1	154,234
1928–29	54,407	34.1	31,742	19.9	14,559	9.1	160,263

[1] Bureau of Education Bulletin, 1929, No. 13, and unpublished figures by W. J. Greenleaf.

Only two institutions of those making special reports to the survey on the topic show loss of students in arts and science subjects over the 5-year period 1923–1928.

It is interesting to note that 40 per cent of the 4-year resident students are freshmen, 27 per cent are sophomores, 19 per cent are juniors, and 14 per cent are seniors. In spite of the fact that enrollments increase from year to year, these proportions have remained

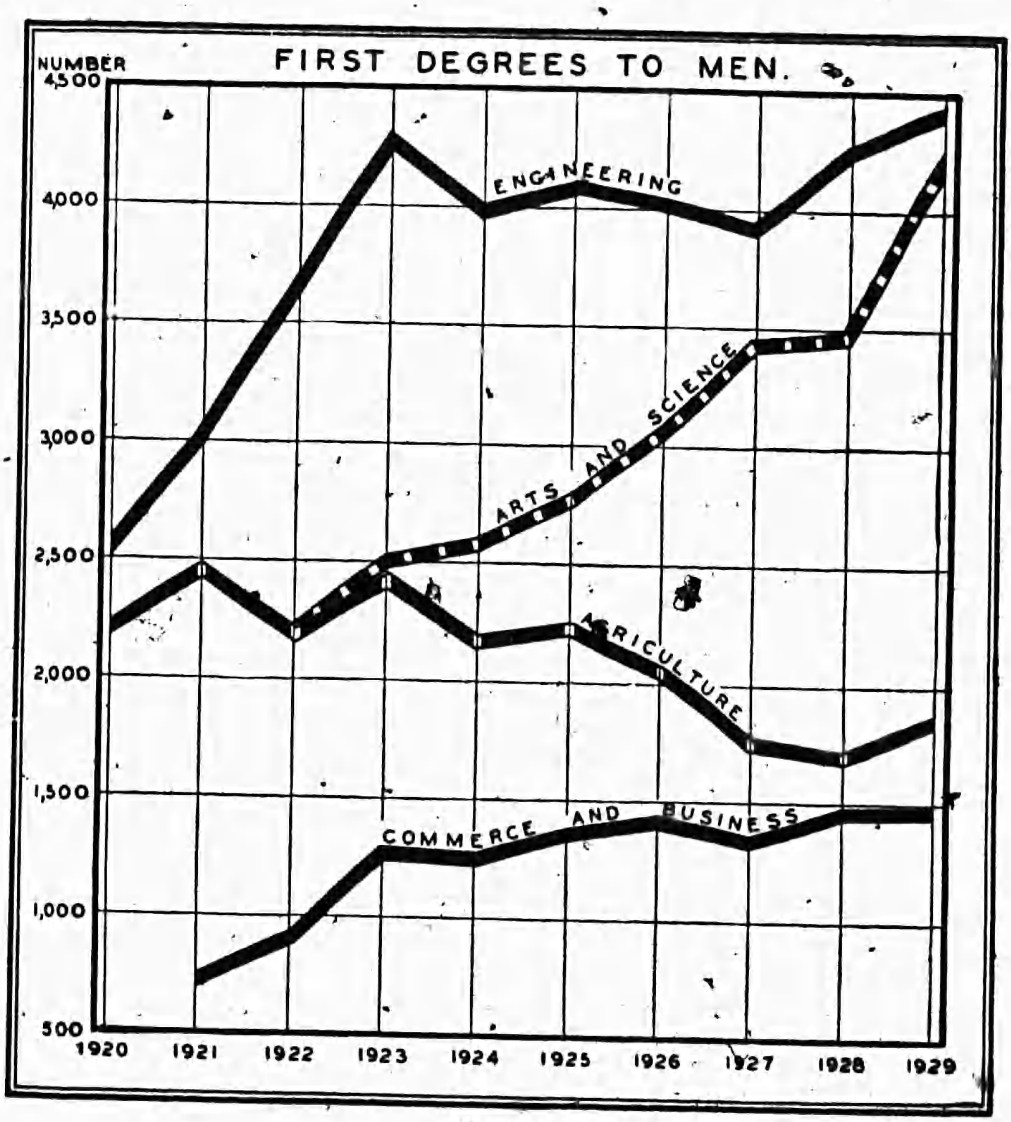

Chart 1

sufficiently constant to justify the estimate that, roughly, there are three times as many in the freshman class as in the senior class, that one-third of the freshmen drop out before the sophomore year, that one-half leave before the junior year, and that two-thirds are eliminated before the senior year.

The facts concerning enrollments in arts and sciences are confirmed by data in regard to degrees granted in arts and sciences. Arts and science degrees awarded by all colleges and universities in the United States totaled 27,263 first degrees to men and 26,302 first degrees to women. Of these, 13 per cent

were granted by the 48 land-grant institutions which offer arts and science degrees; Connecticut Agricultural College, Massachusetts Institute of Technology, Montana State College, and Oregon Agricultural College are not included, since they do not offer such degrees. In 1927–28 the land-grant institutions conferred 6,947 first degrees in arts and sciences—3,481 bachelor degrees to men and 3,466 to women.

Of arts and science degrees, the ratio is practically 50 per cent to men and 50 per cent to women, but the ratio of undergraduate men

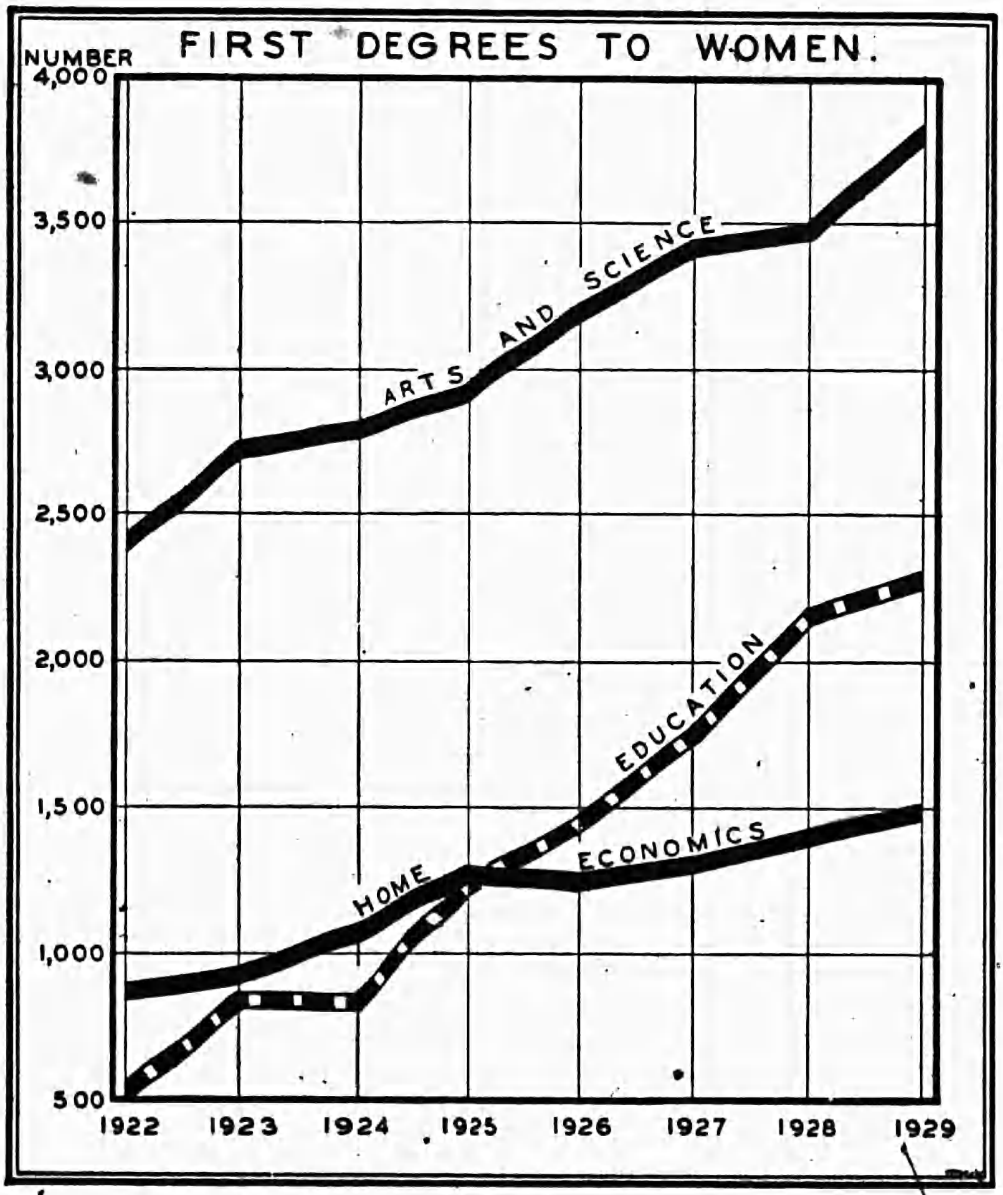

Chart 2

to undergraduate women has been constant for the past decade—70 per cent men and 30 per cent women. There is a greater tendency on the part of the women to elect arts and science courses.

The importance of arts and sciences is further emphasized when degrees are shown graphically over a period of years. Chart 1 pictures the relationship of arts and sciences with three other outstanding land-grant college divisions. Engineering has consistently for

the past 10 years granted more degrees to men than any other department. Arts and sciences, however, has been a close rival and in 1929 the difference in number of degrees awarded in these two subjects amounted to only 228. The losses in agricultural degrees seem to have been absorbed by engineering and arts and science courses. With the women, however (Chart 2), arts and sciences have consistently been the favorite courses with education and home economics a poor second and third. Prior to 1925 there were more degrees granted in home economics than in education, but since that time education has outstripped home economics so that in 1929 while 1,482 degrees were granted in the latter, 2,266 degrees were awarded in education. But arts and sciences awarded a total of 3,802 degrees to women.

Nor has the financial support afforded arts and sciences declined with its changing form and goal. Quite the contrary. During the five years 1923–1928, all except one of 22 arts and science divisions which were able to furnish figures showed increases in the amounts spent for salaries and wages. The increases ranged from 1 per cent to 85 per cent with an average increase of 35 per cent and a median of 31 per cent. The increase in this item is of special interest because salaries for the arts and scienee staffs are in all ranks somewhat lower than those for corresponding ranks in the land-grant institutions as a whole.

In 1920 the United States Office of Education made a study of salaries (United States Bureau of Education Bulletin, 1920, No. 20) in 80 public colleges and universities. The annual reports required from land-grant institutions by the Office of Education carried a salary schedule in 1928–29. The survey of land-grant colleges and universities collected information in regard to salaries in arts and science divisions as of 1927–28. For purposes of comparison the median salaries extracted from these three sources of information are presented in Table 3.

TABLE 3.—*Median salaries of staff members of land-grant colleges and universities*

Rank	Salary in 1920 study of 80 public institutions	Salary in 1929 study of 51 land-grant colleges		Salary in 1928 land-grant survey—arts and sciences only, 44 institutions
		9-month basis	11-12 month basis	
1	2	3	4	5
Dean or director	$3,500	$5,193	$5,071	$5,126
Professor	3,000	4,278	4,161	4,015
Associate professor	2,500	3,342	3,207	3,163
Assistant professor	2,000	2,738	2,880	2,518
Instructor	1,500	2,005	2,134	1,905

The 1929 study of 51 land-grant institutions shows substantially larger salaries for all ranks than were paid in 80 public institutions in 1920. The arts and science salaries for 1928 are also higher than those in the public institutions in 1928. But when the salaries paid arts and science staff members in 1928 are compared with those for all types of staff members in land-grant institutions in 1929 the difference is greater than can be accounted for by the 1-year interval. Arts and science salaries are consistently lower in all ranks than the salaries paid to corresponding ranks of the land-grant institutions as a whole when employment is on the 9 months' basis. Further, only deans of arts and sciences show slightly higher salaries than the median for all deans who are on the 12 months' basis. All other ranks in arts and sciences are paid less than corresponding ranks on the 12 months' basis.

The distribution of arts and science salary ranges are shown by ranks for 44 land-grant institutions in Table 4.

TABLE 4.—*Arts and science salaries, 1927–28*

Salary range	Deans	Professors	Associate professors	Assistant professors	Instructors
1	2	3	4	5	6
More than $9,000	2				
$8,501–$9,000					
$8,001–$8,500	2				
$7,501–$8,000	2				
$7,001–$7,500		7			
$6,501–$7,000	4	10			
$6,001–$6,500	1	12			
$5,501–$6,000	8	45		1	
$5,001–$5,550	10	35	1		
$4,501–$5,000	12	132	2	1	
$4,001–$4,500	7	[1] 161	17	6	
$3,751–$4,000	2	138	32	5	
$3,501–$3,750	2	92	30	13	
$3,251–$3,500	1	72	62	39	1
$3,001–$3,250		32	[1] 54	34	1
$2,751–$3,000		32	99	131	7
$2,501–$2,750		12	47	[1] 102	11
$2,251–$2,500		6	25	154	108
$2,001–$2,250		3	9	88	213
$1,751–$2,000		2	7	51	[1] 455
$1,501–$1,750				5	95
$1,251–$1,500			1	5	97
Less than $1,250		5	3	11	40
Total	53	797	389	650	1,026

[1] Medians.

In spite of rather encouraging increases in total expenditures for salaries and wages in the 22 institutions reporting, it would seem that this increase resulted in part from increase in the number of the staff and was not expended upon salary increases in large enough proportions to make arts and science salaries equal the median for the entire staff of the land-grant institutions.

Of the arts and science divisions reporting, 17 of the 22 show increases in total expenditures for maintenance ranging from 1 per cent to 113 per cent, with an average of 45 per cent and a median of 46 per cent. This does not mean that on the whole the increase for maintenance was greater than the increase in salaries, for 13 institutions showed more of an increase in salaries than in maintenance.

It is interesting in this connection to note that 24 of 34 institutions that furnished information reported that funds for arts and sciences are in proportion to corresponding funds for other major divisions. Ten were dissatisfied with the distribution of funds between arts and sciences and other divisions.

Chapter V.—Articulation with Secondary Schools

It is a far cry from the modern land-grant institution to the college of 50 or even 25 years ago. Many of the purposes of the Morrill Act of 1862 are now accomplished by the vocational high school; in many instances specific purposes that inspired the Morrill Act are no longer in harmony with the general standards of higher education in the United States. A good secondary school to-day probably carries its students in all but a few fields to levels of attainment that are superior to those of the college during the early development of the land-grant institutions. Colleges have taken on a whole series of prescriptions for admission, processes of administration, specializations of subject matter and of vocations, and have devised channels of progress and standards of accomplishment that are entirely foreign to the simple and informal situation that existed during the infancy of the land-grant institutions. Have these higher standards, these new lines of more highly specialized work, the more complicated machinery, the demands of technical divisions for special service removed the arts and science work so far from the industrial classes that the fundamental, democratic purpose of the Morrill Act to provide higher education for the common people is defeated? Have the land-grant institutions become as remote from the interests and capacities of the ordinary citizen as the classical colleges were in 1862?

These questions can be answered only in terms of the entire public educational system of the United States. If public secondary education were as limited to-day as it was in the early days of the land-grant college there is no doubt that both these questions would have to be answered in the affirmative. But this obviously is not the case. The standards of secondary education have kept pace with and been raised at least as rapidly as those of higher education.

In 1870 there were in public high schools in the United States 80,277 students, 0.208 per cent of the total population. In 1928 there were enrolled in public high schools 3,911,279 students, 3.259 per cent of the population. While population increased 211 per cent, the percentage increase of enrollment in public high schools was 4,772. In other words, population in 1928 is a little more than three times that in 1870, but the enrollment in high schools in 1928 is more than forty times greater than in 1870.

High-school education has become general. The college that bases its admissions and its work upon what is being done in the public high schools may very properly be regarded as offering higher educational opportunity to the general public.

Whether this is actually the practice of land-grant institutions can be determined only with reference to their articulation with the secondary schools. Since the arts and science subjects are in these institutions grouped in ways very different from those of the independent college of arts and sciences, it is necessary to examine articulations between public secondary schools and arts and sciences in the land-grant colleges and universities largely in terms of institutional standards and regulations. With few exceptions these regulations apply to the arts and science divisions as well as to other schools and colleges in the land-grant institutions and are expressed most frequently with reference to arts and science subjects.

Do the land-grant institutions make easy transition from high school to college? In many States the law requires the publicly supported higher institutions to admit any graduate of a standard high school and to accept any mature person as a special student without reference to formal satisfaction of high-school graduation requirements.

Special provisions are made by some of the land-grant colleges and universities that go beyond the letter and spirit of such legal requirements. Thirteen of them accept students who are not high-school graduates but who have the necessary units of credit for admission, if they display qualities which indicate that they will profit from the college experience. Seven others leave the way open to admission in instances of this kind but decide each case upon its own merits. On the other hand, two institutions require such special students to take entrance examinations in English and mathematics and in two or three other subjects that may be chosen by the student. The University of Minnesota and Oklahoma Agricultural and Mechanical College give psychological or placement tests for such applicants for admission, and if they pass with high scores, they are admitted. Eleven additional institutions that furnished information require regular entrance examinations in these cases.

Students who enter on condition or who, although high-school graduates, are deficient in one or more subjects, have the opportunity of making up such deficiencies through special noncredit courses in 17 institutions.

Arizona offers English and mathematics; Arkansas—mathematics; California—English; Indiana—English and mathematics; Hawaii—English; Louisiana—English; Maine—French, German, Spanish, and Latin; Missouri—English; Nevada—mathematics; New Hampshire—English; North Dakota assigns students to its practice high school to take what is needed to fulfill their entrance requirements; Oklahoma—English and mathematics; Rhode Island—

solid geometry; South Dakota—English; Virginia—solid geometry; Washington—English; West Virginia—algebra and English. Nine institutions do not offer such work.

The teachers of these noncredit courses are generally selected on a basis of efficiency, personality, and experience. As a rule, the best instructors are chosen—teachers who are earnest and patient. Nonproficiency of entering freshmen in certain courses is ascertained at once in a few institutions.

California, New Hampshire, and Washington give subject-matter tests at entrance; Hawaii, Louisiana, and Oklahoma give placement examinations; Arkansas, Indiana, Missouri, and West Virginia give tests and two weeks' trial in college subjects. In the main, however, freshmen are assigned to college work and later when found to be unable to continue classes because of certain deficiencies may in the institutions named be given noncredit coaching courses.

Minnesota and Cornell do not admit students with deficiencies that can not be made up by work done in regular college courses. Most institutions which have no formal noncredit courses for deficient students advise them to take coaching instruction; recommend tutors for them; advise them to take work in the local high school; assign older students "in loco parentis"; aid them by a wise selection of courses; repeat courses in the second term or semester; or allow extra freshman subjects to be taken to satisfy entrance conditions.

It is interesting to note certain recent changes in entrance requirements that are in harmony with the trend of the past 20 years in the land-grant institutions to set aside or reduce emphasis upon subjects for admission that characterized the old classical college and carried over into the college of arts and sciences that had general education for its purpose. Foreign language and mathematics were the dominant subjects for admission to the older type of institutions. It was thought that they had the highest degree of "disciplinary" value and in addition they provided actual preparation for work that was central in the college itself. It is significant, therefore, that the University of Arkansas and South Dakota Agricultural Colleges have recently dropped the language requirement for admission, that Rutgers University has reduced it. Upon the mathematics entrance units also, less stress is being placed in certain institutions. The universities of Florida and Hawaii have reduced the required units in algebra from two to one in recent years. In no land-grant institution is Latin or Greek required and mathematics has already been so reduced as to raise the question whether certain of the technical specializations would not profit from once more placing greater emphasis upon this subject as preparation. There seems to be a very definite tendency to emphasize English admission requirements to a greater extent than has been the case in many of the technical land-grant institutions.

On the other hand, there is a decided tendency to set up qualitative requirements for admission that are in addition to the formal ones of high-school graduation or presentation of the required number of entrance units.

The University of Arkansas, for instance, does not admit students from the lowest group of the high-school class and asks for recommendations by the principal. Connecticut Agricultural College selects from the upper portion of the graduating class, uses intelligence tests, and secures recommendations from the high-school principal. The University of Delaware asks for the principal's recommendation. The University of New Hampshire requires students to be above the fourth quartile of the norms set by high-school seniors of the State. Rutgers University does not admit by certificate students from the lowest quarter in the high-school class. Cornell limits the freshman class to 500 new students and admits upon selective basis. Washington State College admits students from the lowest quarter of the high-school class on recommendation of the high-school principal, but only on probation. Selective tests in addition to a transcript of the student's high-school record are used to admit students who are otherwise fully qualified in 13 institutions; 25 institutions do not use these tests. However, only 11 institutions require any special scholarship attainments of secondary school graduates. Connecticut admits the upper 50 per cent on certificate and others on test. Nevada requires that students must present two-thirds of their work as of better than passing grade. New Hampshire and Rutgers Universities require students to be in the upper three-quarters of their high-school classes. Pennsylvania requires students to be from the upper two-fifths of the class, but may take students from the next fifth.

In determining the priority of acceptance of candidates for admission to the arts and science college, a few institutions set up certain requirements. Seven are guided by priority of application. Twelve use high-school standing as a means of selection; seven use standing in entrance examination; six standing in intelligence tests; six quality as determined by personal interview; three consider sons and daughters of alumni first.

Just how much recognition should be given to a student's previous high-school work in subjects that are offered in college is a matter that demands attention. Frequently a good student comes to college with an excellent background and high-school training in English, mathematics, or science and in college covers the same ground by taking elementary English, mathematics, or science courses. The majority of land-grant institutions reporting make no adjustment of college work to a student's high-school work; without doubt many students attending these institutions are duplicating courses for at least the first semester if not beyond.

Several institutions offer two college courses in certain subjects, one introductory and the other more advanced; the student is assigned to one or the other upon the basis of his high-school work in these subjects. For instance, double courses in chemistry are given in Connecticut, Missouri, Oklahoma, and Tennessee; two such physics courses are offered in Oklahoma and Wisconsin; similar mathematics courses are given in Connecticut, Hawaii, Missouri, and Wisconsin; and two English courses are offered in Oklahoma, Tennessee, and Utah.

Some institutions select students for introductory or advanced courses in a subject upon the basis of examination: Chemistry in Oklahoma; physics in Maine, New Jersey, and Oklahoma; mathematics in Arizona, Arkansas, Delaware, Minnesota, New Hampshire, and New Jersey; and English in Arizona, Delaware, Hawaii, Minnesota, Oklahoma, and Virginia.

Two courses are sometimes given, one for those without and one for those with high-school work in the subject. Chemistry is a type example. Sixteen institutions provide two courses in chemistry to fit the needs of entering students. Physics is also offered in double courses in four institutions—Arkansas, Kentucky, Nevada, and Utah. Mathematics is given in two courses in Kentucky, Missouri, Nevada, and Utah, and English is likewise offered in two courses in Kansas, Kentucky, and Missouri.

Some institutions state that high-school science is a prerequisite for freshmen who elect college science. The University of Minnesota has adopted a continuation principle for foreign languages. Cornell University gives qualified freshmen special problems in addition to regular work. The State College of Washington grants permission to take a second semester course with tentative enrollment. Except for these instances entering freshmen are at once registered for elementary freshmen courses without regard to duplication of high-school work. English, chemistry, mathematics, and modern languages should as far as possible be so arranged as to provide for high-school work from specific points of achievement.

Chapter VI.—Curricular Prescription and Orientation

Has the practical disappearance of the independent, unified college of arts and sciences in the land-grant institutions resulted in an educational loss that is not compensated for by the higher levels and greater degree of specialization in arts and science subjects that are found in the modern institutions? Is it possible or desirable to provide a substitute under modern conditions for the contacts with many fields of learning and for the understanding of the relationships of many areas of knowledge that the 4-year college of arts and sciences was supposed to afford? What are the attitudes of the land-grant institutions in regard to these questions and in what ways are these attitudes finding expression in definite action?

These are questions concerning which it is difficult to obtain objective evidence that admits of definite interpretation. Possibly consideration of certain aspects of curricular prescription, the development of survey and orientation courses, and the inauguration of practices that are related to the junior college form of organization provide as good indication as any available in regard to the tendencies of thought upon these matters in the land-grant institutions.

Anyone at all familiar with the relationship between practice and regulation must be convinced that the combinations and sequences of subjects that are actually taken by college students, and so constitute their curricula, rather infrequently coincide with the curricula that appear so logical and purposeful in catalogue descriptions. Considerable skepticism may also be excited by the systems of majors and minors that are sometimes supposed to constitute a device for insuring adherence to carefully prepared curricula; tradition and log rolling between departments and major divisions are in so many cases obviously apparent. Nevertheless, curricular prescriptions afford a basis for judging the status of thought in regard to what should enter into a student's undergraduate work and are also to a considerable degree a real indication of practice. Two points especially are deserving of discussion in this connection, first, the frequency with which an attempt is made to secure some type of distribution of effort which will insure a considerable breadth of studious contact, and, second, the degree to which requirements are set up that

make it impossible for the student to escape contact with areas of learning not immediately related to his field of specialization.

Thirty-one of 38 institutions follow the plan of offering a series of elective majors and minors in the 4-year curricula. From 20 to 30 semester hour credits are the usual requirement in most institutions for the major. Many institutions require two majors or one major and two minors for graduation.

The means used to obtain effective distribution and concentration of elective subjects are best presented by quoting the reports made by the land-grant institutions in the following States:

Alabama.—Beginning 1928 system is being prepared.

Arizona.—Majors and minors supplemented by group requirements.

Arkansas.—Group system and two minors for distribution; 40 of the last 60 hours of junior and senior subjects for concentration.

California.—All students must take a varied program including languages, science, social science, etc., in the first two years, and must complete a major in the third and fourth years.

Colorado.—Largely consultation with head of department.

Connecticut.—Required—21 credits in major, 14 in minor, and 12 unrelated.

Delaware.—By system of advisers working with the dean.

Florida.—The major requirement for concentration; the group requirements for distribution.

Hawaii.—Approval of faculty adviser and of the dean of students.

Indiana.—By advisers and dean.

Iowa.—Conference of student with head of department and dean.

Kansas.—By definite required courses which may be supplemented by electives chosen by the student. At least eight semester hours are required in a field. The student's choice in his major fields may bring this to 20 to 30 hours.

Kentucky.—Faculty advisers and in upper division major professors as advisers.

Maine.—Advice of major professors.

Maryland.—Conferences with advisers.

Massachusetts, Amherst.—Sophomores elect group of studies from groups of electives under an adviser. Juniors and seniors choose major group and specialize in that department.

Minnesota.—Advising by major adviser.

Mississippi.—Direction of dean, teachers, and advisers.

Missouri.—Major and minor requirements; freshman and sophomore requirements.

Nevada.—Majors and minors in junior and senior years give specialization and required subjects of freshman and sophomore years are supposed to give good general survey.

New Hampshire.—Major group two or three related departments. Group requirements: I—Language, history, and mathematics; II—Natural sciences; III—Social sciences.

New Jersey.—We are discontinuing the general curriculum and adopting specialized curricula, e. g., prelegal, premedical, language and literature, economics, etc.

New York.—Distribution: Minimum of six hours in each of seven groups. Concentration: Minimum of 20 hours in upper class group.

North Dakota.—Advice from dean in registering.
Oklahoma.—Student consultation with adviser and dean.
Oregon.—Handled in technical curricula. Limited options approved by institutional committee, supplemented by advice of deans and special registration committees in matters of free electives.
Pennsylvania.—Advisory system.
Rhode Island.—Nature of electives indicated in course of study; amount of electives limited.
South Carolina.—Class advisers.
South Dakota.—We are outlining suggestive schemes according to majors and minors.
Texas.—Personal conferences between head of department or dean, and student.
Utah.—Major professor approves.
Washington.—Advice of enrolling officers.
West Virginia.—Supervision of adviser.
Wisconsin.—None; tests have shown a good distribution.

It is perhaps significant that only 13 of the 35 institutions that report seem to place much reliance upon the distributions secured through prescriptions and through major and minor or similar forms of regulation. It is interesting to note the frequency with which the advice or judgment of deans, major professors, or other persons, who are in these institutions likely to be specialists, is depended upon to guide students to breadth of training. Further, examination of catalogues and institutional reports upon specific schools or divisions of specialization warrants the judgment that breadth of training that may be regarded as in some sense a substitute for the general training for which the unified college of arts and sciences stood is insured in few institutions by systems of majors and minors alone. Other devices that supplement the system of majors and minors, such as those that involve distinction between lower and upper division work and prescribe a considerable number of definite courses, especially during the first two years, may perhaps be regarded as more nearly providing breadth comparable to that of the college of arts and sciences.

In order to discover the degree to which subjects not directly related to technical fields are definitely prescribed in the specialized curricula, the situations in engineering and agriculture were selected as typical in the land-grant institutions.

For four major engineering curricula, data were secured in regard to distribution of time between various subject-matter fields. Thirty-eight institutions reported for the civil-engineering curriculum, 35 for mechanical, 36 for electrical, and 25 for chemical. These reports show that the curricula provide on the average for the whole group of institutions, that from 14 per cent to 17 per cent of the time shall be given to languages, social and economic sciences, history, psychology, and government; from 27 per cent to 40 per cent to sciences

and mathematics; from 40 per cent to 53 per cent upon technology and the applications of science to technology.

From the standpoint of these distributions as insuring breadth of education, it is interesting to note the relatively small percentage of the time given to the humanities as compared with that given to sciences and mathematics, which have a direct preparatory value in the technological specialization. It may be doubted whether the proportions that exist as between these two areas should be regarded as a desirable distribution for the purposes of general education for the man who is to follow a specialized vocation.

Agriculture presents a somewhat different situation. To a much larger degree than in engineering, the arts and science subjects have been especially adapted to the purposes of the division of agriculture and given by that college. Thus while on the average only 40 per cent of the courses given in the 4-year agricultural curricula are in technology, a large proportion of the sciences that constitute a considerable part of the 60 per cent remaining are directly basic to agriculture. Further, in agriculture to a much greater extent than in engineering the specific science specializations are the direct, occupational objectives of agricultural students.

These facts with reference to these two technical divisions confirm the impression that there are divergent tendencies that may be discovered in relation to the treatment of arts and science subjects in the land-grant institutions. The first, found quite generally in engineering, is that of dependence upon other divisions for service work in these fields. The second, more usually found in the agricultural divisions of the larger institutions where service divisions are less swayed by the agricultural influence than is the case in the smaller land-grant colleges, is the tendency to assimilate into the agriculture division itself as many of the arts and science subjects as possible in order to relate them directly to the interest of the agricultural student body. These two viewpoints are of significance in the attitudes that are taken toward the development of junior college work for the purpose of providing common general education preliminary to a variety of specializations.

The movements that indicate the greatest tendency to development of demand in the land-grant institutions for some new form of organization that will serve to provide general basic and cultural training are the survey and orientation courses and the growth of organizations related to the junior college idea.

These developments are merely two different attempts to solve the same problem. Arts and science subjects have become highly specialized both in the arts and science organizations and in their aspects that are immediately related to technical interests. It has already

been pointed out that this specialization has tended to express itself by multiplication of independent departments and other administrative units, each devoted to its own interests. But the development of specialization tends in the long run to defeat itself; the point is soon reached where the specialist finds that extension of his own field carries him into other areas. The physicist must become a chemist; the chemist must become a bacteriologist; the bacteriologist must become a geneticist; the mathematician must become a philosopher or poet; the philosopher must become a neurologist. In other words, high specialization demands familiarity with, or at least understanding of, many other fields of knowledge; it comes to realize that all knowledge is related, that progress in a special field is possible only in relation to other fields. As soon as this stage of specialized investigation is reached, the demand arises from the specialists themselves that some form of training be provided early in the educational process which will enable specialization to be undertaken with an understanding of the relationship of the sector of specialization to the whole field of knowledge.

The first expression of this demand usually takes the form of attempts to present a survey of a single field, one of the sciences for instance, so that later specializations may be viewed in perspective with reference to that science. The next step is the survey course which attempts to relate the different sciences so that specialization may be seen in still truer perspective. Or the survey may in the same way be in the literary or social fields. Seven of the land-grant institutions report survey courses of these types.

The next step is the orientation course which attempts to give an integrated picture, not of a single area or of a group of fields, but of the entire range of knowledge. The description of such a course given at the University of Minnesota serves to describe the purposes and scope of this type of solution for the problem of preparing for specialization.

Content.—The content of the course is determined by its purpose. The purpose is not primarily to give a survey but the survey is selected as the best means of accomplishing the purpose. The course will include a limited survey of (1) nature and man, the relations of man to his environment; (2) organized society, its foundations, its service to the individual, and its demands on its members; and (3) society and culture, the significance of the forms of human culture.

Purpose.—The purpose of the course is to help students to acquire during their first year those intellectual habits and methods which are necessary for success as students and those habits and attitudes in moral and social relations which are necessary for usefulness both as scholars and as citizens.

On the intellectual side the course aims to develop the power to weigh evidence and reach sound conclusions, the power of independent thought and judgment, the spirit of inquiry, the habit of open-mindedness, and the zeal for

exploration and enterprise in intellectual pursuits. The method of the course is to be that of class discussion on the basis of assigned readings. From his readings the student will learn how to use the library effectively. From the class discussions he will learn to criticize his own judgments and those of others. The discussions with his fellows, the materials selected for the course, and the method of presentation will stimulate him to further study and investigation.

On the social side much will depend upon the spirit and attitude of the staff of instructors. It is hoped that the materials will be so treated as to heighten the feeling of responsibility and strengthen the conviction of interdependence among men as members of communities and nations.

The course is intended as an orientation course for freshmen students as men and women, not as an introduction to any group of studies such as the social sciences or even to the whole college curriculum as such.

Description of a course of this kind sounds remarkably like the familiar description of the purposes and objectives of the 4-year liberal college of arts and sciences. Nine land-grant institutions report orientation courses. Although examination of the details of what is offered shows that few attack the work with purposes as general and ambitious as those described in the Minnesota course, nevertheless, the viewpoint and the tendency are similar.

The next step in logical if not chronological development is the junior college or lower division offering the work intended to provide the basic and general education essential to successful prosecution of all specializations—in other words, a shorter unified college of arts and sciences. The orientation course attempts a great deal in a very brief period, it must partake of some of the characteristics of smattering knowledge. The junior college idea lengthens the period but may stop short of the four years of the independent college of arts and sciences because much of the work of the old unit for general education is now done by the high school.

Many practices recently adopted by land-grant institutions point to growing tendencies toward junior college development. Seven institutions have established a compulsory stopping place at the end of the sophomore year for those who lack the qualifications for advanced instruction in the junior and senior years; 14 other institutions report that they favor this plan but have not yet revised their instruction to put it into effect.

The plan in effect in California in the college of letters and sciences carries the idea to its logical conclusion. In the University of California the work of the lower division comprises the studies of the freshman and sophomore years. The junior certificate in the college of letters and science is required for admission to the upper division. Students who transfer from other colleges of the University of California or from other institutions are required to meet the junior certificate requirements, but are not held strictly to the time distri-

bution of requirements, if the credit allowed them in the University of California amounts to at least 60 units. In the lower division of the college of letters and sciences it is expected that the student, in addition to fulfilling the prerequisites for the major work upon which he will concentrate in the upper division, will make an effort to establish a basis for that breadth of culture which will give him a realization of the methods and results of some of the more important types of intellectual endeavor, and a mental perspective that will aid him in research without unduly limiting his opportunity to satisfy his individual tastes and preferences. Certain courses taken in the high school are accepted as fulfilling in part or in whole some of these junior certificate requirements. It is desirable that the student should so arrange his high-school program as to reduce the required work in the fields of foreign language, mathematics, and natural science. This makes his program more flexible, gives him a greater freedom of choice, and prepares him to pass more quickly into advanced work or into new fields of study. In no case, however, does the satisfaction of junior certificate requirements in the high school reduce the number of units required in the university for the junior certificate (60) or for the degree (124). The degree requirement of 124 units is calculated on the assumption that the student will normally take 64 units of work in the lower division, including the prescribed work in military science and physical education, and 60 units in the upper division. However, the junior certificate will be granted on the completion of not less than 60 units of college work and the fulfillment of certain specific requirements.

The junior colleges which have been established to take care of the first two years of college work have affected the accrediting agencies in certain States where junior college graduates transfer their credits to take the last two years in the land-grant college. Many land-grant colleges have not felt the need of making any adjustments in their credits because there are few junior colleges in certain States and practically no graduates entering in the junior and senior years. Several land-grant colleges, however, state that certain changes have been made. In answer to the question, What steps, if any, have been taken by your institution to adapt your curricula to the preparation of graduates of junior colleges of liberal arts in your State or locality?—the following replies are significant:

Arkansas.—We are trying to get the junior colleges to have their general course fit our first two years, so far as possible. We have some advanced introductory courses.

Kansas.—With 1929–30 a reduction to 120 hours for the curriculum in general science becomes effective. Military science and physical education will not be required of students entering junior colleges.

Kentucky.—We are on a plan of upper and lower divisions which fits the junior-college idea.

Arizona.—We have been in constant conference with such institutions from their conception. They have tried to shape their curricula in conformity with ours and have sought our advice and even oversight.

Minnesota.—The adapting is done by the junior colleges.

Mississippi.—No special steps yet, but we allow limited credit from those approved by the State accrediting agency (a junior college accrediting commission).

Missouri.—The university has influenced the junior colleges to duplicate the first two years of university work.

Nevada.—Where junior colleges are standardized and accredited, their graduates are excused from certain freshman and sophomore requirements according to their subjects and allowed to graduate by meeting major and minor requirements.

Oklahoma.—By joint committees and admitting students to schools of the college to full junior standing in all schools save science and letters; this only by checking courses.

Plans and methods used by the land-grant institutions to secure proper distribution and concentration of work have been presented.[2] Careful examination of these statements will show that many of the institutions are emphasizing distinctions between upper or lower division work in such fashion as to secure during the first two years a concentration of the subjects designed for general educational purposes and to delay until after the end of the sophomore year any very high degree of specialization.

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[2] Pp. 34–36.

Chapter VII.—Conclusion and Recommendation

1. The united, independent college of arts and sciences with general education as its purpose has practically disappeared from the land-grant institutions.

2. The arts and science subjects are now taught: (*a*) In arts and science divisions characterized by multiplicity and high specialization of the courses offered; (*b*) in separate organizations for humanities and social sciences and for the sciences, also characterized by great specialization; and (*c*) in a variety of technical schools and colleges that tend to emphasize specialization of both arts and sciences with reference to their own technological purposes.

3. Attempts to set up arts and science curricula for purposes of general education by combining courses in arts and science subjects offered by different institutional units is difficult if not impossible since the highly specialized courses offered are inappropriate to general educational purposes. This is true of introductory and elementary courses in many subjects because they are intended primarily as preparation for specialization in the fields with which they deal.

4. High specialization leads ultimately into areas of relationship to other specializations and tends to demand increasingly a preparatory period or form of education that will create understanding of the relationships of all knowledge. Perspective becomes essential to progress in specialization. Hence develops once more recognition of the need for some form of general education appropriate to modern conditions.

5. There is little probability of return to the 4-year college of arts and sciences as the instrument for satisfying this need in the case of students who have or develop intentions of ultimate specialization for purposes of vocational employment or scientific scholarship.

6. For the well-to-do and leisure classes the 4-year college of arts and sciences can not be provided in an atmosphere of and by means of courses intended for high specialization. The general purpose college of arts and sciences can serve this function only by a new selection and arrangement of the materials of knowledge for the specific purposes of general education.

7. The orientation course is an attempt to provide the general viewpoint required to give specialization perspective and to provide the standards demanded by the fact that the specialist lives and works in a social situation.

8. The task undertaken by the orientation course can not be accomplished in the time usually given. Its chief contribution lies in the new selection and arrangement of the materials of knowledge which its purposes make necessary.

9. The lower division or junior college period designed to provide general education suitable to the uses of specialists gives an adequate amount of time for the purpose in view of the fact that the high school has taken over a large part of the task that was formerly required of the 4-year college of arts and sciences.

10. The junior college as a period of general training can not accomplish its purposes if it retains the introductory subject matter and methods of presentation now ordinarily used since the selection and methods are designed to prepare directly for specialization in the areas with which the individual courses deal.

11. If the junior college is to serve as a period of general preparation for specialization, it is highly desirable that it select its material and adopt the methods of presentation upon a basis similar to that used by the orientation course. In constructing the junior college curriculum the influence of strong schools of technology and of research specialists in arts and science fields should be limited in order that selection and methods of arrangement of subject matter may not be distorted by too highly specialized viewpoints.

12. Under present conditions whereby service courses are conducted by schools and divisions "foreign" to the technical schools in which students are enrolled, the social and humanistic subjects frequently fail to function as vital elements in technical education. It is claimed that they may be made to do so when subject matter and presentation are adapted to the interests of technological students and presented by members of the staff of the technical school itself. If this claim and the tendency to this practice is continued, self-contained technical units may be developed which will themselves provide their students with all the social, humanistic, scientific, and technical training that they obtain, so selected and related as to constitute a synthesis of general and technical education.

PART II.—COMMERCE AND BUSINESS

Chapter I.—Introduction

When the Morrill Act was passed, the Nation had scarcely begun to exploit its abundant supply of natural resources. The great need prior to 1880 was for higher technical training to perfect the processes of mining, of agriculture, of manufacturing, and of transportation. The demand for goods far exceeded the supply. The struggle was for increased production; marketing or distribution was of secondary importance. Producers had no difficulty in selling their output. During this period the land-grant institutions under the stimulus of the Morrill Act turned to the establishment of engineering and agricultural colleges. There was relatively little demand for training in marketing, finance, accounting, and the like. But about 1880 great economic changes began to manifest themselves. Supply of goods and commodities caught up with, and even began to exceed, the demand. There was need for increased markets in which to sell the excess, for reduced costs, for improved sales technique, for better means of finance, and for more efficient organization and management.

The land-grant institutions had entered vigorously into the fields of higher technical training during the period prior to 1880; after 1880 they did not enter with the same vigor into the fields of higher training for commerce and business. The land-grant colleges did not take advantage of the changed economic conditions by energetic development of courses in commerce and business. When they did take action, they tended to imitate nonland-grant institutions which had already entered this field of education. They set up their programs upon the basis of standards borrowed from their nonland-grant compeers. In establishing divisions of commerce and business and in designing curricula for this purpose they were more interested in being respectable than original. Indeed, the reports of land-grant college presidents and the reports and annual programs of the Association of Land-Grant Colleges and Universities fail to show any significant recogition of the purposes of the Morrill Act with respect to higher business education.

Land-grant institutions, with reference to higher business education, may be divided into two classes: First, the separate colleges of agriculture and mechanic arts, and, secondly, the State universities. The type of business training developed in the first differs materially from the type appropriate to the second. Until very

recently the first group has emphasized technical training almost to the exclusion of commerce and business training. Here as elsewhere changes in the economic and business world which affect the success of the agriculturist and the engineer were to a large extent ignored.

Technical education requires instruction in the fundamental principles of business as well as in the technological aspects of engineering and agriculture. There are many types of engineers and many types of agricultural occupations. Scores of students graduating from colleges of engineering enter the field of business and develop into major executives. Many of these students enter as minor executives and even as routing and clerical workers. Frequently land-grant institutions have failed to provide proper instruction in commerce and business for these types of students.

The same is more or less true with regard to students in agriculture. Agriculture in the twentieth century has ceased to be a mere process of crop production and has become a complex form of modern business. It is not enough for the agriculturist to know the manner of growing and producing commodities, he must also know something of the markets in which he is to sell and of the means of large-scale agricultural organization. Colleges of agriculture must prepare students to become agricultural executives as well as technical producers of food and other products. Instruction in commerce and business must become an integral part of the program of agricultural education. Some land-grant colleges and universities understand these conditions and have made some provision for instruction of students preparing for the pursuits of agriculture. They have devoted attention to the business aspects of modern agriculture as well as to the technical aspects. In addition, provisions must be made for the business training of students in colleges of engineering and agriculture who start on lower levels as clerical workers and minor executives and after successful experiences there move up to higher levels.

In the second group of land-grant institutions, the needs and objectives are different from those of the first group. They must not only furnish courses in commerce and business for the students on all levels in agriculture, engineering, and home economics, but must also meet the needs for higher business education in other fields of business and commercial endeavor. Leadership in America to-day has passed from the statesman to the business man. Industrial concentration is one of the most significant movements of the times. Those in charge of business enterprises are occupying positions of increased responsibility. The business leaders of the future must be men broadly trained, socially and culturally as well as technically.

Land-grant institutions must accept their responsibilities for meeting the needs of the new economic and social order.

That the land-grant institutions have seen little connection between the mission given to publicly supported higher education by the Morrill Act in commerce and business is shown by the answers of the land-grant institutions to questions concerning the factors that have influenced them in establishing and developing offerings in commerce and business.

Eight institutions indicated that they recognized as of most importance in the establishment of their work in business the obligation of the land-grant institutions to serve business or to provide business education to "the industrial classes." Ten checked this factor as important. The other 24 land-grant institutions that replied seem to have found no connection between the functions of land-grant institutions to serve business as specified by the Morrill Act and the provision of courses in commerce and business.

Table 1 summarizes the statements of 42 institutions concerning the factors that have led to the establishment and increase of their offerings in commerce and business.

TABLE 1.—*Extent to which the following factors have influenced, respectively, the establishment or increase in the offerings in commerce and business in land-grant institutions*

Factor	Establishment of offerings			Increase of offerings		
	Most important	Important	Least important	Most important	Important	Least important
1	2	3	4	5	6	7
Recognition of function of the land-grant colleges to serve business	8	10	4	7	8	3
Legislative enactment	1	-------	4	-------	-------	5
Favorable attitude of division of economics toward organization of business courses	13	9	1	9	9	-------
Inadequate offerings in commerce and business of other State-supported institutions	4	8	2	1	6	3
Inadequate offerings in commerce and business of higher institutions in neighboring States	-------	2	10	-------	1	10
Inadequate offerings in commerce and business of privately controlled institutions in your State	4	7	3	2	6	4
Well-qualified instructors available in the university for the introduction of business courses	3	10	5	7	4	3
Cooperation with commercial and industrial organizations	2	5	5	2	2	7
Demand for business courses in your institution as revealed by:						
Contacts of representatives of the institution with business men and prospective students	18	7	4	14	5	3
Studies of vocational choices of the students	7	3	5	8	7	2
Surveys of the need in commercial and industrial firms for personnel with collegiate education for business	5	2	5	5	10	3
Biographical studies of drop-outs engaged in business occupations	0	1	7	0	0	7
Biographical studies of graduates engaged in business occupations	1	3	6	1	3	5
Location of your institution with reference to centers of commercial and industrial activity in your State	2	9	11	2	7	7
Agreements with other State-supported institutions	1	0	2	0	0	3
Desirability of rounding out offerings of the institution	9	14	4	11	8	3
Need as service courses for other subject-matter divisions	5	10	4	4	14	3

Study of this table gives the impression that offerings in commerce and business have developed without any preconceived and carefully worked out plans. Too often well-qualified instructors have started the courses because of their particular interests or the institutions have seen other universities and colleges offering such courses and have organized their offerings merely to keep up with their competitors or their neighbors.

Since higher business education is a function of land-grant institutions, the purpose of this survey is to discover how effectively these institutions, as a part of their distinctive task in American education, have interpreted and performed this function. Expressed more specifically, the intent of the survey is to determine in a fourfold manner the extent to which (1) the institutions have discovered the needs of higher business education, (2) analyzed the students or raw materials with which they have had to work, (3) devised efficient administration organizations or mechanisms with which to perform their tasks, and (4) set up offerings actually providing "liberal and practical education of the industrial classes."

Chapter II.—Need for Higher Business Education

Prior to devising administrative mechanisms for and determining the content of higher business education, it is vitally necessary that land-grant institutions discover existing needs. Unless genuine needs exist, adequate cause for action is lacking. No institution can justify a policy of ignorance. The discovery of the needs of higher business education is a task which land-grant institutions have almost completely ignored. They have failed to study the demands of the business world for specific types of training to meet specific types of requirements. They have put forth little or no effort in analyzing changing economic and business conditions and in making adequate excavations prior to the laying of foundations for their educational structures. Indeed, except in a few isolated instances, they have exhibited no interest in making use of the painful process of fact gathering as prerequisite to the formulation of their policies as to higher business education.

To substantiate these statements, it is necessary to show what the needs of higher business education are and to indicate the rôle which land-grant institutions have played in the discovery of these needs. Higher business education is used in this sense of training on post secondary school levels in the principles and techniques of money making—money making to be regarded both as a social and as an individual process.

Business involves the sum total of all exchange or financial transactions. It includes all the livelihood pursuits of man.

> Business, in the generally accepted language of Prof. Leon C. Marshall, is a pecuniary scheme of gratifying human wants, and, properly understood, falls little short of being as broad, as inclusive, as life itself, in its motives, aspirations, and social obligations. It falls little short of being as broad as all science in its techniques.

Since business, broadly understood, is concerned with the financial organization of society, the purpose of higher business education is to provide instruction on levels above those of the high school which seeks to make this organization function effectively both in terms of the individual and of the society to which he belongs.

The needs of higher business education may be classified under two heads: (1) Individual or occupational needs and (2) general or collective needs—needs for general economic and business services by the land-grant institutions themselves as well as by public and private agencies. As will be shown later, it is not enough for land-grant institutions to discover the needs of business for recruits trained for specific vocations, although this is their primary or most important task, they must also discover the needs for general economic and business services wherever those services will improve man's means of securing a livelihood.

It is necessary to recognize the varying levels of individual or occupational needs for business education. These levels, classified according to the functions performed by the persons appearing on each level, are as follows:

(1) Business proprietors and officials, (2) salaried major executives, (3) specialists or staff rather than line officers, (4) intermediate executives, (5) minor executives, and (6) clerical or routine workers.

If the preparation of teachers of commercial and business subjects be added as a special need, the result is the maximum individual or occupational needs on all levels.

Reduced to general terms, these occupational levels might be thought of as (1) upper levels, (2) intermediate levels, and (3) lower levels. The lower levels have been recognized and provisions made therefor by the secondary schools. The land-grant institutions have long recognized the upper levels, even though they have made preparations for training thereon in an indefinite fashion; but they have ignored completely, as will be shown later, the intermediate levels, leaving training on these levels to private business colleges and private business establishments.

In 1920, according to census figures, out of the 41,614,248 persons 10 years of age and over gainfully employed in all occupations, 7,369,520, or 17.9 per cent of the total, were concerned either directly or indirectly with the principles and practices of exchange, marketing, finance, and accounting as distinct from technological principles and practices. In 1910 there were 5,351.723 out of a total of 38,167.336, or 14.1 per cent. In 1920, 79.5 per cent of the total gainfully employed in all occupations were males and 20.5 per cent females as compared with 78.8 per cent males and 21.2 per cent females in 1910. In 1920, 71.6 per cent of the total in trade and clerical occupations were males and 28.4 per cent females, whereas, in 1910, 80.2 per cent were males and only 19.8 per cent females. The largest percentage of increase in females is in the clerical occupations. The percentage of increase in the total number gainfully employed from 1910 to 1920, as may be readily calculated, is 9 for all occupations and about 37 for trade and clerical occupations. If the average working life of men in business pursuits is 30 years and of women 6 years, then to maintain a supply of 5,275,612 males and 2,093,908 females in trade and clerical occupatrons as of 1920 an annual placement of about 172,000 males and of about 348,000 females will be required.

Another way in which census data may be used to discover business training is to analyze the figures concerning proprietors, officials, managers, and superintendents. While such analysis may not be very profitable due to limitations of data and due to the added difficulties of segregating the figures for these classes, it may shed at least two or three rays of light on the problem, particularly since the land-grant institutions almost without exception, both in their catalogues and in their answers to the questionnaire on business education, specify that their offerings in commerce and business are for the purpose of training students to become business proprietors and responsible business executives.

With the foregoing ideas in mind, Table 2 has been prepared. In preparing the table each of the nine major occupational groups as used by the census was carefully checked to determine as far as possible those persons that could be allocated under the general class of business proprietors, officials, executives, and managers, in contradistinction to laborers, clerks, and persons engaged in public, professional, and domestic and personal service. Many occupations intermediate between laborers and clerks, on the one hand, and officials and managers, on the other, such as railway station agents, manufacturing foremen, and overseers and the like, requiring considerable executive or managerial ability, have not been included in the table.

From Table 2 it will be observed that in 1920 there were 8,614,521 persons who may be considered proprietors, officials, executives, and managers. This represents an increase of more than 600,000 since 1910. Of these, 6,201,261 in 1920 and 5,979,340 in 1910 were farmers. The number of women as compared with men was very small in number in both census years. Out of the total of 41,614,248 persons 10 years of age and over gainfully employed in 1920 business proprietors, officials, executives, and managers comprised about 20.7 per cent. If the average working life of men in business pursuits is 30 years and of women 6 years, then to maintain a supply of 8,614,521 proprietors, officials, executives, and managers as of 1920, an annual replacement of something like 340,000 beginners will be required.

111490°—30—VOL II——4

TABLE 2.—*Business proprietors, officials, executives, and managers 10 years of age and over engaged in each specified occupation classified by sex for the United States for 1920 and 1910*

Occupation	1920			1910		
	Total	Men	Women	Total	Men	Women
1	2	3	4	5	6	7
Agriculture, forestry, and animal husbandry:						
Dairy farmers, farmers, and stock raisers	6,201,261	5,947,425	253,836	5,979,340	5,717,384	261,956
Owners and managers of log and lumber camps	8,410	8,397	13	7,931	7,927	4
Extraction of minerals: Operators, officials, and managers	34,325	34,143	182	25,234	25,127	107
Manufacturing and mechanical industries:						
Managers and superintendents	201,721	196,771	4,950	104,210	102,748	1,462
Manufacturers and officials	231,615	223,289	8,326	256,591	251,892	4,699
Transportation:						
Officials and superintendents: Railroad	35,881	35,830	51	22,238	22,236	2
Proprietors, officials, and managers: Telegraph and telephone and other transportation	18,957	18,384	573	14,839	13,411	1,428
Trade:						
Bankers, brokers, and money lenders	161,613	156,309	5,304	105,804	103,170	[illegible]34
Insurance agents and officials	134,978	129,589	5,389	97,964	95,302	[illegible]62
Proprietors, officials, and managers	34,776	33,715	1,061	22,362	21,352	1,010
Real estate agents and officials	149,135	139,927	9,208	125,862	122,935	2,927
Retail dealers	1,328,275	1,249,295	78,980	1,195,029	1,127,936	67,103
Wholesale dealers, importers, and exporters	73,574	72,780	794	51,048	50,123	925
All business proprietors, officials, and managers	8,614,521	8,245,854	368,667	8,008,452	7,661,533	346,919

If the objectives of land-grant institutions in providing offerings in commerce and business are limited solely to the training of business proprietors, officials, and so on, the foregoing figures measure in a general fashion the maximum undifferentiated needs for higher business education as of 1920. The word "undifferentiated" is used because such figures do not indicate needs in terms of specific types of training programs. Colleges of agriculture exist to train agricultural business men, of whom, as has been shown, there were 6,201,261 on farms in 1920. Colleges of engineering are interested in training students for manufacturing, transportation, and even trade. Other divisions of the institutions may contribute their quota of training to these fields. But underneath or perhaps on top of all these training programs, there is the necessity for instruction in business principles and practices. In addition to the technical aspects of agriculture and of engineering there are the business aspects. In all of these occupations there is certainly a core of scientific business knowledge which must be included in every program of instruction. In many of the occupations, if not in all of them, definite specialized

training programs in addition to this core, with major emphasis on the business aspects and minor emphasis on the technical aspects, are required.

Still another group of census data may be worthy of consideration in determining occupational needs. These data, taken from the census of manufacturers, are assembled in Tables 3 and 4. A study of Table 3 will show the situation with respect to proprietors and officials, on the one hand, and clerks and other subordinate salaried employees, on the other, as of 1919 and the changes which have occurred since 1909.

By a simple calculation it will be observed that out of a total of 682,857 proprietors and officials in 1919 women comprised 3.8 per cent, and that out of a total of 1,033,507 clerks and other subordinate salaried employees women comprised 36.2 per cent. Assuming again that the average working life of men in business pursuits is 30 years and of women 6 years, annual replacement needs on the basis of the 1919 figures would be as follows: Proprietors and officials, approximately 22,000 men and 4,000 women; clerks and other subordinate salaried employees, approximately 22,000 men and 62,000 women; all classes above wage earners, 110,000.

TABLE 3.—*Persons engaged in manufacturing industries in the United States, 1919, 1914, and 1909*

Class	Census year	Total	Men	Women
1	2	3	4	5
Proprietors and officials	1919	682,857	656,915	25,942
	1914	501,681	485,502	16,179
	1909	487,173	472,914	14,259
Proprietors and firm members	1919	269,137	258,894	10,243
	1914	262,599	252,430	10,169
	1909	273,265	263,673	9,592
Salaried officers of corporations	1919	132,467	127,074	5,393
	1914	92,671	89,749	2,922
	1909	80,735	78,937	1,798
Superintendents and managers	1919	281,253	270,947	10,306
	1914	146,411	143,323	3,088
	1909	133,173	130,304	2,869
Clerks and other subordinate salaried employees	1919	1,033,507	659,775	373,732
	1914	725,135	536,967	188,168
	1909	576,369	437,056	139,303
Wage earners (average number)	1919	9,096,372	7,267,030	1,829,342
	1914	7,036,247	5,590,907	1,445,340
	1909	6,615,046	5,252,293	1,362,753

While figures in Table 4 are not comparable except in a rough way with the figures presented in Table 3 they show little change in the major occupational classes in the manufacturing industries from 1919 to 1927 other than a decrease of 136,000 in proprietors and firm members. In Table 4 proprietors and firm members refer to individual proprietorships and partnerships and must not be confused with proprietors and officials of which they are only a part in Table 3. Salaried officers and employees in Table 4 include salaried officers of corporations, superintendents, managers, clerks, and other subordinate salaried employees. Since there seems to have

been little change in the major occupational groups in manufacturing it is assumed that there has been little change in annual replacement needs.

TABLE 4.—*Persons engaged in manufacturing industries in the United States, 1919 to 1927*

Census year	Persons engaged	Proprietors and firm members	Salaried officers and employees	Wage earners (average for the year)
1	2	3	4	5
1927	9,787,647	132,668	[1] 1,301,002	8,353,977
1925	9,875,697	133,054	1,340,382	8,384,261
1923	10,282,306	148,421	1,355,729	8,778,156
1921	8,265,824	172,871	1,146,380	6,946,570
1919	10,812,736	269,137	1,447,227	9,096,372

[1] Not including data for number and salaries of officers and employees of central administrative offices; no such data having been collected in 1927.

Official data have been utilized up to this point to determine the occupational needs for higher business education. These data have been analyzed with respect to the needs of the Nation as a whole rather than by States or geographical divisions. Likewise they have been analyzed to discover needs quantitatively rather than qualitatively. In general, occupational needs have merely been sketched in broad outlines.

To fill in these broad outlines and to make occupational needs take more definite practical form requires not only the utilization of a great many additional data from a variety of other sources, but also an appraisal of the rôle which land-grant institutions have played in occupational analysis.

That land-grant institutions have failed to discover the needs for higher business education prior to the establishment of courses in connection therewith is not very difficult to prove. Study of the catalogues and the reports of these institutions together with the results of the questionnaire which they filled out on commerce and business reveals little use of scientific research in this respect. Their programs of higher business education have been developed on basis of observation rather than fact. They have imitated rather than originated. They were asked to check the demand for business courses in their institutions as revealed by contracts of representatives of the institutions with business men and prospective students.

Out of 42 land-grant institutions checking this questionnaire, 18 specified that such contacts were most important in the establishing of courses, 7 said such contacts were important, and 5 said they were of least importance. As to the increase in the offerings of business courses, 14 institutions out of 42 replying said that these contacts were the most important, 5 said important, 3 said least important. Out of 15 questions stating the factors which influenced

the land-grant institutions in establishment and increasing their offerings in commerce and business, more institutions check the foregoing question than any other.[1]

From the results of the questionnaire it would seem that the land-grant institutions have used contacts with business men and prospective students as the basis for the origin and increase of courses rather than a scientific study of existing needs.

It will be observed from Table 1 that the items that presuppose the methods of science in setting up offerings in commerce and business have been used by few institutions.

Of 42 institutions making reports in the survey, 7 indicated that studies of vocational choices of students were most important in the establishment of courses and 8 institutions indicated that they were most important in the increase of courses; 3 indicated that such studies were important in the establishment and 7 important in increase; 5 institutions indicated that surveys of the needs in commerce and industrial firms for personnel with collegiate education were most important in establishment and 5 most important in increase; 2 indicated that such surveys were important in establishment and 10 important in increase.

Not a single institution indicated that biographical studies of drop-outs engaged in business occupations were most important in establishment and increase. One institution indicated that such studies were important in establishment and seven institutions indicated that these studies were least important.

From these results it appears that land-grant institutions have not turned the searchlight of science in on themselves and used scientific methods in determining the needs for the various offerings for which they have made provision. They have depended upon general observation rather than upon carefully determined facts. Follow-up letters were sent to the institutions which indicated that they had made studies of vocational choice of students and surveys of the needs in industrial and commercial firms for personnel with collegiate education in the establishment and increasing of offerings in commerce and business. The replies to these letters are extremely interesting. With one or two exceptions the institutions admitted that they had not made any such scientific studies at all. Oregon Agricultural College and the University of New Hampshire were the only institutions replying that have attempted to follow up graduates and make changes in courses upon the basis of facts revealed therefrom.

The land-grant institutions were asked the following question: "Have you made studies of the actual requirements of business for the purpose of guiding your institution in determining the content and organization of courses in commerce and business?"

Twenty institutions answered in the affirmative and 17 answered in the negative. Follow-up letters were sent to the 20 institutions answering in the

[1] See Table 1.

affirmative. While replies were not received from all of these institutions, 11 of the 20 stated that no such studies had ever been made by them.

Again they indicated that they acted upon mere observations. Oregon Agricultural College and University of Minnesota were two exceptions to the rule, both of these institutions apparently having attempted to discover scientifically the needs for education in their respective geographical territories.

With the two exceptions just mentioned, land-grant institutions have not made comparative surveys of commercial occupations in the regions which they serve. Before any institution engages in business education, it should carefully appraise the needs in its territory. These needs should be determined both quantitatively and qualitatively. It should know the number of recruits which business needs and the kind of positions which these recruits are to fill.

Land-grant institutions have not discovered the annual needs of business firms for recruits for initial positions in their localities, either in kind or in quantity. They have not determined the annual needs of firms in terms of promotional opportunities either as to kinds or as to avenues through which promotion takes place. They have not made job analyses; they have failed to recognize the need for scientific analysis of what their students will actually do when they depart from academic halls to engage in business occupations.

Business enterprises have been much more alert in this respect. In organizing personnel departments and in employing labor, they have spent time and money in making job analyses and setting up job specifications. They have discovered the exact nature of the tasks which workers were to perform before they set up training programs for these workers. Land-grant institutions have not only failed to make job analyses themselves but they do not appear to have utilized the job analyses of industrial concerns.

Another way to discover the failure or success of land-grant institutions in determining the needs for higher business education is to examine the extent to which they have measured the relative demand of employers for students completing the several curricula in commerce and business. Table 5 throws some light on this question. This table merits careful scrutiny. It will be observed that the land-grant institutions have indicated that the demand exceeds the supply in all of the various fields for which curricula are offered except commercial law, manufacturing, organization and management, personnel management, and transportation.

It will also be observed that three institutions indicated that the demand very greatly exceeded the supply in commercial teacher training; 4 indicated that the demand very greatly exceeded the supply in insurance; 2 in merchandising and selling; 1 in public service and civic work; 3 in real estate; 3 in secretarial training; and 1 in transportation.

Most of the institutions replying indicated that the demand balanced the supply. Several institutions replied that the demand is less than the supply in several fields and several institutions indicated that there is little or no demand in certain fields. The variety of the replies to the questionnaire submitted by the institutions makes it evident that they are based on speculation rather than facts. Apparently land-grant institutions are not familiar with the dynamic changes that are taking place in the economic organization of society and are not constantly adjusting their curricula to meet these changes.

TABLE 5.—*Relative demand by employers for students completing the several curricula in commerce and business in land-grant institutions*

Curricula	Demand				
	Very greatly exceeds supply	Exceeds supply	Balances supply	Less than supply	Little or no demand
1	2	3	4	5	6
General business	1	5	14	3	1
Accounting		7	11	4	1
Advertising		3	5	6	3
Banking and finance		3	12	5	2
Commercial law			5	2	9
Commercial teacher training	3	7	3	2	4
Foreign trade and service		2	4	4	7
Credit management		1	5	3	8
Insurance	4	3	5	1	3
Journalism		2	4	2	5
Manufacturing			9	3	2
Merchandising, selling, and store management	2	10	5	1	2
Organization and management			9	2	4
Personnel management			2	4	9
Public service and civic work	1	1	3	1	8
Realty	3	1	3	1	5
Secretarial training	3	7	5	1	5
Transportation	1		5	2	7
Others		2	2		

Another way by which the land-grant institutions might have discovered the needs for business training was by keeping records of the number of business and industrial firms actually recruiting employees. They were asked to state the number of firms recruiting students in 1927–28.

Twenty-three institutions reported active recruiting, 11 institutions reported no data available, and 8 institutions gave no answer at all. Ten institutions reported from 1 to 5 firms actively recruiting; 7 institutions reported 6 to 10 firms; 1 institution 14 firms; 1 institution 24 firms; 1 institution 30 firms, 1 institution from 40 to 50 firms; and 1 institution 60 firms.

It would seem that in 1927–28 business and industrial firms pretty generally recruited employees from land-grant institutions. This does not mean, however, that the institutions themselves are respon-

sible for this recruiting. Business and industrial firms may have taken the initiative themselves. Familiarity with the policies of companies of national importance in taking college students convinces one that the companies recruited college students in spite of the institutions.

The institutions were asked to estimate the percentage of graduates in commerce and business who were actually recruited by business firms in 1927–28.

Of 36 institutions replying, 15 indicated they had no records and no available data; the other 21 replied as follows: 5 from 1 to 20 per cent, 7 from 20 to 40 per cent, 4 from 40 to 60 per cent, and 5 from 60 to 80 per cent.

Assuming that these estimates are accurate, industrial and business firms are taking graduates in commerce and business turned out by land-grant institutions, but they are not taking them in large enough numbers.

Still another way in which to measure the extent to which land-grant institutions have discovered the needs of higher business education is to study the objectives which have actuated them in providing business training. The various institutions were asked to check the objectives as specified in Table 6. The results are extremely interesting. The most significant point is that an overwhelming majority of land-grant institutions provide courses four years in length and look toward the education of students for major executive work.

Twenty-eight institutions indicate that their program of training is designed to provide general education to assure a better understanding of the relationship between business and the community, and that it takes four years to realize this objective. Eight institutions in case of this objective specified a course of three years in length; 10, two years in length; and 6 one year in length. With respect to the objective of providing a competent background in business subjects for students of other major subdivisions such as agriculture and engineering, 26 institutions signified that their training program was four years in length; 7 institutions indicated 3-year programs; 2 institutions 2-year programs; and 2 institutions 1-year programs. Thirteen institutions report that they provide a 4-year training program to prepare students for routine work, 3 institutions provide 3-year programs, 8 institutions provide 2-year programs, and 4 institutions provide 1-year programs.

It is doubtful whether it requires from three to four years to prepare students for routine work as indicated by a large number of institutions replying on this particular point.

Twenty-one institutions provide education for minor executive work which extends over a period of four years; 8 provide education extending over a period of 3 years, 5 over a period of 2 years, and 1 over a period of 1 year. Thirteen institutions indicated a 4-year program of education preparing for research work; 3 institutions provide a 5-year program to prepare students for minor executive work, 6 a 5-year program for major executive work, and 10 a 5-year program for research work. Four institutions not shown in Table 6 indicated that one of their objectives was to prepare for commercial teaching.

TABLE 6.—*Objectives of land-grant institutions in offering courses in commerce and business to meet the needs of students and of business and the length of their training programs*

Objective	For students who can remain in school for—				
	1 year	2 years	3 years	4 years	5 years or more
1	2	3	4	5	6
To provide a general education to assure a better understanding of relationships between business and the community	6	10	8	28	1
To provide a functional background in business subjects for students of other major divisions such as agriculture, engineering, etc	2	2	7	26	1
To provide education and training in business for positions in:					
Routine work	4	8	3	13	
Minor executive work	1	5	8	21	3
Major executive work			2	22	6
Research work			2	13	10

In so far as these results are concerned it must be concluded that land-grant institutions in general think that the needs for higher business education require a training program four years in length. While some of them provide training programs of less than four years they are the exceptions. As has been indicated earlier, the needs for business training involve several levels. The land-grant institutions should provide instruction on these various levels. They have apparently concentrated their attention on the higher levels and neglected the intermediate levels. If land-grant institutions are to conform to the Morrill Act, namely, to educate the industrial classes, they must adjust their programs to the needs. They must not only provide business training giving a functional background and assuring better understanding of relationship between business and the community, but they must also provide instruction for routine and minor executive work for students upon intermediate levels.

Still another way to discover the needs for education beyond post-secondary-school levels is to study the records of land-grant institutions as to their actual placement of graduates and nongraduates. The land-grant institutions were asked to state the number of students placed with business and industrial firms from 1925 to 1928. The results of this question are indicated in Table 7. Only one or two observations need be made upon this table. While there are two or three institutions attempting to place nongraduates, land-grant institutions as a whole are doing little or nothing to place them. They evidently are interested only in graduates. While the placement of graduates is decidedly important, the placement of nongraduates may well be given considerable attention.

With respect to students graduating with bachelor degrees land-grant institutions make a good showing. In filling out this part of the questionnaire it was suggested that the institutions might use estimates. Careful study of the table concerning students with a bachelor's degree will show the extent to which graduates have been placed in the various fields of business.

TABLE 7.—*Number of students placed with business and industrial firms from 1925 to 1928 by land-grant institutions*

Nature of business firms or organizations	Nongraduates						With bachelor's degree					
	1925–26		1926–27		1927–28		1925–26		1926–27		1927–28	
	Number of institutions replying	Number of students	Number of institutions replying	Number of students	Number of institutions replying	Number of students	Number of institutions replying	Number of students	Number of institutions replying	Number of students	Number of institutions replying	Number of students
1	2	3	4	5	6	7	8	9	10	11	12	13
Retail	2	19	3	10	4	20	7	34	11	50	13	49
Department store	2	4	2	5	2	9	4	21	5	19	6	28
Wholesale	1	4	1	3	1	1	5	10	6	13	5	15
Jobbing and commission	1	1	1	1	1	2	4	19	5	11	5	18
Banking and brokerage	2	3	2	3	1	2	5	32	11	35	14	37
Real estate and insurance	2	4	0	0	1	5	8	41	11	32	10	27
Manufacturing	0	0	1	3	2	8	9	61	10	51	15	64
Public utilities	1	1	1	2	1	2	9	50	10	50	15	57
Transportation	1	3	1	1	1	1	3	8	7	13	5	11
Professional	1	3	1	1	0	0	8	68	13	81	11	83
Farming	0	0	0	0	0	0	2	2	0	0	3	6
Others	1	13	3	11	2	7	5	131	4	81	7	141

Manufacturing, professional activities, real estate and insurance, retailing, and banking and brokerage have taken the greatest number of graduates in the largest number of institutions. Farming has scarcely taken any; transportation has taken very few.

The land-grant institutions need to make more studies like the study of public utilities made by Dean C. O. Ruggles and his committee for the National Electric Light Association. Dean Ruggles and his committee devoted themselves to the discovery of the needs of business education in the field of public-service corporations. It might be worth while to quote a summary of the findings.

A very large majority of the utility companies stated that they have had success with college men and a very large majority also stated that the opportunities are sufficiently attractive to warrant college men to prepare themselves for work in the field. Utility executives pointed out some of the deficiencies of college graduates and made some suggestions for the improvement of collegiate education.

The facts submitted show that an increasing number of the graduates of both schools of business and schools of engineering are entering the field of

public utilities; also that even in the field of engineering there is a striking decrease in the number of graduates taking employment with the railroads. These statistics verify the conclusions reached in the Yale Survey on Transportation. The results of the survey show that the demand is not only for graduates of engineering schools but that the need for nonengineering graduates is becoming a very important factor. Indeed the facts reported by the parent companies which submitted data on this phase of the survey show that the greatest number of college men employed by them in 1927 were nonengineering graduates.

Aside from the telephone industry, the utility companies are apparently not visiting colleges to participate in conferences on vocational guidance, or to recruit employees to the same extent that representatives of other industries appear to be doing. It is the opinion of a number of educators and of some utility executives that a large number of the best men of the graduating classes are secured by the industries that have carefully worked out plans for recruiting and who visit the colleges early in the last half of the college year.

The data returned by the utility industry do not indicate that many employees of utility companies, whether graduates of colleges or noncollege men, are taking courses with local educational institutions. Only a decided minority of the utility companies reported that their employees are taking such courses. However, a large majority of the companies did indicate an interest in having such courses available to their employees.[2]

In this survey Dean Ruggles and his associates made a study of the placement of college graduates based on returns from 10 schools of business in 1925 and 11 schools in 1926 and 1927. Their results are shown in Table 8.

TABLE 8.—*Fields of activity entered by graduates of schools of business*

Field of activity	1925		1926		1927		Total	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
1	2	3	4	5	6	7	8	9
Public utilities	34	4.2	63	7.1	55	6.6	152	6.0
General business	268	33.3	283	31.7	322	38.7	873	34.5
Banking	37	4.6	82	9.2	92	11.1	211	8.3
Foreign trade	10	1.2	5	.6	6	.7	21	.8
Accounting	34	4.2	43	4.8	50	6.0	127	5.0
Merchandising or retail selling	24	3.0	21	2.4	26	3.1	71	2.8
Insurance	19	2.4	8	.9	15	1.8	42	1.7
Manufacturing	31	3.9	11	1.2	20	2.4	62	2.5
Securities and investments	8	1.0	17	1.9	16	1.9	41	1.6
Real estate	4	.5	1	.1	0	-------	5	.2
Secretarial	2	.2	8	.9	3	.4	13	.5
Law	1	.1	2	.2	3	.4	6	.2
Graduate work or research	4	.5	6	.7	11	1.3	21	.8
Teaching	12	1.5	17	1.9	15	1.8	44	1.7
Miscellaneous and unknown	316	39.4	325	36.4	198	23.8	839	33.4
Total graduates	804	100.0	892	100.0	832	100.0	2,528	100.0

[2] Public utilities, a survey of the extent of instruction in public utilities in colleges and universities, of the industry's interest in college graduates, and of willingness and ability of utilities to cooperate with higher educational institutions. C. O. Ruggles, director of survey (National Electric Light Association).

They also made a study of the placement of college graduates based on returns from 21 colleges of engineering in 1925 and 22 colleges 1926 and 1927. The results are shown in Table 9.

TABLE 9.—*Fields of activity entered by graduates of engineering colleges*

Field of activity	1925		1926		1927		Total	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
1	2	3	4	5	6	7	8	9
Public utilities other than railroads	207	16.9	224	17.9	256	17.6	687	17.5
Railroads	63	5.1	47	3.8	38	2.6	148	3.8
Highway engineering	14	1.1	21	1.7	12	.8	47	1.2
Manufacturing	163	13.3	163	13.0	43	3.0	369	9.4
Electric manufacturing	27	2.2	11	.9	26	1.8	64	1.6
Sales, service, and advertising	27	2.2	13	1.0	19	1.3	59	1.5
Chemical manufacturing	20	1.6	7	.6	15	1.0	42	1.1
Public service	14	1.1	10	.8	11	.8	35	.9
Municipal and consulting service	9	.7	16	1.3	9	.6	34	.9
Industry and business	25	2.0	23	1.8	20	1.4	68	1.7
Architecture	10	.8	9	.7	9	.6	28	.7
Production and design	18	1.5	16	1.3	9	.6	43	1.1
Research and teaching	19	1.5	20	1.6	32	2.2	71	1.8
Miscellaneous and unknown	610	50.0	673	53.6	956	65.7	2,239	56.8
Total graduates	1,226	100.0	1,253	100.0	1,455	100.0	3,934	100.0

This survey of public-utility education is in sharp contrast to the Yale survey on transportation. The Yale survey found that railroad executives were not interested in employing college graduates, and that there was not adequate cooperation between higher educational institutions and railway industries either in instruction or research. On the basis of this survey, Yale revised its entire course of study in the field of transportation. Land-grant institutions, so far as the questionnaire reveals, have not attempted at all any such surveys of specific fields.

Finally, land-grant colleges and universities have failed to make studies of the advantages and disadvantages of cooperative part-time business training and business experience for students in commerce and business. The following questions were asked each of the land-grant institutions offering courses in commerce and business. The questions and replies are set forth in Table 10.

TABLE 10.—*Answers to questionnaire sent to land-grant institutions offering courses in commerce and business*

Question	Answer	
	Yes	No
Do you require for graduation business experience of commercial and business students?	3	37
If "No," is business experience advised or recommended for commerce and business students?	18	11
Has your institution taken the initiative in explaining the cooperative part-time training plan to business firms and associations?	4	29
Has your institution taken the initiative in explaining the plan to the students?	3	30
Has your institution made a study of the desires of the students regarding cooperative part-time training?	3	30
Have business firms or associations taken the initiative in expressing a desire to try out the cooperative part-time plan?	1	32
Have you made a survey among business firms and associations to learn of their desire to participate in cooperative part-time training in commerce and business?	5	28

The answers in this table are extremely interesting. Only three institutions require business experience for graduation. These are Ohio State University, Oklahoma Agricultural and Mechanical College, and Iowa State College. Ohio State University does not give credit. Oklahoma Agricultural and Mechanical College requires business experience, but does not indicate whether credit is given or not. Iowa State College requires business experience in farm management only, but does not indicate whether credit therefor is given or not. The other 37 institutions replying have done nothing in this respect. Eleven institutions do not advise or recommend business experience for commerce and business students. Eighteen institutions do advise such experience. It is not intended to argue that the case for requiring business experience for commerce and business students has been proved. Much investigation is needed before valid conclusions can be drawn. The point is that land-grant institutions apparently are not interested in this problem and are doing little to discover facts that would have a bearing on its solution.

The situation is very much the same with regard to the cooperative part-time training plan. Such training required great effort. The administrative aspects are complex. Not only must firms be willing to cooperate and offer employment for students, but the intervals of work must be arranged to fit the needs of the enterprises. On the institutional side, courses must be scheduled so that the student will attend school for one period and follow his employment for another. This alternation between study and work is difficult of arrangement and still more difficult to administer after arrangements have been made. None of the land-grant institutions reporting has tried the cooperative part-time plan.

Four institutions have taken the initiative in explaining it to business firms and associations while 29 have not. Only three institutions have taken the initiative in explaining it to the students. Three institutions have made studies

of the desires of students regarding the plan but with what results it was impossible to discover. One institution reports that business firms have taken the initiative in expressing a desire to try out the cooperative part-time plan. Five institutions claim to have made a survey among business firms and associations as to their desire to participate in a cooperative part-time training plan. One institution said: "We are studying the problem now." Another said: "We will investigate the plan this year."

Here no brief is held for requiring business experience for graduation. Neither is any brief held for cooperative part-time training. It is felt, however, that the plan merits the most careful investigation. Undoubtedly, the best way to teach is to teach by doing or performing. The idea back of such a plan is sound. Many details must be worked out before the plan will be successful. A surprising thing is that land-grant institutions have shown so little interest and have attempted so little research in this particular field of business education.

Due to the fact that the numerical ratio of the various business employments is changing rapidly and the fact that the nature of business positions is constantly and rapidly changing, studies pertaining to opportunities and requirements of business positions should be made periodically, preferably so as to coordinate the studies with the reports of the United States census.

In addition to the studies of present and probable needs of higher education for business just listed, there is need for comprehensive studies of the individuals who apply for the business courses. The interests, aptitudes, capabilities, and attitudes of those who apply for the courses definitely condition the training program. Studies of the interests, aptitudes, capabilities, and attitudes of persons of below average, average, and above average success in the various occupational levels of business positions should be made for the purposes of obtaining materials for vocational guidance in this field.

In the making of studies pertaining to present and probable future needs of higher education for business, there should be sufficient cooperation among the land-grant institutions to devise and use uniform questionnaires and report forms and procedures. It is obvious that in addition to a minimum report form, many States will wish to collect supplementary data regarding specific items. In this connection, the bureaus and committees of business research might well emphasize research for the improvement of their own educational programs rather than for the improvement of business to the exclusion of the best interests of their educational programs.

As has been indicated earlier it is not enough for land-grant institutions to discover the needs of business for recruits trained for specific occupations. Although this is their primary task, they must also discover the needs for general economic and business services

wherever these services will improve man's means of securing a livelihood. There are three types of these services: First, services to the institutions themselves; second, services to public agencies; third, services to private agencies.

In setting up mechanisms for training in commerce and business, land-grant institutions should have discovered what general economic and business services were needed. Undoubtedly the land-grant institutions themselves need assistance from staff members who are experienced in accounting, finance, organization, and administration. Likewise public agencies need the assistance of such staff members. Opportunities should exist for general economic and business services to the political units of State, county, and city. In addition private agencies and private business interests demand assistance. Land-grant institutions apparently have devoted little time to a study of these needs prior to the establishment of offerings in commerce and business.

Chapter III.—Student Body

Land-grant colleges and universities have not only failed to discover the present and probable future needs of higher business education, but they have also failed to make analyses of commerce and business students—the raw materials of higher business education. It is not sufficient to find out what business wants from college graduates in terms of specific knowledge required to perform certain business tasks, although this is decidedly important. Analyses of students who apply for the training in commerce and business offered by land-grant institutions must also be made. The set-up of mechanisms for handling raw human materials and the devising of offerings for processing these raw materials should not take place until the raw materials themselves have been analyzed and their composition determined. Finished products depend upon raw materials. What comes out is determined by what goes in. Scientific study of the students to be handled by the division of commerce and business can not be ignored if land-grant institutions are to proceed upon a scientific basis.

Several items in the questionnaire were designed to provide data concerning commerce and business students. One question called for the total number of students graduating from land-grant institutions with degrees. Table 11 gives this information. It will be observed from this table that the data provided are somewhat inadequate. Many land-grant institutions do not offer curricula leading specifically to degrees in commerce. Students simply major in commerce and business and take the usual degree of bachelor of science or bachelor of arts.

TABLE 11.—*Total number of commerce and business students graduating from land-grant institutions with degrees*

Degree	1925-26		1926-27		1927-28	
	Number of institutions replying	Number of students	Number of institutions replying	Number of students	Number of institutions replying	Number of students
1	2	3	4	5	6	7
Bachelor of science	6	229	8	235	8	301
Bachelor of arts	8	396	10	448	10	452
Bachelor of science in commerce	17	908	18	938	17	896
Master of science	3	17	4	16	4	9
Master of arts	5	37	5	29	8	33
Doctor of philosophy	1	1			1	4
Others	2	30	2	42	2	35

Some land-grant institutions not only offer courses leading to advanced degrees but also make an appreciable showing as to the number of graduates. Three institutions report 17 taking the master of science in 1925–26, four institutions 16 students taking this degree in 1926–27, and four institutions 9 students taking the degree in 1927–28. Five institutions in 1926–27 report 29 students taking this degree and eight institutions in 1927–28 report 33 students. One institution reports 1 student taking the degree of doctor of philosophy in 1925–26 and 4 students taking the degree of doctor of philosophy in 1927–28. Of the 17 institutions offering the bachelor of science in commerce 12 are State universities.

Another way in which to analyze the raw materials of higher business education is to study the students in terms of the curriculum leading to the first degree for which they registered. Table 12 gives the facts as revealed by the commerce and business questionnaire. According to this table the largest number of students register for the curriculum in general business. The second largest number of students register for accounting. This table merits careful study although the information afforded is very fragmentary. Only one institution reported a curriculum in journalism. Two institutions report a curriculum in personnel management. One institution accounts for 133 of the 136 students pursuing this curriculum.

TABLE 12.—*Registration of students in land-grant institutions by undergraduate curricula for regular academic year 1927–28*

Curriculum leading to first degree	Total number of institutions reporting	Total number of students registered
General business	20	2,924
Accounting	7	570
Advertising	3	394
Banking and finance	6	329
Commercial law	1	3
Commercial teacher training	2	25
Foreign trade and service	4	104
Insurance	2	25
Journalism		280
Manufacturing	1	10
Merchandising, selling, and store management	5	128
Organization and management	3	33
Personnel management	2	136
Public service and civic work	1	14
Realty	1	3
Secretarial training	4	200
Transportation	1	3
Others	7	59

In compiling the data for Table 12 it became evident that the land-grant institutions do not have exact records of student registration according to curricula. Curricula should either appeal to students or should not appeal to them. Land-grant institutions should have the facts about student registration for each curriculum. Complete data would be valuable in providing information concerning the types of curricula chosen by the students.

Table 13 shows the distribution of commerce and business students in land-grant institutions by residence in 1928–29. It will be seen that the great majority of students reside within the State. Only 24 institutions reported on this subject. In these institutions 38 students from foreign countries were reported. In addition to the 24 reporting, 12 institutions answer with the following comments: "No data," "Data unavailable," "Unknown." Again it is apparent that all the land-grant commerce and business divisions do not have accurate records about their own student bodies.

TABLE 13.—*Distribution of commerce and business students in land-grant institutions by residence, 1928–29*

Residence	Number of institutions replying	Number of students
Within the State	24	6,998
In other States	24	761
In foreign countries	24	38

Table 14 gives the distribution of students in commerce and business by occupational groups to which their fathers belong.

TABLE 14.—*Distribution of commerce and business students in land-grant institutions by occupational groups to which fathers belong, 1928–29*

Occupational groups	Number of institutions replying	Number of students	Per cent of total
1	2	3	4
Trade and mercantile	16	1,332	31.8
Agriculture	16	734	17.5
Manufacturing and mechanical industries	16	622	14.9
Professional service	15	467	11.1
Unclassified	4	405	9.6
Public service	16	240	5.7
Transportation	14	157	3.8
Clerical service	15	127	3.0
Domestic service	10	78	1.9
Retired	1	16	.38
Banking	1	9	.21
Total	23	4,187	100.00

This table affords interesting information. The largest number of commerce and business students reported by 16 institutions came from the trade and mercantile group. The next largest came from agriculture. Nineteen other institutions report with the usual comments, "Unknown," "No record," "Data unavailable." Of course there are exceptions, but most of the institutions apparently have not studied commerce and business students with reference to the occupational groups to which their fathers belong, and do not know

a great deal about the student whom they expect to train in commerce and business courses.

Table 15 gives the distribution of commerce and business students in land-grant institutions by size of the communities from which they came.

TABLE 15.—*Distribution of commerce and business students in land-grant institutions by size of communities, 1928–29*

Size of communities	Number of institutions replying	Number of students
Communities with population of 2,500 or fewer	17	1,303
Communities with population of 2,500 or more	17	2,785

Seventeen institutions reported 1,303 students from communities with population of 2,500 or fewer. The same 17 institutions report 2,785 from communities with population of 2,500 or more. Fifteen other institutions replied simply that they did not know or that they had no records. From the data gathered it appears that students in commerce and business come from the larger communities.

Land-grant institutions should make analyses of the economic status of their students in commerce and business. While data about the occupational groups to which their fathers belong are important, more detailed investigation is needed. It would be interesting to know whether the student preparing for business comes from the wealthier or less wealthy classes. Land-grant institutions apparently do not know and have not attempted to obtain the answers to questions of this type.

Likewise land-grant institutions should make analyses of the characteristics and interests of commerce and business students. They should discover occupational interests and aptitudes. They should study the intelligence of their students. They should know something of personality traits. If they are to train students successfully they must know what traits are required by various types of business enterprises, and analyze their students for the purpose of discovering these traits and preparing them for certain fields of business.

Analyses of commerce and business students should reveal the types of students on lower, intermediate, and upper levels. Land-grant institutions should know what each student wants, and by knowledge of his characteristics, his economic status, and other information adjust its curricular offerings to his needs. Careful study of commerce and business students would undoubtedly reveal that certain students expect to remain one year and probably should not be encouraged to remain any longer. Certain other students expect to remain two years and probably should not be encouraged to remain,

any longer. Certain other students expect to remain three years and probably should not be encouraged to remain any longer. Finally, the remaining students expect to remain either four or five years and probably should be encouraged to remain for these periods of time.

Moreover analyses of commerce and business students would reveal other facts of interest. Land-grant institutions almost universally claim to train students to become executives. Have they made any attempts to discover what qualities are required of executives? If they have, such information is not revealed by the questionnaire which they filled out. They should not only know their raw materials in such a way as to turn out the best types of finished products, but they should also know them in such a way as to supply the needs of modern business on intermediate as well as upon higher levels.

Land-grant institutions failed to keep records of other types of information concerning commerce and business students. Table 16 gives data for the years 1925–26, 1926–27, and 1927–28 concerning the number of drop-outs, the number of nongraduates who transferred to other institutions, and the number of graduates who continued their education in other institutions. It also gives information concerning the number of seniors who attended other institutions in 1927–28. As may be seen from the table a very limited number of institutions replied to this particular part of the questionnaire. If the majority of land-grant institutions keep records concerning the number of commerce and business students who drop out, the number of students who transfer to other institutions, and the number of graduates who continue their education in other institutions, they have not utilized them. A few institutions apparently know something about their students in connection with these three items. It is certainly important to study drop-outs and the causes thereof. It would be worth while to know how many of these students who drop out transfer to other institutions and why they drop out. It would also be worth-while to know the number of graduates continuing their education in other institutions. Land-grant institutions as a whole do not recognize the value of these records and have made no attempt to inform themselves in this particular respect. They merely checked these points in the questionnaire with the statement "No records."

TABLE 16.—*Records of commerce and business students for a 3-year period*

Reason	Year					
	1925–26		1926–27		1927–28	
	Number of institutions replying	Number of students	Number of institutions replying	Number of students	Number of institutions replying	Number of students
1	2	3	4	5	6	7
Dropped out	7	274	8	331	11	434
Nongraduates who transferred to other institutions	2	9	2	11	4	14
Graduates who continued their education in other institutions	4	12	6	19	7	30
Seniors who have attended other institutions					18	263

One other item in Table 16 deserves brief attention. Eighteen land-grant institutions in 1927–28 have studied their seniors and know how many of them attended other institutions. Data on this point are worthy of consideration. Undoubtedly land-grant institutions are attracting more and more students from junior colleges and other types of institutions. They tend to come to the land-grant institutions in their junior and senior years. Records of the number of juniors and seniors both should be kept and land-grant institutions should know the extent to which they are meeting needs unmet by other institutions.

Several land-grant institutions report student-loan funds for students in commerce and business. Generally, however, these loan funds are not especially provided for commerce and business students, but may be secured only by these students in the same fashion as all other students. The most noteworthy loan fund is that of the American Bankers' Association Foundation for Education in Economics. Seven land-grant institutions report from one to two of these loan scholarships. They carry a stipend of $250 each. They are made as annual awards upon the basis of merit and are usually limited to juniors and seniors. They are loans rather than gifts. The student is expected to repay them with interest of 5 per cent.

Land-grant institutions have apparently not made any very great provisions for loan funds or undergraduate scholarships and fellowships for commerce and business students. If the loan fund offered by the American Bankers' Association Foundation for Education in Economics be excepted and if two or three institutions offering several undergraduate scholarships and fellowships were also excepted,

the number of institutions providing undergraduate scholarships and fellowships and loan funds would not be very large. Undoubtedly many commerce and business students come from occupational groups where it is necessary to secure some means for partially financing their education. If more funds were available, more students might register for commerce and business courses and more students might complete these courses after they have once registered.

Chapter IV.—Administrative Organization and Staff

Logically land-grant institutions should have discovered the needs of higher business education and made analyses of commerce and business students before they set up administrative organizations or mechanisms to handle the students or raw materials which would come to them. These things they have not done. It has been shown how they have failed to discover the needs of higher business education and how they have failed to analyze their raw materials. This chapter concerns itself with the administrative organization they have set up to handle commerce and business students and covers the following three main problems: (1) The management of faculty personnel, (2) equipment, and (3) finance.

In any discussion of administrative efficiency it must always be remembered that organization is a means to an end. Men organize because organization aids to accomplish ends that are desired. It represents conservation of time and effort. It brings together the forces and structures necessary to accomplish certain objectives.

There is no single correct form of organization. Here no attempt is made to argue for an ideal organization. The administrative mechanisms of the land-grant colleges and universities are analyzed and studied as to their effectiveness. Any land-grant institution that has set up an organization that functions has set up an effective organization.

There are three ways in which land-grant institutions have initiated and administered their courses in commerce and business. First, the courses have been initiated and offered by existing departments without setting up any new departments or divisions. Second, they have been initiated and offered by new departments or divisions of economics and business. Third, they have been initiated and offered by schools or colleges coequal in every respect with other schools and colleges and having separate deans. Practically all the land-grant institutions at present have either departments of economics and commerce or schools and colleges of commerce and business.

There are 21 land-grant institutions that have organized commerce and business into departments or divisions. These departments are

usually departments of economics. The title varies, however, considerably. In some cases the departments are called departments of economics and business; in some cases commerce and business; and in still other cases secretarial training and commerce. Usually the administrative officer in charge of these departments is called the head.

The administration of these departments varies with the various institutions. In nine land-grant institutions the department is directly under the jurisdiction of the dean of the college of arts and science. In other institutions the department is under the jurisdiction of the dean of the school of science, the academic dean, the dean of industrial science, or the dean of general science. In some institutions the department offers service courses and cooperates with other administrative divisions such as the college of agriculture, college of engineering, and the like.

It is of interest to study the organization of departments of economics and commerce in land-grant institutions by the dates of their establishment.

The following land-grant institutions have established such departments in the following chronological order: University of Vermont, 1900; Montana State College, 1910; West Virginia University, 1912; Massachusetts Institute of Technology, 1914; Mississippi Agricultural and Mechanical College, 1915; Virginia Agricultural and Mechanical College, 1920; Kansas State Agricultural College, 1921; University of Hawaii, 1923; Rhode Island State College, 1923; Rutgers University, 1924; Michigan State College, 1925; University of Maryland, 1926; and Alabama Polytechnic Institute, 1927.

Seventeen land-grant institutions have colleges or schools of commerce. These colleges are coequal with other established colleges except in one or two instances. The title of the administrative officer in charge is dean. The colleges or schools are subdivided in most cases into departments. The names of these departments vary widely.

For example, the University of Arkansas reports the following administrative subdivisions: (*a*) economics, (*b*) sociology, (*c*) finance, (*d*) accounting, (*e*) marketing, and (*f*) industrial management and public utilities. Ohio State University reports the administrative subdivisions as follows: (*a*) Department of business organization, (*b*) department of accounting, (*c*) department of economics, (*d*) department of geography, (*e*) school of social administration, and (*f*) school of journalism. While the two latter schools are directly under the jurisdiction of the dean they have more or less separate organizations and are under the immediate administration of directors. In a number of cases the schools or colleges of commerce and business are subdivided merely into economics and business administration.

The State College of Washington has a school of business administration with the following three divisions: Business administration, economics, and secretarial science. It is set up within the college of science and arts. The director of the school is under the dean of the college of science and arts. The case is somewhat similar at the University of Tennessee. The head of the department of economics is the head of the school of commerce. He is directly responsible to the dean of the college of liberal arts, and his school strictly speaking is set up within that college. All budgetary matters and appointments of staff members are referred by the head

of the school of commerce to the dean of the college of liberal arts and by that dean to the dean of the university.

The 17 land-grant institutions with colleges or schools of commerce and business established them in the following chronological order: Agricultural College of Utah, 1892; University of California, 1898; Oregon Agricultural College, 1908; University of Nebraska, 1913; Georgia State College of Agriculture, 1913; University of Missouri, 1914; Oklahoma Agricultural and Mechanical College, 1914; Ohio State University, 1916; University of Tennessee, 1917; University of Minnesota, 1919; North Carolina State College, 1923; University of Kentucky, 1925; University of Idaho, 1925; University of Florida, 1926; University of Arkansas, 1926; State College of Washington, 1927; Louisiana State University, 1928.

Moreover it is interesting to study land-grant institutions as to the dates of conferring their first degrees in commerce and business. Thirty of these institutions report degrees of some type in commerce and business.

The dates of the first conferring of these degrees are arranged in the following chronological order: Agricultural College of Utah, 1894; University of California, 1902; University of Vermont, 1903; Oregon Agricultural College, 1909; University of Nebraska, 1914; Montana State College, 1915; University of Missouri, 1915; State College of Washington, 1915; Pennsylvania State College, 1915; Georgia State College of Agriculture, 1915; Mississippi Agricultural and Mechanical College, 1916; Massachusetts Institute of Technology, 1917; Oklahoma Agricultural and Mechanical College, 1918; University of Tennessee, 1919; University of Minnesota, 1920; University of Wyoming, 1921; South Dakota State College, 1921; Virginia Agricultural and Mechanical College, 1922; North Carolina State College, 1923; University of Hawaii, 1923; University of Idaho, 1924; North Dakota Agricultural College, 1925; Rutgers University, 1926; Michigan State College, 1926; University of Kentucky, 1926; University of Florida, 1926; University of Arkansas, 1927; University of Maryland, 1927; Rhode Island State College, 1927; and Louisiana State University, 1930.

It will be observed that land-grant institutions did not begin to consider commerce and business as important fields of training until after the opening of the twentieth century. While the University of Vermont had a department of commerce and business in 1900, and while the Agricultural College of Utah and the University of California had schools or colleges in 1892 and 1898, respectively, and while the Agricultural College of Utah conferred its first degree of commerce and business in 1894, no other land-grant institution paid any attention to commerce and business until after 1900. While six institutions had established schools or colleges between 1900 and 1914, and while three institutions had established departments of commerce and business before that date, the majority of land-grant institutions established their departments and schools of commerce and business during or after the World War.

The first school of commerce and business in the United States was established in 1881 at the University of Pennsylvania. This was the Wharton School of Commerce and Finance. It is rather significant to note that the University of California and the University of Chicago were the next to establish such colleges or schools. In 1900 the University of Wisconsin, Dartmouth College, and New York University opened schools. No other schools were opened until 1908.

The requirements of land-grant institutions for the appointment of staff members in commerce and business are summarized in Table 17. There are absolutely no fixed requirements among land-grant institutions concerning the number of college credits in commerce and business. Apparently it is felt that college credits in commerce and business have very little bearing upon the qualifications of staff members. Nor are there any fixed requirements as to the number of years of business experience in the field to be taught.

TABLE 17.—*Qualifications required by regulations or in common practice for selection of candidates into the faculty of the division of commerce and business in land-grant institutions in 1927–28*

Requirement	Requirements by faculty ranks						
	Professor	Associate professor	Assistant professor	Instructor	Assistant	Lecturer	Other
1	2	3	4	5	6	7	8
Degrees:							
Bachelor's	1	1	1	17	21	5	1
Master's	9	18	25	14	1	2	.....
Doctor's	23	12	5	.....	.....	.....	.....
Number of years' teaching experience in commerce and business:							
No fixed requirement	31	31	31	33	31	32	30
Required average number of years	3.9	3.2	1.8	1	1	.....	.....
Number of institutions replying	5	5	5	2	1	.....	.....
Number of college credits in commerce and business:							
No fixed requirement	36	36	36	36	36	35	35
Number of years teaching experience in fields other than commerce and business:							
No fixed requirement	38	38	38	38	38	38	37
Number of years business experience in field to be taught:							
No fixed requirement	38	38	38	38	37	35	34
Number of years business experience (general):							
No fixed requirement	36	36	36	36	34	34	33

Study of the academic preparation and teaching and business experience of commerce and business teachers in land-grant institutions produces many interesting results. Table 18 gives data contained in the questionnaire on the number of teachers who have had teaching experience in commerce and business, who have had teaching experience in subjects other than commerce and business, and who have had business experience.

Twenty-six institutions report 85 teachers that have had one year of experience in the institutions with which they are at present connected; 36 institutions report 126 teachers serving in their present connections from 2 to 4 years; 26 institutions report 100 teachers serving from 5 to 9 years; 19 institutions report 47 teachers serving from 10 to 19 years; and 4 institutions report 5 teachers serving 20 years or more. Many of the teachers reported have served relatively long periods of time.

Very few institutions report teachers who have had teaching experience in commerce and business in private or public high schools, private business schools, or company schools. The teaching experi-

ence of the majority of commerce and business teachers outside the institutions with which they are connected at present has been secured in other colleges and universities. Commerce and business teachers have had considerable teaching experience in subjects other than commerce and business.

Eight institutions report 11 teachers who have had experience for 1 year in secondary schools; 14 institutions report 22 teachers who have had experience from 2 to 4 years; 12 institutions report 21 teachers who have had experience from 5 to 9 years; 6 institutions report 6 teachers who have had experience from 10 to 19 years; and 1 institution reports 1 teacher who has had experience for 20 years or more. Some commerce and business teachers have also had teaching experience of college grade in subjects other than commerce and business.

TABLE 18.—*Number of teachers of commerce and business in land-grant institutions who have had teaching and business experience*

Nature of experience	1 year		2 to 4 years		5 to 9 years		10 to 19 years		20 years or more	
	Number of institutions replying	Number of teachers	Number of institutions replying	Number of teachers	Number of institutions replying	Number of teachers	Number of institutions replying	Number of teachers	Number of institutions replying	Number of teachers
1	2	3	4	5	6	7	8	9	10	11
Teaching experience in commerce and business:										
In present institution	26	85	36	126	26	100	19	47	4	5
In private business schools	3	4	5	7	1	1				
In public high schools	7	12	16	36	6	10	1	1		
In private high schools	2	3	2	2						
In company schools			2	2						
In colleges and universities other than present	13	27	29	76	17	35	11	20	2	2
Teaching experience in subjects other than commerce and business:										
In secondary schools	8	11	14	22	12	21	6	6	1	1
In work of college grade	6	9	6	7	7	8	6	6	1	1
Business experience:										
Related to present work	9	14	20	52	11	25	10	13	1	1
Not related to present work	7	8	10	15	2	3	1	1		

Table 18 also shows that commerce and business teachers have had business experience related to their present work. Nine institutions report 14 teachers with business experience of 1 year in length; 20 institutions report 52 teachers with business experience of from 2 to 4 years in length; 11 institutions 25 teachers with business experience from 5 to 9 years in length; 10 institutions 13 teachers from 10 to 19 years in length; and 1 institution 1 teacher with 20 years or more experience. A few commerce and business teachers have had business experience not related to their present work.

Table 19 gives data on teachers of commerce and business in land-grant institutions employed in business in 1927–28 and before appointment to present position.

TABLE 19.—*Teachers of commerce and business in land-grant institutions employed in business in 1927–28 and before appointment to present position*

Teachers	Number of institutions replying	Number of teachers
Employed for themselves, 1927–28	6	7
Employed by others, 1927–28	11	18
Employed in business immediately prior to appointment to present position	16	35

Table 20 affords data concerning the number of commerce and business teachers who have received their highest degree during the past five years. Two institutions report that deans or heads of major divisions have received their doctor's degrees during the past two years. Two institutions report that the heads of departments have received their doctor's degrees during the past 5 years and 3 institutions report that heads of departments have received their master's degrees during the past 5 years. It will be observed from this table that the most of these receiving each of the three types of degrees are associate professors, assistant professors, instructors, and assistants. This is to be expected, since these ranks usually include staff members that are relatively young.

TABLE 20.—*Number of commerce and business teachers who have received their highest degree during the past five years*

Staff members	Bachelor's degree		Master's degree		Doctor's degree	
	Number of institutions replying	Number of teachers	Number of institutions replying	Number of teachers	Number of institutions replying	Number of teachers
1	2	3	4	5	6	7
Deans or heads of major division					2	2
Heads of departments			3	3	2	2
Professors			3	3	8	10
Associate professors	3	4	6	8	7	8
Assistant professors	2	2	22	45	7	14
Instructors	15	28	18	50	2	2
Assistants	9	17	3	7		
Lecturers	2	6	2	2	1	1

Table 21 shows the distribution of commerce and business staff members in land-grant institutions by their highest degree held in 1923–24 and 1927–28. There are many matters of interest in this table:

One institution reports that the dean or head of the major division has a bachelor's degree only. Three institutions report both in 1923–24 and 1927–28 7 deans or heads of major divisions who have master's degrees only and 9 institutions report in each of the years 11 heads or deans with doctor's degrees. One institution reports one head of a department who holds no

degree. Heads of departments held usually either master's degrees or doctor's degrees. Likewise professsors hold master's degrees or doctor's degrees, with doctor's degrees holding the larger place in 1927–28. Associate professors generally have either master's or doctor's degrees. Assistant professors hold bachelor's, master's, or doctor's degrees. Institutions report instructors as holding either bachelor's degrees or master's degrees with master's degrees somewhat in the majority.

TABLE 21.—*Distribution of commerce and business staff members in land-grant institutions by highest degree held in 1923–24 and 1927–28*

Faculty rank	No degree		Bachelor's degree		Master's degree		Doctor's degree	
	1923–24	1927–28	1923–24	1927–28	1923–24	1927–28	1923–24	1927–28
1	2	3	4	5	6	7	8	9
Deans or heads of major division:								
Number of institutions replying	-------	-------	-------	1	3	7	9	11
Number of teachers	-------	-------	-------	1	3	7	9	11
Heads of departments:								
Number of institutions replying	1	1	2	1	6	14	10	14
Number of teachers	1	1	2	1	8	18	12	19
Professors (omitting deans):								
Number of institutions replying	-------	1	3	4	7	9	8	16
Number of teachers	-------	1	3	5	7	16	17	40
Associate professors:								
Number of institutions replying	-------	1	4	7	6	19	5	10
Number of teachers	-------	1	4	11	7	34	8	18
Assistant professors:								
Number of institutions replying	2	1	10	9	14	18	6	8
Number of teachers	2	1	12	14	22	42	9	19
Instructors:								
Number of institutions replying	1	-------	14	19	7	21	3	2
Number of teachers	1	-------	39	35	18	67	3	2
Assistants:								
Number of institutions replying	2	2	4	11	1	3	-------	-------
Number of teachers	2	4	10	32	1	9	-------	-------
Lecturers:								
Number of institutions replying	-------	1	2	5	1	2	1	1
Number of teachers	-------	1	3	7	2	2	1	4
Total number of institutions replying	3	6	19	30	23	34	18	28
Total number of teachers	7	9	73	106	68	195	58	113

Land-grant institutions are interested to a considerable extent in professional improvement. Table 22 shows the membership of commerce and business teachers in professional and other societies. Many institutions report that staff members all the way from assistants and lecturers to deans and department heads belong to professional honorary societies, professional organizations, and business men's associations.

TABLE 22.—*Membership of commerce and business teachers in professional and other societies*

Faculty rank	Professional honor societies		Professional organizations		Business men's associations	
	Number of institutions replying	Number of teachers	Number of institutions replying	Number of teachers	Number of institutions replying	Number of teachers
1	2	3	4	5	6	7
Deans or heads of major divisions	12	12	14	14	12	12
Heads of departments	11	20	16	27	7	11
Professors	11	32	16	47	10	24
Associate professors	10	17	21	42	4	7
Assistant professors	15	28	16	37	7	17
Instructors	9	19	12	25	4	9
Assistants	3	8	3	4	1	1
Lecturers	2	2	2	4	2	3
Total institutions replying	23		27		19	
Total number of teachers		138		200		84

Table 23 shows the number of staff members in commerce and business who have had eight or more semester hours credit in professional education subjects. Twenty institutions report a total of 78 staff members who have had eight or more semester hours' credit in professional education subjects.

TABLE 23.—*Staff members in commerce and business who have had eight or more semester-hour credits in professional education subjects*

Staff member	Number of institutions replying	Number of staff members
Dean or head of major division	7	7
Head of department	6	9
Professor	8	15
Associate professor	11	15
Assistant professor	5	14
Instructor	9	16
Assistant	1	1
Lecturer	1	1

Table 24 gives the staff members who have studied commerce and business as a major field of concentration in graduate work.

TABLE 24.—*Staff members who have studied commerce and business as a major field of concentration in graduate work*

Faculty rank	Number of institutions replying	Number of staff members
Dean or head of major division	8	8
Head of department	15	21
Professor	13	35
Associate professor	18	32
Assistant professor	20	41
Instructor	17	41
Assistant	3	5

Table 25 shows the number of staff members in commerce and business who spent 10 per cent or more of their time in 1927–28 in public contacts and services other than extension.

TABLE 25.—*Staff members in commerce and business who spent 10 per cent or more of their time in 1927–28 in public contacts and services other than extension*

Faculty rank	Number of institutions replying	Number of staff members
Dean or head of major division	7	7
Head of department	8	9
Professor	8	12
Associate professor	6	7
Assistant professor	5	7
Instructor	2	3
Assistant	1	3
Lecturer	1	2

Seventeen institutions report a total number of 50 staff members engaged in these contacts and services. One would expect deans and department heads to be found in a table of this kind. It is rather surprising to find several institutions reporting many staff members in other faculty ranks spending their time in public contacts and services.

Another way of estimating professional alertness is to examine the number of staff members in commerce and business who are editors of publications. Facts on this point are presented in Table 26.

TABLE 26.—*Staff members in commerce and business who are editors of publications*

Faculty rank	Number of institutions replying	Number of staff members
Dean or head of major division	0	0
Head of department	2	2
Professor	4	7
Associate professor	1	1
Assistant professor	2	4
Instructor	0	0
Assistant	0	0
Lecturer	1	1

Four institutions report a total number of 15 staff members serving as editors of publications. Heads of departments, professors, associate professors, assistant professors, and lecturers all serve in this capacity.

Staff members of commerce and business in land-grant institutions make a fairly good showing in the field of productive scholarship and writing. Table 27 gives the data revealed by the questionnaire for the years 1923–1928.

TABLE 27.—*Staff members in commerce and business who have published books, bulletins, and articles in field of commerce and business during the years 1923–1928*

Faculty rank	Books		Bulletins		Articles	
	Research	Popular	Research	Popular	Research	Popular
1	2	3	4	5	6	7
Professors:						
Number of institutions replying	17	5	14	3	18	6
Number of staff members	42	12	30	8	57	11
Associate professors:						
Number of institutions replying	8	1	5	2	8	5
Number of staff members	9	3	8	4	10	6
Assistant professors:						
Number of institutions replying	8	4	8	1	9	3
Number of staff members	8	9	16	7	13	5
Instructors:						
Number of institutions replying	3	----	3	----	5	3
Number of staff members	4	----	3	----	8	9
Assistants:						
Number of institutions replying	2	----	----	----	----	----
Number of staff members	3	----	----	----	----	----
Lecturers:						
Number of institutions replying	1	----	1	----	2	2
Number of staff members	1	----	1	----	3	2
Total number of institutions replying	18	7	17	4	22	12
Total number of staff members	67	24	58	19	91	33

Staff members of almost every rank except assistants are producing books, bulletins, and articles.

Another part of the questionnaire was designed to reveal the extent to which staff members in commerce and business were engaged in research during 1927–28 upon full or part time. The results are shown in table 28.

TABLE 28.—*Staff members in commerce and business who were engaged in research during 1927–28 whole or part time*

Faculty rank	Number of institutions replying	Number of staff members
Dean or head of major division	4	4
Head of department	11	14
Professor	11	28
Associate professor	10	17
Assistant professor	16	29
Instructor	6	14
Assistant	2	4
Lecturer	1	1

Twenty-four institutions report a total of 111 staff members engaged in research during 1927–28 upon full or part time. Staff members of all ranks are included, thus indicating that both those in the lower as well as in the upper ranks are interested in research in commerce and business.

Table 29 shows the sources of supply of faculty members in land-grant institutions according to the institutions from which they received their highest degrees.

TABLE 29.—*Sources of supply of faculty members in land-grant institutions according to the institutions from which they received their highest degrees*

Institution	Number of land-grant institutions replying	Number of faculty members	Per cent of total number of faculty members
Ohio State University	4	48	12.7
Harvard University	17	34	9.0
Columbia University	15	28	7.4
University of Minnesota	8	24	6.4
University of Wisconsin	16	23	6.1
University of Chicago	10	21	5.5
University of Illinois	13	15	4.0
University of California	9	11	2.9
University of Michigan	6	10	2.6
Oregon Agricultural College	1	10	2.6
Iowa State College	2	9	2.4
University of Nebraska	2	8	2.1
Johns Hopkins University	6	7	1.8
Oklahoma Agricultural and Mechanical College	2	6	1.6
Cornell University	4	6	1.6
University of Iowa	5	6	1.6
Yale University	4	6	1.6
Other institutions	35	104	27.6
Total	37	376	100.0

Ohio State University heads the list as a source of supply. One institution is responsible, however, for 44 out of the 48 faculty members reported. Harvard stands second with 17 land-grant institutions reporting. Nine land-grant State universities provide sources from which land-grant institutions draw staff members, as may be readily seen from the table. A study of the complete data revealed by the questionnaire shows that it is quite a common practice for each land-grant institution to use faculty members who have received their highest degree from the institutions themselves. To the extent that this represents inbreeding the practice is open to serious criticism.

Thirty-five land-grant institutions report 104 faculty members from more than 50 other colleges and universities. Land-grant institutions do not recruit their faculty members from foreign universities. Only 4 faculty members out of the total of 376 reported by 37 land-grant institutions received their highest degrees from universities outside of the United States. One of these received his highest degree from the University of Frieburg, one from the University of Jena, one from the University of Leipzig, and one from the University of Lyons.

Table 30 provides data concerning the number of staff members in commerce and business who were engaged in extension teaching or other extension duties in 1927–28.

TABLE 30.—*Staff members in commerce and business who were engaged in extension teaching or other extension duties during 1927–28*

Faculty rank	Number of institutions replying	Number of teachers
Dean or head of major division	4	4
Head of department	7	9
Professor	11	16
Associate professor	7	12
Assistant professor	9	14
Instructor	10	20
Assistant	1	2

A total of 19 institutions reported 76 staff members engaged in these activities. The staff members as will be seen from the table are divided among all the faculty ranks, the largest numbers being in the lower ranks.

Any study of the administrative organization set up to handle commerce and business courses requires analyses of the duties of staff members. Tables 31, 32, 33, and 34 contain analyses of these duties. Table 31 contains the duties of the deans or heads of the major divisions of commerce and business pertaining primarily to the institutions as a whole. This table should be read as follows: The first duty in the table is entitled, "Assist the president in the discharge of his duties." Five institutions report that the dean has a major responsibility with respect to this duty, seven minor responsibility, three that he is responsible as head of a committee, and seven that he has joint responsibility with others.

TABLE 31.—*Duties of dean or head of major division of commerce and business pertaining primarily to the institutions as a whole*

Duties	Major responsibility	Minor responsibility	Responsible as head of committee	Joint responsibility with others
1	2	3	4	5
Assist the president in the discharge of his duties	5	7	3	7
Assist in the preparation of the general catalogue and announcements	13	4	1	5
Advise or assist in the preparation of the financial reports, budgets, etc	11	5	1	4
Advise in matters pertaining to honorary degrees for business men	5			3
Advise in the revision of courses of study not offered by the division of commerce and business	5	3	3	3
Administer students' loan funds for the institution	4	2	1	3

Table 32 analyzes the duties of staff members in commerce and business other than the dean pertaining primarily to the institution as a whole. This table should be read in the same way as Table 31. Study of this table will reveal that in a few institutions the secretary to the dean, heads of departments, committees made up of staff members, and individual staff members assist, in the various ways specified, in the performance of many duties pertaining to the institution as a whole.

TABLE 32.—*Duties of staff members in commerce and business other than dean pertaining primarily to institution as a whole*

Duties	Administrative assistant	Secretary to dean or head	Heads of departments	Committee	Individual members of staff
1	2	3	4	5	6
Assist in the preparation of the general catalogue and announcements	2	3	4	3	3
Advise or assist in the preparation of the financial reports, budgets, etc.	1	2	6	4	4
Advise in matters pertaining to honorary degrees for business men			1		
Advise in revision of courses of study not offered by the division of commerce and business	1	1	3	3	1
Administer student loan funds for the institution				1	2

Table 33 presents an analysis of the duties of deans pertaining primarily to the major division of commerce and business. In studying this table the major responsibility of deans for a large variety of activities becomes very evident.

Of 31 duties listed, 20 or more institutions report that deans have major responsibility for 11. From 10 to 20 institutions report that deans have major responsibility for 13 of the activities. The other columns indicate that in few institutions reporting do deans have minor responsibilities such as responsbility as heads of committees or joint responsibility with others for the 31 activities specified. Table 34 affords a similar analysis for staff members other than the deans. Heads of departments in several institutions participate in most of the activities specified. Only 8 institutions specified that heads of departments teach. Other interesting conclusions might be drawn from the table.

TABLE 33.—*Duties of dean pertaining primarily to major division of commerce and business.*

Duties	Major responsibility	Minor responsibility	Responsible as head of committee	Joint responsibility with others
1	2	3	4	5
Make annual and other reports on the work of the college, school, or division	23	4		
Make budget recommendations for the division	28	4		
Preside over divisional faculty meetings	22	3		
Supervise department heads	16	2		
Advise in or supervise the classroom instruction in the division	17	8		
Teach	25	5		
Exercise general oversight of building and general equipment of the division	18	6	1	
Approve or supervise the preparation and publication of studies and research reports of the division	5	5	1	6
Serve as medium of communication, for all official business of the college with other university authorities, students, and constituents	15	5	1	1
Conduct correspondence of the division	22	5		1
Assist in the preparation of the catalogue or announcements of the division	24	3		3
Approve secondary school credits for admission to college or major division of commerce and business	5			3
Oversee the registration of students in the division	24	4		3
Approve students term or semester programs of study	21	4	1	2
Oversee permanent scholastic records of students in the division	13	6	1	4
Approve applications for advanced standing of students in commerce and business	22	2		1
Construct or approve the schedule of class sections	15	7		5
Advise in the formulation or revision of entrance requirements for commerce and business curricula	15	3	1	7
Advise in the formulation or revision of graduation requirements of the commerce and business curricula	21	3	1	5
Direct or assist in the coordination of the work of the division with secondary commercial education	9	2	1	2
Assist in the coordination of the work of the division with other major divisions	19	6	1	6
Assist in the coordination of the work of the division with extension work in commerce and business	15	3		2
Assist in the coordination of the work of the division with graduate and research work in commerce and business	16	2		2
Oversee relations between faculty and students in the division	22	6		1
Direct studies of the intelligence, vocational interests, home conditions, etc., of the students of the division	4	1		3
Direct the vocational counseling of the commerce and business students	13	5	1	5
Deliver special lectures to commerce and business students regarding entrance into and promotion in business	11	5		2
Assist in selecting candidates for scholarships, prizes, etc	13	5	1	7
Administer student loan funds for the division of commerce and business	8	1	1	4
Placement of commerce and business students	1			
Conduct merchants institutes and institutes of banking	1			

TABLE 34.—*Duties of staff members other than dean pertaining primarily to major division of commerce and business*

Duties	Administrative assistant	Secretary to dean or head	Heads of departments	Committee	Individual members of staff
1	2	3	4	5	6
Make annual and other reports on the work of the college, school, or division		2	3		
Make budget recommendations for the division	1	1	5		1
Preside over divisional faculty meetings	1		3		
Advise in or supervise the classroom instruction in the division			4	1	
Teach			8		20
Exercise general oversight of building and general equipment of the division		2	3	1	
Approve or supervise the preparation and publication of studies and research reports of the division	1		4	3	2
Serve as medium of communication, for all official business of the college with other university authorities, students, and constituents	2	2	3		2
Conduct correspondence of the division	3	3	5		4
Assist in the preparation of the catalogue or announcements of the division	1	5	5	2	5
Approve secondary school credits for admission to college or major division of commerce and business			2		
Oversee the registration of students in the division	1	6	6	1	7
Oversee permanent scholastic records of students in the division	3	5	4		1
Approve students term or semester program of study	2	2	4	2	5
Approve applications for advanced standing of students in commerce and business	1		3	1	2
Construct or approve the schedule of class sections		1	6	2	5
Advise in the formulation or revision of entrance requirements for commerce and business curricula			4	4	2
Advise in the formulation or revision of graduation requirements for commerce and business curricula			4	4	6
Direct or assist in the coordination of the work of the division with secondary commercial education			1		3
Assist in the coordination of the work of the division with other major divisions		1	4	3	2
Assist in the coordination of the work of the division with the extension work in commerce and business	1		5	2	3
Assist in the coordination of the work of the division with graduate research work in commerce and business	1		4	5	5
Oversee relations between faculty and students in the division	1	2	2		3
Direct studies of the intelligence, vocational interests, home conditions, etc., of students of the division	2			1	2
Direct the vocational counseling of the commerce and business students	1		2	2	
Deliver special lectures to commerce and business students regarding entrance into and promotion in business			3		5
Assist in selecting candidates for scholarships, prizes, etc	1		4	3	4
Administer student loan funds for the division of commerce and business				2	1
Placement of commerce and business students	1				
Conducts merchants institutes and institutes of banking	1				

Another problem in the management of faculty personnel is that of the teaching load. It is apparent that a direct relation exists between the size of the work load carried by individual instructors and the cost of university instruction. Due to the rapid increase in student enrollments in the various universities of the United States, a decided pressure has been put on university administrators to so arrange the teaching loads that it will reduce the average cost of

instruction per student. A maladjustment of the teaching load has frequently resulted.

To determine the working load of staff members is one of the largest problems in the administration of educational work. In the past, and even the present, are many cases in which tradition, sentiment, rule of thumb, temporizing, compromise, and similar methods are dominant in determining the teaching load of a faculty member. So many factors enter that it is quite difficult to arrive at any one method that will stand all the tests, yet it is possible that a number may be stated that will be worthy of some practical application. Almost any method selected will be defective.

Dr. Leonard V. Koos, after much research with reference to these factors, arrived at the following conclusions:

(1) That the mode of presentation is an important factor. The lecture requiring more time than a recitation.

(2) That the subject taught is influential in determining one's teaching load.

(3) That elementary subjects require less time than advanced work. There is a striking difference between the time required for freshmen and sophomores as compared with juniors and seniors and the latter, in turn, as compared with graduate work.

(4) That the instructor's previous experience or inexperience with the work of the course is a real factor, as it naturally required more time upon the first presentation of the subject.

(5) That repetition in concurrent sections by the same instructor meant a lighter teaching load.

(6) That no conclusion could be reached with reference to the rank of the instructor. While some variation was noted, the rank of the instructor could not be stated as the determining factor.

(7) That the size of the class influences the teaching load and that the recognition which this factor should be given depends largely upon the written work required of the class.

There are two points of view from which the measurement of the actual working loads of faculty members in terms of time expended may be approached. First, and in many respects the best, the total actual time spent in the performance of his duties may be used. But human nature must be taken into consideration; it is difficult to secure accurate information, since the individual realizes that his future teaching load will be influenced by this report. Again, this method does not make any allowance for the variation in individuals. Second, and possibly the more generally accepted method, is to measure loads of faculty members for a particular part of their duties, such as meeting classes, as an index of the total service load.

One of the most common units employed by accrediting agencies for the measurement of teaching load is the "teaching hour." It represents one hour of lecture or discussion or one and one-half hours of instruction in the laboratory or quiz sections. The North Central

Association of Colleges and Secondary Schools has set the standard of 16 semester hours a week as the maximum teaching load. This unit finds its principal usefulness in determining the maximum teaching standards. Its defects are many, in that it fails to take cognizance of the many factors influencing the teaching load.

Still another unit of measurement is the "student clock hour." This unit represents one student under instruction in lecture, discussion, or weighted laboratory for at least 50 minutes each week. Thus, for purposes of comparison, the student clock hour is a rather satisfactory measure of average for a group or department or for a college.

Table 35 gives the teaching load, in student clock hours, of staff members in commerce and business in 36 land-grant institutions. The first column gives the number of staff members in each rank and total number for all institutions. The other columns contain the number in each rank carrying the teaching load of student clock-hours as specified by the column heading. Deans evidently teach as well as perform administrative duties. This confirms the results in Table 33, which gives 25 institutions reporting that deans or heads of the major divisions of commerce and business have major responsibility for teaching.

TABLE 35.—*Teaching load in student clock hours of staff members of commerce and business in 36 land-grant institutions*

Staff members	Number of staff members	Number of instructors with the following student clock-hour loads										
		Less than 100	101 to 200	201 to 300	301 to 400	401 to 500	501 to 600	601 to 700	701 to 800	801 to 900	901 to 1,000	1,001 or more
1	2	3	4	5	6	7	8	9	10	11	12	13
Dean	16	4	3	1	5	2		1				
Professor	70	6	8	16	16	10	4	2	1		2	5
Associate professor	55	2	7	7	17	9	6	3		2		2
Assistant professor	66	1	5	10	14	7	12	7	1	3		6
Instructor	77	2	8	15	21	12	9	2	1			7
Assistant	29	7	7	4	7	3	1					
Lecturer	10	2	3	1	2			1				1
Others	3				3							
Total	326	24	41	54	85	43	32	16	3	5	2	21
Per cent		7.36	12.58	16.56	26.07	13.19	9.82	4.91	.92	1.54	.61	6.44

The turnover of faculty personnel is of importance. Table 36 gives data on this point.

TABLE 36.—*Number of staff members who left division of commerce and business for any cause during the years 1925–1928*

Rank	1925–26		1926–27		1927–28	
	Number of institutions replying	Number of staff members leaving	Number of institutions replying	Number of staff members leaving	Number of institutions replying	Number of staff members leaving
1	2	3	4	5	6	7
Professor	8	10	4	4	5	5
Associate professor	5	5	4	4	4	4
Assistant professor	9	11	15	16	8	9
Instructor	10	16	11	21	11	21
Assistant	3	23	5	19	3	11
Lecturer	1	2	1	1	.....	.....

It will be seen that several institutions report staff members in all faculty ranks that have left the division of commerce and business during the years 1925–1928.

Arranged by years, 18 institutions report 67 staff members leaving in 1925–26; 24 institutions report 65 staff members leaving in 1926–27; and 20 institutions report 50 staff members leaving in 1927–28. Thirty-two institutions report a total of 184 staff members leaving during the three years under consideration. In Table 35, 326 staff members were reported by 36 institutions. This report was made for the year 1927–28. Since 20 institutions report 50 staff members leaving in this year, the percentage of turnover, assuming that 325 represented the total permanently on the pay roll, calculated on the basis of terminations would be 15 per cent.

The next matter to be considered in the management of faculty personnel is the improvement of instructional technique. Table 37 lists 14 activities looking toward this end. The various land-grant institutions were asked to check in the appropriate columns answers concerning these activities.

The table should be read as follows: Line one means that one institution reported that as a regular program it provided for individual reports on problems of instruction by staff members of commerce and business; 11 institutions report this as an occasional activity; 4 institutions report excellent results from this activity and 7 report worth-while results. A study of this table reveals the fact that many land-grant institutions have engaged in activities designed to assist in the improvement of instruction in commerce and business courses. For example, 14 institutions undertake as a regular program definite recognition of commendable work in class instruction by increased salary, rank, or commendatory public mention and 8 institutions report excellent results from this method. Ten institutions report divisional faculty or staff meetings devoted to improvement of instruction as a regular program, and 13 institutions as an occasional activity. Ten institutions report excellent results from this activity and 10 report worth-while results.

TABLE 37.—*Activities undertaken by the division of commerce and business which are specifically designed to assist in the improvement of instruction within the division*

Activity	Undertaken as—		Results as—		
	Regular program	Occasional activity	Excellent	Worthwhile	Unsatisfactory
1	2	3	4	5	6
Provide for individual reports on problems of instruction, by staff members in commerce and business	1	11	4	7	.....
Organize discussion groups within division of commerce and business	8	10	8	8	.....
Offer regular courses in commerce which are attended by members of the division	1	.....	1	.....	.....
Engage lecturers or outside speakers for service to members of the staff	3	11	4	9	.....
Provide for actual classroom visitation by qualified individuals	1	8	2	6	1
Provide for conference and consultations with outside experts on teaching and related problems in commerce and business	1	11	2	8	.....
Plan cooperative research among the various departments in commerce and business	4	6	2	5	.....
Development and practice of special methods of teaching appropriate to instruction in commerce and business (e. g., case method, etc.)	8	8	7	8	.....
Definite recognition of commendable work in class instruction, by increased salary, rank, or commendatory public mention	14	6	8	9	.....
Liberal provision for the publication (mimeographed or printed) of materials involving worth-while study by the teacher	7	7	5	6	1
Encouragement by administative officers of experimentation with different types of instructional organization, e. g., special type courses, etc	5	6	3	6	1
Liberal provisions for commerce and business staff participation in the formulation of divisional instructional policies	7	7	6	7	.....
Divisional faculty or staff meetings devoted to improvement of instruction	10	13	10	10	.....
Approval of commerce and business textbooks	12	4	5	10	1

Table 38 shows the difficulties of the case method as checked by land-grant institutions. While each land-grant institution was asked to check the importance of these difficulties if the case method was used in commerce and business, the various institutions were inclined to check each difficulty whether the case method was used or not. In other words, the questionnaire does not reveal how many institutions use the case method. Four institutions report the difficulty in arriving at basic principles from specific cases very important; 7 institutions, important; and 6 institutions, least important. The largest number of institutions checking any one difficulty checked as very important the shortage of good case material that is well organized.

TABLE 38.—*Difficulties of the case method as checked by land-grant institutions*

Difficulty	Very important	Important	Least important
1	2	3	4
Difficulty in deriving basic principles from specific cases	4	7	6
Students' lack of general background	7	6	3
Students' lack of business experience	7	5	4
Members of staff do not have sufficient business experience	1	6	8
Requires too much time to cover a given unit of instruction	6	6	5
Requires too much of the time of the instructor to collect and organize case material	3	3	5
Shortage of good case material that is well organized	8	4	4
Difficult for students to evaluate various factors in the cases	7	6	3
Complexity of certain types of cases	6	6	5
Difficult for staff members to summarize factors in the case	2	4	9

Table 39 gives the advantages of the case method as checked by land-grant institutions. An appreciable number of institutions checked as very important all the advantages listed in the table. A very limited number of institutions checked these advantages as least important. Apparently the land-grant institutions that answered this question at all are of the opinion that the advantages of the case method outweigh the disadvantages.

TABLE 39.—*Advantages of the case method as checked by land-grant institutions*

Advantage	Very important	Important	Least important
1	2	3	4
Gives student command over new situations	7	5	1
Encourages analysis of situations by students	12	5	1
Encourages synthesis by students	10	0	----
Requires that students evaluate all factors	7	7	----
Teaches students to draw conclusions	13	3	1
Arouses interest	8	6	3
Encourages discussion	9	7	2
Holds students in school for graduate and research work	----	2	8
Encourages close contact of the staff members with current business problems	11	3	2

Another matter involving instructional technique concerns the methods and results of efforts undertaken to avoid or reduce undesirable duplication of subject matter in commerce and business courses. Table 40 gives the facts in this connection.

Fifteen institutions leave the matter of duplication entirely or largely to the initiative of teachers of commerce and business. An equal number of institutions require the submission of syllabi or course outlines to the head of department. Eleven institutions require the submission of syllabi or course outlines to some other authority or agency. Three institutions report excellent results, six average results, and two poor results from leaving the matter of duplication entirely or largely to the initiative of individual staff members. Seven institutions report excellent results and four average results from the submission of syllabi or course outlines to heads of departments.

TABLE 40.—*Methods and results of efforts undertaken to avoid or reduce undesirable duplication of subject matter in commerce and business*

Method	Number reported	Results		
		Excellent	Average	Poor
1	2	3	4	5
Left entirely or largely to initiative of teachers of commerce and business	15	3	6	2
Submission of syllabi or course outlines to:				
Head of department	15	7	4	
Other authority or agency	11	7	2	

Some institutions say that they have little or no duplication of subject material in commerce and business courses. Others say that any duplication is eliminated by conferences between the head of department and his staff. One institution reports a course-of-study committee designed to prevent duplication. Another institution reports that the catalogue committee reports on duplication.

Chapter V.—Facilities

In addition to the organization of commerce and business, including the management of faculty personnel, buildings and equipment are important as mechanisms for meeting the needs of higher business education. The questionnaire contained several items on this point. Twenty-one institutions replied that they were using one building or a part of one building with the total capacity of the buildings ranging from 11 to 80 rooms. Seven institutions replied that they were using two or more buildings with the total capacity of the buildings ranging from 20 to 216 rooms. Commerce and business except in seven or eight institutions where there are special commerce buildings share quarters with other departments. Another way to determine the building space devoted to commerce and business is to study the number of rooms devoted exclusively to commerce and business.

Sixteen institutions devote from 1 to 5 rooms exclusively to commerce and business; 11 institutions from 6 to 11 rooms; and 7 institutions 12 rooms or more. Among the latter, 1 institution reports 53 rooms and another reports 71 rooms used exclusively by commerce and business.

Twenty-five land-grant institutions report 203 lecture and recitation classrooms utilized exclusively for commerce and business. Twenty-one institutions report 178 lecture and recitation classrooms utilized both for commerce and business and for instruction in other classes. Table 41 gives the rating of lecture and recitation classrooms utilized for commerce and business.

TABLE 41.—*Rating of lecture and recitation classrooms utilized for commerce and business*

Rating factors	Excellent	Good	Fair	Poor
	2	3	4	5
Total capacity in relation to present needs	5	11	10	9
Location and connection	5	20	7	2
Construction and finish, shape, appearance of walls, ceiling, and blackboards	5	13	10	6
Furniture and equipment	6	8	13	7
Heating and ventilation	7	17	10	2
Cleanliness and neatness	7	15	13	1
Water-supply system	8	13	6	5
Storage service	6	7	7	8
Electric-service systems (bells, telephone, clocks, call systems, etc.)	6	11	10	6

It may readily be seen that many institutions report each of these factors either as excellent or good. There are, however, also many institutions reporting on each factor as fair.

Table 42 provides data on the size and value of equipment and furniture of commercial laboratories, conferences, and special rooms other than offices.

TABLE 42.—*Size and value of equipment and furniture of commercial laboratories, conference, and special rooms other than offices*

Type of rooms	Student capacity		Value of equipment and furniture	
	Institutions reporting	Students	Institutions reporting	Value
1	2	3	4	5
Accounting and statistical laboratories	20	1,648	14	$31,896
Typewriting, shorthand, and office devices	6	529	6	30,171
Seminar and library rooms	5	160	2	800
Conference and assembly rooms	3	525	3	2,250

It will be seen that 20 institutions report accounting and and statistical laboratories with total student capacity of 1,648. Fourteen of these twenty institutions reported an appraised value of these laboratories of $31,896.

The average capacity of accounting and statistical laboratories is 82.2 students. The average capacity for typewriting, shorthand, and office devices rooms is 88 students. The average capacity for seminar and library rooms is 32 students. The average capacity for conferences and assembly rooms is 262.5 students.

Thirty-six institutions report the use of offices by commerce and business staff members. They report a total of 188 offices, or 5.2 offices per institution. Eighteen institutions checked office space for each staff member as satisfactory; 17 checked office space for each staff member as unsatisfactory; 7 institutions checked office equipment excellent; 21 institutions satisfactory; and 8 unsatisfactory. Fifteen institutions checked the convenience of location of offices and their proximity to classrooms as excellent, 11 good, 8 fair, and 1 poor.

The land-grant institutions were asked to report on the outstanding needs of commerce and business for buildings.

Eight institutions reported definitely the need for new buildings especially adapted to and equipped for commerce and business. One institution reports the need for completing and equipping a special commerce building already constructed. Six institutions report needs for library, reading, and seminar rooms. Eight institutions report needs for better and more adequate accounting and statistical laboratories. Fourteen institutions exclusive of those reporting the need for a new building report a need for more and better-equipped lecture and recitation rooms. One institution reports the need for student club quarters. Five institutions report the need for assembly and conference

rooms, and five institutions report the need for additional office space. Practically all the institutions reporting indicate need of equipment of one type or another.

Library facilities are very important in connection with the facilities for commerce and business. The questionnaire on commerce and business included items concerning magazine and bulletin services only. Table 43 provides information as to the periodical and bulletin services in economics.

TABLE 43.—*Magazine and bulletin services in economics available for commerce and business courses in general or divisional libraries*

Periodical and bulletin service	Number of institutions that were regular subscribers in—	
	1922–23	1927–28
The American Economic Review	26	35
The Quarterly Journal of Economics	26	35
The Journal of Political Economy	24	34
The Political Science Quarterly	26	34
The Annals of the American Academy of Political and Social Science	26	36
Yale Review	17	24
The Economic Journal (London)	13	20
The Economic Review (London)	4	10
Revue d'Economie Politique	3	4
Journal des Economistes	2	4
The Economic World	3	8

From 1922–23 to 1927–28 there has been an appreciable increase in the number of institutions taking the various economic journals. For example, in 1922–23 only 26 institutions were regular subscribers to the American Economic Review. In 1927–28, 35 institutions were regular subscribers. The same is true with regard to the Quarterly Journal of Economics. The other journals show more or less similar increases. Few land-grant institutions are regular subscribers to foreign economic periodicals.

Table 44 includes information concerning periodical and bulletin services in statistics. Again, there is an appreciable increase from 1922–23 to 1927–28 in the number of institutions regularly subscribing for these periodicals and services.

TABLE 44.—*Magazine and bulletin services in statistics available for commerce and business courses in general or divisional libraries*

Periodical and bulletin service	Number of institutions that were regular subscribers in—	
	1922–23	1927–28
Review of Economic Statistics	3	14
The Publications of the American Statistical Society	16	24
Statistical Service of Harvard University	8	17
The Journal of the Royal Statistical Society (London)	6	9
Journal de Societe de Statistique de Paris		1

Table 45 gives data on periodicals and bulletin services in banking and finance. Again there is an appreciable increase from 1922–23 to 1927–28 in the number of institutions subscribing to banking and finance periodical and bulletin services. It is rather interesting to observe that more institutions in 1927–28 were regular subscribers to the Commercial and Financial Chronicle and the Bankers' Magazine than any other periodical. The magazine with the next largest number of subscriptions in 1927–28 was the Analist. Only 10 institutions subscribe to Bradstreet.

TABLE 45.—*Magazines and bulletin services in banking and finance available for commerce and business courses in general or divisional libraries*

Periodical and bulletin service	Number of institutions that were regular subscribers in—	
	1922–23	1927–28
The Analist	16	26
Business Digest	5	7
The Commercial and Financial Chronicle	16	30
The Bankers' Magazine	12	30
Bradstreet's	5	10
The Economist	10	14
The Journal of the Institute of Bankers	2	4
Journal of the American Bankers' Association	6	13
Publications of the Investment Bankers' Association of America	6	11
Wall Street Journal	5	13

Table 46 gives the same information concerning industry and commerce. The various institutions have made the same sort of progress in this field from 1922–23 to 1927–28 as in the preceding fields.

TABLE 46.—*Magazine and bulletin services in industry and commerce available for commerce and business courses in general of divisional libraries*

Periodical and bulletin service	Number of institutions that were regular subscribers in—	
	1922–23	1927–28
Administration	10	13
The American Exporter	3	6
Bulletins of the Taylor Society	6	12
Commerce Reports (Department of Commerce)	22	33
The Credit Monthly	4	5
Exporters' Review	1	1
Factory	10	17
Foreign Trade Review	3	6
Bulletins of the American Management Association	3	10
Magazine of Business	15	26
Management	4	13
Management Engineering	7	13
Merchants' Trade Journal	1	1
The Nation's Business	15	28
Personnel Journal	3	8
Harvard Business Review	13	31
University Journal of Business	5	12
The World's Markets	1	2
Reports and Decisions of the Interstate Commerce Commission	16	25

Both in 1922–23 and in 1927–28 more institutions were subscribers to the Commerce Reports, the Magazine of Business, The Nation's Business, Harvard Business Review, and Reports and Decisions of Interstate Commerce Commission than to any other periodicals or services listed.

Table 47 contains facts as to periodical and bulletin services in advertising, accounting, and trade and labor. Progress in each of these fields is seen from 1922–23 to 1927–28.

TABLE 47.—*Magazine and bulletin services in advertising, accounting, trade and labor, available for commerce and business courses in general or divisional libraries*

Periodical and bulletin service	Number of institutions that were regular subscribers in	
	1922–23	1927–28
Advertising:		
Advertising and Selling	8	15
Printers' Ink	15	28
Judicious Advertising	3	2
The American Printer	1	4
Accounting:		
The Accounting Review	1	13
Certified Public Accountant	7	16
The Journal of Accountancy	16	26
Trade and Labor:		
Publications of the American Association for Labor Legislation	16	24
Monthly Labor Review	21	31
American Federationist	6	17
American Labor Year-Book	8	14

More institutions subscribed to Printers' Ink in the field of advertising, and more institutions subscribed to the Journal of Accountancy in the field of accounting, and more institutions subscribed to the Monthly Labor Review and publications of the American Association for Labor Legislation in the field of labor than any of the other services or periodicals.

Table 48 contains data on the annual budget of the divisions of commerce and business in land-grant institutions for the years 1923 to 1928. As may be observed there are three major items in the table: Salaries and wages, operation and maintenance, and capital outlay. The table is almost self-explanatory.

Average salaries and wages have increased from $31,224 to $37,835, or an increase of 21.9 per cent. Funds for operation and maintenance have increased from an average of $28,074 to $81,080, or an increase of 188 per cent. Average funds have increased from $33,256 in 1923–24 to $42,081 in 1927–28, or an increase of 30.4 per cent.

TABLE 48.—*Annual budget of the division of commerce and business in land-grant institutions for the years 1923–1928*

Budget items	1923–24		1924–25		1925–26		1926–27		1927–28	
	Number institutions reporting	Amount	Number institutions reporting	Amount	Number institutions reporting	Amount	Number institutions reporting	Amount	Number institutions reporting	Amount
1	2	3	4	5	6	7	8	9	10	11
Salaries and wages:										
Total	19	$593,258	22	$697,379	23	$792,416	24	$881,115	27	$1,021,547
Average		31,224		31,699		34,453		36,713		37,835
Operation and maintenance:										
Materials and supplies, including freight, travel, repairs, etc.—										
Total	18	28,074	19	34,539	22	47,841	24	72,501	25	81,980
Average		1,560		1,818		2,175		3,021		3,279
Capital outlay:										
Equipment, replacements—										
Total	4	5,146	5	34,511	6	20,698	7	10,345	7	16,859
Average		1,287		6,902		3,450		1,478		2,408
Equipment (new)—										
Total	6	2,611	8	3,678	8	3,849	8	14,287	12	15,811
Average		435		460		481		1,786		1,318
Total	19	631,870	21	764,366	23	842,364	24	959,607	27	1,136,197
Average		33,256		36,384		36,624		39,983		42,081

Chapter VI.—Offerings and Services

This survey has shown thus far that land-grant institutions have failed to discover the needs for higher business education. They have also failed to analyze commerce and business students—the raw materials of higher business education. An examination of the mechanisms set up by land-grant institutions to handle commerce and business students has been made. In Chapter VI the offerings of land-grant institutions to meet the needs of higher business education will be examined.

These offerings will be studied under three heads. The first point to be considered concerns internal offerings; that is, offerings in commerce and business to individual students and to the institution itself. Offerings to the individual will be discussed in terms of curricular and noncurricular offerings. Offerings to the institution itself will be discussed in terms of general economic and business services which the division of commerce and business may render the institution. The second head involves external offerings. Here commerce and business will be examined in terms of public and private contacts and in terms of the correlation of commerce and business offerings with other institutions in the territories served by land-grant colleges and universities. Under the third head an examination will be made of internal and external offerings in terms of the institution as a whole particularly with reference to their correlation.

Following the foregoing outline internal curricular offerings to individual students will first be examined. This involves at once a study of the content of higher business education and leads to curriculum making.

There are many methods of formulating the curriculum. Land-grant institutions have followed to a greater or lesser extent all of the known methods. However, the method that it has followed most is one of imitation. When land-grant institutions have decided to engage in instruction in commerce and business, those responsible for formulating policies have quite frequently assembled the catalogues of other institutions and apparently copied therefrom. What courses other institutions required they required. What courses were elective they made elective. If other institutions set up group requirements, they set up group requirements.

While land-grant institutions have copied each other they tend to copy more the privately endowed institutions and nonland-grant State universities. This is particularly true of land-grant State universities when they have initiated schools or colleges of commerce and business. Instead of following the spirit of the Morrill Act and engaging in pioneering and experimentation to meet State situations they have frequently taken the line of least resistance and imitated.

Land-grant institutions can perform only a part of the task of business education. There are commercial high schools, private business colleges, continuation schools, corporation schools, and collegiate schools of business in nonland-grant and privately endowed institutions. All of these are engaged in curriculum making and are participating in business education. Instead of specialization, land-grant institutions as well as all other agencies have tended to cover the whole field. Consequently efforts have been duplicated more than is desirable.

Land-grant institutions have had an excellent opportunity to achieve distinction and to carry out the intent of the Morrill Act, namely, to provide "a liberal and practical education for the industrial classes." However, instead of blazing new trails in business education, they traveled the old trails. They were more anxious to do what other institutions were doing, particularly nonland-grant State universities, than to experiment and achieve new results.

Table 1 has already shown that relatively few land-grant institutions recognized the function of land-grant colleges to serve business. They established offerings in commerce and business because of the favorable attitude of the division of economics toward the organization of such courses and more because of superficial contacts of the representatives of the institution with business men and prospective students than because of a desire to put into effect the purposes of the Morrill Act. They made no comprehensive studies of the present and probable future trends of higher business education. They were merely followers and not leaders.

It is worth while in this connection to review Table 6 also. From that table it will be seen that land-grant institutions have set up pretty generally curricular offerings extending over a period of four years. Their objectives have been to provide a general education, to assure a better understanding of the relationships of business and the communities, to provide a functional background in business subjects for students of other major divisions, such as agriculture and engineering, and to provide education and training for positions in minor and major executive work and research work extending generally over a period of four years.

The various land-grant institutions were asked to indicate whether or not they offered any 1, 2, or 3 year nondegree short curricula in commerce and business.

Thirty-six institutions replied in the negative to this question; 3 replied in the affirmative; 1 reported that it formerly had a 2-year short secretarial curriculum but had discontinued it at the end of 1927. The three institutions that replied in the affirmative were asked to give the name of the curricula and the name of the diploma or certificate granted, indicate the types of students for whom the curricula were designed, state the specific purposes of the curricula, and indicate whether or not full credit, part, or no credit was granted toward a bachelor's degree to students taking courses in these short curricula. The names of these short curricula are generally "secretarial training," "training in secretarial science," or "stenographic training." In one of the institutions a certificate in secretarial science is awarded at the end of two years. In another institution a commercial certificate is awarded at the end of two years. In another institution a commercial certificate is awarded at the end of one year and a diploma at the end of two years. Admission requirements for these curricula is the same as to the curricula four years in length.

The types of students appealed to are those who look forward to working their way through college. The specific purposes of the curricula are to prepare students for general office work or to produce bookkeepers or stenographers as quickly as possible. Three institutions report that full credit on courses in these short curricula are granted toward a bachelor's degree.

Table 49 gives the number of students pursuing curricula in land-grant institutions leading to the first degree. This table also affords data as to the types of curricula. It will be seen from this table that the curriculum in general business contains the largest number of students; accounting, advertising, and banking and finance are next in order in so far as the total number of students is concerned. Either many land-grant institutions do not offer the various types of curricula listed except general business or they failed to answer the questionnaire accurately. The data in this table are very meager except for the curricula in general business. Many institutions merely answered "No data."

TABLE 49.—*Number of students pursuing curricula in land-grant institutions leading to first degree*

Curricula	Number of institutions replying	Total number of students
General business	20	2,924
Accounting	7	510
Advertising	3	394
Banking and finance	6	329
Commercial law	1	3
Commercial teacher training	2	49
Foreign trade and service	4	104
Insurance	2	25
Manufacturing	1	10
Merchandising, selling, and store management	5	128
Organization and management	3	33
Personnel management	2	186
Secretarial training	4	200
Transportation	1	3
Others (unspecified)	7	59

Land-grant institutions were asked to indicate the major divisions in which the degree was granted for the several curricula in commerce and business leading to the first degree. Two institutions reported that the degree is granted in agriculture; one reports that the degree is granted in engineering; seven report that their curriculum in teacher training is granted both in the teacher-training division and in the commerce and business division. A number of institutions report that the degree is granted in the college of arts and sciences. For the several curricula the degree is reported by more institutions to be granted in the division of commerce and business than in any other division.

An attempt was made in the questionnaire to secure data concerning the number of students who were minoring in the various curricula in commerce and business although majoring in such divisions as agriculture, engineering, home economics, teacher training, and arts and sciences. No institution was able to furnish the figures.

Table 50 gives the average minimum number of semester hours' credit required for the completion of curricula in commerce and business in land-grant institutions leading to the first degree.

The table should be read in the following fashion: Reading from left to right, beginning with the line entitled "general business": 25 institutions reported an average of 132.1 semester hours' credit in all subjects for the completion of the curriculum in general business; 19 institutions report 45.3 as the average minimum number of semester hours' credit required in arts and science, excluding economics, for the completion of the curricula in general business; 19 institutions report 41.7 as the average minimum number of semester hours' credit required in commerce and business, excluding economics, and so on.

This table warrants careful scrutiny. It will be seen that the average minimum number of semester hours' credit in all subjects required for the completion of all the various curricula ranges from 120 to 139. There seems to be no uniformity among the various curricula in so far as the number of semester hours' credit in all subjects required for the completion of the various curricula is concerned. There is considerable variation in the average minimum number of semester hours' credit required in arts and science, excluding economics. The range is from 25.6 in case of the curriculum of insurance to 58 in the case of journalism. There is also a wide range in the average minimum number of semester hours' credit required in commerce and business, excluding economics. The range is not nearly so great in the average minimum number of semester hours' credit required in economics if the one institution reporting an average of five in case of public service and civic work is excluded. The range again is very great in case of the average minimum number of semester hours required in technical subjects. Although the number of institutions reporting on this item is not very large, the average minimum number of semester hours required in electives in all subjects varies widely ranging from 9.6 in case of secretarial training to 32.1 in other curricula "unspecified."

TABLE 50.—*Average minimum number of semester-hours' credit required for completion of curricula in commerce and business in land-grant institutions leading to first degree*

Curricula	All subjects		Minimum number of semester hours' credit required in arts and sciences, excluding economics		Minimum number of semester hours' credit required in commerce and business, excluding economics		Minimum number of semester hours required in economics		Minimum number of semester hours' credit required in technical subjects (agriculture, etc.)		Minimum number of semester hours required in electives in all subjects	
	Number institutions replying	Average	Number institutions replying	Average	Number institutions replying	Average	Number institutions replying	Average	Number institutions replying	Average	Number institutions replying	Average
1	2	3	4	5	6	7	8	9	10	11	12	13
General business	25	132.1	19	45.3	19	41.7	19	17.4	5	15.8	16	25.6
Accounting	12	130.0	10	37.7	9	60.0	10	15.1	4	14.2	7	22.4
Advertising	6	132.5	5	30.8	5	58.8	5	13.8	3	17.0	4	27.2
Banking and finance	10	131.7	9	35.7	9	55.6	9	13.3	4	13.5	6	25.0
Commercial law	2	139.0	2	36.0	2	47.0	2	13.0	2	27.0	2	19.0
Commercial teacher training	7	131.8	6	34.6	6	51.1	6	12.0	5	17.6	5	23.0
Foreign trade and service	4	127.0	3	46.0	2	34.0	2	17.0	1	29.0	1	16.0
Insurance	4	130.5	3	25.6	3	56.3	3	12.0	3	18.6	2	20.5
Journalism	2	128.0	2	58.5	2	34.5	1	21.0	1	15.0	----	----
Manufacturing	4	129.5	4	49.0	3	46.0	4	17.7	4	16.7	4	11.3
Merchandising, selling, and store management	10	131.7	9	36.5	9	55.2	9	12.5	4	13.5	6	26.6
Organization and management	6	131.3	3	27.6	4	55.7	4	12.7	3	23.3	2	22.0
Personnel management	3	129.0	2	27.5	2	55.0	2	16.2	2	7.2	1	16.0
Public service and civic work	1	120.0	1	55.0	----	----	1	5.0	1	31.0	1	29.0
Realty	1	135.0	1	40.0	1	67.0	1	12.0	1	7.0	----	----
Secretarial training	8	115.8	4	43.0	5	51.8	5	11.0	4	29.5	3	9.6
Transportation	4	132.3	1	38.0	1	60.0	1	12.0	----	----	1	28.0
Others (unspecified)	11	120.6	12	34.3	11	40.3	11	16.4	7	21.4	7	32.1

Table 51 is arranged to show the major divisions in which courses in economics or in commerce and business are offered.

TABLE 51.—*Major divisions which offer courses in economics or in business and commerce*

Major division	Within their respective divisions		In cooperation with the division of commerce and business	
	Economics	Commerce and business	Economics	Commerce and business
1	2	3	4	5
Agriculture	17	4	13	9
Engineering	4	1	11	10
Home economics	7		5	2
Teacher training	1	2	5	5
Arts and sciences	15	8	9	5
Adult education			1	1
Research and graduate work	7	2	10	8

In 29 institutions registration of students whose major field of study is commerce and business is required in the division of commerce and business. In 10 institutions registration in the division of commerce and business is not required. The latter institutions were asked to estimate the percentage of students whose major field of study was in commerce and business but who were registered in other major divisions.

One institution reports 10 per cent registered in agriculture, 40 per cent in engineering, 5 per cent in home economics, 15 per cent in teacher training, 15 per cent in arts and sciences, and 15 per cent in architecture and veterinary medicine. One institution reports 10 per cent in teacher training, 20 per cent in arts and sciences, and 70 per cent in commerce and business. One institution reports 90 per cent in agriculture, 3 per cent in engineering, 3 per cent in home economics, and 3 per cent in teacher training. One institution reports 10 per cent in arts and sciences and 90 per cent in commerce and business. Five institutions report 100 per cent in arts and sciences. One institution reports 25 per cent in arts and sciences and 75 per cent in commerce and business. One institution reports 100 per cent in commerce and business. One institution reports 10 per cent in teacher training and 90 per cent in commerce and business.

Table 52 shows specific subjects required of students majoring in commerce and business and the objectives in pursuing these subjects.

TABLE 52.—*Specific subjects required of students majoring in commerce and business and objectives in pursuing these subjects*

Required subjects in commerce and business	Number institutions requiring work in different years					Average number semester hours of credit granted	Objectives		
	Freshman	Sophomore	Junior	Senior	Graduate		Vocational guidance	Vocational training	Tool subject for interpretation of business data and relationships
1	2	3	4	5	6	7	8	9	10
Orientation course	13	3	.....	.....	.....	4.8	7	.....	7
Elementary economics	5	32	2	.....	.....	5.6	3	3	32
Accounting	6	26	11	3	1	7.17	6	18	18
Business statistics	.....	6	16	8	1	3.46	2	3	23
Advanced economics	.....	2	8	17	1	7.38	3	2	13
Business policies	1	1	5	12	.....	6.16	3	1	6
Others	2	6	10	8	6	4.6	7	11	16

Required subjects not listed by Table 52 vary widely. Some of the subjects are economic geography, business correspondence, salesmanship, investments, business law, marketing, corporation finance, money and banking, and business cycles.

Land-grant institutions were asked to indicate whether or not commerce and business was offered as a major, a minor, or a second or related minor. Thirty-eight institutions answered that commerce and business was offered as a major. Twenty institutions answered that it was offered as a minor and one institution answered that it was offered as a second or related minor.

Regulations governing admission to the 4-year curricula in commerce and business are the same in all respects in 31 institutions as the regulations for admission to the freshman class of the institution as a whole. In other words, students entering the 4-year curricula in commerce and business must meet the same requirements in 31 institutions as freshman registering for other curricula in the institution. Five institutions reported that the regulations governing admission are not the same as for the freshman class of the institution as a whole.

One of these institutions reports that the school of commerce requires only two years of foreign language whereas the college of liberal arts under which the school of commerce is organized, requires four units in foreign language. Another institution reports that general admission requirements of a standard State college is 10 academic and 5 free elective units whereas the school of commerce requires 8 academic units and 7 free electives. Likewise, geometry is not required in the school of commerce whereas it is required in the other divisions. The third institution specifies one year of high-school bookkeeping for entrance to commerce and business, whereas such requirement does not apply for the other divisions of the institution. The fourth institution reports that entrance requirements vary between the various colleges of the university. The report of the fifth institution is not clear. It seems that one unit of mathematics is required for commercial engineering but that this unit is waived for business administration.

Table 53 gives data concerning the average maximum number of high-school units in commercial subjects accepted in fulfillment of the entrance requirements of the division of commerce and business or of the major division in which commerce and business is organized.

TABLE 53.—*Average maximum number of high-school units in commercial subjects accepted in fulfillment of entrance requirements of the division of commerce and business or of the major division in which commerce and business is organized*

Subject	Accredited high schools		Private business colleges	
	Number of institutions replying	Average maximum number of units	Number of institutions replying	Average maximum number of units
1	2	3	4	5
All courses in commerce and business	26	4.3	1	2.0
Shorthand	25	1.5	2	1.0
Typewriting	24	1.3	2	1.0
Commercial arithmetic	22	.8	1	.5
Banking or accounting	25	1.5	2	1.0
Commercial law	19	.8	1	.5
Office practice	6	1.0		
Commercial or economic geography	23	.8	1	.5
Industrial or economic history	14	1.3		
Economics	22	.9	1	1.0
Business English	11	1.0	1	.5

A study of this table will reveal that 26 institutions allow an average maximum of 4.3 units from accredited high schools for all courses in commerce and business; 25 institutions allow an average maximum number of 1.5 units in shorthand; and 24 institutions, 1.3 units in typewriting. Other credits allowed from accredited high schools may be seen from the table. In general, land-grant institutions accept credits on commercial subjects in fulfillment of entrance requirements of the division of commerce and business or of the major division in which commerce and business is organized.

A small number of land-grant institutions allow entrance credits presented from private business colleges. The amount of credit allowed, however, and the number of institutions involved are relatively insignificant.

Thus far this chapter has dealt with the curricular offerings for individual students. The results of the questionnaire have been given to show the extent to which land-grant institutions have made provisions for commerce and business students. Noncurricular offerings are also worthy of consideration.

By noncurricular offerings is meant provision made by the division of commerce and business for student activities outside the classroom.

Campus activities of all students, including students of commerce and business, are considered elsewhere by this survey of land-grant colleges and universities.[1] Attention here will be devoted to two topics only: First, honor societies and fraternities, and, second, student publications.

Land-grant institutions were asked to state how many national honorary commercial societies and national professional commercial fraternities and sororities have local chapters at their institutions. Twenty institutions replied that there were no such honor societies. Seventeen reported the existence of such honor societies, 13 of which established chapters during the past five years.

Local commercial clubs have been important organizations in a number of institutions where higher business education has been provided. The following list gives information concerning local commercial clubs in land-grant institutions:

	Yes	No
Do you have a local commerce club for students majoring in commerce and business?	24	16
If so, does your institution provide the club rooms?	13	11
Are membership fees required?	14	10
Is a member of the staff of commerce and business the adviser for the club?	23	1
Does the club hold professional meetings?	21	2
Does the club hold social meetings?	22	1
Does the club have adequate reading-room facilities?	8	16

Twenty-four land-grant institutions have local commerce clubs for students majoring in commerce and business. Sixteen institutions do not have such a club. Thirteen institutions report an average of $2.46 for annual membership dues. These dues range from 50 cents to $10. One institution has annual membership dues of $10 and another institution has membership dues of $6. Three institutions report the organization of these clubs prior to 1919. All the other institutions report the organization of these clubs since 1919.

An attempt was made to discover the extent to which periodicals, devoted primarily to business and business occupations and published directly or indirectly by the division of commerce, had been established. Twenty-nine institutions reported no such periodicals. Four institutions reported periodicals. These institutions were the University of Idaho, Pennsylvania State College, Ohio State University, and the University of Minnesota.

In addition to internal curricular and noncurricular offerings, an attempt was made to secure information as to the assistance rendered by the division of commerce and business in the form of general

[1] See Vol. I, Part VI. Student relations and welfare.

economic and business services. The following question was asked all land-grant institutions: "Has the division of commerce and business assisted in installing new significant improvements in the business organization or administration of the institution during the past three years?" Nine institutions answered in the affirmative and 30 institutions answered in the negative. The division of commerce and business in the majority of land-grant institutions apparently does not render any general economic and business services to the institution itself.

The nine institutions replying in the affirmative specify a variety of services. The extent of these services is indicated by the following comments: "Head of accounting department worked out plans of accounting records for the university"; "Dean directed a study of costs of registrar's office and recommended the reorganization of that office, the recommendation was approved and the reorganization of the office of the registrar was largely the result"; "Professor of accounting installed system of records and audits in the extension division"; "Is playing a leading rôle in the consideration of a suitable retiring allowance system"; "Assistance has been rendered the administration in securing adequate financial support of the institution"; "Auditing student organization"; "Chairman of accounting department made assistant to president, has large accounting and statistical responsibility"; "College of commerce office organization plan copied by new group of all languages department"; "General contributions to improve administration through dean as ex officio member of the university administrative council"; "Revised business regulations of the university with good results"; "Participating in organization of general extension division"; "Instructor in charge of accounting has advised concerning system for cooperative dairying"; "Assisted in the initiation of a budget"; "Division of history and politics and sociology has been removed from the department of business administration and business administration has become a separate business school with three divisions, viz, economics, business administration proper, and secretarial sciences."

In addition to service rendered through curricular and noncurricular activities and by means of business assistance, land-grant institutions should have provided assistance outside the walls of the institution itself. These external offerings should have taken the form of general economic and business services rendered to public and private agencies.

Table 54 provides information concerning general economic and business services rendered by land-grant institutions to commercial and industrial organizations in 1927–28. Reading from left to right beginning with the first line "Furnishes bulletins and other publications," 3 institutions have served retail enterprises; 2, department stores; 2, wholesale concerns; 2, jobbers and commission houses; and so on. The use of "0" in Tables 54, 55, 56, 57, 58, 59, and 60 indicates no land-grant institutions reporting on the item involved. Table 54 shows, as a study of it will reveal, that very few land-grant institutions have rendered general economic and business services to commercial and industrial organizations.

TABLE 54.—*Number of land-grant institutions rendering general economic and business services to commercial and industrial organizations in 1927–28*

Nature of services rendered	Retail	Department store	Wholesale	Jobber and commission	Banking and brokerage	Real estate and insurance	Manufacturing	Public utilities	Transportation	Professional	Farming	Others
1	2	3	4	5	6	7	8	9	10	11	12	13
Furnishes bulletins and other publications	3	2	2	2	1	2	0	1	0	1	3	2
Conducts surveys, audits, etc	2	3	2	1	2	2	1	1	0	1	1	2
Furnishes technical information and consultation service	4	4	3	2	3	5	3	2	2	3	4	2
Conducts discussion groups and conferences	5	3	2	0	1	3	1	0	0	2	5	3
Affords special speakers and lecturers	5	5	5	4	4	3	3	2	3	4	5	2
Has representation by staff members in the membership of organizations, etc	2	0	1	1	2	2	2	0	3	2	0	0
Affords specialized library facilities and service	0	1	1	1	1	1	1	1	1	0	0	0
Affords facilities for research in commerce and business	1	2	2	2	3	2	2	2	2	1	1	1
Cooperative business training	1	2	1	1	2	1	1	1	0	1	1	1

Table 55 contains data concerning general economic and business services rendered by land-grant institutions to civic and community organizations. Again land-grant institutions have rendered little service to civic and community organizations other than providing special speakers and lecturers.

TABLE 55.—*Number of land-grant institutions rendering general economic and business services to civic and community organizations in 1927–28*

Nature of services rendered	Kiwanis, Rotary, Monarch Club, etc.	Y. M. C. A., Y. W. C. A., K. of C., etc.	Chamber of commerce, board of trade, employers' association, etc.	Labor	Alumni of institution	Others
1	2	3	4	5	6	7
Furnishes bulletins and other publications	0	0	0	0	1	0
Conducts surveys, audits, etc	0	1	4	0	0	1
Furnishes technical information and consultation service	0	0	0	0	1	0
Conducts discussion groups and conferences	2	2	4	2	2	2
Affords special speakers and lecturers	14	10	14	7	8	1
Has representation by staff members in the membership of organizations, etc	9	5	11	1	6	1
Affords specialized library facilities and service	0	0	0	0	1	0
Affords facilities for research in commerce and business	0	0	1	0	0	0

Table 56 gives economic and business services rendered by land-grant institutions to general public, State, and municipal agencies

in 1927–28. While land-grant institutions have served the general public, they have rendered practically no service to municipal and State agencies.

TABLE 56.—*Number of land-grant institutions rendering general economic and business services to general public, State, and municipal agencies in 1927–28*

Nature of services rendered	General public	Municipal	State department of education	Attorney general	Others
1	2	3	4	5	6
Furnishes bulletins and other publications	8	0	2	0	2
Conducts surveys, audits, etc	5	3	0	0	1
Furnishes technical information and consultation service	9	1	1	0	2
Conducts discussion groups and conferences	10	0	0	0	1
Affords special speakers and lecturers	17	1	0	0	1
Has representation by staff members in the membership of organizations, etc	5	0	1	1	1
Affords specialized library facilities and service	5	0	0	0	0
Affords facilities for research in commerce and business	6	0	0	0	1

Land-grant institutions have neither rendered much general economic and business service to public and private agencies nor received much similar service from public and private agencies. Table 57 shows the general economic and business services rendered by Government and other public agencies to the divisions of commerce and business in 1927–28. The divisions of commerce and business have made almost no use of Government and other public agencies.

TABLE 57.—*Number of land-grant institutions receiving general economic and business services from Government or other public agencies in 1927–28*

Nature of assistance rendered by agencies listed	State departments or agencies					
	Municipal agencies	Education	Treasurer	Attorney general	State auditor	Others
1	2	3	4	5	6	7
Assisted in guidance and placement of students	1	2	0	1	0	0
Assisted in organizing classes in commerce and business	0	1	0	0	0	0
Assisted in giving publicity to commerce and business offerings	0	0	0	0	1	0
Represented needs of institution to State legislature	1	0	0	0	0	0
Assisted in cooperative surveys	2	0	0	0	0	1
Supplied lecturers	0	0	0	0	0	1
Supplied bulletins and other publications	0	3	2	2	2	1

Tables 58 and 59 give data concerning the general economic and business services rendered by commercial and industrial organiza-

tions and by civic and community organizations to the divisions of commerce and business in land-grant institutions in 1927–28. Aside from securing lecturers and assistance in guiding and placing students, divisions of commerce and business in land-grant institutions have not utilized to any great extent the services of commercial and industrial organizations and civic and community organizations. Tables 57, 58, and 59 do not include services in the form of fellowships and scholarships.

TABLE 58.—*Number of land-grant institutions receiving general economic and business services from commercial and industrial organizations in 1927–28*

Nature of assistance rendered by agencies listed	Retail	Department store	Wholesale	Jobbing and commission	Banking and brokerage	Real estate and insurance	Manufacturing	Public utilities	Transportation	Professional
1	2	3	4	5	6	7	8	9	10	11
Loaned equipment	1	1	2	0	1	0	4	0	1	0
Donated equipment	0	0	1	0	1	0	1	0	0	0
Paid tuition or fees of students	0	0	0	0	1	1	0	0	1	0
Gave prizes	1	1	0	0	2	1	1	0	0	2
Assisted in formulating courses or curricula in commerce and business	0	0	0	0	0	3	1	0	1	1
Assisted in guidance and placement of students	10	8	3	1	10	9	9	9	4	3
Afforded rooms or other housing facilities for off campus, lectures, etc	1	1	0	0	1	1	0	1	1	1
Assisted in organizing classes in commerce and business	3	3	2	1	5	3	1	1	1	1
Assisted in giving publicity to commerce and business offerings	4	3	2	1	5	5	2	2	1	2
Represented needs of institution to State legislature	1	2	1	0	2	2	2	0	0	0
Assisted in cooperative surveys	4	4	2	0	2	2	2	0	1	1
Supplied lecturers	4	8	2	0	8	8	3	9	5	3
Afforded exhibits	0	1	0	0	1	1	2	3	0	0
Loaned visual education materials	0	1	0	0	1	1	1	2	3	0
Supplied bulletins and other publications	4	3	3	1	5	4	4	7	5	1

TABLE 59.—*Number of land-grant institutions receiving general economic and business services to general public, State, and municipal agencies in 1927–28*

Nature of assistance rendered by agencies listed	Kiwanis, Rotary, Monarch Club, etc.	Y. M. C. A., Y. W. C. A., K. of C., etc.	Chamber of commerce, board of trade, employers' association, etc.	Labor	Alumni of institution	Others
1	2	3	4	5	6	7
Donated equipment	0	0	0	0	1	0
Paid tuition or fees of students	1	0	0	0	0	0
Gave prizes	0	0	0	0	0	2
Assisted in formulating courses or curricula in commerce and business	0	0	0	0	0	1
Assisted in guidance and placement of students	1	2	1	0	2	1
Afforded rooms or other housing facilities for off campus classes, lectures	0	1	1	0	0	0
Assisted in organizing classes in commerce and business	1	1	3	0	1	1
Assisted in giving publicity to commerce and business offerings	2	1	7	0	1	0
Represented needs of institution to States legislature	0	3	3	0	1	0
Assisted in cooperative surveys	0	0	3	0	0	0
Supplied lecturers	1	1	4	1	0	0
Afforded exhibits	0	0	0	0	0	1
Loaned visual education materials	0	0	1	0	0	0
Supplied bulletins and other publications	0	0	4	0	0	1

Table 60 indicates the extent to which divisions of commerce and business have utilized Federal agencies in connection with general economic and business services. Nine institutions have secured assistance from the department of State in connection with the consular commercial service and 7 institutions with reference to foreign-service administration; 10 institutions have secured bulletins and other publications from the Bureau of Internal Revenue and the Comptroller of the Currency of the Treasury Department. More institutions secured bulletins and other publications from the Department of Commerce and the Department of Labor than from any other departments. A large number of institutions secured bulletins from the United States Tariff Commission, Federal Trade Commission, Interstate Commerce Commission, and Federal Reserve Board. Only a very few institutions have secured technical information and advice from Federal agencies. Only in one or two instances have they cooperated in making surveys.

TABLE 60.—*Number of land-grant institutions receiving general economic and business services from Federal agencies in 1927–28*

Kind of assistance	Department of State		Treasury Department		Interior Department		Department of Agriculture	
	Consular Commercial Service	Foreign Service Administration	Internal Revenue	Comptroller of the Currency	Bureau of Education	General Land Office	Extension work	Bureau of Agricultural Economics
1	2	3	4	5	6	7	8	9
Furnish bulletins and other publications	9	7	10	10	10	2	7	1
Furnish technical information and advice	1	.....	2	2	0	0	2	1
Cooperate in making surveys, etc	1	0	0	0	0	0	1	1
Loans exhibits, visual materials	0	0	0	0	0	0	0	1
Others	0	0	0	0	0	0	0	0

TABLE 60.—*Number of land-grant institutions receiving general economic and business services from Federal agencies in 1927–28*—Continued

Kind of assistance	Department of Commerce			Labor Department	Others			
	Foreign and Domestic Commerce	Census Bureau	Bureau of Standards	Labor Statistics	United States Tariff Commission	Federal Trade Commission	Interstate Commerce Commission	Federal Reserve Board
1	10	11	12	13	14	15	16	17
Furnish bulletins and other publications	22	18	15	19	14	16	15	21
Furnish technical information and advice	5	4	2	2	2	3	0	4
Cooperate in making surveys, etc	0	0	0	0	0	0	0	0
Loans exhibits, visual materials	2	0	0	0	0	0	0	0
Others	0	0	0	0	1	0	0	1

There are many pertinent factors involved in developing public and private contacts on the part of divisions of commerce and business in land-grant institutions. These factors may be listed under five heads: First, lack of facilities; second, teaching load; third, pressure of other university duties; fourth, lack of experience and ability of staff members; and, fifth, lack of information as to needs.

Undoubtedly divisions of commerce and business in land-grant institutions have lacked the facilities to develop public and private contacts. Frequently funds have not been available for the payment of travel and other expenses in connection with rendering general economic and business services to and receiving the same from public and private agencies. There is no reason, however, why they should not have made use of the general economic and business services offered by State and Federal agencies.

In some institutions the teaching load has presented the development of public and private contacts. On the average the teaching load does not, however, seem to be excessive. Teaching duties should not have interfered with rendering general economic and business services to and receiving the same from public and private agencies. Likewise the pressure of other university duties should not have prevented such activities. In some cases the lack of experience and ability of staff members was an obstacle. This is by no means, however, the situation in all institutions. Perhaps the lack of information as to needs is the most important factor. Divisions of commerce and business have apparently failed to discover the needs for higher business education both as to instruction of students and as to assistance of public and private agencies.

There is one other matter involving external offerings. This concerns the correlation of offerings in commerce and business with similar offerings in other institutions. The following question was asked all land-grant institutions: "Are any specialized schools for employees, the offerings of which are related to the offerings of the division of commerce and business of your institution maintained by business and commercial concerns, in the immediate territory served by your institution?" Eight land-grant institutions answered this question in the affirmative; 29 answered it in the negative. Those that answered in the affirmative were asked if there were any cooperative arrangements maintained by their institutions with such systems of training. Four answered in the affirmative and four in the negative. Cooperative arrangements maintained by those answering in the affirmative took the form of providing instructors for local chapters of the American Institute of Banking.

Table 61 gives data concerning other institutions of collegiate grade within the States served by land-grant institutions which offer curricula in commerce and business. Study of this table will show that 21 land-grant institutions report a total of 25 other institutions offering undergarduate courses in commerce and business in their territories. Sixteen land-grant institutions report that 16 other institutions offered graduate courses in commerce and business. There is also considerable competition between land-grant institutions and normal schools and teachers colleges in offering undergraduate courses in commerce and business. The greatest competition is between land-grant institutions and private institutions, both in undergraduate courses and in graduate courses.

Three land-grant institutions report that there is undesirable duplication in resident undergraduate offerings between themselves and the separated State universities. Four land-grant institutions report undesirable duplication between themselves and normal schools and teachers colleges. One land-grant institution reports undesirable duplication between it and private institutions within the territory which it serves. Not a single land-grant institution indicated any undesirable duplication in graduate courses in commerce and business. Only one institution checked duplication of offerings off the campus. Two land-grant institutions checked duplication of services or other activities such as publicity and legislative askings.

111490°—30—VOL II——8

TABLE 61.—*Other institutions of collegiate grade within the States served by land-grant institutions which offer curricula in commerce and business*

Types of institutions	Number of land-grant institutions replying	Number of other institutions offering courses in commerce and business
State universities (separated institutions):		
Undergraduate	21	25
Graduate	16	16
State normal schools and teachers colleges:		
Undergraduate	18	33
Graduate	1	1
Private institutions:		
Undergraduate	26	111
Graduate	11	34

Table 62 gives information concerning the efforts during the past five years to eliminate or reduce duplication in commerce and business between land-grant institutions and other institutions. Reading from left to right beginning with the statement entitled "State legislative enactment," four land-grant institutions have used this method to reduce or eliminate duplications in commerce and business offerings. Two of these institutions report very satisfactory results, one fairly satisfactory and one unsatisfactory. In case of four land-grant institutions action of the States boards of education has been utilized as a method of eliminating or reducing duplications. One of these institutions checked the results as satisfactory, one fairly satisfactory, one unsatisfactory, and the other did not check. In case of three institutions activity has been taken by State boards of curricular review or similar agencies. Two of these institutions checked the results as fairly satisfactory and one as unsatisfactory.

TABLE 62.—*Efforts during the past five years to eliminate or reduce duplications in commerce and business between land-grant institutions and other institutions*

Item	Methods utilized	Results secured		
		Very satisfactory	Fairly satisfactory	Unsatisfactory
1	2	3	4	5
State legislative enactment	4	2	1	
Action of State board of education	4	1	1	
Informal conferences or agreements of institutional officers concerned	1		1	
Action of State board of curricular review or similar agency	3		2	

Finally must be considered the relationship of the divisions of commerce and business to standardizing agencies. There is only

one standardizing agency in the United States that concerns itself with higher business education—the American Association of Collegiate Schools of Business. Among its 42 members at present there are 9 land-grant institutions. Only the divisions of commerce and business that have assumed the form of a college or school and have separate deans and faculties and have been organized for three or more years are eligible to this association. Since many land-grant institutions have organized commerce and business under other colleges or divisions of the institution, the divisions of commerce and business so organized are not eligible for admission to this association.

The nine land-grant institutions belonging to the American Association of Collegiate Schools of Business are as follows: University of California, University of Florida, University of Illinois, University of Kentucky, University of Minnesota, University of Missouri, University of Nebraska, Ohio State University, and the University of Wisconsin.

In addition to the American Association of Collegiate Schools of Business there are two regional associations: The Pacific Coast Association of Collegiate Schools of Business and Departments of Economics and the Southern Economic Association. Four land-grant institutions report membership in the Pacific Coast Association, three report membership in the Southern Economic Association.

PART III—TEACHER-TRAINING

Chapter I.—Introduction

This report deals with undergraduate teacher training only. Research and graduate work in education are treated elsewhere. Since teacher preparation in the broader sense is directly or indirectly related to almost every major activity of the institutions, it has been necessary to limit the treatment of many aspects of institutional activity related to teacher training in order to avoid duplication with other sections of the survey report. For instance, the extent, nature, and arrangement of academic and technical subject matter, while a matter of utmost importance is of necessity treated in separate chapters of the survey report, and only the curricular problems which are the primary concern of the teacher-training units are here presented. Similarly, problems of general interest to the whole institution concerning the library, business office, registrar's office, and so on, are treated under appropriate sections of the survey report. Departments, divisions, schools, or colleges of education exist only as parts of the institutions in their entirety. Some familiarity, therefore, with the program of the land-grant institutions as reported in the survey report as a whole is desirable if the teacher-training program is to be understood in its wider aspects.

The emphasis in land-grant colleges on the vocational objectives of education has led to considerable differences in most institutions between the organization and methods of work in general arts and science teacher-training units and those of the vocational teacher-training units. For this reason data were collected separately for the most commonly reported teacher-training departments and curricula, and a very substantial part of this report is written specifically on the problems of such units. This method of treatment is not to be construed, however, to mean that there is no fundamental unity of the objectives of teacher training as a whole, nor of the means undertaken to realize these objectives. The teacher of vocational agriculture or of home economics belongs to the same profession as the teacher of academic subjects.

Relationship of Teacher Training in Land-grant Institutions to Public Education as a whole

Teacher training in land-grant institutions can not be studied intelligently apart from consideration of the general programs of teacher training and of public education throughout the country as a whole. Workers in practically every field in professional education are trained in federally aided institutions. Twenty-five such institutions are State universities that maintain some of the largest schools and colleges of education in the United States. Even in many of the separated land-grant colleges, students receive training for teaching, supervision, or administrative work in nonvocational fields. It is necessary and desirable, therefore, to consider teacher preparation in land-grant colleges in its general setting in the much broader fields of public education and of teacher training in the Nation as a whole.

In 1928 there were 7,808,978 persons in the United States of high-school age (15 to 18 years, inclusive). Of this group 4,313,939 were enrolled in public and private high schools, and 3,923,546, or about 50 per cent of the total population, 15 to 18 years of age, were enrolled in public high schools. Two hundred and three thousand, two hundred and sixty-one high-school pupils 14 years of age and over were enrolled in all-day federally aided vocational schools. In addition to this number, 655,195 students, including a large number of adults, were enrolled in evening, part-time, and day-unit courses in federally aided vocational schools.

There is, of course, a substantial number of pupils engaged in vocational work in other than federally supported schools. One hundred forty thousand five hundred and seventy-five, for instance, were enrolled in 1928 in nonfederally aided vocational schools and classes under the provisions of the State plan as approved by the Federal Board for Vocational Education. Of the total of 858,456 students of all ages enrolled in federally aided vocational schools, 144,901 were enrolled in agricultural schools or classes, 537,611 were in trade and industrial schools or classes, and 175,944 were enrolled in home economic classes.[1]

Relation of Vocational and of General Teacher Training

The number of teachers in public high schools in 1928 was approximately 190,000, including perhaps 33,000 junior high-school teachers. The number of teachers of vocational courses in all types of federally aided vocational schools was 20,779. This does not include a large number of vocational teachers in nonfederally aided schools.

The most important agencies through which these teachers, as well as other workers in professional education, receive their preparation are the public and private institutions of higher learning, approximately 1,200 in number. Most of these institutions train teachers, or afford academic, technical, or other education which constitutes part of the equipment of teachers. The State-supported

[1] Twelfth Annual Report of the Federal Board for Vocational Education, 1928.

institutions that train teachers include the land-grant colleges, the separated State universities, women's colleges, and teachers colleges, and normal schools.

In-service training as distinguished from preservice training, constitutes a very important aspect of the whole teacher-training program. It has been estimated roughly that one teacher in four each year attends summer school. The extensive programs of State, county, and city supervisory systems, including the supervisory work of State boards of vocational education, are well-known and important phases of teacher training in service.

The total number of federally aided institutions and agencies that trained vocational teachers in 1928 was 146. Seventy-one gave training in agricultural education, 83 in trade and industrial education, and 93 in home economics education. Chief among these federally subsidized institutions that train vocational teachers are the land-grant institutions.

Definition and Scope of the Professional Preparation of Teachers

The professional preparation of teachers, in the broader meaning of the term, includes the provision of opportunities for properly qualified individuals to acquire, by competently directed learning, the requisite body of knowledge, the professional attitudes, the teaching skills, and the desire for future growth demanded by the specific requirements of the teaching positions to be filled. For convenience in expression, the term "teachers" is here used to include all workers in the field of professional education, such as administrators, supervisors, and research workers in education.

Levels on Which Teacher Training is Conducted

A general view of teacher preparation, as at present conducted, discloses a very great variety of practices and great differences in the quality and quantity of work done. Chief among the reasons for such diversity is decentralization of educational activities. The type of teacher for which the many local school systems are willing to pay greatly influences their programs of teacher training. The whole field of education is in a state of rapid change, and the diffusion of knowledge concerning educational advancement is slow and uncertain among practitioners in the field. The scientific study of education and of teacher training is a recent development; and local freedom to try new ideas, and to experiment in different directions is exercised in an endless variety of ways. For these and other reasons a description of teacher preparation at the present time is a description of current stages in the slow process of educational evolution.

A general view of the fields of teacher preparation for public schools may be attained in one way by conceiving of the many diverse

activities encountered as being conducted upon a number of different levels. Such levels may be defined in quantitative terms. The higher levels of teacher preparation may be designated as the professional education of teachers, supervisors, administrators, and research workers, commonly found in positions in colleges, universities, large high schools, and progressive public-school systems. The preparation of teachers on intermediate levels, which at the present time is the most common form of teacher preparation for high schools and the most progressive elementary schools, may be termed "semiprofessional teacher training." At least two years of work above secondary school graduation may well designate the minimum for this intermediate level of teacher preparation; actually four years of work constitutes a minimum for most teachers in accredited high schools. The very lowest levels of teacher preparation, which in effect are often preparatory only to actual teacher training, are found in 1, 2, or 3 year curricula of collegiate grade, in county normals, and in teacher-training high schools. In this section of the land-grant college report primary consideration will be given semiprofessional training, that is, undergraduate preparation of teachers on intermediate levels. Emphasis, however, will be upon the elements in such training that may be advanced above the intermediate, semiprofessional level to the higher level of professional education of teachers.

Content of Training

A second aspect of teacher preparation may be defined by consideration of the subject matter and activity content of such preparation. Roughly, six-sevenths of the training of prospective high-school teachers is in liberal and in vocational or technical work, and about one-seventh in subjects in education. The proportion of required work in professional education for elementary school teaching is somewhat greater.

The primary subject-matter emphasis in vocational teacher training is on the acquisition of information in technical or vocational fields. In arts and science teacher training, the emphasis is on arts and science subjects. Both forms of teacher training are found in land-grant institutions. The definition set up of the professional education of teachers does not admit, however, of the consideration of teacher preparation as a merely incidental function of a liberal arts education, nor of a technical or vocational education directed to occupations other than teaching. The training or professional education of teachers, not of subject-matter specialists, is the primary concern. It is believed that the lines of genuine progress in teacher preparation point toward the professionalization of teaching and of teacher training.

Chapter II.—Brief Historical Account of Teacher Training

The first State university to make definite provision for teacher training was the University of Indiana in 1853. It was not until 1873, that the University of Iowa established the first permanent department of education, then called a "chair of didactics." The University of Michigan established a permanent chair in 1879.

The first land-grant institution reporting a department primarily engaged in teacher training was Cornell University, which offered eight courses in 1886–87. These eight courses the following year were combined into three. It is interesting to compare these courses in education of more than 40 years ago with those of to-day. The courses were established after "careful study of the work done in institutions similar to our own, viz, in the universities of Michigan and Iowa, in the University of Edinburgh, and in the teachers' syndicate of Cambridge University." [2]

Course 1 treated of the Science of Education, "as deduced from the intellectual, physical, and moral nature of man." Course 2 was primarily a "seminary" devoted to study in the university library, but a portion of the time was given to the observation of the actual methods and operation of different schools. The provision of additional practice facilities was a matter of concern to the single instructor in charge of the work of the department. Course 3 traced the history of education, including that of oriental nations and of Greece.

The growth of teacher-training in land-grant institutions was rapid after 1904. Departments of general education, vocational education, agricultural education, home economics education, and industrial education were established and grew steadily in size after this date. Shortly after the passage of the Smith-Hughes Act in 1917, the growth in vocational teacher-training departments was especially rapid.

Of much significance in the professional education of teachers was the establishment of schools, colleges, and major divisions of education in land-grant institutions indicated in the following table:

[2] Annual report of the President of Cornell University for the academic year, 1888–89.

TABLE 1.—*Schools, colleges, or major divisions of education in land-grant institutions, with dates of establishment*

Institution	Title of unit	Date established as definite unit
University of Missouri	School	1904
University of Minnesota	College	1905
Ohio State University	do	1907
Georgia State College of Agriculture	School	1908
Louisiana State University and Agricultural and Mechanical College.	Teachers college	1909
University of Florida	do	1912
Oklahoma Agricultural and Mechanical College	School	1913
University of California	College	1915
University of Wyoming	do	1915
University of Arkansas	do	1916
North Dakota Agricultural College	School	1917
State College of Washington	do	1917
University of Illinois	College	1918
Oregon Agricultural College	School of vocational education	1918
Connecticut Agricultural College	Division of teacher training	1918
University of Wisconsin	School (in college of letters and science).	1919
Alabama Polytechnic Institute	School	1920
University of Idaho	do	1920
University of Nevada	do	1920
University of Maryland	College	1920
University of Arizona	do	1921
University of Delaware	School	1921
University of Nebraska	College	1921
University of Kentucky	do	1923
Rutgers University	School	1923
Agricultural and Mechanical College of Texas	do	1923
Pennsylvania State College	School	1923
University of Tennessee	College	1926
West Virginia University	do	1927
North Carolina State College of Agriculture and Engineering.	School	1927
Agricultural College of Utah	do	1927

Some of these major units differed so little from departments in the early part of the century, that provisional classification only is possible. The increase during the past 15 years in the number of such major units engaged in teacher preparation is noteworthy and affords one index to the extent of development of teacher training into a professional activity. This increase has an important bearing on the development of the field of public education as a whole, since in these major units was conducted a fair share of the research and investigation upon which modern education is largely based. In these schools and colleges many present-day educational leaders received their training.

More significant, perhaps, than the increase in numbers of schools and colleges of education, is the general development of the offerings of these major units. During the past 25 years the number of courses offered in education in the several land-grant institutions has commonly doubled or trebled. Equally striking has been

the change in the content of the courses offered. Beginning typically as outgrowths of the offerings in traditional subject matter, the courses are now greatly strengthened by a very large amount of research in education.

The development of courses in professional education is, however, only one element in the development of teacher training. A second element is the growth and practical utilization of academic and of vocational or technical fields of study. The importance of having suitable materials to teach is self-evident. A third element is the development of research, upon which instructional activities in new fields so largely depends. Research programs in academic and technical fields have suggested techniques, inculcated desirable habits of exact thinking, and otherwise broken the way for research in professional education. An account of the development of extension work or of training in service is likewise of significance to the teacher trainer. The Smith-Lever extension worker performs many of the duties of a teacher. General extension work includes many courses for teachers and affords an invaluable means for the continuing education of teachers in service. Thus teacher training is intimately a part of the entire program of land-grant college education. Tendencies which emphasize separation of teacher training from other divisions of higher education rather than the interdependence of all educational efforts are exceedingly unfortunate.

The first Federal legislation to make specific recognition of the desirability of Federal aid for teacher training was the Nelson amendment of March 4, 1907, to the Morrill Act of 1890. The provision was incorporated in the Nelson amendment that land-grant colleges "may use a portion of this money for providing courses for the special preparation of instructors for teaching the elements of agriculture and the mechanic arts." According to rulings made by the United States Department of the Interior, all or a part of the funds provided may be used for this purpose. It is held that the statement of the act authorizes expenditure for instruction in the following subjects:

1. History of agriculture and industrial education (with special reference to agriculture, mechanic arts, and home economics.)
2. Methods of teaching agriculture, mechanic arts, and home economics.
3. Special aid and supervision given to teachers actively engaged in teaching agriculture, mechanic arts, and home economics in public schools.

It is further ruled that—

A reasonable portion of the funds provided by the act of 1907 may be used for the instruction of teachers in agriculture, mechanic arts, and domestic

science at summer schools, teachers institutes, and by correspondence, and in supervising and directing work in these subjects in high schools.

Expenditure is not authorized for instruction in general course in pedagogy, psychology, history of education, and methods of teaching.

The several land-grant institutions are left largely independent not only in respect to the curricula offered, but also in respect to the local disposition of these funds. Seven-tenths of 1 per cent of the Morrill-Nelson appropriation in 1908, and nine-tenths of 1 per cent in 1928 was reported by 52 land-grant institutions as having been utilized for teacher preparation in agriculture and mechanic arts. Only four States—Georgia, Iowa, New York, and Utah—reported in 1928 the utilization of any of this fund for teacher training. Thus, the permission granted to use part of the Nelson appropriation for the express purpose of training teachers has been taken advantage of to a negligible extent only.

The responsibility, therefore, for the specific training of teachers was largely discharged by the States without direct Federal help until 1917, when funds for this purpose were provided by the Smith-Hughes Vocational Education Act. The Smith-Hughes Vocational Education Act provides not only for Federal cooperation with the States in promotion of vocational education in agriculture, home economics, and trades and industries, but also for cooperation with the States in the preparation of teachers of such vocational subjects. By far the greatest advancement in the history of vocational teacher training has come since the date of passage of this act of Congress. The growth of vocational teacher training has also influenced noticeably the development of training for teachers in the arts and sciences and in related fields, especially in the separated land-grant colleges.

Five hundred thousand dollars was made available in 1917 to the States from Federal funds for the training of teachers of agriculture, home economics, and industrial education (trades and industries). This amount was increased during successive years until $1,000,000 became available for this purpose in 1921 and thereafter. Each State received a minimum allotment of $10,000 after 1923. In 1928 and annually until 1930, the total allotments for all the States and the Territory of Hawaii amounts to $1,096,706. During the fiscal year 1927–28 approximately 95 per cent of the allotments available were used by the States.[1] Since 1921, the amount used has annually exceeded 91 per cent of the amount available. The law provides that a minimum of 20 per cent of the funds must be reserved for each of the three phases of vocational teacher training: Agriculture, home economics, and trades and industries; but that no more than 60 per cent should be expended on the training of teachers for any one of these types of work. The distribution made by the State boards has been fairly evenly divided among the three phases of teacher training. At the present time State and local financial support for teacher training exceeds in amount the total of all Federal subsidies for this purpose.

An act was passed by Congress February 4, 1929 (George-Reed bill) to provide for the further development of vocational education in the several States and Territories. Appropriations, additional to those of the Smith-Hughes Act,

[1] Annual Report of the Federal Board for Vocational Education, 1929.

were made of $500,000 in 1930, and each year thereafter for four years, a sum exceeding by $500,000 the sum appropriated for each preceding year. Half the sum is provided for teachers, supervisors, and directors of agriculture; and half for such workers in home economics. The general conditions for the administration and expenditure of the appropriations are in accordance with the original provisions of the Smith-Hughes Act. One hundred thousand dollars annually was appropriated to the Federal Board for Vocational Education for administration and related activities involved in carrying out the provision of the act of February 5, 1929. Demands for vocational teachers may be expected to increase as a result of this subsidy.

The number of teachers prepared should be determined almost entirely by the needs of the public schools for trained teachers. It was about 1905 or 1906, more than 40 years after the establishment of the land-grant institutions, before the high schools enrolled as many as 10 per cent of the total population of high-school age. By 1916, 20 per cent of the total population of high-school age was enrolled; by 1921, 30 per cent; and in 1928, approximately 50 per cent. The most rapid growth was experienced between 1915 and 1925. While moderate growth in actual numbers enrolled continues at the present time, the percentage rate of increase has slackened during the last few years.

The increase in the number of high-school teaching positions has corresponded roughly to the increase in the number of pupil enrollments, since the number of students per teacher has not varied much during the past 40 years; at present there is, on an average, 23 students per teacher in the high schools. The increase in the number of teachers in public high schools is shown in Table 2.

TABLE 2.—*Increase since 1890 in the number of teachers in public high schools*

Year	Number of teachers			Year	Number of teachers		
	Men	Women	Total		Men	Women	Total
1	2	3	4	1	2	3	4
1890	3,597	5,280	[1] 9,120	1920	34,396	63,258	[2] 97,654
1900	10,172	10,200	20,372	1926	58,496	105,059	[2] 163,555
1910	18,890	22,777	41,667	1928	64,931	117,706	[2] 182,637

[1] Includes those not reported by sex. [2] Does not include elementary grades in junior high school.

Present tendencies indicate that eventually a period of stabilization is to be expected in the number of high-school positions to be filled. While there is no immediate indication that the land-grant colleges should drastically curtail their general program of teacher preparation, there is reason to believe that they should devote considerable attention to significant current tendencies. For instance, special needs of the high schools that have arisen during the present century demand constant redirection of subject-matter emphasis. One indication of this need is shown by the increase in the number

of subjects taught in high school. In 1890, nine subjects and a score or more of different courses constituted most of the high-school curriculum. Now enrollments are reported in hundreds of different courses. It is evident that, unless the institutions are in the closest possible touch with developments among the secondary schools, their teacher-training departments may turn out numerous graduates not fitted for the work that they must acually teach in the high schools.

Increase in Enrollments in Teacher Training

The increase since 1921 in recorded enrollments in general education and in vocational education schools, departments or major courses of the land-grant institutions is shown in Table 3. These figures, of course, do not include by any means all students enrolled in land-grant institutions who are preparing to teach, but only those actually enrolled in the teacher-training units or groups indicated. It will be noted that the total enrollment in all education units has increased six times over, whereas the total resident undergraduate enrollments in all courses have increased less than two-fifths. While changes in the methods of student accounting undoubtedly are responsible for some of the increases shown, the tendency is clearly toward definite institutional recognition of the development of teacher training as a distinct function.

TABLE 3.—*Enrollments in general and in vocational education schools, departments, or major courses since 1921, in relation to total resident undergraduate enrollment of land-grant institutions*[1]

Year	General education	Vocational education	Total enrollment, all education units	Total resident undergraduate enrollment, all courses	Percentage of total institutional enrollments, in education units
1	2	3	4	5	6
1920-21	2,897	----------	2,897	109,683	2.64
1921-22	5,829	780	6,609	115,398	5.70
1922-23	7,860	1,288	9,148	123,650	7.39
1923-24	9,188	1,561	10,749	126,582	8.49
1924-25	11,177	1,407	12,584	133,931	9.39
1925-26	10,241	1,302	11,543	142,111	8.12
1926-27	13,318	1,991	15,309	151,438	11.09
1927-28	15,652	1,163	16,815	151,196	11.12

[1] Data from annual reports of land-grant colleges to the Office of Education.

In Table 4 is shown the number of first degrees granted since 1921 to students in general education and in vocational education. The institutions are unable to state accurately the number of students not registered in the major divisions of education who nevertheless are in training for the purpose of becoming teachers. An

estimate made on the basis of all available information is that for the country as a whole approximately one-third of the trainees graduated in 1928 were not registered in the school, college, or divisions of education, and hence were usually reported as enrolled in arts and science, agriculture, and similar subject-matter divisions of the institution. This proportion is larger for previous years. The total number of prospective teachers graduated with first degrees in 1928 is reported to be 3,082. Adding to this figure an estimated number of 1,541 prepared for teaching but not registered in education, the total of 4,623 is obtained for graduates with the first degree who were prepared for teaching in 1927–28.

TABLE 4.—*Number of first degrees granted students in general education and in vocational education 1921–1928 in all land-grant institutions*

Year	General education			Vocational education			Grand total
	Men	Women	Total	Men	Women	Total	
1	2	3	4	5	6	7	8
1921			618				618
1922	172	492	664	103	31	134	798
1923	371	776	1,147	170	70	240	1,387
1924	572	772	1,344	184	60	224	1,568
1925	504	1,154	1,658	150	68	218	1,876
1926	538	1,344	1,882	204	85	289	2,171
1927	584	1,625	2,209	242	105	347	2,556
1928	774	2,058	2,832	169	81	250	3,082

Further expansion and development of existing activities and redirection of existing teacher-training programs seem inevitable. Social, political, and economic changes are rapid and educators are striving to keep pace. To meet current problems, educational activities are advancing with unprecedented rapidity. Definite and certain promise exists for the education in the future of even greater number of the citizenry of our country for vocational effectiveness and for the worthy pursuits of leisure. It is not impossible that in America our greatest contributions to modern civilization may consist in the discovery of the ways and means for securing a happy concordance of vocational and of liberal education.

Chapter III.—Objectives

The objectives of the teacher-training programs as expressed in the catalogues of the institutions are only occasionally alike. The most commonly mentioned objective is the professional preparation of teachers. A number of similar statements so broad as to be almost meaningless are given. The training of teachers for specific positions is mentioned or implied in the statements of a few institutions. Not infrequently such objectives as "a broad and liberal education" are stated. The necessity for meeting State certification requirements is mentioned by several institutions. In Table 5 are shown the reports of the land-grant institutions relative to the types of positions for which they definitely offer or attempt to offer training.

TABLE 5.—*Specific objectives of undergraduate teacher-training activities in respect to positions for which training is offered*

Position	Frequency of mention
Teachers of—	
Elementary grades	14
Rural schools	15
Junior high schools	34
Senior high school subjects:	
Science	40
Liberal arts subjects	33
Vocational agriculture	44
Home economics	39
Trade and industrial education; industrial arts; manual training: shop	27
Commercial subjects	16
Specialists in or supervisors of—	
Kindergarten or kindergarten-primary work	3
Elementary schools	17
Public-school music	18
Art education	16
Physical education, men	27
Physical education, women	27
Athletic coaching, men	28
Principals of—	
Elementary schools	25
High schools	27
Superintendents of schools	25
Others—Vocational guidance councilors	4

The land-grant universities, as a group, undertake to train teachers, supervisors, and administrators for practically every type of position in the field of education. The separated land-grant colleges, while somewhat more limited in the diversity of their offerings, by no means confine themselves to the training of teachers of vocational agriculture, home economics, and trades and industries.

The subjects actually taught in the high schools determine to a large extent the courses taught in the institutions that train teachers. During the last years of the nineteenth century, the high-school curriculum was composed almost entirely of English, Latin, Greek, French, German, algebra, geometry, physics, chemistry, and general history. To-day probably 250 different high-school subjects and their subdivisions that are taught the country over could be named. In Table 6 the percentage distribution of high-school students during recent years among certain selected subjects is shown. It should be noted that needs for teachers may be quite acute in some of the newer subjects in which only a relatively small percentage of pupils are enrolled. These special needs should be ascertained in each State by the land-grant institutions that prepare teachers, and curricular emphasis redirected accordingly.

TABLE 6.—*Percentage of students in certain studies in public high schools since 1910*

Subject	Percentage of total public high-school enrollments reported by years			
	1910	1915	1922	1928
1	2	3	4	5
Agriculture	4.7	7.2	5.1	3.7
Home economics	3.8	12.9	14.3	16.5
Industrial education; manual training	----	11.2	10.5	12.5
English	57.1	57.1	78.6	93.1
Algebra	56.9	48.8	40.2	35.2
Music	----	31.5	25.3	26.0
Latin	49.1	37.3	27.5	22.0
Geometry	30.9	26.6	22.7	19.8
Drawing and art	----	22.9	14.8	18.6
American history	----	----	15.3	17.9
General science	----	----	18.3	17.5
Typewriting	----	----	13.1	15.2
French	9.9	8.8	15.7	14.0
Biology	----	6.9	8.8	13.6
Civics, community	----	----	----	13.4
Medieval and modern history	----	----	15.4	11.3
Bookkeeping	----	3.4	12.6	10.7
Ancient history	----	----	17.2	10.4
Spanish	.7	2.4	11.3	9.4
Shorthand	----	----	8.9	8.7
Hygiene and sanitation	----	----	6.1	7.8
Chemistry	6.9	7.4	7.4	7.1
Commercial arithmetic	----	----	1.5	7.0
Physics	14.6	14.2	8.9	6.9
Civil government	15.6	15.7	19.3	6.7
World history	----	----	----	6.1
Economics	----	----	4.8	5.1

The factors reported as having most weight in determining what teacher-training curricula shall be established are shown in the following table.

TABLE 7.—*Factors reported as having most weight in determining the establishment of offerings in teacher-training curricula*

Factor	Frequency of mention by institutions—									
	All teacher training units	Agricultural education	Home economics education	Industrial education	Arts and science education	Commercial education	Physical education for men	Physical education for women	Public school music	Art education
1	2	3	4	5	6	7	8	9	10	11
Demand by employers of teachers	137	28	23	13	28	7	13	15	7	3
State board of education mandatory regulations, including certification requirements	123	28	25	11	24	4	9	12	5	5
Federal sponsorship and support of training programs	84	34	31	14	3	1	0	1	0	0
Demand by students	73	11	13	5	20	2	7	8	4	3
State legislative enactment	54	16	11	4	11	1	4	4	2	1
Desire to round out offerings of institution	47	2	14	4	14	2	4	5	2	0
Local community demand or support	13	3	5	2	2	0	0	1	0	0
Faculty sponsorship	10	2	1	1	1	1	1	1	1	1
Endowment for specific type of teacher training	3	2	0	1	0	0	0	0	0	0

Apparently there is large dependence by land-grant institutions on what other agencies desire in respect to curricular offerings for prospective teachers. It would seem that a careful study of the actual needs of the State for trained teachers and of the activities of these teachers in various fields should afford the bases for setting up institutional teacher-training curricula. In only a few States have continuous detailed studies been made by State departments of education and other agencies concerning the needs for teachers of various levels of training, and for different types of positions. The land-grant institutions themselves have given too little attention to leadership in making such studies. They have a definite responsibility to ascertain facts of this nature that should determine their objectives and the programs set up to realize these objectives.

Approximate data only are available concerning the positions taken by graduates of teacher-training curricula. Returns indicate that the type of positions actually taken by graduates should be studied much more carefully in the future in the determination of the objectives set up by the institutions. A sampling of returns indicates that about 60 per cent of graduate and undergraduate placements are made in senior or regular high school arts and science and vocational subjects; 10 per cent in college and university teaching; 7 per cent in elementary grades; 3 per cent in physical education and health work; and less than 2 per cent each in a great variety of fields of teacher preparation. Evidently much work is in order by

the institutions to determine the relative weight to be accorded teacher-preparing offerings in each institution.

Much of the rapid progress in vocational education has been due to persistent efforts on the part of leaders in this field to determine accurately and thoroughly just what the worker has to do, and to develop, organize, and systematize the procedures necessary to attain the objectives thus derived. Although such job analysis does not and should not determine the nature and scope of the whole objective of educational effort, insistence upon making life activities of pupils the starting point in formulating teacher-training objectives, has resulted in some useful general statements of such activities and of teacher-training objectives appropriate to them.

The matter of emphasis upon the several life objectives of the pupil, or, in other words, the emphasis upon the several objectives of education, is one of extreme importance. Misplaced emphasis in the past, and to a considerable extent in the present, has afforded much just opportunity for criticism of education. It is extremely difficult to see why the general objectives of a high-school teacher of vocational subjects should be very greatly different from the general objectives of a teacher of other subjects. All teachers alike are helping young people to adjust more effectively to their environment to the end that individual self-realization and social efficiency may be more nearly attained.

It is clear that a formidable number of only partially analyzed factors must be considered in formulating the objectives of the teacher trainer in land-grant institutions. There are the individual and social needs in respect to the life activities of the pupils in the schools, and the educational objectives of the teachers themselves to be considered. In addition, the conditioning factors of Federal, State, and local administrative requirements, the teacher's personal objectives, the difficulty of adapting subject matter to realize the objectives set up, and other factors must all be considered. In determining the objectives of teacher training, the frontier of existing knowledge is soon reached in many fields, and educators, in the existing state of knowledge, of necessity can not agree on many formulations specific enough to be universally acceptable and at the same time useful. It is a happy augury for the future of professional education that some of the most effective work in the determination of teacher training and related educational objectives is now being done or has been done by workers in the land-grant institutions. The attitudes and interests of these institutions are such as to insure that traditional and present practices will be modified by a democratic social philosophy.

Chapter IV.—Teacher Supply and Demand

Reports from land-grant institutions indicate roughly the condition of supply and demand in respect to teachers of different types as shown in Table 8. It will be noted that the types of teachers for which the greatest undersupply is reported are teachers of vocational subjects, and of special or nonacademic subjects, including physical education and health, public-school music, and commercial education. A condition of oversupply is reported for teachers of liberal arts subjects and of elementary public-school grades. Other data largely confirm these reports.

TABLE 8.—*Condition in certain States in respect to the quantitative supply of teachers and administrators*

Teachers of—	Number of States		
	Oversupply	Approximate balance of supply and demand	Undersupply
1	2	3	4
Vocational agriculture	6	20	18
Home economics	7	17	14
Trades and industries	3	11	13
Science teachers	12	14	18
Liberal arts subjects (high school)	30	8	2
Commercial subjects	2	12	15
Physical education and athletic coaching (boys)	6	9	21
Physical education and health (girls)	6	12	16
Public-school music	3	9	15
Art education	5	9	11
Elementary public-school grades	17	4	4
School administration:			
Principals	4	6	5
Superintendents	4	5	4

The present condition of apparent oversupply of elementary teachers and of teachers of liberal arts subjects has been met in a large number of States by raising certification and employment qualifications. This means that more and more elementary teachers must secure the bachelor's degree, or at least secure two or three years of college-grade work. In the case of the high-school liberal arts teachers, many young graduates with bachelor's degrees are induced to secure the master's degree in order to obtain the better positions.

Such pressure has not yet been brought to bear very heavily on teachers of vocational subjects.

The teaching profession in the United States at the present time undoubtedly faces a critical situation. There is every indication that there is an oversupply in many sections of certificated teachers, or of teachers that meet the usual conditions of employment. Unless certification requirements are raised considerably, the inevitable tendency of employers of teachers will be to lower salaries. Under existing conditions of oversupply, one or more of three things may happen—salaries may be lowered, certification and employment requirements may be raised, or the quantity of teachers put on the market by training institutions may be decreased.

No one having the interest of the schools at heart wishes salaries to be lowered. The machinery for raising certification requirements or raising the standards of employment is an effective means of preventing an oversupply in so far as it reduces the number of candidates eligible for positions. The limitation of the number of students through stringent admission requirements, lengthening or delaying the period of apprenticeship, or lengthening the period of training has proved most effective in occupations and professions other than teaching.

Complaint has often been made that recruits to the teaching profession do not include the brightest members of the high-school classes. It has been claimed that law, medicine, and the higher levels of business occupations and managerial work claim an undue proportion of the more intelligent high-school and college students. Questions of quantitative undersupply or oversupply of teachers are, in some respects, secondary to the question of qualitative supply and demand. There are very definite limits to which the recruiting of mediocre material for teaching should be carried. To offer opportunities to any and all young people to enter teaching and yet deny them after long and expensive training the income for which they prepared is unfair to the individual.

It is clear that the institutions that train teachers can do much to help the profession by doing their part in cutting down the number of poorly qualified workers now competing in the open market for teaching positions. There seems little justification for separated land-grant institutions, for instance, to continue to pour teachers of arts and sciences or of elementary grades into the teaching market when abundant agencies already exist to train such teachers. It must be confessed that with the existing machinery available for regulating the supply of teachers not up to reasonable minimum standards of preparation, the outlook is dark. Until such control is exercised

by State departments of education and by the individual and cooperative action of institutions that train teachers, existing tendencies inevitably will continue toward lowering teachers' salaries and consequently the quality of teaching personnel.

Special study is needed on the part of land-grant institutions to ascertain the desirability of expanding their offerings along new lines. For instance, more emphasis upon the training of administrators and supervisors, teachers of combination subjects, teachers of nonacademic and special subjects, and teachers of various other special types of work might reduce somewhat the excessive emphasis upon quantity production of liberal arts teachers. The desirability of expanding graduate teacher-training offerings should be ascertained. Training on graduate levels is undoubtedly a function of the best-equipped and supported State universities and land-grant colleges. For institutions that are given adequate support the extension of teacher preparation to graduate professional levels is a logical step since the opportunities for teachers of academic subjects who are trained on such levels are increasing continuously in almost all States.

Placement of Prospective Teachers

Placement activities of the land-grant institutions are not organized typically in one central unit; such organization prevails in only 9 institutions reporting, while in 30 institutions placement activities are conducted by two or more separated units of the institutions. About half of all the placement bureaus or agencies are engaged in the placement of teachers only. In 33 out of 45 institutions reporting teaching appointments are handled through the school, college, or department of education. Typically, the officer in charge of such work devotes only part of his time to placement.

Two times in three difficulty is reported in the placement of all graduates. The chief difficulties reported are as follows in order of frequency: Oversupply of teachers, deficiency in qualifications required by employers, training too specialized, race or religious prejudices, lack of experience, candidates too exacting in type of position desired; salaries too low, poor combinations of subjects taken by candidates, and candidates can not assist in extra curricular activities.

There are numerous services that the placement bureau, if given an adequate staff, could afford to the institutional officers. The prevailing conception of the managerial activities of the placement services as being largely clerical is decidedly wrong. The obligation of the institution to its students and to the State is not discharged

when students are given their degrees. Progress is difficult when a large degree of ignorance prevails concerning the nature of positions taken by the institutional product. In the future, probably the best measure of the whole institutional program of activities could be secured if accurate measures could be devised of determining how and where institutional graduates function in our social and economic life. Rough measures only are available for the supply of and demand for teachers. Such measures, however, can be developed and refined and their use in all institutions would constitute one practical starting point for the whole program of teacher training. Placement bureaus or agencies are in a particularly favorable position to render assistance in this respect, and their facilities might well be expanded to enable them to make further study of the placement of the product turned out by the institutions.

Too many of the policies of the placement bureaus have been in the past suggestive of those of commercial teachers' agencies. The number of placements made in relation to the number of teachers enrolled has been the chief measure applied to the success of the placement bureaus. It should be no cause for disparagement of the placement service if it does not place some of the inferior material registered for positions. The quality, and not the quantity, of placements should be featured more in the reports of such activities. A genuine improvement would result if the work of the placement bureaus could be put on a professional, instead of a high-grade clerical level.

Chapter V.—Administrative and Professional Organization and Relationships

Relationships With the Federal Government

Public education is the accepted function of State governments and of local units. The relationships of the teacher-training units of the land-grant institutions to the Federal Government are almost entirely indirect, and chiefly professional rather than administrative in nature. The Federal agencies set up to administer subsidies granted by acts of Congress deal directly either with the States or, to a less extent, with the land-grant institutions, rather than with the teacher-training units.

On the whole, significant relationships are practically nonexistent between the teacher-training units themselves and the Federal Government in respect to the administration of Morrill-Nelson funds. Further, the national vocational education act of 1917 (Smith-Hughes Act), to provide for the promotion of vocational education, and the George-Reed Act of 1929, to provide for the further development of vocational education, establish relationships primarily with the States and with the land-grant institutions through the agency of the State boards for vocational education. The administration of Smith-Hughes funds has brought with it the largest measure of Federal control so far established in the field of education. Numerous and significant regulations, standards, and restrictions as related to the expenditure of funds have been set up by the Federal board in accordance with the provisions of the act.

The Federal board, by the provisions of the act, makes studies, investigations, and reports, with particular reference to their use in aiding the States in the establishment of vocational schools and classes and in giving instruction in agriculture, trades and industries, commerce and commercial pursuits, and home economics. Such investigations and reports, when the board deems it advisable, may be made along appropriate lines in cooperation with and through the United States Departments of Agriculture, Labor, and Commerce and through the United States Office of Education.

By the provisions of the Smith-Hughes Act each State shall designate a State board to cooperate with the Federal board, this board to act as a trustee of Federal funds. Plans by which Federal moneys are to be expended for vocational education must be submitted, covering a 5-year period. to the Federal board, and if the plans are

accepted and the States adhere to them reimbursement may be given the States. Acceptance by the States of all the provisions of the act is, of course, understood. While the Federal board submits an outline form for proposed plans, such plans are largely for guidance in formulating State plans, and may be modified by the State boards.

In accordance with the wording of the Smith-Hughes Act, a distinct emphasis has been placed since 1917 upon active professional leadership and administrative guidance on the part of the Federal Board for Vocational Education. The interpretation of the act by the Federal board is given in an official statement in 1918 by the director. The act, according to this statement, "is the culmination of a series of progressive steps from the granting of Federal moneys with very few restrictions to the granting of Federal moneys under certain definite standards and with certain definite restrictions concerning the expenditures." In accordance with this interpretation the board has afforded active leadership in the establishment of principles and the promulgation of standards relative to instructional and related activities in vocational education and teacher training.

Some measure of control over the expenditure of the large subsidies to the States for the promotion of the teaching of vocational subjects is to be expected. The original purpose of the grant must be attained and funds must not be misused. An administrative organization with adequate powers is desirable for the control of the funds. If there is a demand, professional services of considerable variety and extent are also possible and it is an easy step to increased administrative supervision and control of the activities brought about by the expenditure of funds.

The desirability of the further coordination of Federal activities in the field of education and in the field of teacher training is a matter of common mention. The magnitude and expense of the educational program of America—a program in which the National Government, as well as the States, is vitally interested—demands effective, businesslike, and statesmanlike methods for the determination of the organization, policies, and programs best adapted to our educational needs. The least important reasons for such coordination, namely, that economies of operation would justify coordination and that problems of administration would be vastly simplified, by themselves justify coordination of the educational activities of the Federal agencies in relation to State programs. Abundant safeguards exist to prevent any abuse of power; and none except utterly inept State or local agencies need fear any reasonable expansion of professional leadership exercised through more effectual research and dissemination of information.

In answer to the request to indicate the nature of services actually rendered the teacher-training units by Federal agencies, a large variety of services were indicated. Among the most frequently mentioned are: (1) Preparation and distribution of publications: Books, bulletins, circulars, bibliographies, library reports, and similar material; (2) supplying of visual instruction materials such as charts, stereographic slides, and films; (3) correspondence advisory services; (4) lectures and addresses; leadership or assistance in conducting individual and group conferences; (5) directing surveys; and (6) expert advice and assistance in research, marketing, personal visits, and loan of instructional materials.

Federal agencies most commonly mentioned as contributing to the teacher-training programs in the land-grant institutions include: Federal Board for Vocational Education; Department of the Interior, Office of Education; Department of Agriculture; Department of Labor; Department of the Treasury, Public Health Service; Library of Congress; and Department of Commerce.

The returns made indicate that teacher-training officials in the land-grant institutions have only scratched the surface in utilizing materials of instruction and other educational services afforded by the United States Government.

Undesirable Duplications Among Higher Institutions of Learning

When it is remembered that most higher institutions to some degree train teachers, reports of land-grant institutions shown in Table 9 concerning "undesirable" duplications of work with other institutions disclose fairly satisfactory conditions. A minority of the institutions report duplications of work within their respective States, chiefly with teachers colleges or with private institutions. Home-economics education, which is taught in nearly 600 higher institutions, seems to lead in respect to duplication reported as "undesirable."

TABLE 9.—*Fields of teacher training in which undesirable duplications of work are reported between the land-grant institutions and other teacher-training institutions of the States*

Field	Number of times reported			
	Teachers colleges or normal schools	State universities (if "separated" institutions)	Private institutions	Total
1	2	3	4	5
Agricultural education	3	0	1	4
Home economics education	5	1	4	10
Industrial education	5	1	0	6
Science	4	0	0	4
Liberal arts	5	0	2	7
Commercial education	0	0	1	1
Public-school music	0	0	1	1
Public-school elementary grades	1	0	0	1

Relationships of Teacher-Training Units With State Agencies

One good measure of the effectiveness of professional relationships between teacher-training units and State agencies is the amount and nature of mutual service afforded. There is a very great difference in the reports of the land-grant institutions concerning such relationships. Dozens of services are reported by some institutions while other institutions have little more to report than the dissemination or receipt of bulletins, occasional lectures afforded State audiences, and correspondence service. It is interesting to note in the reports of the land-grant institutions that those having the least difficulty in securing State support are those that report the most widespread service to the State.

TABLE 10.—*Nature of services most commonly rendered by all teacher-training units to the educational agencies of the State*

Service	Number of times reported
Advisory and informatory service to teachers and administrators	150
Participation of staff members in outside (noninstitutional) educational activities of the State	150
Group conferences held with school officials	123
Place students in teaching positions	118
School exhibits supplied, directed, or judged	75
Assist in forwarding legislative programs for support of public-school education	63
Assist in formulating certification requirements of State department	63
Cooperative studies or research undertaken with public-school officials	51
Promotion of public-school physical education and health work (including athletics)	49
Conduct teachers institutes	41
Educational research bureau conducted primarily for State service	26
Recreational and amusement programs afforded (lyceum, music, etc.)	20
General surveys of schools	18
Measurement programs	17
Surveys concerned with special-school problems—building surveys	16
Other special type surveys	14

There is little doubt that in most land-grant institutions the teacher-training units should become more vitally related to their public-school constituencies. Academic aloofness from the every-day problems of public-school teachers is inexcusable in publicly supported institutions. The recent rapid growth of teachers colleges, which now outnumber land-grant institutions nearly 3 to 1, is due largely to the feeling on the part of State educational officers that the teachers colleges are interested in public-school problems and are setting up means for solving them. The enrollment of prospective high-school teachers in teachers colleges has increased with

great rapidity; now probably 1 student in 4 in these institutions is definitely planning for work in high schools.

Services rendered by State departments of education to teacher-training units of land-grant institutions.—The nature of the direct services rendered the general and vocational teacher-training units in their programs by the State departments of education is indicated below in order of frequency of mention: (1) Publications and reports; (2) conferences; (3) certification services; (4) supervision; (5) placement of teachers; (6) assistance in student teaching supervisory activities; (7) addresses and lectures; (8) assistance in developing courses of study; (9) inspection; (10) personal and advisory services; (11) State department staff members serve on institutional teacher training staffs; (12) correspondence; (13) assistance in providing student teaching facilities; (14) scholarships and payment of tuition; and (15) promotional work.

Services rendered by State board of vocational education to institutional teacher-training units.—The nature of the direct services rendered the vocational teacher-training units by the State boards for vocational education is listed in order of frequency of mention: (1) supply bulletins and other publications; (2) set up or approve State plans and establish courses; (3) assist in conferences; (4) personal assistance by State supervisor; (5) teacher-training inspection; (6) supervision of teacher training; (7) personal assistance by State director; (8) advisory service; (9) correspondence service; (10) general supervisory service; (11) placement of teachers; (12) provide lecturers; (13) cooperate in research; and (14) promote legislation.

It will be noted in Table 10 that the types of service rendered by teacher-training units to the educational agencies of the State are too often not particularly vital services. For instance, surveys concerned with genuine school problems, research on first-hand problems of the schools, and other essential services are among those least commonly reported. The types of service set up in the vocational teacher-training program are much more effective than those set up by the general educational units in a large number of the smaller land-grant institutions. The service to public education afforded by the larger schools and colleges of education are, of course, outstanding.

In Table 11, are shown the ways in which land-grant institutions are influential in determining State standards in the certification of teachers. The certification of teachers is, of course, a State function and the land-grant institutions usually feel that they have nothing to do with the matter except meet requirements. Consequently, institutions that presumably supply the educational leadership and guid-

ance for their States find themselves in the position of following rather than leading in the establishment of progressive standards. It would seem that many colleges of education with facilities for research and study should be of invaluable assistance to the State departments in determining standards. For example, during the course of the field work of this survey complaint was often heard on the part of officers in technical or academic subject-matter fields concerning the increased requirements in education set up by State departments. State department officials await with open minds and considerable eagerness scientific findings of educational research workers concerning the effect on teaching success of the mastery of professional, technical, and academic subject matter. Such findings should preface either criticism or commendation of the honest efforts of State departments to improve the quality of teaching in the public schools.

TABLE 11.—*Ways in which the land-grant institutions are influential in determining State standards or policies in the certification of teachers*

Item	Frequency of mention
Advice and conference of institutional authorities with State superintendent of education or board	8
President of institution is member of State board of education or board of examiners	6
Members of staff function prominently on advisory committees appointed by State department of education	4
Offer general suggestions to State board	2
University standards are higher than and set the pace for State requirements	2
Institutions represented on State department committees	2
Held membership in State education association legislative committee	2
Recommend changes	1
State supervisor of agricultural education and State supervisor of home economics are employed jointly by the college and State board of education and in large measure determine certification requirements in these fields	1
Department of education of university is influential in securing more professional training for certification by State	1
Cooperative agreement reached regarding acceptance of institution for certification	1
Results of research made available to certificating authorities	1
State supervisor influential	1
Dean is assistant to commissioner of education	1
Dean of college is member of State board of education	1

Relationships of Local City and Community with Teacher-Training Units

Except for the provision of observation and student teaching facilities, local school systems and the local community as a whole appear to afford very limited assistance in the teacher-training

programs of the land-grant institutions. For instance, the parent-teachers' association does not function as extensively in the teacher-training programs of the land-grant institutions as in the public schools. Prospective teachers should, however, at least be informed concerning the general organization, purposes, and activities of this important organization. Teachers in training will later, in all probability, be called upon to work in some way with the association and with similar organizations. The building up of cooperative relationships with local public schools and with the local community is possible to a much greater extent in most institutions.

Some ways in which local public-school officials and teachers could be of further assistance to the teacher-training units, include the provision of research facilities and materials, such as school records and plant facilities for education classes. Opportunities could be provided for class excursions; for visiting privileges resulting in first-hand contacts by student teachers with actual school conditions; for local school community work; for student teachers to attend teachers' meetings and to receive first-hand contacts with local teachers and school officials; for seniors to do substitute teaching; loans of school equipment; library facilities; opportunities for physical education or health programs; lectures by or conferences with local educators; opportunities for local surveys; and cooperative curriculum revision programs.

Administrative Organization of Teacher Training Within the Land-Grant Institutions

The existing confusion in the organization of teacher-training activities in the land-grant institutions is heightened by the prevailing confusion in the terminology applied to teacher-training units. Wherever possible, without danger of obscurity, the following terminology has been adopted by this part of the survey report. These conventionalized definitions, offered only in the interest of uniformity and to promote a better degree of understanding, do not always follow present practice in land-grant colleges. Objections on this score may be offered to any one of the definitions.

College of education.—A part of a university, requiring for admission graduation from a standard secondary school or the equivalent, offering a 4-year curriculum leading to the first degree, and functioning primarily in the preparation of teachers.

School of education.—A part of a university, the standard admission to which is not less than the equivalent of two years of college work and which offers instruction of not less than two years' duration leading to a degree in education or to an equivalent degree.

Division of education.—An organic portion of an institution, which is primarily devoted to teacher training and which is larger or more independent than a department. A major division is a division, the head of which reports directly to the president; it may be considered the equivalent of a school or college of education.

Department of education.—A unit of instruction confined to a subject or subjects in the field of professional education.

Curriculum of teacher training.—A systematic arrangement of courses leading to a certificate, diploma, or degree, which extends through one or more years; which is planned for a clearly differentiated group of pupils; and within which a student is restricted in his choice of work.

Course in education.—A subdivision of the subject of education; for instance, principles of teaching. The administrative organization of teacher training in land-grant institutions is extremely varied and complex. In no two institutions is the organization exactly the same. Many factors determine this confusion of administrative organization. The philosophy of the institution as a whole concerning the nature of teaching and the desirability of genuine professional training has much to do with the organization set up. Placed in the midst of a considerable number of other institutional activities, many of which are competing for funds, prestige, and power, teacher-training activities are conditioned to a considerable degree by the attitudes of other parts of the institution. Educational leadership within the institution, of course, also has much to do with the administrative organization.

The necessity for the recognition of teacher training as a major activity with an administrative set-up in keeping with its importance is fairly apparent. Approximately one-quarter of the graduates of the colleges of agriculture, a still larger number of home economics and of arts and science graduates, and nearly three-quarters of the graduate students who secure the doctor's degree, enter teaching. The necessity for specific professional training for public-school teachers is no longer a theoretical contention; such training is mandatory in practically all the States and is required almost everywhere by public-school employers.

In some institutions, the minimum number of courses in professional education necessary to meet State certification requirements constitute the entire "professional" element of the teacher-training program. These courses are carried as a side line to the major subject-matter offerings. The courses in education may be given in any major division, such as arts and sciences, agriculture, or home economics. The courses dispersed among the various divisions may or may not be unified. In other institutions, a department of general education may be organized, that may or may not include courses in special methods. Special methods courses may be taught as single courses or in departments in almost any major subject-matter division. In still other institutions, a school, college, or major division of education may be established, which

may include varying numbers of teacher-training departments, while in the same institutions subject-matter schools or colleges may also have organized teacher-training courses or departments. The combinations or the foregoing types of organization are limited only by the number of institutions.

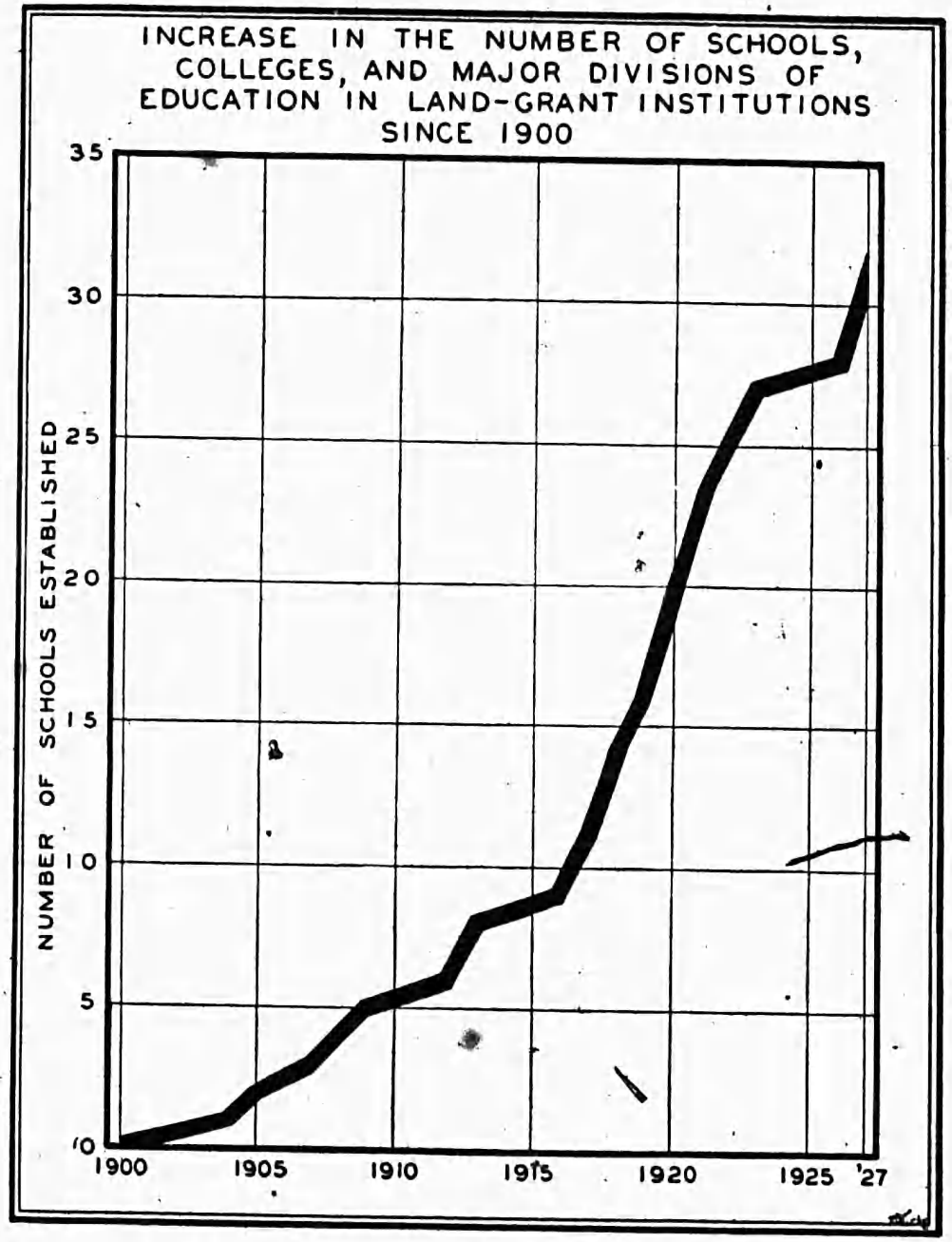
Even when some type of administrative organization seems clearly defined for an institution, closer analysis of the way the organization actually functions discloses further difficulties. Many conditions have a bearing on the administrative organization, but are rarely met in the same way by two institutions having what appears to be the same type of administrative organization.

The school or college of education is often merely a part of the institution in which courses in education are grouped for convenience. Only a limited amount of coordination of teacher-training activities is afforded. Frequently, no distinguishing degree is conferred upon graduates working in such major units. Often little or no control is exercised over the academic or technical subject matter taken by prospective teachers, although a measure of such control sometimes is theoretically granted to the college of education. Very few institutions report that all prospective teachers register in the school, college, or major division of education. As elsewhere noted in detail, such functions as the determination of the budget, the selection of staff members, the revision and enlargement of the curriculum, professional guidance, and other important functions are undertaken by a great variety of agencies, least important among which is sometimes the major division of education.

Worse conditions than these are possible, in so far as a unified program for the professional education of teachers is concerned, only in institutions having a number of teacher-training units with no institutional coordinating agencies whatever. Consideration of detailed aspects of the institutional administrative organization of teacher training, therefore, seems desirable to ascertain points of weakness that may be strengthened in the slow evolution of professional schools for teachers.

Of the 52 land-grant institutions, 31 have schools, colleges, or equivalent major divisions of education. There is a larger number of such major units among the State universities than among the 25 separated land-grant colleges; of the latter, only 10 have schools or major divisions of education. These classifications, shown in Table 1, are more or less tentative, for reasons previously mentioned.

The tendency is clearly toward a greater degree of unification of teacher-training activities in most of the land-grant institutions. The rate of growth in number of colleges, schools, and major divisions is indicated graphically in the following chart:



Representation of Instructors in Teacher-Training Units in Other Divisions of the Institution

One measure of the influence of teacher-training units in the administrative and professional affairs of the institutions is the extent to which these units have representation and voting privileges in the other administrative units, several of which largely affect the status and advancement of teacher-training. Such representation is indicated in Table 12, which should be read as follows: The department of agricultural education in 31 institutions has representation in the college or major division of agriculture, by staff members with voting

privileges; in two institutions, similar representation in the division or colleges of home economics, and so on.

TABLE 12.—*Frequency with which teacher-training departments or similar units have representation by staff members with voting privileges in the major divisions of the institutions*

Teacher-training department or similar unit	Number of units reporting	Number of staff members in—					
		Agriculture	Home economics	Education	Arts and sciences	Engineering	Others
1	2	3	4	5	6	7	8
Agricultural education	39	31	2	23	5	1	1
Home economics education	37	8	20	22	5	0	1
Industrial education	27	1	0	19	0	6	1
Education (general)	36	4	2	31	13	1	1
Commercial education	11	0	0	8	2	0	4
Physical education for men	23	0	1	17	8	0	1
Physical education for women	24	0	3	15	10	0	3
Public-school music	14	0	0	10	5	0	3
Art education	13	0	2	9	3	0	1

Selection of Teacher-Training Staff

One of the most important administrative functions of teacher-training officials is the selection of the teacher-training staff. Practice in this respect is shown in Table 13. In the general education major divisions and departments this function is usually exercised by the education officials themselves, although in several institutions officials other than those in educations participate in the selection of teachers of this subject.

In 25 institutions the head of the department of education originally proposes or initiates the selection of teacher-training staff members; in 14 institutions the dean or director of education originally proposes or initiates the selection. The official who actually selects is the dean or director of education in 16 institutions; and the head of the departments of education in 14 institutions. The presidents of the 35 institutions reporting approve the selection of staff members. The board of trustees, of course, in practically all institutions have the final power of appointment of staff members. In one institution the president proposes or initiates selection and in four institutions he actually selects teacher-training staff members.

In the land-grant institutions having no major divisions but only separated departments of teacher training, the officials concerned in the selection of the teacher-training staff members are very often members of technical subject-matter departments. In home economics education, for instance, the head of the department of home economics originally proposes or initiates the selection of staff members in 16 institutions. (See Table 14.) In only a very few institutions does the head of a department of education initiate selection. Similarly the head of a department of home economics actually selects the staff members in home economics education in

11 institutions, whereas in only three institutions does the head of the department of education exercise this function.

In 1 institution the dean of agriculture initiates selection. In 3 institutions he actually selects and in 4 institutions he approves the selection of home economics teacher-training staff members. The dean or director of the school or college of education in 3 institutions initiates selection; in 5 actually selects; and in 4 approves the selection of home economics teacher-training staff members. Of the relatively small number of deans of home economics, 1 initiates selection; 2 actually select; and 2 approve the selection of home economics teacher-training staff members. In 4 institutions the president actually selects such staff members and in practically all the institutions he approves the selection, while the board of trustees appoints. Five States report that the State board for vocational education approves the selection of teacher-training staff members in home economics. Various other State or institutional officials are reported as participating in the selection in a few States.

TABLE 13.—*Officials concerned in the selection of staff members in general education and arts and science teacher-training units*

Official	Frequency of function			
	Originally propose or initiate selection	Actually select	Approve selection	Appoint
1	2	3	4	5
Head of department of education	25	14	1	0
Dean or director of school, college, or major division of education	14	16	7	0
Dean of faculty (or of university)	0	0	2	0
Dean of arts and science	0	1	1	0
Dean of women's college	0	2	1	0
President of institution	1	4	35	2
State board for vocational education	0	0	2	0
Board of trustees (or regents)	0	1	0	35

TABLE 14.—*Officials concerned in the selection of staff members in the home economics teacher-training units*

Official	Frequency of function			
	Originally propose or initiate selection	Actually select	Approve selection	Appoint
1	2	3	4	5
Head of department of home economics	16	11	1	0
Head of department of education	3	3	0	0
Dean or director of education	3	5	4	0
Dean or director of agriculture	1	3	2	0
Dean of home economics	1	2	2	0
Dean of women's college	0	2	0	0
Dean of university	0	0	1	0
President (or chancellor) of institution	0	4	23	1
State board for vocational education	0	0	5	1
State supervisor of home economics	1	0	0	0
State board of education	0	0	1	1
State board of agriculture	0	0	0	1
Board of trustees (or regents)	0	0	0	22

Other things being equal, it is a natural expectation that officials trained in education and thoroughly informed as to the instructional needs of teacher-training staff members should be responsible in large measure for the selection of these instructors. The cooperation of the teacher-training officials should be invited in the selection of staff members in any field the work of which is largely with prospective teachers. If teacher training is to be advanced to the level of professional education of teachers, every possible means should be utilized to insure the proper selection of staff members. Full possibilities in this direction have not yet been realized in the land-grant institutions.

Budgetary Procedure

Teacher-training officials are interested in the matter of budgetary procedure in its bearing on the amount of financial support and recognition accorded teacher training. Numerous weak and dispersed teacher-training units, keenly aware of their lack of influence in institutional councils that accompanies their lack of unity, are very skeptical about the consideration accorded by the powerful academic and technical colleges to the minor, unrelated teacher-training departments.

Most of the institutions report that efforts are made by the dean of education to secure participation by staff officers in the formulation of the budget. Various means are employed to secure such participation. The most common one employed is by individual or group conferences of the dean with departmental staff officers. This method is reported in 20 institutions. In a substantial number of institutions the deans confer with departmental or divisional heads. Budget estimates are occasionally requested of staff members, and in one institution the dean encourages the heads of the departments to call staff meetings for agreement on departmental needs. In a few institutions the heads of the departments are encouraged to consult the staff members. In only three institutions is the formulation of the budget very largely delegated to the heads of the several departments, although in most institutions the heads of the departments initiate budget estimates within their own departments.

In only eight institutions were the rank and file of staff members in education reported as participating in the formulation of the budget. Prevalent indifference on the part of staff members may be remedied by extending this privilege. Not only would officers profit by closer insight into the ideas and aspirations of staff members but the staff members themselves would profit by an understanding of administrative necessities and policies and would not so often feel that their wishes are not given proper consideration.

General institutional officers should in any case employ administrative machinery that enables them to formulate a balanced budget for the institution as a whole. Difficulty occurs when, because of the ineffective administrative organization of teacher-training units, such units do not in fact receive the recognition they deserve in the determination of their own budgetary items. Budgetary procedure that will afford most satisfactory results for professional teacher training will result from proper administrative unity and organization of separated teacher-training units. Such organization implies participation in budget making by education staff members, heads of teacher-training departments, the dean of education, the financial officer, the president, and the governing board of the institution. In addition, participation in certain aspects of budget making will often be necessary on the part of other agencies, such as State financial officers and deans of technical or academic divisions in certain separated land-grant colleges. The essential thing is full and equal participation in the making of the budget by officers whose programs are affected by budgetary allotments.

Registration of Students

Another indication of the incomplete stage of administrative development of schools, colleges, or major division of education, is shown in the reports of 28 institutions concerning the proportion of prospective teachers who register in education. In only 3 institutions do all prospective teachers register in the school, college, or major division of education. In 10 institutions three-fourths of the prospective teachers register in the professional school of education. In 11 institutions half of the students so register, and in 4 institutions, one-fourth only of the teachers in training register in the professional school provided for their training. Less than two-thirds of the prospective teachers register in the professional schools provided for them.

It is argued that local conditions may sometimes justify the registration of prospective teachers in academic or technical subject-matter departments, even though a school of education is provided. For instance, in the allocation of funds to the several major divisions or in advancing reasons for larger State support of such divisions, significance may be attached to the enrollment figures of certain major units other than education. This argument is based on the assumption that taxpayers or their representatives are more interested in supporting colleges of agriculture or of engineering than they are in supporting colleges, schools, or departments that endeavor better to train teachers for the children of the taxpayers. However, officers administering Smith-Hughes subsidies have found

that abundant provisions for trained teachers is one of the very best ways to advance the teaching of vocational subjects and of securing popular support for vocational education.

It is possible for the major division of education to afford substantial professional assistance to prospective teachers regardless of the divisions of the institution in which such students are registered. The situation should afford a challenge to professional educators to develop a type of professional school which shall afford the offerings, command the respect, and exercise the powers of a professional training unit.

The officials who approve the program of studies each semester or term for students in arts and science teacher training or for general courses in education are, in three-fourths of the institutions, the heads of the departments or of the schools, colleges, or major divisions of education. Officials who approve the student program of studies in vocational and other special fields of teacher training are usually, however, staff members or officials whose primary interest is in technical fields. It is doubtful whether such officials by themselves can afford the same quality of professional guidance to prospective public-school teachers that can be afforded in conjunction with trained and experienced practitioners in the field of public-school education. Cooperation between the professional education departments and the technical or academic subject-matter departments is essential. All staff members and officials engaged in teaching education should acquaint themselves with the academic and subject-matter needs of the prospective teachers. The professional educator is just as likely as anyone else to become a narrow specialist in his field. Modern education is insistent upon a broad and inclusive conception of all the elements entering into the professional equipment of the teacher.

Officials Responsible for the Determination of the Content and Requirements of the Teacher-Training Curricula

One cause of the almost phenomenal growth of separated State teachers' colleges has undoubtedly been the result of the relative independence of the officials of these institutions. Colleges of education in the universities possess all the advantages of rich contacts in large centers of learning and research but their programs must be constructed and developed with an eye to the needs or demands of other parts of the institution. In most institutions, no courses in professional education may be added without the participation of general institutional agencies, such as the general faculty committee, the dean of resident instruction, and deans of major technical or vocational subject-matter divisions other than education. The nature of the organization under which the teacher-training unit or units

operates is a powerful determining factor in the nature and extent of the growth of professional teacher training.

Changes in Administrative Organization and Relationships Suggested by Teacher Trainers

Changes in the administrative organization and relationships of the teacher-training units believed desirable by teacher-training officials in the land-grant institutions were reported in detail. These changes reported by teacher-training officials may by no means represent the opinion of the administrative officers or staff members of the institution not primarily interested in teacher trainings; nor indeed will the teacher-training staff members in all cases agree. It is believed, however, that the expression of the opinions and attitudes of the teacher trainers in the several institutions, is of interest and value.

TABLE 15.—*Activities in respect to which improvement is desired by officials of the institutions in the coordination of separated teacher-training activities in two or more major divisions of the institutions*

Item	Order of frequency of mention
Student guidance and advisement in reference to selection of teacher-training curricula	1
Interchange of professional knowledge and viewpoints among departments; conduct of staff conferences	2
Securing adequate budgetary appropriations for teacher-training programs	3
Selection of courses in field of specialization (exclusive of education) which constitute a part of the teacher-training curricula	4
Placement of teachers trained in different departments	5
Standardization of course requirements	6
Formulation and revision of courses in education offered by different units	7
Selection of teacher-training staff serving two or more teacher-training units	8
Coordination of training-in-service programs	9
Avoidance of duplication in specific content of courses	10
Avoidance of duplication in staff in two or more units	11
Avoidance by departments of duplications in courses offered	12
Supervision and coordination of student teaching and observation	13
Avoidance of duplication in use of equipment and facilities	14
Elimination of competition for students in classes offering equivalent work	15
Distribution of time and services of part-time teachers serving two or more teacher-training units	16
Allotment of adequate funds to the several teacher-training units	17
Cooperation between subject-matter departments and the major division of education	18
Delegation of responsibility for work	19
Making of prompt reports	20
Maintenance of higher standards of work	21
Coordination of special methods and general methods courses	22
Elimination of competition for students as between major divisions	23
Provision of adequate practice and observation facilities for students in minor separated teacher-training units	24
Promotion of professional as well as academic interests of teachers	25

Of the 29 institutions reporting, two-thirds express the opinion that the present organization should be strengthened by further consolidation or cooperation of administrative units. Less than one-fifth of the entire number of institutions in which the problem applies report no further changes necessary. Evidence that the mere catalogue creation of a school or college of education by no means insures harmony and coordination of activities is seen in the fact that as many institutions having schools and colleges of education reported the need for further coordination of teacher training, as was the case of institutions having no such major units. There is abundant evidence that the major divisions of education in many institutions are still in the process of administrative and professional development, and that their objectives and powers are still in the making.

Table 15 indicates in approximate order of frequency the specific administrative functions in respect to which difficulty is encountered by the institutional administration in the coordination of professional activities, both in dispersed teacher-training units and in colleges, schools, or major divisions of education. These difficulties must be considered in any program of reorganization. Some of them will automatically disappear upon the establishment of a unified teacher-training organization. The extent to which this will happen depends upon the thoroughness and soundness of the organization set-up. In any case, these difficulties must be faced in the development of constructive reorganization programs, and their solution one by one will mark the course of future progress.

Numerous changes in administrative organization of separated teacher-training units may precede the establishment of a unified organization. A school or college of education may be established in name only. Thereafter there is nearly always the need for putting the organization on a sound functional basis. A number of changes toward this end are reported. Typical among such changes during the past three years are the following:

In Colorado Agricultural College home economics education was transferred from the department of home economics to rural education; in Oregon Agricultural College the requirement was made that all teacher-training registrations be brought to the attention of the dean of education; in the University of Tennessee, the school of education was made into a college of education with its own dean, faculty, and curricula; in Rutgers University teacher training was extended to new departments of art, physical education, and library; in Cornell University a division of education was formed for closer cooperation of the department of education in the arts college and the department of rural education in the colleges of agriculture and home economics; in the University of Vermont a commercial curric-

ulum was arranged through the cooperation of the departments of education and of commerce and economics; in the State College of Washington definite subject-matter requirements for teachers' certificates were agreed upon by the school of education and subject-matter departments.

Many other changes and adjustments could be listed, pointing in various degrees to increasing cooperation among units. There is every reason to believe that this movement will continue. Reorganization will not be attained all at once nor can any one set type of organization meet the needs of all the States. The growing professionalization of public-school teaching, which necessitates increased and more effective professional preparation of teachers, will ultimately result in appropriate administrative organization and offerings.

Chapter VI.—Fiscal Aspects

Existing systems of accounting do not render it possible to state the exact amounts expended by the land-grant institutions for teacher training. The proportion of expenditures for the instruction of trainees and for other students attending together classes in technical and in academic subjects is not commonly differentiated. The expenses for maintenance and upkeep of plant, supplies, overhead expenses, and other expenditures for trainees and for other students can not be apportioned accurately. Reports, however, were received stating the total paid in salaries of teachers of education. The approximate total reported for 1927–28 was $1,637,190. This constitutes about 2 per cent of the total for all salaries officially reported in 1918 for the land-grant institutions and about 4 per cent of the amount spent for salaries in resident instruction only. Since roughly one-seventh of the training of the typical graduate in teacher training is in professional education and in view of the fact that from one-fourth to one-half or more of the resident students in land-grant institutions plan to teach, the amount spent for instruction in professional education courses appears very small.

Of the total of approximately $1,637,190 spent in 1927–28 for salaries of teachers of education in the teacher units of all land-grant institutions, $331,615 was spent for salaries of teachers of professional courses in agricultural education; $296,593 in home-economics education; $150,121 in industrial education; $780,811 in general education; and $77,050 for salaries of teachers of education in other teacher-training units, such as physical education, music, art, etc. These amounts are approximate since many courses in general education are attended alike by prospective teachers of agriculture, home economics, arts and science, and the other teacher-training units. The amounts afford, however, a rough indication of the distribution of expenditures for salaries of teachers of courses in education among the several teacher-training units.

Scholarships and Fellowships

Scholarships, fellowships, and other forms of financial assistance offered to students of the institutions are discussed in another part of the survey report.[4] About one-fourth of the land-grant institutions afford some kind of financial assistance that is offered exclusively or primarily to teachers in training. The most common form of assistance is by awarding scholarships or fellowships, re-

[4] See Vol. I, Part VI, Student Relations and Welfare.

ported by nine institutions. The money value of these scholarships and fellowships ranges from $30 to $100. Fees and tuitions are remitted wholly or in part for prospective teachers during the regular session in four institutions.

In North Carolina State College free tuition is granted students on their promise to teach. In Pennsylvania State College students in vocational agriculture, home economics, and industrial education have fees remitted for vocational courses. In the University of Vermont tuition fees of $200 per year are allowed elementary education students by the State board of education. In the Virginia Agricultural and Mechanical College tuition allowances are made during the summer school, but not during the regular session, for those employed as teachers in the State.

Self-Help for Prospective Teachers

Nineteen institutions report that opportunities are available for students to assist in the payment of college expenses by securing employment in teaching. Openings for tutors, of course, are common. Evening schools afford employment in 6 institutions; while 24 institutions report that student instructors are employed, and 34 report the employment of student assistants. A variety of special teaching employments is reported, such as the teaching of music. Only occasionally may the student expect to defray any considerable part of his expenses by part-time teaching in public schools.

Chapter VII.—Physical Plant and Housing Facilities

Buildings Utilized by Teacher-Training Units

The courses in education in the smaller land-grant institutions are usually taught in the same buildings utilized by academic or vocational subject-matter divisions. The comparatively small number of classes taught in professional education in many of these institutions renders impractical the provision of separate buildings for teacher training except for student teaching.

Nineteen institutions, usually the larger ones, report separate education buildings, the chief use of which is to offer housing for regular class work, offices, psychological laboratories, and similar facilities. The typical building of this sort was constructed in 1911. It was not originally designed for teacher training. It is three stories in height, and is of brick construction. No elevators are provided. It is a building of nine rooms, one or two of which are not utilized by teacher-training units. The estimated present value of the building, less value of equipment, is $100,000. The general desirability of the locality in which the building is placed is about the same as that of other main buildings on the campus. The internal structure of the building, with respect to stairways, corridors, etc., is only fairly good in keeping with the usual conditions in buildings nearly 20 years of age.

Five buildings, utilized primarily for teacher-training purposes, were constructed before 1899. About a dozen have been constructed within the past 10 years. The range in the number of rooms utilized by teacher-training units is from 1 to 62. The lowest estimated present value of any building is $4,000, while the highest evaluation set was $600,000.

Deans and other staff members in education are fully aware of the desirability of having, whenever possible, a definite section of the institutional plant set off for the school or college of education. In many small institutions, of course, it is necessary for the teacher-training department to share the same classrooms with other departments. This is entirely permissible in many situations. Studies in secondary education have shown that most high-school classrooms are not utilized to the fullest extent possible; and the situation, as gathered from the few studies available and as noted in the field work of the survey, is often worse in the colleges and universities. However, while it is a needless expense to provide and maintain class-

rooms not utilized most of the school day, it is possible in a number of institutions to make rearrangements so that classes in related subjects may be placed in convenient proximity. In the larger institutions, of course, the provision of a separate building or separate buildings for schools or colleges of education is possible. In the present state of the development of professional teaching, any legitimate device which tends to promote a consciousness of professional solidarity, instructional effectiveness, and general faculty and student esprit de corps is worthy of adoption. In many institutions extensive and diverse programs of instruction, experimentation, research, and other activities render very desirable the grouping of such activities in one building or group of buildings, appropriate to a professional school or college.

Service Provisions

The service provisions of the buildings, classrooms, and laboratories utilized by teacher-training units are reported unsatisfactory in respect to the following items in 10 per cent or more of the land-grant institutions: Ventilation, fire protection, electric service system, including telephone, fire alarm and call systems, toilet system, locker and clockroom service, and storage service. There seems no reason why service systems in respect to these items should not be made satisfactory. One of the most effective means of promoting the best work of the institutional staff is to remove causes for discomfort and dissatisfaction in the physical surroundings of such workers.

Judging from reports, satisfactory conditions exist in almost all the land-grant institutions in respect to science laboratories utilized by teacher-training departments. These departments utilize as a rule the science laboratories of the arts and science and the technical departments.

Complaint was expressed by six institutions relative to the capacity and equipment of special rooms, including shops, rooms for commercial work, music rooms, etc. Practical work in teacher training is an important element of the program and teacher trainers are sensitive to needs in these fields. Nowadays, public-school teachers everywhere must know something of music, art, physical education and health, and similar subjects in order to meet public-school needs. Neglect in the provision of necessary housing facilities and the necessary equipment is indefensible in respect to these important fields.

Chapter VIII.—Staff

Institutional authorities are evidently not satisfied with the existing qualification of their teacher-training faculties. Existing difficulties and uncertainties in the selection of staff members are intensified by the uncertainty of many institutions as to just what requirements they are in a position to set up. (See Table 16.) The qualifications of the best man to be secured for the money available often determines the "requirements" of the institution. The institutions paying the best salaries are in a position to prescribe the more rigid minimum requirements.

TABLE 16.—*Qualifications for the selection of staff members for teacher-training units—required in the 37 institutions reporting*

Staff members	Highest degrees required				Number of years experience				Number of years for which original appointment is made				
	Not set	Bachelor's	Master's	Ph. D., or Ed. D., or equivalent	Not set	1 year	2 to 4 years	5 to 10 years	Not set	1 year	2 years	3 years	5 years
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Dean	6	1	2	18	11	0	1	5	16	4	0	1	0
Head of department	1	2	9	19	10	0	1	11	14	12	0	2	0
Professor	2	2	14	24	8	0	4	9	14	14	0	2	0
Associate professor	0	4	14	13	14	0	10	5	13	16	0	1	1
Assistant professor	5	6	23	5	22	0	10	4	14	15	1	5	0
Instructor	9	13	14	1	26	3	6	0	17	14	1	1	0
Critic or demonstration teacher	1	10	7	4	8	0	4	4	7	9	0	1	0

Table 16 indicates the comparatively small number of institutions that specify definite minimum amounts of training in professional education. Doubtless, the possession of some indeterminate amount of training of this type is taken for granted, but most employers of teachers of education apply very indefinite standards. There is no such vagueness in the minds of employers of teachers of agriculture or of engineering, in respect to the candidate's mastery of the field of his specialty.

The nature of experience expected or required of heads of departments and for deans is set forth a little more definitely, but again much uncertainty is evident. It is difficult, of course, to evaluate the nature of experience in definite objective terms. Public-

school teaching experience as a requirement is mentioned with comparative frequency and college teaching experience is also commonly mentioned. As in selecting public-school teachers, employers display considerable interest in the records of candidates in meeting the practical problems of positions previously held.

The training required of the instructional staff of the teacher-training units is somewhat more definite than for the training of staff officers. Special training of some sort in the specific field of instruction is, as might be expected, required for nearly all new college teachers. A substitute sometimes accepted for special training is valuable experience attested by considerable professional or individual prestige.

College teaching experience, often desired of new college staff members by employing officials, is by no means universally required. There is a noticeable tendency on the part of teacher-training employing officials to demand public-school experience of instructors on their staffs. The practice of offering purely theoretical or academic instruction in education often results in dislike of education courses on the part of inexperienced trainees. When practical schoolmen are employed on teacher-training staffs, their experience functions in their instructions. Students are trained more nearly for practical work. They are more easily imbued with desirable preservice attitudes. Teacher training in many ways is on a sounder basis when the instructional staff has a good percentage of its members with an extensive and first-hand knowledge of practical public-school needs.

Training of Teachers of Education

The highest degrees held by teachers of education in the several teacher-training units are shown in Table 17. It will be noted that general education has a considerably larger percentage of teachers with doctor's degrees than any other teacher-training unit; and correspondingly, a smaller percentage whose highest degree is the bachelor's. The number of teachers in vocational and nonacademic units who have a doctor's degree, is disappointingly low. There seems no justifiable reason why the training of college teachers of vocational and nonacademic subjects should be less than that of teachers of arts and science subjects.

The percentage of teacher-training staff members who have no degrees has rapidly decreased during recent years. It will be noted that few staff members in agricultural education, home economics education, general education, and commercial education have no degree. Industrial education, physical education for men, and public-

school music have the largest percentage of teachers with no degree. The importance of the elements of training offered by these units does not justify the low status of the training of college teachers of these subjects. In recent years great importance has been attached to the nonacademic or special subjects in the public schools. Public-school teachers in these fields are now in greater demand than are teachers of the older arts and science subjects. A program of expansion of teacher training beginning with the provisions for increased training of staff members in these fields might well be undertaken in some institutions even at the expense of the older subjects.

TABLE 17.—*Highest degrees held by teachers of education in the several teacher-training units*

Teacher-training unit	Total number of teachers	Number and percentage of staff members							
		Having no degree	Per cent	Bachelor's	Per cent	Master's	Per cent	Doctor's	Per cent
1	2	3	4	5	6	7	8	9	10
Agricultural education	116	1	0.9	33	28.4	65	56.0	17	14.7
Industrial education	62	11	17.7	27	43.6	18	29.0	6	9.7
Home economics education	123	2	1.6	51	41.5	63	51.2	7	5.7
Education	353	4	1.2	96	27.2	136	38.5	117	33.1
Commercial education	10	0	0	6	60.0	4	40.0	0	0
Physical education for men	83	15	18.1	54	65.1	10	12.0	4	4.8
Physical education for women	38	2	5.3	23	60.5	10	26.3	3	7.9
Public-school music	21	11	52.4	10	47.6	0	0	0	0
Art education	19	2	10.5	14	73.7	3	15.8	0	0
Others	97	6	6.2	32	33.0	37	38.1	22	22.7
All units (including duplicates)	922	54	54.0	346	37.5	346	37.5	176	19.1

Highest Degrees Distributed by Faculty Ranks

In Table 18 are shown the highest degrees held by teachers of education distributed by faculty ranks. There is, of course, a definite correspondence between faculty rank and training. Approximately two-thirds of the deans have the doctor's degree, one-half of the professors, one-fourth of the associate professors, and one-fifth of the assistant professors. Of the total number of 850 staff members of all ranks, 24 per cent have the doctor's degree; 38.7 per cent have the master's degree as their highest; and 32 per cent have the bachelor's degree as their highest; 5.3 per cent have no degrees.

In Table 18 reports are shown for some staff members, chiefly in the training schools, who have no faculty rank. Some differences, therefore, are shown in Table 17 in the percentages of teachers holding the several degrees, especially the doctorate.

TABLE 18.—*Highest degrees held by teachers of education, distributed by faculty ranks*

Rank	Number of staff members	Number and per cent of staff members—							
		Having no degree		Having for their highest degree the—					
				Bachelor's		Master's		Doctor's	
		Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
1	2	3	4	5	6	7	8	9	10
Deans	28	0	------	0	------	10	35.7	18	64.3
Professors	213	3	1.4	26	12.2	74	34.7	110	51.7
Associate professors	108	1	.9	21	19.4	57	52.8	29	26.9
Assistant professors	134	6	4.5	38	28.3	62	46.3	28	20.9
Instructors	216	14	6.5	92	42.6	98	45.4	12	5.5
Assistants	47	3	6.4	30	63.8	14	29.8	0	------
Others	104	18	17.3	65	62.5	14	13.5	7	6.7
Total	850	45	5.3	272	32.0	329	38.7	204	24.0

Professional Training of Staff Members

The number of semester hours in professional education subjects taken by the younger teacher-training staff members affords one indication of the extent of their professional equipment. It is an indication only, and not an accurate measure, since the courses themselves can not always be clearly defined, and are not always of equivalent value. The number of semester hours taken in professional education subject matter does not afford even an indication of the professional training of some of the older staff members; for professional education is comparatively a new field, and several leaders in American education at the present time who have contributed most to the development of the field probably never had, as students, an hour's formal class work in professional education subject matter as presented to-day. Nevertheless, a universal and just concern of employing officials of higher institutions is the amount of college or university training in the specific field to be taught that is offered by prospective staff members who have not otherwise attained mastery of, or distinction in, their field. Hence the typical number of semester hours of institutional training in professional education received by the younger teachers of courses in education is of sufficient significance to merit consideration. In the future, this measure or its equivalent will constitute more and more a valid indication of comparative status in respect to professional training.

In Table 19 the approximate median number of semester hours taken in education subjects by 627 teachers of courses in professional

education is shown. Detailed institutional comparisons on the basis set up result in no valid conclusions. Of interest, however, is the variation in the professional training of staff members in the several teacher-training units. Much apparently is yet to be done in promoting the professional training of institutional teachers of nonacademic or special subjects.

TABLE 19.—*Number of semester hours in professional education subjects received by teacher-training staff members in 46 institutions reporting*

Subject	Approximate median number of semester hours' training
General education	52
Agricultural education	38
Home-economics education	35
Industrial education	30
Commercial education	25
Physical education for women	25
Art education	25
Physical education for men	20
Public-school music	15
Others	10

It is a matter of common knowledge that the requirements in professional education are steadily increasing for teacher-training staff members. Such increases should continue, for of the 627 staff members for whom reports were received, 13 had less than one-half year's work in professional education. Most teachers in accredited high schools are required to have more professional training. Thirty-seven staff members who teach professional education courses reported no training at all in this field. Many of these teachers would not be permitted to teach in the high schools of their States. Only one-sixth of the total number of staff members had as much as two and a half or more years of training in professional education.

The 15 institutions most commonly reported in which teachers of courses in education received their highest degrees are shown in Table 20. Returns are given for all institutions reporting, for the separated land-grant colleges and for the State universities. Institutions in which fewer than seven faculty members reported receiving their training are not listed. Scores of such institutions were mentioned. No particular significance should be attached to slight differences in the rank of certain institutions contributing about the same number of teachers to the staffs of the land-grant institutions. This table does not, of course, indicate where most undergraduate training nor all graduate training was received, nor does it always show where technical and academic training was received. Likewise, no valid measure is given of the present output of the colleges and schools of education in the institutions listed.

If these items were considered, the rank of institutions listed might be different.

Of a total of 472 staff members teaching courses in education for whom returns were utilized, 244, or 52 per cent, received their highest degrees in land-grant institutions.

Since many teachers of courses in education received part and sometimes all their graduate training in service, largely in summer school, those institutions that now have or that have had large summer schools are well represented in the list given.

TABLE 20.—*Institutions most commonly reported in which teachers of courses in education received their highest degrees*

Institution	Number of staff members		
	Total land-grant institutions	Land-grant State universities	Separated land-grant colleges
1	2	3	4
Teachers College, Columbia University	117	69	48
University of Chicago	32	17	15
University of Minnesota	30	27	3
Cornell University	26	13	13
University of Nebraska	23	20	3
University of Wisconsin	22	13	9
Ohio State University	16	15	1
Iowa State College of Agriculture and Mechanic Arts	15	1	14
Harvard University	12	7	5
University of Iowa	11	6	5
University of Illinois	11	8	3
University of California	10	10	0
Kansas State Agricultural College	9	0	9
Stanford University	8	5	3
University of Tennessee	8	8	0

The percentage of teachers of courses in education who received their highest degrees in the institutions in which they were teaching in 1927–28 is worthy of note. One institution reported that between 60 and 80 per cent of its teacher-training staff received their highest degrees in that institution; 8 institutions reported from 40 to 60 per cent of their staffs so trained; 13 institutions reported 20 to 40 per cent; and 18 institutions less than 20 per cent. While the question of inbreeding is exceedingly complex, and there is much to be said for the practice of hand-picking promising material from the graduate student body for future service on the faculty, a higher institution of learning is the last place in the world in which inbreeding of ideas and the development of provincialism and undue self-sufficiency should be permitted.

Faculty Rank

Faculty ranks held by 922 teachers of education are shown for the several teacher-training units in Table 21. The largest percent-

age of teachers holding the rank of professor is found in the agricultural education unit, with 40.5 per cent of the staff with this rank. Second in order is the general education unit with approximately 35.1 per cent of the staff members with the rank of professor. The institutional prestige of teachers is considerably dependent upon their rank; it is to be regretted that teachers of public-school music, art education, and commercial education have such a poor showing in this respect. Of all staff members, approximately 28.5 per cent have the rank of professor; 14.1 per cent the rank of associate professor; 19 per cent assistant professor; and 21.6 per cent the rank of instructor.

There is evidence in a number of institutions that the proportion of faculty membership in each rank is not determined by any definite standards. An unduly large proportion of instructors or assistants, for instance, is indicated in the individual reports of several land-grant institutions. Occasionally there is a preponderance of professors with comparatively little training. Some arbitrary proposals relative to faculty distribution among the several ranks have been made, but no authoritative principles or standards have ever been worked out that are acceptable in all situations. The size of the institution, the extent to which the work is departmentalized, the amount of financial support, the nature of the work done, the number of students in graduate work and in each undergraduate year all have a bearing and make necessary a study of the individual needs of each institution.

Consideration of the faculty ranks of demonstration and supervising teachers is given elsewhere. In comparison with the general faculty in rank, salary, training, and general institutional prestige, the training school teachers make a very poor showing.

The general training of teachers of education with the decided exception of supervising teachers, compares favorably with the training of the entire land-grant institutional staff as a whole. Most reasons that could be advanced for raising the general level of training of teachers of education would apply in the training of the entire institutional faculty, which is discussed elsewhere.

TABLE 21.—*Faculty ranks held by teachers of education in the several teacher-training units*

Unit	Number teachers	Number and percentage of staff members having the rank of—													
		Professor	Per cent	Associate professor	Per cent	Assistant professor	Per cent	Instructor	Per cent	Assistant	Per cent	Lecturer	Per cent	Other	Per cent
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Agricultural education	116	47	40.5	19	16.4	22	19.0	15	12.9	8	6.9	1	0.9	4	3.4
Industrial education	62	14	22.6	13	21.7	10	16.1	8	12.9	0	0	15	24.2	2	3.2
Home economics education	123	24	19.5	25	20.3	29	23.6	26	21.2	8	6.5	1	.8	10	8.2
Education	353	124	35.1	44	12.4	55	15.6	71	20.1	15	4.2	7	2.0	37	10.5
Commercial education	10	1	10.0	0	0	4	40.0	5	50.0	0	0	0	0	0	0
Physical education for men	83	19	22.9	11	13.2	11	13.2	22	26.5	16	19.3	0	0	4	4.9
Physical education for women	38	9	23.7	3	7.9	12	31.6	12	31.6	1	2.6	0	0	1	2.6
Public school music	21	1	4.7	3	14.3	7	33.3	8	38.1	2	9.5	0	0	0	0
Art education	19	2	10.5	1	5.2	3	15.8	12	63.2	1	5.2	0	0	0	0
Others	97	22	22.7	11	11.3	22	22.7	20	20.6	3	3.1	4	4.1	15	15.5
All units	922	263	28.5	130	14.1	175	19.0	199	21.6	54	5.9	28	3.0	73	7.9

Instructional Load

Several measures of the instructional load of college teachers are possible. No one is wholly satisfactory. The most satisfactory measure for present purposes is the student clock-hour load, the product of the number of students in each class and the number of clock hours taught per week. Laboratory work is weighted on a ratio of 3 to 2. In Table 22 the student clock-hour loads of deans of education are shown. The approximate median is slightly more than 200 student clock hours. More than five deans report an instructional load of more than 400 student clock hours, which is quite a substantial load even for teachers not heavily charged with administrative duties. Nevertheless, because teacher-training units are small the administrative duties of some deans of education in many land-grant institutions permit considerable teaching. In nearly all institutions, at least some teaching is undertaken by the dean. Eighteen institutions report that teaching is considered a major responsibility of the dean, while 10 consider it a minor duty. Regardless of the teaching load, there are opportunities for considerable professional leadership, not only of prospective teachers, but also of other staff members, by a dean who sets the pace by a superior type of instruction.

The student clock-hour load of teachers in courses of education other than the dean is shown in Table 23.

TABLE 22.—*Student clock-hour loads of deans of education*

Load	Number of deans	Percentage	Load	Number of deans	Percentage
Less than 100 student clock hours	5	18.2	401 to 500 student clock hours	3	11.2
101 to 200 student clock hours	8	29.7	More than 500 student clock hours	2	7.4
201 to 300 student clock hours	6	22.3			
301 to 400 student clock hours	3	11.2	Total	27	100.0

TABLE 23.—*Student clock-hour loads of teachers of courses in education*

Rank	Number of staff members	Number and percentage of staff who teach—											
		Less than 100 student clock hours	Per cent	101 to 200 student clock hours	Per cent	201 to 300 student clock hours	Per cent	301 to 400 student clock hours	Per cent	401 to 500 student clock hours	Per cent	501 to 600 student clock hours	Per cent
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Professor	150	38	25.4	27	18.0	20	13.3	27	18.0	14	9.3	4	2.66
Associate professor	86	11	12.8	13	15.1	11	12.8	18	20.9	7	8.2	5	5.8
Assistant professor	86	23	26.8	19	22.1	17	19.8	13	15.1	3	3.5	1	1.1
Instructor	133	47	35.3	33	24.8	16	12.0	16	12.0	6	4.5	6	4.5
Assistant	23	16	69.6	7	30.4	0	0	0	0	0	0	0	0
Lecturer	20	4	20.0	4	20.0	2	10.0	2	10.0	2	10.0	1	5.0
Total	498	139	.....	103	.....	66	.....	76	.....	32	.....	17	.....

TABLE 23.—*Student clock-hour loads of teachers of courses in education*—Contd.

Rank	Number and percentage of staff who teach—										
	601 to 700 student clock hours	Per cent	701 to 800 student clock hours	Per cent	801 to 900 student clock hours	Per cent	901 to 1,000 student clock hours	Per cent	1,001 or more student clock hours	Per cent	Mid interval
	15	16	17	18	19	20	21	22	23	24	25
Professor	3	2.0	4	2.66	5	3.3	0	0	8	5.3	201 to 300.
Associate professor	2	2.4	10	11.6	2	2.3	0	0	7	8.1	301 to 400.
Assistant professor	4	4.7	2	2.3	1	1.2	2	2.3	1	1.2	101 to 200.
Instructor	3	2.3	0	0	3	2.3	2	1.5	1	.7	101 to 200.
Assistant	0	0	0	0	0	0	0	0	0	0	Less than 100.
Lecturer	0	0	0	0	0	0	1	5.0	4	20.0	201 to 300.
Total	12	.....	16	.....	11	.....	5	.....	21	.....	201 to 300.

Owing to the nature of the measure used, standards in respect to a permissible maximum student clock-hour load are more or less tentative. Most authorities have proposed a maximum of from 300 to 400 student clock hours. This maximum should be applied with care in the case of individual teachers, the nature of whose instructional duties vary widely. More than 23 per cent of the professors, 36 per cent of the associate professors, 14 per cent of the assistant professors, 13 per cent of the instructors, and 40 per cent of the lecturers have a load in excess of 400 student clock hours. In the minority of cases and under some conditions such loads are not excessive. Little evidence has so far been found in studies of class size that large classes taught by superior teachers and by the lecture method do not function with reasonable efficiency. There are, however, many faculty members who are clearly given a teaching load that may be judged excessive. More than 10 per cent, for instance, of the professors have a load in excess of 700 student clock hours. Of all teachers, including lecturers, more than 10 per cent have an instructional load in excess of 800 student clock hours.

Approximately one-fourth of the teachers of education in all teacher-training units have a load of fewer than 100 student clock hours. In the vocational education units, there is frequently reported a very low student clock-hour load. Classes in vocational agriculture especially are often quite small. Probably the teacher of small classes has almost as much work to do as he would have in larger classes. Hence, this problem appears to be fiscal rather than instructional.

Duties of the Dean of Education

A high percentage of returns concerning the duties of the dean of education was secured. Thirty-one institutions reported on this

item. An inspection of the data shown in Table 24 discloses first, a very great variety of activities that the dean is called upon to perform. His duties range from the simplest of mechanical routine activities to the discharge of responsibilities that, under the presidency, are second to none in the institution. The list, of necessity, is not completely inclusive. It could be broken up into several hundred items on any desired levels of generalization.

There is, of course, no considerable standardization of the work of the deans, any more than there is of the duties of presidents. The duties of both types of officials are greatly conditioned by the environment of educational, administrative, and executive activities and necessities in which they find themselves placed. While local freedom and local differences in practice are no doubt desirable in many respects, professionalization of the work of the dean, like that of other executive officers, is rendered somewhat more difficult by such conditions. It is interesting to note, however, in administrative and executive fields that have been intensively studied, that certain principles have been discovered, and that certain procedures and practices work better than others. An outstanding example is found in the field of public-school administration, with special reference to the duties of superintendents and principals of schools. Recent rapid advances in the scientific and semiscientific study of higher education, promise early intensive consideration not only of the duties of the dean but of the best methods of performing his duties.

Inspection of the returns concerning the duties of the deans discloses a number of activities which should in large part at least be delegated to subordinates. Frittering away of energy on nonessential details seems to be an outstanding fault of schoolmen in administrative work. However, parsimonious executive policies may be in part responsible through failure to provide qualified administrative and clerical assistance to overworked executives. But the schoolman himself too often neglects the delegation of nonessential details to qualified subordinates.

Coincident with the recent rapid development in the number, size, scope, and functions of schools and colleges of education, has arisen an elaborate and complex mass of intersecting relationships with the whole institution. As never before, the dean of education must have ample time for detailed study and for careful execution of administrative and instructional policies. Ill-defined institutional administrative relationships often necessitate the exercise to a high degree of tact, courage, and personal influence.

One is struck by the number of activities performed by the dean which have to do with the maintenance or promotion of good instruction. This should be the most important general function of the

dean. The whole administrative set-up exists for the purpose of forwarding the instructional and reseach activities of the institution. The dean is ordinarily the official who should take the leadership in such activities in education, and is the logical official to whom necessary details related to the improvement of instruction should be referred.

TABLE 24.—*Duties of the deans of the schools, colleges, or major divisions of education in 31 institutions reporting*

Duties	Major responsibility	Minor responsibility	Joint responsibility with others	Responsible as head of committee
1	2	3	4	5
DUTIES PERTAINING PRIMARILY TO THE INSTITUTION AS A WHOLE				
Direct summer school	16	1	3	1
Assist in the preparation of the general catalogue and announcements	3	7	18	3
Assist the president in the discharge of his duties	2	5	12	3
Advise in matters pertaining to higher degrees	2	4	23	0
Advise or assist in the improvement of instruction	2	0	5	0
Advise or assist in the formulation or revision of courses of study not constituting a part of the teacher-training curricula	2	3	10	2
Assist in general institutional duties connected with student relations and welfare; discipline; orientation	0	0	10	3
Serve on committees not elsewhere specified	0	0	15	0
Make radio talks	0	1	0	0
DUTIES PERTAINING PRIMARILY TO SCHOOL OR COLLEGE OF EDUCATION				
Nominate or assist in the selection of staff members	30	2	1	1
Make annual or other reports on the work of the college, school, or division	29	4	1	0
Assist in the preparation of the catalogue or announcements of the school or college	27	4	3	0
Make budget recommendations	26	1	6	0
Preside over faculty meetings	25	4	0	1
Advise in the instructional activities of the school or college	24	3	3	1
Present candidates for degrees	24	2	4	1
Adjust teaching load of staff	24	6	2	0
Recommend dismissal of staff members	23	4	3	0
Serve as medium of communication for all official business of the college with other university authorities and with students	23	2	4	0
Assist in the formulation or revision of teacher-training courses or curricula	22	1	5	0
Approve students' term or semester programs of study	21	1	6	2
Direct and supervise department heads	20	2	2	1
Oversee the registration of students in his division	19	6	6	1
Teach	18	10	1	0
Certify pay roll of division	18	2	4	0
Maintain and promote the academic welfare of students of education	17	1	9	0
Construct or approve the schedule of class sections	15	3	7	5
Approve applications for advanced standing of students in education	12	4	8	1
Assist in the placement of graduates in teaching positions	12	4	13	3
Supervise the preparation and publications of studies and research reports of his division	7	6	6	0
Exercise general oversight of building and general equipment of the college or school	6	5	6	0
Conduct research	5	14	3	0
Make statistical studies within institution with reference to teacher-training work	5	12	9	0
Direct extension activities of the teacher-training division(s)	4	12	13	0
Prepare applications for teacher's license	2	0	0	1
Educational field service not elsewhere specified	2	0	0	0
Approve secondary school credits for admission to college or school of education	1	2	6	2
Stimulate and encourage members of the staff in the interest of personal achievement	1	0	0	0
Member of faculty council	1	0	0	0
Correspond with prospective students	1	0	0	0
Supervise training school	0	1	0	0
Cooperate in the organization, management, teaching, etc., of the university high school	0	0	1	0
Answer inquiries concerning educational matters	0	0	0	1

Duties of Heads of Teacher-Training Departments

The extent and variety of the duties of heads of teacher-training departments are shown in Table 25. Considerable agreement in the duties performed in different institutions may be noted in the list; difference exists chiefly in the degree of emphasis placed upon such duties. It will be noted that very nearly all the heads of departments teach, which is rather to be expected, since most of the departments are relatively small. The representation of heads of departments of education in general institutional administrative organization is not very extensive; if there is a dean of education, he usually performs this function; if there is not, often adequate representation does not exist.

Most of the training of heads of departments at the present time must be derived from practical experience either in college teaching or in the position itself. Several duties would appear to render the possession of public school experience a most desirable professional asset. The nature and variety of the work on the whole demands considerable ability, not all of which is developed in college work. Special collegiate training for some of the work listed would seem to be desirable, but such training may be attained only by a much wider development of graduate work in this field.

TABLE 25.—*Duties of heads of teacher-training departments in 46 institutions*[1]

Duties	Frequency	
	Major duties	Minor duties
Teach	42	4
Oversee progress and quality of work of department	39	6
Formulate and execute departmental policies	38	8
Represent to administrative officers the needs of the department	35	10
Assist in revision and formulation of teacher-training courses of study and curricula	34	13
Confer with teachers in department	32	12
Unify department; build up departmental solidarity	30	11
Make departmental reports	28	16
Oversee expenditure of departmental funds	28	14
Present the names of candidates for teaching positions in the department	26	12
Assist in making budget estimates	24	21
Assign teachers to classes	23	20
Care for property used in department	23	20
Conduct departmental meetings and discussions	22	20
Represent department in institutional administrative organizations, such as faculty council, senate, or graduate faculty	18	14
Represent department in institutional committees	11	7

[1] A large variety of other duties are reported. Not one of these activities is reported, however, by more than a very few institutions.

Chapter IX.—Student Personnel Problems

The factor of economic status still has a bearing on the type of human material entering teaching. It is known that the financial rewards of teaching are not such as to appeal to many of the more ambitious and able members of high-school graduating classes. Teacher trainees to-day do not ordinarily come from the wealthier classes. Teaching is comparatively easy for college trained people to enter and pays an immediate salary attractive to those who must begin wage earning as soon as possible.

While new sources of recruits have been opened to the professions, extension of secondary and higher education has resulted in the admission both to public high schools and to teacher-training institutions of a larger number of students with mediocre intellectual ability. A twofold responsibility is placed upon the teaching profession. The teaching profession itself must be safeguarded against the admission of too many teachers of average ability. Superior teachers and educational leaders must be selected from students now presenting themselves for training in the public schools.

The responsibilities of teachers, who must assist the coming generation to solve the increasing problems of society, demand a good quality of native ability, as well as adequate scholarship. Professional education is a comparatively new field and able leadership is urgently needed. Prevailing conditions of supply and demand, especially for teachers in elementary education and in secondary school liberal arts subjects, justify in most States more effective measures for selective admission to curricula for prospective teachers. From the viewpoint of the State and of society in general the desire of an individual to secure a job in teaching is subordinate to the necessity for the maintenance and advancement of the welfare of coming generations.

The most commonly used predictive measures of success in training are: First, marks in high school; second, scores on psychological tests, such as intelligence scores; third, marks in courses taken in training institutions. Other measures and means of selection are sometimes used, such as standing or rating in physical examinations, in those personal traits that may be roughly measured, general character and ability as reported by high-school principals and others, records of students in extracurricular activities, and qualifications

hastily evaluated in personal conferences and otherwise by teachers and officers of the institution.

No one measure of a prospective teacher's qualifications has yet been refined or developed to a degree which promises completely satisfactory use. Studies have shown a positive but not a very high correlation between scholastic achievement of prospective teachers and success in classroom teaching. The correlation between success in extracurricular activities and leadership in student activities and teaching success, is extremely difficult to ascertain. The correlation between teaching success in public schools and scholarship in the training institution is positive but has not been proved to be very high. Again, although the value of health is well recognized in all vocations, it is possible for a brilliant teacher to surmount many physical handicaps.

Intelligence tests, which have increased greatly in use during the past few years, have an accepted and valuable place, but measure only a limited number of traits which are factors in the teacher's success. By no means all of our most successful public-school teachers are noted for brilliant intellects. Other traits in combination, such as patience, perseverance, vigor, attractive personality, and ability to adapt to local conditions, admittedly are extremely important. Despite the fact that desirable traits tend to go together, it is a matter of common observation that traits other than abstract intelligence may compensate in considerable measure for moderate deficiencies as denoted by a low intelligence quotient.

One-fifth of the land-grant institutions report that some attempt is made to measure personality traits of students. Vocational aptitude tests are reported in six institutions, and various psychological tests specifically for prospective teachers are reported in two institutions. Four of the vocational aptitude tests are used for guidance. Six institutions report that an intelligence quotient is obtained for all students. Most institutions reporting consider that personality ratings are useful for placement. The diagnostic value of such tests in relation to the training programs should be more generally capitalized.

The temptation of lay boards of education is to lower salaries of qualified teachers because of the existence of an apparent but inherently spurious oversupply of trained teachers. State departments and informed public-school executives are inclined to be more and more exclusive in the qualifications set up as a prerequisite for entering the profession. The situation must be handled with the interests of the children of the State in mind. It is therefore recommended, first, that increased study be undertaken in land-grant institutions of the most effective means and practices for the selection of prospective trainees; and second, that means so determined be definitely and vigorously applied. Rising State certification requirements help, but they are not enough. It is time for the teacher-training departments to lead in developing and applying standards rather than to

remain in the position of reluctant compliance with external State requirements.

Professional Guidance

Forty-one of the 46 institutions reporting state that they make definite provision for advisement of trainees in choosing their fields of specialization in teaching; in five institutions no definite guidance is reported. Staff members engaged in guidance work are indicated in Table 26.

All the institutions reporting advisement programs provide for personal conferences with trainees; usually by teacher-training officials. Twenty-two institutions report advisement by means of information presented in connection with regular professional courses, other than courses in introduction to education or to teaching. Sixteen institutions introduce a certain amount of advisement in courses in introduction to education or to teaching. In several institutions, outside speakers discuss, for the benefit of prospective teachers, the specialized field of educational service. Nearly a dozen other means for prospective teacher advisement are reported, such as the utilization of information afforded by the teacher appointment bureau. Special guidance or orientation courses are reported by three institutions. The hope that sufficient guidance will be given in the regular academic or technical courses taken by prospective teachers is indicated in some of the returns. It is to be feared that these pious hopes at times are far from justified.

TABLE 26.—*Staff members who afford guidance to prospective teachers relative to fields of preparation in teacher training*

Staff members	Frequency of mention
Dean of education	20
Dean of technical or arts and science major divisions	7
Head of departments or divisions of education	14
Head of technical or arts and science subject-matter departments or divisions	7
Staff members of education department (other than officers or critics)	13
Staff members of subject-matter departments (other than officers)	9
Special advisors; councilor; freshman advisor	5
Members of vocational guidance committee	3
Director of placement service	3
Critic or supervisor	3
Director of training school or principal	4
Teachers of special courses on occupations, etc	2
Special lecturers	2
Secretary of college	1
State supervisors or directors	1
Junior dean (freshman and sophomore)	1

Unsettled conditions in the market for teachers necessitate accurate trainee advisement in respect to the specialized fields they should enter. The demands for teachers in different fields vary considerably. In some States, heads of departments of agricultural education inform themselves concerning almost every opening for prospective teachers of vocational agriculture within their prospective States, almost as soon as the vacancy occurs. Such officials are in an exceptionally good position to advise students concerning the

requirements of different positions and the possibilities of employment. However, not all teacher-training officials can boast an intimate knowledge of conditions in employment in relation to the qualifications of students, since the numbers of trainees in the institution and positions in the field are sometimes quite large. In such cases, regular institutional agencies, such as the placement bureau, should have detailed records from which information may be secured that would be of assistance in the professional advisement of students.

The chief difficulty in the guidance of prospective teachers appears to inhere in the lack of adequately equipped personnel for the work, rather than in lack of interest on the part of teacher-training officials. Unfortunately there is often considerable doubt evident on the part of training officials concerning the real needs of the State. Even State departments, it must be confessed, find it difficult to give definite figures as to the status of teacher qualifications for the State and exact data on supply and demand in relation to certification requirements. Not enough research on State needs is reported by institutional placement divisions. The whole problem is one that might be undertaken profitably from a national viewpoint, if adequate Federal or other funds could be secured for the purpose. Meantime, the land-grant institutions may well take the initiative in solving a problem that applies fundamentally to their own programs of training.

Causes for Failure of Graduates

A final test of a good teacher-training program is the effectiveness on the job of the teachers trained. If exact data could be secured concerning the causes of success or failure, an invaluable help would be available in curricular construction. Success or failure, of course, are relative terms; a teacher who is a success in one field of work or in a given locality or under certain combinations of circumstances, may be more or less of a failure under other conditions. The judges of success or failure may be the school principal, supervisor, superintendent, board of education, parents, students, the teacher's colleagues, the teacher himself, and others. Not always do these judges agree. Moreover, few people stop to analyze and weigh the specific traits or activities of teachers making for success or failure. General concepts of uncertain meaning are used in reporting causes of success or failure.

In practical school administration, however, judgments are necessary concerning the effectiveness of the work of the teacher and reports were requested concerning the most common causes of failure in teaching positions of land-grant college graduates so far as known by the teacher trainers. The nature of the returns, generalized in Table 27, are suggestive. More detailed analyses of specific traits,

attitudes, and activities of students "failing" on the job would afford interesting and worth-while research projects for teacher trainers wishing to revise curricular and extracurricular offerings. Such research would be valuable also for the light it would throw on the problem of selective admissions.

TABLE 27.—*Reasons for failure of institutional graduates in teaching positions*

Reason	Number of times reported
Lack of adjustment to local community; disregard of local conventions; poor community contacts	29
Poor personality; general (not primarily ethical) character defects	27
Inadequate training in professional education subjects, including especially student teaching and special methods	24
Lack of adjustment to local school officials or to school staff; poor cooperation with colleagues or officials	22
Field of training (majors and minors) not the same in college as in high school; improper placement	19
Pupil management and displacement poor; lack of understanding of young people; poor relationships with pupils	18
Poor scholarship; lack of knowledge	16
Unsatisfactory attitudes toward teaching as a profession; lack of interest; lack of professional ideals; teaching as last resort; regard teaching as temporary	14
Inability to adapt knowledge and training to needs of pupils, and to organize and select subject matter	14
Laziness; lack of application or of industry	12
Natural ability deficient; lack of intelligence	8
Immaturity; lack of experience	5
Lack of supervision and in-service training	4

The large number of returns falling under the general head of attitudes and of personality or general character traits, as distinguished from the results of actual instructional activities, is worthy of note.

Care of Gifted, Subnormal, or Maladjusted Students

Thirteen institutions report that special provisions are made for the care of gifted, subnormal, or maladjusted students, while 25 institutions report no such provisions. Wherever the conception prevails that all students who are high-school graduates must be accepted, teacher-training departments must deal with many who will be deficient in scholarship, in personality, in adjustment to social situations, and who will suffer from ill health, character defects, and all the other ills of an unselected group of college students. While institutions in States reporting an oversupply of poorly trained teachers, have weeded out some inferior material, in practically all institutions the whole range of student ability must be provided for in teacher-training programs.

Modern educational literature, especially in the elementary and secondary fields, is filled with suggestions for the proper instruction of gifted, subnormal, and maladjusted students. Many of the practices in public-school fields have been adapted to higher education, and some new methods have been devised for special instruction on the collegiate level.

The University of Arkansas has a special class for probation students in "How to study." Kansas State Agricultural College provides for conferences, by some of their students, with teachers of psychology. In some other large institutions excellent work in mental hygiene is done. In the University of Maine superior students are advised to study advanced special problems for college positions. In the University of Minnesota an honors course was planned for 1929. In the University of Nebraska mental and general achievement tests are used to enable the dean and the director of the Bureau of Educational Service to eliminate unfit students. Informal assistance in personal conferences is, of course, given by many institutions.

The recommendation is made that institutions not now conducting definite, organized activities in this important aspect of teacher training, undertake such work to the end that prospective teachers may be able to work more happily and effectively, and at the same time, learn to assist the public-school pupils whom they in turn will instruct.

Professional Organizations

One means of promoting professional solidarity and of advancing professional spirit among the student personnel is found in student participation in the activities of professional clubs, honorary fraternities and similar organizations. Phi Delta Kappa, one of the leading educational honorary fraternities for men only, and with stress on research has chapters in 13 land-grant institutions: University of Missouri, University of Minnesota, Cornell University, University of California, University of Nebraska, University of Illinois, Ohio State University, University of Wisconsin, Washington State College, Kansas State College, University of Kentucky, University of Arizona, and University of Tennessee.

Only two separated land-grant institutions have organized chapters of this professional honorary fraternity. Eleven chapters are located in land-grant universities.

Another educational honor society for both men and women emphasizing professional attitudes, is Kappa Delta Pi, which is organized in 11 land-grant institutions, 4 of which are separated land-grant colleges.

Education clubs are conducted in a few institutions. Evidently there is considerable room for more intensive exercise of faculty and student initiative in the establishment in perhaps half of the land-grant institutions of some sort of student organization which will serve to bring to a focus the professional interests of prospective

teachers. If an institution does not feel itself large enough to affiliate with national professional organizations, there is always abundant room for local professional clubs. Not only are there immediate benefits to students who participate in such work, but attitudes are developed that tend to lead the future teacher to an easier approach to participation in the activities of the national, regional, and State professional organizations that are so influential to-day in forwarding the whole cause of education.

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Chapter X. — Curricula and Courses

The basis of curricular construction lies in the necessary changes to be made in the knowledge, skills, habits, and attitudes of prospective teachers. The activities of teachers in the public schools are determined by the life needs of pupils under instruction. As elsewhere shown, under the discussion of objectives of teacher training, many practical considerations cause the institutions that train teachers to forego the arduous scientific work and immensely detailed study necessary to establish their teacher-training curricula on a fundamentally sound basis.

Much of the curricular material utilized at present is, of course, already established by usage and tradition. Changes result from a process of growth that is frequently all too slow, and are determined by many social and institutional forces. Foremost among these are the needs of public-school employers of teachers, pronouncements of influential educational bodies, State department of education certification requirements, requirements of State plans for federally supported vocational education, State legislation, the mental status and abilities of students, demand by students, and subject-matter interests of instructors. A few outstanding factors that have a practical bearing on teacher-training curricular revision and construction may be pointed out.

Combination Subjects Taught in the High Schools

High-school teachers are commonly called upon to teach two, three, and even four subjects. Their major field of specialization in college is often not the field of teaching in which they are placed in high school. A trainee majoring in economics or sociology may find no positions available in these subjects and may be forced to teach science or mathematics. Inflexible arrangements in some institutions, whereby the teacher specializes in one subject with one minor largely in the same field, should be modified to fit the teacher to meet conditions as they actually exist in the public schools. The high-school instructor frequently teaches two, or more commonly three, different subjects. He should learn one subject well, but both he and the schools will profit if he learns enough to teach at least one or two other subjects.

Particular attention should be given to serviceable combinations of courses, such as English and history, language or science, and mathematics. Intensive study by the institutions of the local needs of the territory they serve will be necessary before adequate guidance of or requirements for prospective teachers may be confidently undertaken or prescribed. In any case specific and intensive training must be given in the main fields of subject matter for which teachers are most in demand from year to year. Needless to say, only officials of the institutions who are thoroughly acquainted with public-school needs can contribute very much toward effective institutional organization of curricula so that complex public-school conditions may be met.

The public-school authorities, of course, must do their part toward solving this complex problem. Suitable subject combinations should be arranged for new teachers and care be taken to select teachers specifically trained for the vacancies to be filled. There is a growing tendency for State departments of education to issue certificates that are good only for teaching specific subjects or combinations of subjects.

Among the States leading in this movement are Connecticut, Indiana, Ohio, Pennsylvania, West Virginia, and Virginia. In a number of other progressive States the granting of "blanket" certificates covering the teaching of any and all high-school subjects will, judging from present tendencies, eventually be largely modified or abondoned. Land-grant institutions may well cooperate and lead in this movement.

In general, teachers of vocational subjects are more fortunately situated with respect to distribution of high-school work. The trainee in vocational agriculture and in industrial education is rather sure of high-school employment in his field of specialization, as is also, to a slightly less degree, the teacher of home economics. Even these teachers, however, are often called upon for work in one or more other subjects, such as science; and they are often called upon to do also administrative and extracurricular work, for all of which the teacher trainer must give preparation.

Majors and Minors in Education

In 21 institutions the subject of education is offered as a major; in 17 it is a minor, and in 6 a second minor. A number of institutions report that education is not considered either as a major or minor. This tendency appears to be in the right direction. The term "major" or "minor" is most commonly used to refer to a body of subject matter in which the prospective teacher has specialized most and which he expects to use as actual teaching material. Undergraduate courses in education afford no more than preparatory training in general education for prospective college teachers of this

subject. College teachers "major" in education to best advantage in graduate work only. The terms "major" or "minor" appear more applicable to strictly subject-matter fields, such as English or science, that are actually taught in the high schools.

Institutional Participation in the Formulation of State Certification Requirements

During the course of field work in land-grant institutions an attitude of extreme dependence upon State department regulations concerning the certification of teachers was frequently noted in curricular construction. Complaint was sometimes made by officials that certain requirements, such as those in professional education, were too high. In few, if any, cases, however, was the suggestion made that the requirements be made even higher.

Many State departments are handicapped by lack of financial support and adequate personnel in exerting adequate professional leadership. Much of the progress in developing modern education has come from our better schools and colleges of education. These teacher-training units are in a position to conduct research, develop professional leadership, and otherwise forward professional education to an extent that can not always be attained by the State departments of education. State departments, for instance, have no experimental schools in which to try out their requirements and check on their validity and value. It is extremely doubtful if any teacher-training unit worthy of the name should depend wholly upon the State department or State board of education for its minimum standards of professional attainment in the training of teachers. Rather, such units should lead the way in professional advancement and become, to the State departments, earnest collaborators and in many cases genuine leaders in setting standards of training. State department officials are in a position to know the needs of the public schools, and their requirements are worthy of thorough and whole-hearted trial. If mistakes are made, the officials of the institutions should be at all times in a position to assist in remedying such mistakes by virtue of superior professional leadership, intensive research, and thorough knowledge of public-school needs. It is for such services, among others, that the State maintains its institutions of higher learning.

It is encouraging that 30 institutions report that they have in some measure been of assistance to the State departments in setting standards of training. The nature of the reports, however, leaves no doubt that possibilities in this respect are just beginning to be realized.

It is not assumed that the land-grant institutions can take over the function of the State in the certification of teachers; but it is believed that the higher State-supported institutions, that presumably are the keystones of the State's educational program, and that have been provided at large expense by the State with excellent provisions for research, study, and instruction, should contribute by a larger degree of professional cooperation in deciding upon the best practices possible to discover and realize in the public schools of the State. The problems involved in the certification of teachers afford some highly advantageous points of departure as opportunities for such services.

Special Requirements Made of Students in Teacher-Training Curricula

Of 44 institutions, 29 report that special qualifications are required, in one or more teacher-training units, of trainees as distinguished from other students; 15 institutions report no special requirements. Twenty-four institutions report farm experience required of students in agricultural education only; six institutions report special scholarship requirements. The amount of farm experience required ranges from one to four years, with two years as the typical requirement. Trade experience is reported as a definite requirement in three industrial education units, and homemaking or vocational experience in six home economics education units. Such experience, of course, is desired in most institutions.

Satisfactory personality and related traits, in so far as they may be determined, are required by four institutions, chiefly by the home economics education unit. Other requirements, reported once each, include satisfactory intelligence as determined by standard tests, motor ability (industrial education unit), and vocational experience. When the total number of trainees in all units is considered, by far the larger number meet no special requirements not met by the average student in fields other than teacher training.

Changes Contemplated in the Extent of Offerings in Teacher Training

Thirty-four institutions report definite plans to modify the extent of their offerings in teacher training in the near future. Twelve institutions make no report and express themselves as uncertain concerning future plans. A lack of definite knowledge concerning the exact needs of the State for trained teachers is responsible for much of the uncertainty existing. The amount of financial support which may be received in the future, changes which may come about as a result of future studies of the needs of public-school education, and perhaps a certain amount of inertia in thinking on the part of a few teacher-training officials make reasonably exact planning difficult in some institutions.

Of 137 teacher-training units in land-grant institutions reporting, 47 definitely plan increases in existing subject-matter offerings, usually in the form of

additional courses in education. Plans for additional facilities for observation and student teaching are reported by about one-fourth of these institutions. The necessity for an increased number of staff members for teaching the additional courses planned is recognized in the reports. The possibility that graduate work will soon be established to provide for expansion of offerings in professional education is recognized in the reports of 10 per cent or more of the institutions.

For 87 teacher-training units, no changes in existing offerings are planned. This number constitutes about two-thirds of the teacher-training units reporting. Only three teacher-training units report any plans for decreasing the extent of offerings in teacher training while plans for the discontinuance of existing offerings are reported by no institution.

The teacher-training unit for which plans for the greatest development are reported is general education. In 10 institutions no changes are planned in the extension of offerings in this unit; while in 15 institutions an increase is planned. The smallest amount of change planned is in physical education for women. Of 10 institutions reporting, 9 report no changes planned, while in only 1 is any increase planned. The vocational teacher-training units uniformly report plans for a reasonable increase in the extent of existing offerings. On the whole, present plans of teacher-training units provide either for a continuance of the status quo or for a healthy increase in teacher-training offerings.

Typical among recent curricular changes by specific institutions are the following: The University of Arkansas has put the elementary school curriculum on a 4-year basis and eliminated the 2-year elementary curriculum. This change is in accordance with recent tendencies to extend the training of elementary teachers to a 4-year level. In the University of Florida and in Georgia State College of Agriculture, a curriculum has recently been organized for teachers of physical education. Alaska Agricultural College and School of Mines, and the University of Hawaii have recently organized teacher-training courses in vocational agriculture. The University of Kentucky recently made a complete reorganization of all teacher-training curricula, better to meet the needs of the State. In the University of Vermont, a commercial education curriculum has been arranged with requirements to include 18 semester hours of work in education. Numerous changes in many other institutions indicate a desire on the part of land-grant institutions to keep abreast of rapidly changing needs in public education.

Changes Made in Teacher-Training Curricula as a Result of Suggestions by the Placement Bureau or Placement Service

Twenty institutions report that the placement bureau or placement service has been helpful in assisting institutional officers to revise teacher-training curricula. Placement officials are constantly in touch with the needs of the public schools. In several institutions such matters as the subject combinations most often called for, the fields of oversupply and undersupply in teaching, new curricular developments in high schools, the most common causes for failure of graduates of the institution, and other information have been ascertained and reported by placement officials and curricula revised somewhat in the light of such information.

Names of Degrees Granted in Land-Grant Institutions to Prospective Teachers

First degrees granted to prospective teachers were reported under 16 titles, listed in Table 29. The name of the degree granted often affords little or no indication of the curriculum taken by prospective

teachers. Statistics are sometimes seen in which the assumption is made that reports of enrollments or of graduates by degrees granted are sufficient to show the number of trainees. The validity of such statistical reports can be granted only with the establishment of uniformity and significance in degree nomenclature. The tendency is for degree titles to increase as specialization in curricula offered increases. There is a demand for the establishment of degree titles for prospective teachers that will indicate the professional nature of the curricula completed. However, such titles as "Bachelor of science" or "Bachelor of science in agriculture" are still very commonly conferred on teachers. Degree titles with professional connotations such as "Bachelor of science in education" and "Bachelor of arts in education" are of comparatively recent development, but their use is increasing.

TABLE 28.—*Names of degrees granted in land-grant institutions to prospective teachers*

Name of degree	Number of institutions in which granted
Bachelor of science	19
Bachelor of science in agriculture	18
Bachelor of science in education	18
Bachelor of science in home economics	17
Bachelor of arts	9
Bachelor of arts in education	4
Bachelor of science in physical education	2
Bachelor of literature	2
Bachelor of arts in arts and sciences	2
Bachelor of science in agricultural education	1
Bachelor of education	1
Bachelor of science in industrial education	1
Bachelor of science in art	1
Bachelor of fine arts in education	1
Bachelor of industrial education	1
Bachelor of science in economics	1

Teacher-Training Curricula

The teacher-training curricula or equivalent course groupings most frequently offered in land-grant institutions are listed in Table 29. The course groupings reported are not always curricula in the strict sense, but they do represent the combinations of professional, academic, and technical courses taken by trainees in land-grant institutions. It will be instructive to compare the curricula or course groupings with the objectives of the institutions. The objectives are far broader than the offerings by which these objectives are to be realized. Education courses in some of the smaller separated land-

grant colleges are service courses only and their combination with technical and academic courses is scarcely an organic one.

It will be noted that supervision of elementary schools is reported as a curriculum in 15 institutions. The extent of course offerings specifically in this field often does not justify the belief that adequate training for supervision of elementary teachers can be given in many of the institutions. Too many of the so-called curricula are in reality general courses in education labeled "supervision." It is difficult to see how supervisors can be adequately trained by means of theoretical courses in education without, for instance, observation work in the training school.

TABLE 29.—*Teacher-training curricula or equivalent course groupings most frequently offered in 46 land-grant institutions*[1]

Curricula or course grouping	Number of institutions in which offered
General education courses, for one or more subject-matter units	46
Agricultural education	46
Home economics education	41
Arts and science education (including all subdivisions)	41
Physical education for women	24
Trade and industrial education (including industrial arts)	23
Physical education for men	23
School administration	20
Public-school music	18
Supervision of elementary schools	15
Commercial education	13
Athletic coaching	13
Art education	13
Elementary education	7
Health education for nurses	3
Elementary school principalship	2
High-school principalship	2

[1] More than 20 other teacher-training curricula were reported once each.

Twenty institutions report curricula in school administration. There is considerable question as to whether prospective school administrators can receive more than very elementary training in this field in undergraduate work. While it is true that many school administrators have only the bachelor's degree, their chief qualification is practical experience. The master's degree in education is very rapidly becoming the minimum requirement for superintendents and principals of schools in which administration is a very large part of the work of the individual in charge. Two or three courses in school administration may be given to decided advantage in undergraduate curricula, but it would seem that if a curriculum in school administration is to be offered, it should be upon the graduate level.

It is encouraging to note the number of institutions that offer curricula in special or nonacademic subjects, such as art, music, and physical education and health. There is considerable demand throughout the country for teachers of these subjects. It is recommended that institutions not now offering curricula in special and nonacademic subjects investigate carefully the needs of these fields to discover whether or not their programs may be redirected advantageously along the lines indicated. Reference to Table 7, page 126, will add force to this suggestion.

The number of curricula in home economics education would have been larger, but for the fact that in some States few or no women attend the separated land-grant institutions. Courses in home economics education are offered in all land-grant institutions attended by any considerable number of women.

Semester Hours' Credit Required for Graduation

In Table 30 is shown the average percentage distribution of semester hours' credit required for graduation in undergraduate training curricula leading to the first degree. The median number of semester hours required in professional education is shown in Table 31. Data given are to a certain degree approximate owing to divergencies of practice in the distribution of electives. A careful recheck with all institutions in the case of agricultural education shows, however, that the data are exact enough to be of considerable value.

The individual returns from the institutions show a very great variation in the number and percentage of semester hours required in the different academic and professional subject-matter fields, and in the field of professional education. The minimum number of hours required in professional education is never less than the minimum State requirements for certification. In most cases requirements are greater in the institutions. This safeguards students who may happen to leave States with low certification requirements to teach in States in which requirements are higher. Such incomplete data as are available for all the nonland-grant State universities in the country indicate that requirements in education in these institutions are very much the same as those in the land-grant institutions.

TABLE 30.—*Percentage distribution of average minimum number of required credits in professional education, and in technical, academic, and other subjects*

Subject	Percentage in—								
	Agricultural education	Home-economics education	Industrial education	Arts and science education	Commercial education	Physical education for men	Physical education for women	Public-school music	Art education
1	2	3	4	5	6	7	8	9	10
Professional education	13.4	16.6	15.3	17.0	15.6	16.5	16.5	16.5	15.6
Technical subjects (agriculture, home economics, etc.)	38.8	27.7	22.9	.....	29.9	26.2	25.4	34.9	29.9
Arts and science subjects	34.4	32.4	28.4	46.7	28.0	30.5	31.2	23.1	26.1
All other required subjects	5.9	11.4	15.5	19.2	12.9	10.7	12.8	8.7	9.0
Electives	7.5	11.9	17.9	17.1	13.6	16.1	14.1	18.1	19.4

TABLE 31.—*Median number of semester-hours credit required as a minimum in professional education in teacher-training curricula leading to the first degree*

Teacher-training unit	Semester hours	
	Total, all subjects	Professional education
1	2	3
Agricultural education	134	18
Home-economics education	132	22
Industrial education	130	20
Arts and science education	129	22
Commercial education	127	20
Physical education for men	127	21
Physical education for women	127	21
Public-school music	127	21
Art education	128	20

Length of Teacher-Training Curricula

Table 32 shows the length of teacher-training curricula in terms of college years. It will be noted that a little more than half of the institutions report arts and science teacher-training curricula extending throughout the four years of college work. In many of these institutions, however, there is little or no differentiation among curricula in the freshman and sophomore years. (See Table 33.)

TABLE 32.—*Institutions reporting length of teacher-training curricula*

Curricula	4 years (freshman, sophomore, junior, and senior)		3 years (sophomore, junior, and senior)		2 years (junior and senior)		1 year (senior)		Number of institutions reporting
	Number reporting	Per cent	Number reporting	Per cent	Number reporting	Per cent	Number reporting	Per cent	
1	3	3	4	5	6	7	8	9	10
Agricultural education	18	43.9	4	9.8	11	26.8	8	19.5	41
Home-economics education	22	56.4	1	2.6	8	20.5	8	20.5	39
Industrial education	6	35.2	1	5.9	2	11.8	8	47.1	17
Arts and science education	18	52.9	2	5.9	7	20.6	7	20.6	34
Commercial education	2	22.2	0	0	3	33.4	4	44.4	9
Physical education for men	7	53.8	0	0	0	0	6	46.2	13
Physical education for women	8	53.3	0	0	1	6.7	6	40.0	15
Public-school music	4	50.0	0	0	2	25.0	2	25.0	8
Art education	3	33.4	1	11.1	2	22.2	3	33.3	9

TABLE 33.—*College year in which differentiation of courses begins by teachers in training*

Class	Number of institutions reporting—								
	Agricultural education	Home-economics education	Industrial education	Education	Commercial education	Physical education for men	Physical education for women	Public-school music	Art education
1	2	3	4	5	6	7	8	9	10
Freshman	8	8	9	16	4	11	9	7	5
Sophomore	11	7	4	14	2	4	4	4	3
Junior	25	23	8	12	6	4	6	3	4
Senior	1	1	1	3	1	0	0	0	0
No differentiation	1	2	0	2	0	0	0	0	0

Other teacher-training units, for which half or more of the institutions report curricula four years in length, include public-school music, physical education for women, and home economics education. The tendency is toward a gradual increase in the number of curricula four years in length. In several ways the integration of courses into 4-year curricula makes easier the adaptation of the constituent courses to the needs of teachers. It is not possible, however, for all institutions, especially the smaller ones, to set up all academic or technical courses taken by teachers as strictly teacher-training courses. The differentiation of subject-matter courses in institutions with small class enrollments would involve more expense than would be justified. In all institutions, however, the needs of teachers may be recognized and provided for by qualified instructors without detracting from the value of the courses for students who do not plan to teach.

Courses in Education

Detailed reports were received concerning nearly 2,000 courses in professional education offered in land-grant institutions. About 4 per cent of these courses were listed in the catalogues, but were not actually taught. The range among the institutions in this respect is considerable. These figures do not include courses offered in alternate years. Evidences of "padding" of listed catalogue courses in education are not more marked than for other courses offered by the institutions. In fact, the percentage seems somewhat lower.

Some general conclusions may be derived from a study of the courses listed. Hundreds of courses, judged from catalogue descriptions to be largely the same, were listed under from 2 to 12 different titles. The need for developing a common system of the terminology for courses in education is very great. If the catalogue titles of all the different courses could be separated from the catalogue descriptions, it is doubtful if even the teachers of many such courses could again place the proper titles over the catalogue descriptions.

In Table 34, existing practice in respect to the number of semester hours required in professional education subjects in the general education unit is shown. The table is self-explanatory. The wide range in requirements for the several subjects for the different institutions is clearly indicated. It is particularly unfortunate that it is impossible in the light of present knowledge to state more exactly the amount of work that should be taken in the several professional education subjects. No studies have yet been made that show definitely to what extent individual courses result in better instruction in the public schools. Granting the necessity and value of existing courses in education, there is no doubt that a good part of the responsibility for training teachers still rests with instructors of technical or academic subject matter. This responsibility can not be fully met by formal traditional organization, selection, and arrangement of courses. To the extent that such instructors meet their full responsibility, the teacher of professional education has his own job lightened. Disregard of public school needs by teachers of academic or technical subject matter makes necessary greater assumption of responsibility by teachers of education.

TABLE 34.—*Number of semester hours required in 36 institutions in professional education subjects in the general education unit*

Course	Number of institutions reporting	Number of institutions requiring—							
		1 semester hour	2 semester hours	3 semester hours	4 semester hours	5 semester hours	6 semester hours	7 semester hours or more	Approximate median
1	2	3	4	5	6	7	8	9	10
Educational psychology	36	0	7	23	3	1	2	0	3
Observation and supervised teaching	32	0	2	13	6	4	4	1	3
General psychology	28	0	4	18	2	1	3	0	3
Principles of secondary education (or education)	27	0	3	21	1	0	2	0	3
Special methods (in academic subjects)	20	0	8	11	0	1	0	0	3
History of education	19	0	2	10	3	1	3	0	3
General methods	17	2	0	13	1	0	1	0	3
Introduction to education and teaching	16	1	6	9	0	0	0	0	3
Administration and classroom management	14	0	6	3	3	0	2	0	3
Tests and measurements	13	1	6	5	1	0	0	0	2
Technique of teaching	11	0	3	8	0	0	0	0	3
Education sociology (or social problems)	4	0	4	0	0	0	0	0	2
The curriculum (or social aspects of the curriculum)	3	0	0	3	0	0	0	0	3
Rural education	3	3	0	0	0	0	0	0	1
Rural sociology	2	0	0	2	0	0	0	0	3
School law (or school law and management)	2	1	0	1	0	0	0	0	2
Philosophy of education	2	0	0	3	0	0	0	0	3
Vocational education	1	0	1	0	0	0	0	0	2
How to study	1	0	1	0	0	0	0	0	2
Extracurricular activities	1	0	0	1	0	0	0	0	3
Educational hygiene	1	0	1	0	0	0	0	0	2
The high school	1	0	1	0	0	0	0	0	2
Visual aids	1	0	1	0	0	0	0	0	2

A number of the State departments of education prescribe certain specific courses in professional education as necessary for certification of teachers. Some States merely make the requirement of a certain amount of work in the general field of professional education. The specific courses in education, required by the State departments of education in general, correspond closely to the minimum course requirements of the institutions. Institutional teacher-training programs have, no doubt, been determined to a considerable degree by State departments and State board requirements. The setting of minimum course requirements in professional education should not be left wholly to the State departments, even though it is the legal function of the State to formulate certification requirements.

Content of Courses in Professional Education

In general and in educational psychology, the tendency is to cut down on the purely technical phases of the subject, and to stress the topics that may be easily applied by the prospective teacher. On this basis, courses in technical, general, or "pure" psychology obviously have serious limitations that are now of necessity being

recognized by progressive curriculum builders. It is extremely doubtful if courses in psychology not bearing on practical teaching processes should be fixed requirements in undergraduate teacher-preparing curricula. The number of professional courses is too limited and too much excellent material is available in other professional courses to permit of extensive padding with material from any field that has not satisfactorily demonstrated its practical value. There are other departments where purely technical or general courses may be taken if the student desires to specialize in advanced psychology.

The same comments may also be offered upon the course in history of education, as commonly taught. The reduction of requirements in this field during recent years is a matter of common knowledge. At present, three semester hours only is the typical requirement. Present tendencies are in the direction of either omitting much of the required work in this course or of teaching it in other courses. A growing number of educators believe that the work, in any case, should be put more frequently on an elective basis. The University of Minnesota, among other institutions, has indicated this viewpoint.

Special methods courses have largely outgrown the earlier tendencies to afford rather narrow and tenuous information concerning teaching devices only. Courses in the proper selection, arrangement, and presentation of subject matter reflect the modern tendency. The special methods classes in agriculture, home economics and industrial education are commonly conceded to be among the most practical and fruitful of the professional courses taken in vocational teacher training. The name of this course is now almost a misnomer, since so little of the element of method as formerly understood is involved.

There appears to be little recognition of the needs of teachers for a suitable course in educational sociology. Only the lack of development of this field in keeping with the development of other fields, such as educational psychology, can explain this failure to recognize a field in which teachers by virtue of the nature of their work are preeminently interested.

Public-school administration is often required of students who never expect to enter educational administration as a profession and who need, therefore, only so much work in this subject as will enable the teacher to realize his administrative setting. A clearer demarcation could be made to the satisfaction of many teachers by separating the content of this course into the minor fields of classroom or pupil management, and of public-school management, including school law, city school administration, the work of the principal, and so on. If two courses can not be offered, emphasis should be devoted in the one course to the actual needs of most of the trainees in the course.

In all courses, the tendency is strongly toward the elimination of any material not bearing directly on the needs of prospective teachers. There is no great necessity to rely on the transfer of training, when so much valuable material is now available bearing directly on specific professional needs. The chief problems that remain are to rid existing courses of material remaining as a heritage from the comparatively recent period when traditional subject-matter fields afforded the chief reliance for professional content, and properly to organize and arrange the wealth of validated material now available as a result of scientific experimentation and study in the field of professional education.

Duplication of Courses and Course Content

A particular danger exists in respect to the duplication of content in the courses in education, especially in the larger institutions in which the establishment of new subdivisions of the field is proceeding rapidly. Many insistent demands, such as those springing from individual instructional interests of teachers, may very easily result in the establishment of courses offered concurrently that treat the same topics. Existing divergencies in course terminology often conceal this undesirable condition.

Numerous recent studies have shown the necessity of improvement in the allocation of content on a more systematic basis. Studies with such improvements in view should, however, include consideration of the possibilities of necessary overlapping and correlation of courses.

The most common method employed to avoid or reduce duplication of content in courses in education is by departmental or divisional staff conferences. Over 75 per cent of the institutions report this method. In 19 institutions the teachers of educational courses submit written outlines of courses to the heads of departments, deans, or other central authorities. In many institutions, of course, departmental, divisional, or general institutional committees on curricula assist in the avoidance of duplication of subject-matter content.

In Iowa State College a conference of department heads is held to consider the matter of distribution of content and of duplication of courses. In Kansas State Agricultural College every instructor in education is required to outline the objectives for his courses and submit them in conference. In the University of Kentucky all the outlines of courses are brought to the faculty of the college of education for discussion. In the University of Minnesota all courses in curricula are recommended to the faculty of the college of education; approval is by faculty. At Cornell University a member of the staff visits classes in the college of agriculture. In Ohio State University a permanent curriculum committee is now making a thoroughgoing investigation of the whole problem.

Sequence of Courses in Professional Education

Sequences of courses in professional education are indicated in Table 35. Practically every course in professional education is given in any one of the four college years. For instance, observation, participation, and student teaching is offered in four institutions in

the freshman year, and in three institutions in the sophomore year, although usually in curricula for high-school teachers this course is offered in the senior year. Educational psychology is offered in the freshman year in 4 institutions, and in the sophomore year in 17 institutions; although, again, the course ordinarily comes somewhere during the last two years of the 4-year curriculum. Although most commonly offered in the junior or senior years, other courses in education are similarly distributed over the four college years.

TABLE 35.—*Sequence in which the most commonly required courses in education are offered*

Course	Frequency with which place of course in sequence is—							
	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth
1	2	3	4	5	6	7	8	9
Introduction to education (or to teaching)	10	3	3	0	0	1	0	0
General psychology	19	5	2	1	0	0	0	0
Educational psychology	4	13	7	4	3	0	0	0
History of education	2	8	2	1	0	1	1	0
Principals of education	0	3	3	5	1	0	0	0
Principals of secondary education	0	4	0	4	3	1	1	0
Technique of teaching	0	1	4	1	2	2	0	0
School administration and classroom management	0	0	2	3	0	1	0	0
General methods	1	0	0	7	6	1	0	1
Special methods	0	0	3	6	9	1	1	0
Tests and measurements	0	0	0	4	0	6	0	0
Observation and student teaching	0	1	2	3	9	4	2	3

The existence of 2-year curricula for teachers in a few land-grant institutions does not wholly explain this condition. It is clearly evident that the existing diversity of practice in determining course sequences, while of some value from the experimental viewpoint, indicates a lack of definite knowledge concerning just what such sequences should be. The determination of the proper sequence of courses in teacher training and answers to related problems must await much more intensive research than has ever been accorded these problems.

Chapter XI.—Student Teaching and the Training School

The average duration of the course in student teaching is one semester or one quarter. Each student teacher conducts five class sessions per week on an average. The typical length of practice class periods taught by student teachers is 60 minutes; the range is from 30 to 120 minutes. The amount of college credit required of each student teacher in the course ranges from two semester hours to seven semester hours. The approximate median number of credits required is three semester hours. There is substantial variation among institutions relative to the number of clock hours practice required for a given number of semester hours credit; 3, 4, or 5 clock hours per week for 1 semester may be required for 3 semester hours credit. With such variations the semester hour unit of credit is an extremely crude measure of student achievement in this course and it is difficult to see how one institution can accept statements of credit in student teaching from other institutions with any certainty as to what such credit really signifies.

Training Schools and Training Classes

In Table 36 is shown the nature and characteristic features of schools or classes untilized for student teaching. Practically all the institutions reporting make use of senior or regular 4-year secondary schools for practice. The recent rapid growth of junior high schools in the United States has necessitated the provision of junior high school classes for practice. Twenty-four land-grant institutions also utilize elementary schools for practice.

TABLE 36.—*Nature and characteristic features of school utilized by 48 land-grant institutions for observation and practice teaching*

Items relative to schools utilized	Number of institutions reporting
Three or four year secondary school	45
Junior high school	24
Elementary school	17
Smith-Hughes vocational high school	29
Rural school (center of fewer than 2,500 population)	21
Consolidated school	15
Urban school (town or city of 2,500 or more population)	34
Public school	40
Private school	5
Owned by institution	11
Controlled but not owned by institution	0
Joint control by institution and other agency	10
Not controlled by institution	35
Utilized for actual practice teaching and observation	48
Utilized for observation only	12
Vocational classes utilized	39
Nonvocational classes utilized	31
Utilized for appreciate teaching only	5

Thirty-nine institutions report the use of vocational classes; of these, 29 utilize vocational high schools; 31 report the use of nonvocational classes, for the most part along with other classes in vocational work.

It is worthy of note that only 21 institutions report practice facilities in centers of fewer than 2,500 population. The typical land-grant institution is located in a town of 6,000 or 7,000 population. The problems of country schools are more or less removed from the consideration of the student teachers in more than one-half of the land-grant institutions.

Local public high schools appear to afford the chief reliance for student teaching facilities in land-grant institutions. Forty institutions partially or wholly make use of such schools for practice, while 17 of a total of 50 institutions have institutionally owned practice or laboratory schools. These are commonly utilized in conjunction with the public schools.

The 17 institutions reporting institutionally owned practice schools enroll a total of slightly more than 3,000 pupils, or an average of about 176 pupils per institution having such schools. Of the total number of pupils, at least 1,000 are in grades below high school, while a maximum of 2,000 are in high-school grades. The inadequacy of this number is indicated by the fact that the institutions reported for 1928 a total of 2,822 baccalaureate degrees conferred upon students in general education and 250 in vocational education. Practically all of these should have had the course in student teaching. Adding to the total number a very conservative estimate of

1,000 teachers not reported as enrolled in education a total is secured of more than 4,000 student teachers in all institutions, as contrasted with an enrollment of 3,000 practice pupils in the institutionally owned training schools.

No standards relative to the number of practice pupils necessary in land-grant institutions that train teachers have been accepted by these institutions. The standards of the American Association of Teachers Colleges require a minimum group of 30 children for every 18 college students to be given 90 clock hours of student teaching, either in the campus training school or in affiliated urban or rural schools under the supervision of the teachers college. While some of the land-grant institutions meet this standard, it is higher than present practice in the land-grant institutions as a whole.

The typical land-grant institution makes use or partial use of one or two schools for observation, demonstration, or practice. Among the several teacher-training units, elementary education is served by the largest number of schools utilized for training purposes; 11 elementary education departments or other units report the use of 58 schools, or an average of slightly more than 5 schools per unit. Commercial education is served by the fewest number of training schools or classes; an average of less than one school is utilized for training; three institutions that offer commercial "teacher-training" curricula report no training-school facilities. Occasionally teacher-training curricula are reported, but no practice facilities, in other teacher-preparing units. Since student teaching is probably the most characteristic element of a complete training program, it is difficult to see how the assumption can be made that a teacher-training program is offered when no provisions are made for observation and practice. No Smith-Hughes programs are reported without such provisions, although practice facilities do exist of widely varying effectiveness.

Schools utilized for training are reported owned by the following 17 institutions: University of Arkansas, University of California at Los Angeles, University of Florida, University of Illinois, University of Kentucky, Louisiana State University, University of Maryland, University of Minnesota, University of Missouri, University of Nebraska, North Dakota Agricultural College, Oklahoma Agricultural and Mechanical College, South Dakota State College, University of Vermont, West Virginia University, University of Wisconsin, and University of Wyoming.

Of these campus schools or university training schools, most are senior or regular 4-year high schools, but three include junior high school units, and six include elementary school units. Usually the school building is also used for purposes other than student teaching, such as for offices or for regular class work in education.

It is to be regretted that the number of institutionally owned, maintained, or controlled training schools is not larger. It is true that the expense to the institution of construction, operation, and maintenance of these schools is considerable and that public schools are commonly available to at least some extent for observation and practice. However, of 40 institutions reporting the use of public schools, only 10 report joint control of these schools by the institution and public-school authorities. More than 30 institutions report the use of training schools over which they have little or no administrative control. No institution reports complete control of public schools not owned by the institution. This means that the most significant activity of the entire teacher-training program of the institution is conditioned by the exigencies of purely local public-school situations, with continual possibilities for friction, and even actual hostility toward important and necessary aspects of student teaching. Educational experimentation in the public schools utilized for training is commonly viewed with suspicion by parents, and often effective opposition is encountered on their part and on the part of local school officials. Desired classes and units of instruction for student teachers are often hard to arrange on the high-school schedules. Institutional training officials are frequently unable to secure satisfactory public-school teachers for demonstration lessons. Desired sequences in the presentation of instructional units is difficult when the exigencies of a public-school program must be met. For every unusual departure from the usual public-school routine, time-consuming arrangements must be made by institutional authorities with public-school teachers or other outside authorities over whom little or no control is exercised. It is small wonder that most staff members and officers engaged in directing student teaching nearly always wish a campus school as one part of their laboratory training facilities.

One difficulty experienced by land-grant institutions in the use of public schools for student teaching is indicated by the number of student teachers spending excessive time in travel to and from practice schools. Time is lost in regular class work, in the limited student-teaching period or in the study periods of student teachers. About three-fourths of the institutions report that they have student teachers spending one-half an hour or more per day in travel to and from training-school classes. It is impossible in some institutions with limited finances and poor location with reference to training classes to remedy this condition at present. Some institutions of this type, however, are making considerable progress toward solving the problem by the provision of school busses for pupils, by school cars for student teachers, by establishing campus training schools, or by organizing a system of apprentice teaching whereby the student

teacher remains on the job and concentrates his teaching for several weeks at some school distant from the campus.

The public school affords a very valuable field for certain practice purposes. Here the student teacher is enabled to secure his practice under genuine public-school conditions. Conditions in the campus training school are never quite the same as in public schools. Often, however, opportunities for observing really superior demonstration teaching, the use of college equipment and facilities, and for the securing of all the advantages of practice under controlled conditions and close supervision outweigh the opportunities for student teaching in the available public schools. Each type of school affords experiences of value to prospective teachers, and the ideal situation would provide for both an institutionally owned campus school and public-school practice facilities.

Training Schools and Training Classes

Training schools or practice classes are made use of over varying periods of time during the regular year, ranging from 1 month to 12 months; most commonly they are utilized 6 weeks, 1 semester, or 1 school year. Four institutions use their training classes for 1 month only, while 10 makes use of them for 5 or 6 weeks. It is possible for some of these institutions, by utilizing for the entire year the training classes available, to enlarge considerably their existing opportunities for practice. This, of course, will necessitate certain adjustments in the scheduling of student teachers, such as alternation of successive groups of trainees between regular class work and student teaching.

Twenty-four training schools were reported utilized for educational experimentation, other than that involved in regular training school practice work. While the primary function of the training school is the inculcation of skills by practice in actual teaching, institutions that have adequate funds and personnel for an expansion of activities can in no other way contribute better to the general advancement of professional education in this country than by controlled educational experimentation in actual teaching situations. It is to be hoped that institutions in a position to do so may be privileged to expand this desirable type of work. It is possible, of course, for all teacher-training units that have practice facilities to undertake a limited amount of simple educational experimentation of primary interest to teachers in their routine class-room work.

The average number of pupils available per institution for student teaching is approximately 433. This number does not include the pupils utilized for observation only. Observation pupils utilized vary in numbers from day to day, dependent often upon arrange-

ments with public-school authorities. The number of pupils utilized for actual practice also varies constantly. The average number of training-school classes available for practice per institution is 18. The enrollment of classes taught by student teachers is typically 24, with an average minimum of 14 and an average maximum of 34. Classes are largest in city high schools used for practice. An older practice of having two student teachers active in a class room at one time seems to have largely disappeared. Except for observation, no institution reported more than one student teacher assigned to the same practice class during the same teaching period.

Special Facilities for Student Teaching

In land-grant institutions having inadequate practice facilities as well as in institutions well provided in this respect a variety of special facilities for student teaching and observation are provided. Among such special facilities reported are: (1) Substitute or emergency teaching in public schools; (2) substitution of work in course for student teaching; (3) research; (4) observation arranged at irregular intervals; (5) pupils brought in from near-by schools for occasional demonstration lessons; (6) observation away from the campus for study of special aspects of instruction; (7) participation in certain extracurricular activities, such as athletics, orchestra, etc., with practice in direction of such activities; (8) work in principal's office; and (9) attendance upon social affairs of the schools.

Some of these activities no doubt are occasionally of value to prospective teachers, since the activities of teachers cover a very large range and specific practice in directing the activities of high-school students is highly desirable in a variety of directions. However, most of the activities listed are not organized to meet the specific needs of teachers. Such activities are too often almost desperate attempts to meet, in the absence of adequate facilities, the necessary requirements for certification and the local institutional regulations concerning the amount of student teaching to be given. An adequate training program should be as well organized, have as definite aims, and be as well scheduled and conducted as any other class in the institution. It is difficult to see how an occasional excursion to a distant school can be substituted for the active, direct, and continuous teaching of children afforded in well-organized training centers.

The substitution of academic and technical courses for actual practice teaching seems futile. The activities of an interne in a hospital are quite different from the activities of a student who is mastering a textbook in chemistry. Courses in subject matter are highly desirable and necessary; but the teaching of a class room full of boys and girls demands an entirely different set of reactions on the part of the teacher.

Special activities, therefore, not conducted in conjunction with well-organized courses in student teaching or which are offered as a substitute for student teaching must be chosen with very great care and with definite objectives in view. Student teaching programs for each student in training should be worked out with a view to affording specific practice in the fields of specialization or semi-specialization in which the student is working. The choice of special activities to be undertaken then becomes a different matter.

College classes or subcollegiate classes, utilized for observation or student teaching.—Eleven institutions utilized 93 college classes for observation or student teaching work for credit. Three institutions use subcollegiate classes, other than in the training school, for observation; while six institutions use such classes for student teaching.

The expedient of using college classes for student teaching purposes, while occasionally permissible perhaps for infrequent types of observation work, is an exceedingly undesirable one for two reasons: First, the teaching of adults affords a different type of specific learning from that of teaching public-school students; second, the use of college classes is usually merely an attempt to set up a substitute for genuine practice work with secondary or elementary pupils, resulting in further delay in providing satisfactory facilities. When college classes are depended upon, to any large extent, for student teaching facilities, most unsatisfactory training conditions prevail. The practice afforded is usually sporadic, unorganized, and misdirected. College students would ordinarily resent any really continuous program of student teaching undertaken by their fellow students in such classes. Few undergraduate college students will undertake, immediately upon graduation, actual instruction in college classes. Their work will be with a different class of students, and their training should be in the teaching of such students.

Administrative and professional organization of student teaching.—More than a dozen different officers are reported responsible for the direction of the work of supervising teachers in land-grant institutions. Those most commonly reported are shown in the following table:

TABLE 37.—*Officials responsible for the direction of the work of demonstration and critic teachers in the arts and science general education teacher-training units of 34 institutions.*[1]

Official	Number of institutions
Dean of education	9
Dean of subject-matter major division other than education	9
Head of department of education	12
Principal of school utilized for observation and student teaching	12
Director of student teaching or of training schools	8

[1] Several other officials were occasionally mentioned.

The use of public schools for practice facilities complicates the administrative organization in most institutions. The principals of the schools used by student teachers direct the work of supervising teachers wholly, or in part, in 12 land-grant colleges. In many institutions 2 or more separated teacher-training units must make their own individual arrangements for control over the supervision of practice work, hence arrangements may differ within the same institution.

In many of the larger and more progressive State teachers colleges and normal schools the office of director of training has been established. This position is often coordinate with that of deans or directors of major divisions. The need for some such office in many of the land-grant institutions is rather evident. In eight institutions officers with specific powers of this general type are functioning.

Among the officers reported who preside over group meetings or conferences held with trainees are: The dean of education; the head of the department of education; director of training; director of student teaching; principal of the high school; principal of the elementary school; critic; demonstration teacher; staff members of almost every rank; supervisors; room teachers; and others. The head of the department of education is infrequently mentioned. This indicates confusion of functional organization.

In institutions having two or more separated teacher-training departments general group meetings or conferences are difficult to arrange, and smaller group meetings must be held. While much of the effective assistance given trainees by the teacher-training staff may well be offered at individual or small group conferences, the place of the general group meeting or conference is well established in the best training programs. Here numerous matters of general interest may be taken up and a very effective means afforded of promoting professional morale and esprit de corps. The general head or coordinator of the whole program of student teaching logically presides over the general conference or group meeting of all student teachers somewhat as a principal or superintendent of schools presides over his general faculty meetings.

Participation of teachers of professional education other than student teaching in training-school activities.—There is a tendency to organize more and more the work in professional education and in academic subject-matter around the student's experiences in the training school. One of the most difficult problems in establishing a well-coordinated program of teacher training is to secure the cooperation of teachers of academic, technical, and education subjects with the supervising teachers.

In only 11 institutions were special-demonstration lessons, in which practice pupils were utilized, taught in connection with the regular class-room work in academic or technical work or in professional

education other than student teaching. It is noteworthy, however, that most of the special demonstration lessons reported were taught in institutions most commonly mentioned as leading the way in the professional training of teachers. In the 11 institutions reporting an average of about 18 demonstration lessons per institution were taught in connection with two courses in education per institution.

In 19 institutions none of the teachers in courses of special methods and general education other than the members of the training-school staff actually participated in the professional activities of the training school during 1927–28. Ten institutions reported that all the teachers of such courses participated in training-school activities. Seven institutions reported that half or less of their professional education staff were in active touch with the work of the training school. Clearly the need is urgent for the establishment of some means whereby the professional work of all teacher-training staff members may be more nearly unified. It is extremely difficult to see how a course in methods of teaching can be taught without observation of the actual teaching process. A course in child psychology which does not include abundant opportunity for the observation of school children in action would seem to miss almost entirely what might well be the core and center of such work. Abstract principles of education may be more readily understood and are more convincing if presented in conjunction with practical teaching situations.

Some of the institutions, appreciating the necessity for maintaining cooperative relations with public schools uilized for training teachers, have appointed the principals of the public schools as members of the regular staff. This practical means of insuring working arrangements with the public schools utilized for training may, however, result in very unsatisfactory standards of supervision of directed teaching.

The actual supervision of student teachers is widely dispersed among many different staff members. In answer to the question "Who customarily marks (or grades) the student teacher?" almost every type of staff member of the institution or of the training high school was mentioned, including the critic, the high-school teacher in charge, the methods teacher, a professor of the institution, director of training, general supervisor, head of department, State supervisor, and high-school principal. Often two or more of these officers or staff members may share the function.

The supervision of student teaching of laboratory science affords another example of the dispersal of the supervisory function. This subject is supervised in various institutions by the high-school teacher of science, the college professor in charge, the teacher of agricultural education or of other vocational subjects, the director of training, science professor, critic, and six or eight other different staff members.

The need is urgent for some means of coordinating the work of the teachers of professional education and the work of the training school, but it is difficult to generalize as to the best means to be adopted in view of the rather chaotic organization of teacher training as a whole in many institutions. Certainly any administrative means which may be set up should begin in one central organization rather than in several unrelated teacher-training units in the same institution.

Contribution of institutions toward meeting the expenses of public schools utilized for student teaching.—The difficulties encountered in securing practice facilities necessitate numerous adjustments with local public-school systems. There is no uniform practice relative to either the amounts paid toward the support of the public schools or the precise nature of local working agreements. Payments range from nothing to the entire expense of staff and facilities used. The most common arrangement consists in payment by the institution of a bonus or part of the salaries of supervising teachers or other high-school staff members utilized in the training program. Twenty-one institutions follow this convenient plan.

The University of Delaware reimburses one local school for the amounts paid to supervising teachers in excess of the regular basic salary. At the Georgia State College of Agriculture, the university pays the salaries of supervising teachers in one school of agriculture and home economics; in another school, one-half the salary of the supervising teacher in home economics education is paid. In the University of Idaho, $2,500 is paid to the city school for 100 student teachers. In the University of Maine, a recent arrangement makes the local teacher a part-time member of the university staff. The institution pays part of her salary and makes her responsible for supervision. In the University of Nevada, public schools are paid $37 to $50 per student teacher per semester. In Virginia Agricultural and Mechanical College, members of the teacher-training staff take the full responsibility of teaching the two all-day classes used, relieving the public school authorities of instructional expense.

Unusual arrangements are sometimes made. One institution provides a clerk for the public school utilized and guarantees no increase in pupil costs over other schools in the city. In another institution, the entire expense of one public school is met. Ohio State University remits the usual fees of some of the helping teachers who register at the university.

In so far as the practice may be stated, roughly two-fifths of the 21 institutions that contribute to public-school expenditures pay from one-eighth to one-fourth of the salaries of public-school teachers utilized for supervisory work. One-fifth of the institutions typically pay from one-fourth to one-half of the salaries, one-fifth pay from half to all the salaries of the staff utilized, while one-fifth make payments other than for salaries.

There are numerous reasons why local school systems in the vicinity of higher institutions should assist in every way possible in providing practice facilities for the institutions. Nearly always the local community profits educationally more than any other section of the

State by the presence of the institution. It is to the interest of the State, which in part at least supports and controls the public schools, that adequate training facilities be provided the State-supported institutions that train teachers for public schools. Often the institution will make possible a better public school than the local community would otherwise have.

Transportation expenses of student teachers.—In most of the land-grant institutions at least some of the training schools utilized are located disadvantageously. Where the apprentice plan of student teacher is used the student leaves the institution for a definite period, often several weeks or months. When, however, the student teacher must travel daily for miles to and from the training school, the matter of arrangement of his transportation becomes a problem. Fifteen institutions pay the entire amount for transportation of student teachers to and from practice schools. Twenty-one institutions leave this matter to the student teachers. In a few institutions the expenses are shared by the institution and by the student teachers. The primary consideration, of course, is that convenient facilities be provided so that there is not much waste of time en route to and from the schools. In two or three institutions visited, students were left to find any means available for reaching the laboratory schools; "hitch-hiking" was the rule. Classes were occasionally missed and tardiness both at the training school and at classes in the institution was frequent.

Training-School Buildings

The typical training school building was constructed in 1918. It is two or three stories in height and has no elevator. The building is constructed of brick. It is fairly convenient to student teachers and training-school children, and has a good environment. Since the building is reasonably modern the appearance of stairways, corridors, and general internal structure is fairly good.

In five institutions the location of the training school, in respect to convenience to student teachers and training-school pupils, is very unsatisfactory. In three institutions these schools are poorly located in unsatisfactory surroundings. In the older institutions the interiors of the training schools are too often quite depressing. On the other hand, nearly a dozen training-school buildings have been constructed within the past five years and are well designed in accordance with modern ideas on construction of school plants.

Training of Supervising Teachers

Table 38 shows the highest degrees possessed by demonstration and supervising teachers. It is sometimes true, of course, that staff

members have more training than is indicated by the highest degrees possessed, but this convenient measure is useful for practical purposes. Data are given for separate teacher-training units for purposes of comparison. It will be noted in all teacher-training units that the training of supervising teachers is inadequate. It seems almost incredible that the bachelor's degree is the highest degree of more than half the supervising teachers in general education. Conditions in this respect in both agricultural education and home economics education are better than in general education. It is to be feared that the traditional practice of employing low-paid workers in this field has an undue influence on institutional policies. College credit is given for the work of supervising teachers and student teaching is commonly recognized to be as important as other professional courses for prospective teachers. Since public-school teachers are frequently utilized for student teaching, mediocre public-school standards are too often institutional standards. A higher level of training for supervising teachers is an immediate necessity in many land-grant institutions.

TABLE 38.—*Highest degrees and number held by demonstration and supervising teachers in land-grant institutions*

Teacher-training unit	Number of highest degrees held—			
	Bachelor's	Master's	Doctor's	None
1	2	3	4	5
Agricultural education	29	31	4	1
Home-economics education	37	30	1	3
Industrial education	10	7	3	2
Education	115	74	15	16
Commercial education	9	0	1	1
Physical education for men	17	4	0	1
Physical education for women	10	4	1	2
Public-school music	6	1	1	4
Art education	3	1	0	2
Others	3	2	6	0

Experience of Supervising Teachers

Table 39 shows the experience in their present positions of demonstration and supervising teachers. Successful experience in teaching or in supervision is generally considered to be absolutely essential for effective supervisory work. Typically supervising teachers have held their present positions for three or four years, although the range is wide in respect to tenure. Twenty-three teachers have held their present positions for one year only. Only a minority of the supervising teachers have had prior training in school experience.

TABLE 39.—*Number of years' experience in present position of demonstration and critic teachers in land-grant institutions*

Teacher-training unit	1 year	2 years	3 to 4 years	5 to 9 years	10 years or more	Typical number of years' experience
1	2	3	4	5	6	7
Agricultural education	10	8	25	25	7	3-4
Home-economics education	14	16	21	16	0	3-4
Industrial education	3	3	4	14	1	5-9
Education	23	21	28	35	19	3-4
Commercial education	1	2	1	6	1	5-9
Physical education for men	0	1	0	3	2	5-9
Physical education for women	0	5	6	6	6	3-4
Public-school music	0	0	3	3	0	3-4
Art education	0	2	1	0	0	2-4

Supervising Teachers

Reports were received concerning 80 full-time and 154 part-time supervising teachers in general education. Of the part-time teachers 122 devoted only one-fourth of their time to the actual work of supervision.

The part-time supervising teachers two-thirds of the time taught subjects in education; less than 5 per cent taugh vocational technical subject matter other than education. Nearly one-third taught arts and science subject matter.

Instructional Load of Supervising Teachers

The number of student teachers supervised by any one critic during a given practice period is shown in Table 40. A wide range exists in the number of trainees supervised; the typical number in general education is five, which is larger than in the vocational and nonacademic or "special" teacher-training units. In those States in which a large oversupply of teachers of academic subjects is reported, some argument is afforded for the limitation of the number of students admitted to practice classes in liberal arts fields. In typical institutions, however, the number of students supervised by a critic is not in excess of standards proposed by authorities in this field. The number of student teachers reported, however, in some institutions is clearly an overload for supervising teachers. In this connection, it must be remembered that most supervising teachers are working only part-time in practice work.

TABLE 40.—*Number of student teachers (not including observers) supervised by a critic during any given practice class period in land-grant institutions*

Teacher-training unit	Number supervised			Teacher-training unit	Number supervised		
	Average minimum	Typical	Average maximum		Average minimum	Typical	Average maximum
1	2	3	4	1	2	3	4
Agricultural education	2	3	4	Physical education for men	1	3	3
Home-economics education	2	4	5	Physical education for women	2	2	3
Industrial education	1	3	4	Public-school music	1	3	4
Education	4	5	9	Art education	1	2	3
Commercial education	2	3	4				

Faculty membership of demonstration and supervising teachers.—In 25 institutions reporting, demonstration and supervising teachers are members of the general faculty of the institution. In 20 of the institutions reporting, such workers are not members of the faculty; most of these are teachers in local public high schools. The faculty rank of demonstration and supervising teachers who are members of the institutional faculties is shown in Table 41. The very low rank given training school supervising teachers will be noted at once. More than half the training school teachers have less than professorial rank. In some of the institutions listed that give the rank of professor to members of the training school faculty, the instructors have general administrative oversight only over actual training activities.

As would be expected, only about one-third of the training school staffs are listed in the catalogues of the institutions. Less than half are privileged to vote in faculty meetings.

College credit, therefore, is commonly given student teachers for work done under individuals who do not belong to the institutional faculty and whose qualifications as a group are but little better than those of public-school teachers.

TABLE 41.—*Faculty rank of number of demonstration and supervising teachers who are regular members of the institutional staff*

Teacher-training unit	Number with rank of—				
	Professor	Associate professor	Assistant professor	Instructor	Assistant
1	2	3	4	5	6
Agricultural education	14	10	7	14	7
Home-economics education	3	5	14	27	8
Industrial education	4	0	7	8	3
Education	16	4	18	105	10
Commercial education	1	0	0	7	2
Physical education for men	0	0	4	8	8
Physical education for women	2	0	6	7	0
Public-school music	1	1	2	14	1
Art education	0	1	1	3	46
Others	0	0	4	0	9

TABLE 42.—*Faculty rank of demonstration and supervising teachers by institutions*

Rank	Number of institutions
None	20
Assistant	15
Instructor	12
Assistant professor	8
Associate professor	10
Adjunct professor	1
Professor	6

Salaries

The salaries of supervising teachers are shown in Table 43. They are surprisingly low. They are not much higher than the average for successful teachers of experience in almost any good city high school. Salaries for supervising teachers in agricultural education are much better comparatively than for supervising teachers in other training units.

Salaries, training, experience, and faculty rank are all on interrelated levels in respect to these items, and all levels can be raised when salaries are increased. It is strongly recommended that all land-grant institutions in a position to do so make earnest efforts to raise the standards in respect to these items for demonstration and supervising teachers.

TABLE 43.—*Distribution of training school critics and demonstration teachers according to salary*

Teaching-training unit	Number of staff members reporting	Number with salaries of—																
		Less than $500	$501–$750	$751–$1,000	$1,001–$1,250	$1,251–$1,500	$1,501–$1,750	$1,751–$2,000	$2,001–$2,250	$2,251–$2,500	$2,501–$2,750	$2,751–$3,000	$3,001–$3,250	$3,251–$3,500	$3,501–$3,750	$3,751–$4,000	$4,001–$4,250	Mid-interval
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Agricultural education	65	1	0	0	3	1	2	3	10	8	9	11	4	2	3	5	3	$2,501–$2,750
Home-economics education	76	6	1	1	0	2	12	18	11	5	5	5	4	1	4	1	0	1,751– 2,000
Industrial education	28	4	1	4	0	0	4	2	0	3	2	0	2	0	2	1	3	1,751– 2,000
Education	171	2	4	4	3	21	13	33	39	9	4	6	13	6	8	3	3	1,751– 2,000
Commercial education	9	0	0	0	0	1	2	5	1	0	0	0	0	0	0	0	0	1,751– 2,000
Special subjects (physical education, music, art, and others)	33	1	0	0	0	4	3	6	4	6	2	3	0	0	1	1	2	2,001– 2,250
Total	382	14	6	9	6	29	36	67	65	31	22	25	23	9	18	11	11	2,001– 2,250
Per cent	100	3.7	1.6	2.3	1.6	7.6	9.4	17.5	17	8.1	5.8	6.5	6	2.4	4.7	2.9	2.9	----------

Special Requirements for Admission to Student Teaching

Twenty-six out of 46 institutions reporting, state that they have in some degree special requirements for trainees prerequisite to admission to student teaching. The requirements of 11 of the 26 institutions are not definitely expressed. Typical among such requirements are "high standing in class," "satisfactory to director of student teaching," "poor students are required to withdraw," "acceptable disposition and personality," etc.

Fifteen institutions, however, have set up specific requirements in definite terms. The University of California at Los Angeles permits no trainee to undertake student teaching who is short 10 or more grade points. The trainee must also have the approval of the school physician and must pass a psychological test. One or two other institutions have a grade point or honor point system. Colorado Agricultural College and West Virginia University require as a minimum an average grade of 80 per cent in all previous work. In several States prospective student teachers must rank in scholarship at least with the average of all comparable students of the institution.

There is good reason for the extension of selective requirements as applied to prospective teachers. It is a reasonable proposal for institutions in States now having a large oversupply of teachers in certain subjects and which have inadequate training facilities, to limit the enrollments of inferior students in teacher-training curricula. This appears to be a better procedure than to overcrowd practice classes, pad the courses in student teaching with extraneous work, or shorten the period of practice provided.

Conditions Under Which Student Teaching is Waived

Eight institutions report that they do not waive requirements for observation and student teaching under any conditions. Six institutions do not make definite reports. Thirty-two institutions waive student teaching in one or more teacher-training units, to the extent of perhaps 10 per cent of the entire group of trainees.

Typical among the conditions under which trainees are permitted to substitute other work for student teaching, are the following in order of frequency: Previous teaching experience in any field; successful teaching experience in student's major field of specialization; superior ability demonstrated in student teaching; lack of practice facilities; student teaching done elsewhere; student not qualified; and unavoidable conflict of classes.

Obviously waiving requirements in student teaching is not justifiable on the score of lack of student teaching facilities, because of conflicts with other classes and by reason of lack of qualifications on the part of students who are nevertheless permitted to graduate from teacher-training curricula. Arrangements must be made to remedy

such conditions if the institutions intend to maintain a real teacher-training program.

If the student teacher is to be excused from practice at all, the following should be suggestive in determining the maximum degree of flexibility permitted in this respect. The Indiana State Board of Education regulations provide for a minimum of 40 months of certified successful experience in public schools. In the University of Kentucky a teacher of successful experience of two years or more is given a chance to demonstrate his ability as a teacher. If he can satisfy the supervising teacher and the principal that he is a sufficiently skilled teacher, he is excused from student teaching. In the University of Maryland, student teaching is waived only in the case of experienced teachers who have a record of satisfactory teaching attested to by the State supervisor. In the University of Nebraska, candidates must have had three years of successful teaching experience in high school.

Per Cent of Student Teachers Failed in Practice

Nineteen institutions report that no student teachers were failed in practice during 1927–28. Less than 4 per cent were failed in two institutions. This comparatively low percentage of failures among student teachers is variously explained. It is felt that student teachers are a rather select group and that decidedly deficient students are usually weeded out before they undertake student teaching. This assumption is partially, but not wholly, justified. The assumption that student teachers in the senior class, for instance, are a superior group as compared to all other seniors not in student teaching can not easily be proved. Again, supervisors realize that complete failure in student teaching is rather a severe blow for any student planning almost immediate entrance to service. Previous attention should have been given to students who have trained for a long time for entrance to a vocation. It is unfair to supervising teachers to require them to take the whole burden of redirecting poor students after they have passed all other institutional courses, despite the fact that student teaching when properly conducted is a test of many abilities or traits that receive little consideration in such courses.

Activities of the Practice Period

About one-half of the land-grant institutions report that no definite system of graduation of the activities of the practice period is established. Half report the requirement of about 10 hours of observation prior to actual class-room teaching. On an average 30 per cent of the practice period is devoted to observation, 54 per cent to actual class-room teaching and 16 per cent to other activ-

ities. Activities other than observation and actual teaching occasionally include a certain amount of participation. This work has numerous potentialities, but is not yet very well organized. Such activities as conduct of assembly, diagnostic testing of pupils, special help for backward pupils, dramatics, and much similar work are legitimate activities of the practice period and in some institutions are organized and presented in a very definite fashion. Several institutions, probably as the result of overcrowding of practice classes, permit entirely extraneous work on the part of the student teacher, such as preparation for technical or academic college class work. Such activities, while usually valuable, are not an inherent part of the work in student teaching. It is unfortunate that lack of practice facilities should be permitted to result in cutting down the actual amount of legitimate work required in such an important course.

Progressive institutions usually set up some system whereby gradual induction into the actual work of teaching is permitted the trainee. This practice is to be commended. There are many teaching activities that training classes do not provide for at present, and a graded system of participation tends to afford opportunity for extending the range of outcomes of the course.

In a number of institutions improvement in the work in observation is desirable. In a considerable number of observation classes, about all the observers do is to look on; there are no outlines or intensive reports required, no problems previously set up to be solved, and a minimum of conference is provided after the observation is over. Such observation " work " is but little more profitable than the observation that the student teacher has done incidentally in other recitation periods in which he has participated since his first year in elementary school. Only vigorous and intensive direction by trained supervisors will result in the elimination of dawdling and perfunctory discussions of observations.

A few institutions, such as those in Maryland, North Dakota, Nevada, and Wyoming, combine the courses in special methods with the courses in student teaching. The relationship between the two courses is very close, since special methods usually either immediately precedes or parallels student teaching.

Number of Subjects Taught by Each Student Teacher

In 20 institutions student teachers receive practice in one subject only. In eight institutions practice is given in two subjects. Only in a very few institutions is practice given in three or more subjects. When it is remembered that beginning teachers very commonly are called upon to teach two or three subjects in high school it is clear that a substantial number of teachers never receive any practice in

courses they are called upon to teach. It would appear that a wider range of teaching experience is desirable in the training programs of many land-grant institutions.

Conference with Student Teachers

The number of group conferences held per month with student teachers ranges from one to five; the typical practice is one per week. The number of group conferences is fewest in large city public high schools or in situations in which student teachers are widely dispersed among the public schools used for practice.

The number of individual conferences held per week with each student teacher ranges from one to five; the typical practice is one or two per week. Since in an individual conference the supervising teacher functions to best advantage in her work with student teachers, any situation is unfortunate that does not admit of such conferences at the time each unit of practice class work is presented. It is not always necessary that long conferences be held, but certainly any significant major activity on the part of the student teacher is worthy of the direction and attention of the supervising teacher.

In large institutions a great number of student teachers must be handled at times. It is difficult for the supervisor to visit student teachers often unless they are concentrated in one school. At times the training facilities are severely strained even of institutions ordinarily provided with excellent provisions for practice. Hence considerable flexibility in local arrangements are sometimes necessary. Permanent crowding of practice classes, however, is rarely if ever necessary.

Formal Written Lesson Plans

Of 38 institutions reporting on the type of lesson plans required, one-fourth require formal written plans in less than 10 per cent of the practice work. More than one-half require such lesson plans in 40 per cent or more of the practice work. The tendency during recent years has been to decrease the number of formal written lesson plans that cover the work in minute detail. While practically all class work in the training schools should be thoroughly prepared and planned, a teacher who is really familiar with her material usually finds that a few well-planned notes, questions, illustrations, and similar material serve her purpose, especially during the close of the student teaching courses. While the supervisor must know at all times whether the preparation of the teacher is thorough, there are better means to do this than by inspection of detailed written plans that may serve only to conceal lack of preparation.

The supervisory practice of using detailed rating scales for each practice class is rather infrequently reported. Self-rating by the

student occasionally is reported a helpful procedure. Perhaps half the institutions construct and use their own self-rating scales for student teachers, often adapting existing forms to their own purposes.

Training-School Pupils

The percentage of actual teaching of practice classes which is done by student teachers is, on the whole, too high in land-grant institutions. The welfare of the pupils in training schools must be safeguarded. It is recommended in the standards of the American Association of Teachers Colleges that at least two-fifths of the teaching in training schools should be done by regular teachers of the training school, or by regular members of the institutional faculty. This is desirable in order to provide for proper continuity of the work of training pupils, for their instruction by experienced teachers, and to insure confidence on the part of parents relative to the training school program. In the typical land-grant institution, 70 per cent of actual teaching of practice classes is done by student teachers. It is recommended that provisions be made, whereby at least 40 per cent of the actual teaching of practice classes be done by experienced teachers. At present more than half of the land-grant institutions do not reach this standard in one or more of their training schools.

Conclusions

Numerous difficult and pressing problems await solution in the upbuilding of student teaching facilities and practices in land-grant institutions. Among many needs, three may be especially stressed. First, is the lack of properly trained demonstration and supervising teachers. Only by material salary increases, careful selection of staff, and professional recognition of such teachers by the institution can this need be met.

A second pressing need in a number of institutions is for a campus school, better public-school practice facilities, or increased provisions for both. Only in part is the meeting of this need beyond the power of the land-grant institutions. They can not establish more public schools but they can provide means either to take the student teachers to available schools, or to bring training pupils to the institution.

A third major need is for the coordination of the general control of observation and practice activities. Dispersed teacher-training units working apart from each other, lack of sympathy with or understanding of the training school program by regular technical, academic, or even professional education instructors, the use of widely separated public schools for training, and a variety of other conditions render most desirable the establishment of some office or authority, such as that of director of training with power to coordinate and direct student teaching throughout the institution.

Chapter XII.—Improvement of Instruction

The procedure whereby teacher-training personnel and officials may be of service in the improvement of instruction within the institution as a whole is varied. Numerous local factors determine the success or failure of any programs undertaken. The activities which are most commonly undertaken, with some estimate of the results secured, are indicated in Table 44.

TABLE 44.—*Activities undertaken by teacher-training units for the improvement of instruction within the institutions as a whole*[1]

Activity	Number of institutions in which results were—		
	Excellent	Worthwhile	Unsatisfactory
1	2	3	4
Offer regular courses in subjects in education, which are attended by faculty members	6	12	0
Advise with general faculty in meetings devoted to improvement of instruction	3	14	0
Bring to the institution outside lecturers or experts in the field of education	6	13	1
Advise with or participate in activities of faculty committee(s) appointed to formulate and conduct programs of improvement	4	15	0
Assist and advise in cooperative research on instructional problems	5	10	2
Offer individual reports, by members of the teacher-training staff, on problems of instruction	3	12	1
Offer special courses in subjects in education primarily for faculty members	1	4	2
Organize or lead discussion groups	2	4	0
Assist in determining minimum qualifications of candidates for teaching positions within the institution	2	3	0
Direct actual class visitation by qualified individuals	3	4	0

[1] Other means, all undertaken with excellent or worth-while results, are mentioned by one or more institutions. Typical among these are: Conducting psychological tests among students throughout the institution, informally creating respect for study of teaching problems, and furnishing of faculty members with reading material and advice relative to their teaching problems.

The improvement of instruction within the teacher-training units themselves should be a matter of constant concern both to teacher-training staff members and officers within such units. A constant check should be maintained upon the validity and practicality of materials, teaching skills, and attitudes presented and taught by teacher trainers. Neither the colleagues of the education staff nor prospective teachers have much faith in principles or theories that even teacher trainers themselves can not reduce to practice. A most important means of teacher training and improvement of instruction is by practical demonstration.

The means undertaken to improve instruction in the teacher-training units themselves and the results secured are shown in the following table:

TABLE 45.—*Activities undertaken for the improvement of instruction within the teacher-training units*[1]

Activity	Number of institutions in which results were—		
	Excellent	Worthwhile	Unsatisfactory
1	2	3	4
Organize discussion groups within teacher-training division(s)	7	14	1
Provide for individual reports on problems of instruction, by members of teacher-training staff	7	13	0
Engage lecturers or outside speakers for service to the teacher-training staff	7	10	0
Provide for conferences and consultations with outside experts on teacher-training problems	6	8	0
Plan cooperative research between teacher-training departments	2	11	0
Provide for actual classroom visitation by qualified individuals	4	4	0
Offer regular courses in education which are attended by members of the teacher-training staff	3	4	0
Offer special courses in subjects in education for members of the teacher-training staff	1	3	0

[1] Other means undertaken with excellent or worth-while results, are mentioned by one or more institutions: Specialist in research provided staff members; provisions made for regular attendance at professional conferences and associations; college and departmental staff meetings; constant informal discussions of effective teaching held within the education faculty and with cooperating teachers; student questionnaires on faculty teaching utilized; and submission to dean of education of outlines of courses; these are informally discussed by faculty.

Apparently the most successful activities undertaken for the improvement of instruction in teacher-training units are the organization of discussion groups on professional problems, the provision for individual study and reports on problems of instruction, and utilization of outside authorities for service to the teacher-training staff, either for lectures or for conference and consultations. Local conditions determine, to a large extent, the success or failure of the activities undertaken. Usually when the administrative setting is favorable, and adequate professional leadership supplied, favorable results are reported.

Class Size

Typical among purely administrative means for the improvement of instruction is the regulation of the size of classes. The size of class sections in professional education courses is shown in Table 46. It will be noted that 235 class sections have enrollment of from one to four. This constitutes 8.3 per cent of all class sections for which reports were received. The teacher-training units in which the largest percentage of class sections with such enrollments are agricultural education, industrial education, and physical education for men, including athletic coaching, with percentages of 16.6, 14.8, 14.2, respectively. Limited numbers in classes are desirable when the

teacher must do much work with individual students. This fact, however, does not constitute sufficient reason for the large number of class sections reported with the very low enrollment indicated. In some institutions with small enrollments, it is difficult to see how the situation can be remedied if teacher training is to be undertaken at all in certain units; but in many institutions the number of small class sections could be cut down by the use of commonly known devices, such as alternation of courses, abandonment of relatively unnecessary courses, or abandonment of overly ambitious programs of expansion. Reference to Table 5 (p. 124) will show a surprisingly extensive list of objectives on the part of the land-grant institutions. Unjustified programs of expansion often lead to unduly small classes as well as to other troubles.

More than one-fourth of the general education and the public-school music classes have enrollments of 40 or more. Thirty-six classes were reported in general education with enrollments of 100 or more. Next in order among teacher-training units with classes of 40 or more are commercial education, physical education for men, and physical education for women. The greatest extremes in class size occur in physical education for men.

TABLE 46.—*Size of class sections in professional education courses in land-grant institutions*

Teacher-training unit	Number of class sections with enrollments indicated—																						
	Total	1 to 4	Per cent	5 to 9	Per cent	10 to 14	Per cent	15 to 19	Per cent	20 to 24	Per cent	25 to 29	Per cent	30 to 39	Per cent	40 to 59	Per cent	60 to 79	Per cent	80 to 99	Per cent	100 or more	Per cent
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Agricultural education	319	53	16.6	73	22.9	53	16.6	71	22.3	36	11.3	18	5.6	13	4.1	2	0.6	0	0	0	0	0	0
Home economics education	150	14	9.3	37	24.7	18	12.0	28	18.7	20	13.3	15	10.0	17	11.3	1	.7	0	0	0	0	0	0
Industrial education	242	36	14.8	48	19.8	37	15.3	28	11.6	19	7.9	16	6.6	31	12.8	20	8.3	3	1.3	2	.8	2	.3
Education	1,566	84	5.4	156	50.0	165	10.5	175	11.2	171	10.9	152	9.7	257	16.4	235	15.0	95	6.1	40	2.5	36	2.3
Commercial education	57	2	3.5	1	31.8	11	19.3	8	14.0	5	8.8	0	0	17	29.8	13	22.8	0	0	0	0	0	0
Physical education for men	183	26	14.2	30	16.4	31	16.9	14	7.7	14	7.7	12	6.6	20	10.9	29	15.8	2	1.1	3	1.6	2	1.1
Physical education for women	112	10	8.9	15	13.4	25	22.2	19	17.0	2	1.8	8	7.2	18	16.1	11	9.8	3	2.7	0	0	1	.9
Public-school music	47	2	4.2	3	6.4	7	14.9	7	14.9	5	10.6	0	0	8	17.0	12	25.6	3	6.4	0	0	0	0
Art education	28	1	3.6	2	37.1	9	32.2	7	25.0	2	7.1	2	7.1	5	17.6	0	0	0	0	0	0	0	0
Other	131	7	5.3	23	17.6	16	12.7	13	9.9	13	9.9	15	11.5	18	13.7	15	11.5	5	3.8	5	3.8	1	.8
Total	2,835	235	8.3	388	13.7	372	13.1	370	13.1	287	10.1	238	8.3	404	14.3	338	11.9	111	3.9	50	1.8	42	1.5

Chapter XIII.—Home Economics Teacher Training

Studies published by the Office of Education indicate that roughly about one-third of the women registered in 1917 for home economics work were preparing for teaching. Possibly a somewhat larger proportion of the graduates in home economics actually entered teaching.

Since the curricula for home economics subject matter as taught even at the present time is usually much the same for prospective teachers as for others, detailed accounts of the trends in the development of the field are given in the part of the survey on undergraduate home economics.[5]

The growth of professional education subject matter as a distinguishing element of home economics teacher training, is very largely a development of this century. Prior to 1900 dependence was placed almost entirely upon traditional subject-matter training with very little attention to the largely undeveloped field of professional education. Occasional rule-of-thumb practices based upon classroom experience were imparted to prospective teachers. The idea that the instruction of the teacher should hinge largely upon the needs of high-school students did not then have the emphasis that it has to-day. Professional education for that matter had little to offer in 1900. By 1917 the materials in the field of professional education were utilized to as large an extent as was perhaps justified. This work was largely offered in such courses as history of education, general psychology, courses in principles and theory, and general and special methods. Perhaps most land-grant institutions offered at least some opportunity for observation and to a less extent student teaching. While typically 15 or 20 lessons in observation and student teaching were afforded, such work was more often elective than required and too often was poorly organized and ineffective. Needless to say, considerable redirection of emphasis in all the subjects mentioned has taken place during the past decade.

The organization of home economics education with respect to supervision of public-school classroom instruction was not nearly so well developed before 1917 as it is to-day. Only six State officials,

[5] See Vol. I, Part XI.

largely part-time workers, are listed in Office of Education publications as concerned with State work in home economics immediately before this date. Much of the time of these officials was spent in promoting industrial education programs. A corresponding lack of emphasis on the local supervision of home economics teaching existed in the counties and cities, although perhaps 2,500 high schools offered work in home economics.

Very little material on the strictly professional aspects of home economics teaching was available in print before 1917. There is still a scarcity of material on home economics teacher training when compared with the large quantity of printed material on general education. While large and substantial achievements have been attained in professional home economics teacher preparation, the field is still very much in the making. More attention to the development of research in professional home economics teacher training should undoubtedly be given in land-grant institutions, especially in the larger ones, and in those financially able to undertake extensive research and study. Especially worthy of commendation are beginnings in the field of research undertaken by institutions that have released one or more staff members for part or full time research in this field. The devepolment of graduate work in home economics education has been considerably delayed; and a wider development of this work will be necessary before the full instructional possibilities of undergraduate teaching can be realized.

The passage of the Smith-Hughes Act afforded a very great stimulus for vocational teacher-training and a substantial part of the recent progress in the field of home economics may be attributed to the Federal subsidy provided for by the act although public-school vocational classes in home economics were not so heavily subsidized as those in vocational agriculture. The States, however, very quickly went so far in their local support of secondary school home economics education that they have more than made up for any lack in Federal support. The demand for home economics teachers is at present quite as heavy in the high schools as for teachers of vocational agriculture or trades and industries, and is in excess of the demand for teachers of arts and science subjects.

Objectives

The general objectives of teacher training in home economics are derived in the same way as they are for other types of teacher training. The chief emphasis on the part of the home-economics teachers is the preparation of pupils for worthy home membership. However, scores of instructional activities fall under this head. The teacher

of home economics must give recognition to the isolation of many home makers, the diversity of their work, and the difference in the types of activities among homes. Recent changes in modern-day life have in some sections changed these conditions and have brought new responsibilities of an economic and social nature to the home. There is now less manual work but more actitvities of a managerial character. Again, the teacher must provide not only for the needs of girls who have become or are already engaged in the occupation of home making for themselves or for others, but also for girls and women employed in institutional or commercial work. New topics of instruction must be set up almost from year to year in the most progressive public schools and in the teacher-training institutions.

In formulating teacher-training aims and objectives it is important to know the general public-school teaching situation in which the trained graduate must work. Thirty-four institutions report that one of their objectives is training of junior high school teachers; 15 rural school teachers; and 14 teachers of elementary grades. Vocational home economics teacher trainers must, therefore, harmonize their special programs with the work of the best elementary and junior high schools, as well as with that of the best senior and regular 4-year nonvocational high schools.

In the vocational all-day schools and classes, one-half of each day must be given over to vocational subjects including home economics, or this subject and the related subjects of science and art. School girls are usually given courses in food selection and preparation, clothing, diet, recreation necessary to maintain good health, work related to the care and training of children and other courses which better enable them to make satisfactory adjustments to family life. It will be noted that the term "vocational home economics," therefore, represents no revolutionary departure from the so-called nonvocational work in its modern development. Fundamentally, vocational home economics denotes an emphasis in an established field of which it is a part, rather than an entirely new field of work.

The great diversity of the work of teachers of home economics is further illustrated by the fact that some of them must recognize the needs of more than 7,000 boys who are enrolled in home-economics courses; 456 of these pupils are in vocational day and evening schools. Home-economics teachers must provide assistance to these boys by helping them become intelligent consumers, by helping them keep physically fit, and by molding their attitudes in such way that they may participate more sympathetically in home and family life. Assistance may also be rendered them in developing standards of good taste, in helping them plan the financing, purchase, or building of homes, and enabling them to become more effective participants in the other multitudinous activities of family life.

Supply and Demand

According to Office of Education statistics. 3.78 per cent of all public high-school pupils were studying home economics in 1910; 12.89 per cent in 1915; 14.27 per cent in 1922; and in 1928, if all pupils are counted without excluding duplicates, 16.48 per cent. A conservative estimate of the number of individual pupils studying home economics in 1928 is 450,000. (See Table 47.)

TABLE 47.—*Number of pupils of noncollegiate grade enrolled in home economics during 1918, 1922, and 1928*

Type of schools	Number of pupils enrolled in—		
	1918	1922	1928
1	2	3	4
a. Vocational federally aided units:			
All-day schools	8,439	28,987	48,881
Evening schools	22,360	66,025	98,147
Part-time schools	.....	23,696	28,916
Total	30,799	118,708	175,944
b. Total all other home-economics pupils reported by public and private high schools, including junior high schools	83,333	202,428	273,891
All home economics pupils (total of *a* and *b*):			
Public	101,987	307,553	435,000
Private	12,145	13,583	15,000
Total, all home-economics pupils	114,132	321,136	[1] 450,000

[1] Approximate.

In 1918, 3,276 public schools and private secondary schools reported they were teaching home economics; in 1922, 7,014 schools; and in 1926, 8,572 schools. Of this number in 1928, 1,160 were all-day vocational federally aided units. (See Table 48.)

The total number of teachers of home economics, which includes a very large number of part-time teachers of subjects other than home economics, has grown proportionately with the increase in number of pupils and of schools. No data concerning the exact number of full-time and part-time teachers of home economics are available. There were 1,668 all-day vocational home-economics teachers in federally aided schools in 1928. There were in addition, 2,912 vocational evening school teachers and 229 vocational part-time teachers. (See following table.)

TABLE 48.—*Number of schools of noncollegiate grade teaching home economics in 1918, 1922, and 1928*

Type of school or unit	Number of schools in—		
	1918	1922	1928
1	2	3	4
a. Vocational federally aided units:			
All day	200	723	1,160
Evening	123	410	928
Part time	----------	131	77
Total	323	1,264	2,165
b. Total all other schools (public and private) teaching home economics	1,734	5,750	6,407
c. All schools teaching home economics:			
Public	2,865	6,590	8,072
Private	411	424	[1] 500
Total, all schools	3,276	7,014	8,572

[1] Approximate.

TABLE 49.—*Number of teachers of home economics in vocational federally aided schools* [1]

Type of school	Number of teachers in—		
	1918	1922	1928
1	2	3	4
All day	48	1,163	1,668
Evening	688	1,735	2,912
Part time	(2)	245	229
Total	736	3,143	4,809

[1] Data from U. S. Federal Board for Vocational Education, Twelfth Annual Report, 1928.
[2] Data not segregated.

Approximately two out of three graduates in home economics teacher-training curricula in land-grant institutions now hold teaching positions in other than Smith-Hughes work in home economics. Reports from the land-grant colleges concerning the number of secondary school teaching positions in home economics indicate that there are approximately four non-Smith-Hughes positions to one Smith-Hughes position to be considered by the institutions in the placement of its graduates. Many institutions make little distinction between the two types of work. The Smith-Hughes program is apparently thought of as setting up minimum requirements only. Many States have gone far beyond the original program set up for federally subsidized schools.

A rough estimate of the total number of graduates of home economics teacher-training curricula in all higher institutions, including the land-grant colleges, is about 1,400 per year. Not all of these

graduates enter teaching; the nearest estimated proportion who do so is about 80 per cent. Many more new teachers of home economics who are not college graduates do nonvocational work on a part-time basis in the public schools of the country.

Seven institutions report an oversupply of home-economics teachers in their respective States; 17 report an approximately equal balance of supply and demand; and 14 report an undersupply.

While more than half of the higher institutions of this country teach home economics, the teacher-training institutions need have little fear of flooding the market with teachers of home economics for at least the next few years. Teacher turnover in this field is rapid. If many more vocational schools are established, which seems probable as a result of additional Federal subsidies, the number of new teachers to be required will, of course, be increased proportionately.

Administrative and Professional Organization

Relationship with the Federal board.—The unofficial and indirect nature of the relationships between the Federal Board for Vocational Education and the teacher-training institutions that ordinarily prevails in the administration of the Smith-Hughes Act does not prevent the rendering of much informal professional assistance by the Federal board agents to the teacher-training program of the land-grant institutions. These institutions report that participation in institutional conferences, visits with State officials to the institutions, and other activities of the agents and representatives of the Federal board are profitable and worthy of extension.

There seems no sound reason why the Federal board if provided with necessary funds and personnel should not carry through certain suitable types of research on problems of interest to the institutional staff members. The field of research in home economics is fertile and largely untilled. The knowledge of existing practice disseminated in the annual regional conferences called by the Federal board and participated in by teacher trainers is an invaluable service. Nothing but the most cordial welcome should await the extension of this service by the presentation of additional scientifically derived data arrived at impartially by properly equipped Federal agencies. It is certain that the institutions themselves are not at present entering the field of research in home economics as extensively as the existing state of knowledge of this important field justifies.

Difficulties confronted in adjusting the teacher-training program to the requirements of the Smith-Hughes Act.—Most of the difficulties confronted in adjusting the teacher-training program to the requirements of the Smith-Hughes Act are common to the establish-

ment of any new and worth-while program. Thirteen institutions only report any difficulties. Judging from these reports the pioneering stage in building up the Smith-Hughes program has largely passed.

Some of the difficulties occasionally mentioned are: Insufficient provisions for electives; difficulty in scheduling practice work in high-school programs; related subjects not taught to meet home economics requirements; insufficient social science required; shortage of practice facilities (mentioned by three institutions); providing adequate vocational experience for prospective teachers; giving teachers' experience in observation and supervised home projects; difficulty in understanding requirements and the administration of the act; too heavy requirements in chemistry; lack of interest on the part of the student; and the proper administrative placement of home-economics education in the existing administrative set-up of the institution.

It may be noted that many of the difficulties are merely the growing pains of progress and are not due to any inherent weakness in the Smith-Hughes program. They are the natural difficulties encountered in raising standards, or in making necessary readjustments to local conditions.

State Relationships

The State board for vocational education is responsible for a system of vocational teacher training, since teachers must be provided for the vocational schools. The board may have the work done directly through the State staff, or, more commonly, may delegate the preservice teacher training to higher institutions within the State. In home-economics education, 39 land-grant colleges, among other institutions, have been approved for vocational teacher preparation. Greater responsibility rests upon the land-grant teacher-training units for professional self-direction than upon vocational high schools, because fewer State-board regulations and standards are actually applied to teacher training than to the work in secondary schools.

The 40 States in which the land-grant institutions are approved for teacher training in home economics are shown in Table 50. In 9 States, the separate State university is designated as the home-economics teacher-training institutions, in 9 States a State teachers college or normal school, and in 7 States, a women's college. Still other types of institutions are designated in 4 States. Among the 69 different institutions, there is abundant opportunity for variation and experimentation in objectives and procedures in teacher training. The land-grant institutions, however, by virtue of an early start, large enrollments, and richness of offerings, constitute the preponderant group among the total of 69 institutions.

TABLE 50.—*Type of institutions approved for home economics teacher training*

State	Type of institution				
	Land-grant colleges	Separated State universities	Teachers colleges and normal schools	Women's colleges	Other public institutions
1	2	3	4	5	6
Alabama				X	
Arizona	X				
Arkansas	X				
California	X		X		
Colorado	X				
Connecticut	X				
Delaware	X				
Florida				X	
Georgia	X				
Hawaii	X				
Idaho	X				
Illinois	X		X		
Indiana	X	X	X		
Iowa	X				
Kansas	X	X	X		
Kentucky	X				
Louisiana	X				
Maryland	X				
Maine	X				
Massachusetts			X		
Michigan	X		X		
Minnesota	X				
Mississippi				X	
Missouri	X				
Montana	X	X			
Nebraska	X				
Nevada	X				
New Hampshire	X				
New Jersey	X				
New Mexico	X				
New York	X		X		
North Carolina				X	
North Dakota	X				
Ohio	X				X
Oklahoma	X	X		X	
Oregon	X	X			
Pennsylvania	X				X
Rhode Island	X				
South Carolina				X	
South Dakota	X	X			
Tennessee	X				
Texas		X	X	X	
Utah	X	X			
Vermont	X				
Virginia			X		X
Washington	X	X			
West Virginia	X				
Wisconsin					X
Wyoming	X				
Total	40	9	9	7	4

Undesirable Duplication of Home Economics Teacher-Training Offerings

The matter of what constitutes "undesirable duplication" can be determined, of course, by judgment only and is subject to considerable uncertainty as to the accuracy of conclusions in any one institu-

tion. Since nearly 600 higher institutions of all types offer courses in home economics, the problem of duplication has several aspects. Officials in only five land-grant institutions that train teachers have reported that undesirable duplication exists. These are between the offerings of teachers colleges and normal schools and the offerings of the land-grant institutions reporting. Only one land-grant institution reports duplication with private higher institutions.

If the home-economics teacher-training units of the land-grant institutions wish to retain or to extend their existing programs, no better basis can be found than that of setting up a genuine program of professional teacher training primarily directed to meet the public-school needs of the State. The number and success of their product in teaching positions is the final criterion of the relative success of the several different types of institutions that train teachers either as a primary or as an incidental function.

Relationships With State Supervisory Staff

Part-time supervisors often divide time with teacher-training departments of land-grant institutions, hence, unlike the full-time supervisors, the part-time workers usually have their headquarters at the institutions. This arrangement seems to work well, since a first-hand knowledge of actual field conditions by the supervisors may be applied directly to the training of prospective teachers. Such relationships should be encouraged and extended by the institution in all cases possible, by summer employment of the State supervisor, provision of part-time work for her during the regular session, utilization of her services in institutional conferences, and by other means.

Services rendered by home economics teacher-training units to educational agencies of the State.—The primary service, of course, of the home economics teacher-training units of the State is to supply teachers qualified for service in the public schools. Numerous other services were reported by officers of the home economics teacher-training unit. Some of these services are shown in Table 51.

TABLE 51.—*Services rendered during 1927–28 to educational agencies of the State by home economics teacher-training units*

Service	Number times mentioned
Place students in teaching positions	30
Staff members participate in outside (noninstitutional) educational activities of the State	30
Advisory and informatory service afforded to teachers and administrators	27
Group conferences held with school officials	24
School exhibits supplied, directed, or judged	16
Assistance given in forwarding legislative programs for support of public school education	13

Service	Number times mentioned
Assistance given in formulating certification requirements of State department	11
Promotion undertaken of public-school physical education and health work (including athletics)	7
Teachers institutes conducted	6
Cooperative studies of research undertaken with public-school officials	5
Surveys made relative to special school problems	4
Educational research bureau conducted primarily for State service	4
General surveys made of schools	2
Educational addresses given	2

Several other services were mentioned once each.

Internal Organization of Home Economics Teacher Training

The administrative placement of home economics teacher-training work during the early part of the decade was usually in the home economics division. In about a dozen institutions it was organized in the division of education. In 18 or 20 institutions the work was in both divisions. At the present time, the administrative placement of home economics teacher training is indicated as nearly as it can be shown in Table 52. The administrative organization of teacher training is very loosely defined in many institutions and many informal professional and administrative relationships exist that can not be indicated in the table. A tendency exists to affiliate the home economics teacher-training work more closely with the major divisions or departments of education. The recent growth of large divisions, school, or colleges of education has strengthened this tendency.

TABLE 52.—*Colleges, schools, or major divisions in which home economics teacher-training units are organized in land grant institutions*

"Teacher-training units" here refers primarily to offerings in professional education and special methods [primarily for home-economics teachers in training. Technical home economics and related service courses are usually organized in the appropriate major subject-matter divisions]

Institution	Major division in which organized
Alabama Polytechnic Institute	Home economics.
University of Arizona	Agriculture.
University of Arkansas	Education.
University of California	Do.
University of California at Los Angeles	Do.
Colorado Agricultural College	Department of rural and vocational education as elective work in degree course in home economics.
Connecticut Agricultural College	Education.
University of Delaware	Home economics.
Georgia State College of Agriculture	Agriculture.
University of Hawaii	Applied science.
University of Idaho	Letters and science.
University of Illinois	Education.
Purdue University	Do.
Iowa State College	Home economics.
Kansas State Agricultural College	General science.

Institution	Major division in which organized
University of Kentucky	Education.
Louisiana State University	Home economics.
University of Maine	Agriculture.
University of Maryland	Education.
Michigan State College	Home economics.
University of Minnesota	Education and home economics.
University of Missouri	Education (home economics in college of agriculture).
Montana State College	Household and industrial arts.
University of Nebraska	Department of vocational education in college of agriculture.
University of Nevada	Education; technical work in agriculture.
University of New Hampshire	Department of education in college of liberal arts.
Rutgers University (Woman's College)	Department of home economics.
Cornell University	Department of rural education in college of agriculture.
North Dakota Agricultural College	Home economics.
Ohio State University	Agriculture and education.
Oklahoma Agricultural and Mechanical College.	Home economics.
Oregon Agricultural College	Home economics and vocational education.
Pennsylvania State College	Education.
Rhode Island State College	Home economics and department of psychology and education.
University of Tennessee	Agriculture.
Agricultural College of Utah	Home economics and education.
University of Vermont	Agriculture.
Virginia Agricultural and Mechanical College.	Do.
State College of Washington	Home economics and education.
West Virginia University	Education and agriculture.
University of Wisconsin	Agriculture and education.
University of Wyoming	Education.

A dual necessity confronts the teacher trainer in home economics. She must maintain connection with the technical home economics teacher-training work and, at the same time, maintain close relationships with the departments engaged in the professional work of training teachers.

Undoubtedly the modern conception of teaching as a profession implies that the teacher trainer should be administratively associated with the institutional units engaged in professional teacher training. This will help to bring about the professionalization of teacher training as a distinctive and worthy activity. However, the best work of the teacher trainer can not be done without numerous relationships with the technical and academic departments

of the institutions, with State supervisory officials, and with the public schools.

The officials concerned in the selection of home economics teacher-training staff members in 27 institutions are shown in Table 53. The responsibility for this important function is rather widely dispersed. It will be noted that perhaps half of the officials who actually select teacher-training staff members are primarily interested in administrative work or in subject-matter fields other than education or teacher training. Initial proposals of the names of prospective staff members appear to be made chiefly in the departments of technical home economics, although in a minority of institutions the initiative is with officers in education.

TABLE 53.—*Officials concerned in the selection of home economics in teacher-training staff members in 29 land-grant institutions*

Official	Number of institutions—			
	Originally proposes or initiates selection	Actually selects	Approves selection	Appoints
1	2	3	4	5
Head of department of—				
Home economics education	4	2		
Home economics	11	6		
Education	3	2	3	
Dean or directory of—				
Home economics	1	3	3	
Education	5	7	4	
Agriculture		4	2	
Liberal arts			1	
Faculty			1	
University			1	
Women's college		1		
College		1	1	1
President or chancellor		4	29	
State board for vocational education (or State supervisors)	2	1	6	2
Board of trustees or regents		1		27
Other			3	

Officials Who Approve the Programs of Studies of Students in Home Economics Teacher Training

The educational guidance received by prospective teachers is an important aspect of institutional service. The officials who approve such home economics programs are shown in Table 54. The head of the home economics education department is more often concerned in the approval of student programs than any other officer. Officers in education and technical home economics are next in order of mention. Only in the minority of institutions is approval required by officers of both home economics and of education divisions. Probably a somewhat larger measure of cooperation exists than was reported between technical and professional units. After making all

due allowances, however, there is no doubt that excessive rigidity exists in the setting up of departmental limits, as between the subject-matter elements and the strictly professional elements of the entire teacher-training curriculum. Further evidence on this point is seen in the reports concerning the officials responsible for the determination of the actual content and requirements of the several curricula in teacher training. In too many cases, the administrative organization of technical home economics subject matter and of education subject matter results in separate and unrelated programs in these fields.

TABLE 54.—*Officials who approve program of studies in home economics teacher training*

Officials	Number of institutions reporting
Head of department of—	
Home economics education	26
Education	7
Dean or director of—	
Education	10
Home economics	9
Arts and science	2
Agriculture	2
Others—	
Home economics staff members (other than officers)	5
Not elsewhere specified	3

Fiscal Aspects

The amount of money available for teacher training through the provision of the Nelson amendment is utilized to a negligible extent only. The allotment of Federal funds to the States by the provision of the Smith-Hughes Act for all vocational teacher training in 1928 was $1,096,765.93. The money, if expended, must be matched by an equal amount of State or local money. The minimum allotment to each State and the Territory of Hawaii is now $10,000. The amount of Federal funds expended in 1928 for each type of vocational teacher training was approximately as follows: Home economics, $340,278; agriculture, $352,215; trade and industry, $337,891. Thus the proportionate distribution among the three vocational fields is seen to be much the same.[6]

To the amount expended for home economics teacher training from Federal funds, should be added the expenditure of State and local money for vocational home economics teacher training. This amount in 1928 was $322,363 State money, and $141,530 local money, a total of $463,893 for home economics vocational teacher training.

[6] Twelfth Annual Report of the Federal Board for Vocational Education.

The total expenditure for home economics vocational teacher training from 1918 to 1928, inclusive, was: Federal money, $3,176,092.97; State money, $2,943,125.92; local money, $1,279,411.08; total, $7,371,629.97. The total amount spent in this country for all types of home economics teacher training by all institutions and agencies is of course very much greater than this.

The term "teacher training" has not always been definitely restricted even within the land-grant institutions; considerable purely technical work in home economics has been given in the past with teacher-training funds. A Federal Board ruling applicable in 1924 lessened this practice. The uncertain line between purely technical subject matter and professionalized subject content for teachers, special methods and similar courses makes the matter of division of instructional costs a rather impractical procedure.

Staff

According to an existing ruling of the Federal board, vocational teacher trainers, in order to receive Federal funds for their salaries, must meet certain minimum qualifications in respect to training and experience. In accordance with this ruling, separate State plans have set up quite similar requirements applicable to new appointees. Over four-fifths of the State plans prescribe four years or more of home economics training of collegiate grade. Six States require graduate work. Supervised teaching and special methods in home economics and in supervision and teacher training are required in approximately three-fourths of the States. Administrative, supervisory, and teaching experience in appropriate fields of work is required in the majority of the States, while at least some home-making experience is required in very nearly all the States.

Returns from teacher-training institutions indicate that the teacher trainers actually exceed these requirements. The chief weakness in the qualifications of the teacher trainers is to be found among supervising teachers, especially high-school room teachers in the public schools, who supervise in part the work of trainees. Some institutions were unable even to state the qualifications of these public-school teachers. Usually they are college graduates; but, otherwise, often do not fully qualify as staff members to whose students college credit should be granted.

The evening schools, provided for in 43 State plans, offer a very important service to home makers and other students over 16 years of age. Workers anxious to improve in their job make excellent prospects for instruction, but the teacher in evening schools must possess or attain unusual ability in securing and holding public and class interest. Home and sometimes trade experience is an important

element required in the teaching equipment of evening school instructors. The limitations to institutional training activities are clear in this respect. What the possibilities are for expansion of campus or of in-service training to meet such needs must await further study and experimentation.

Training

The showing of home economics education staff members is unfavorable when their training is compared with that of staff members in other institutional units. Of 123 teachers of education in the home-economics teacher-training unit, only 5.7 per cent have a doctor's degree. Nine and seven-tenths per cent have this degree in industrial education and 4.7 per cent in agricultural education. The number of home-economics teachers having the bachelor's degree as the highest is larger than that of such staff members in agricultural education; 41.5 per cent of the home economics teachers have the bachelor's degree as their highest degree, whereas the number is only 28.4 per cent in agricultural education. Less than 2 per cent of the teachers in home economics education have no degrees. A comparison with industrial education is difficult, owing to the nature of the work, which often involves the use of men with practical trade experience, rather than long institutional training; 17.7 per cent of such staff members report having no degree. There are, however, more staff members proportionately in industrial education having a doctor's degree than in home economics. The percentage of staff members in home economics and agricultural education which have the master's as their highest degree is 51.2 per cent and 56 per cent, respectively. In comparison with the general education unit, the showing of home economics education is distinctly unfavorable. While home economics education has 5.7 per cent of the staff members with the doctor's degree, general education has 33.1 per cent with the doctor's degree. As compared with the 41.5 per cent in home economics teacher training with the bachelor's degree only, general education has only 27.2 per cent with the bachelor's degree as their highest.

It is true that the possession of advanced graduate degrees is not the only measure of graduate training, since many staff members have done work above the A. B. degree that is not yet recognized by the possession of advanced degrees. Comparisons, however, by highest degrees held appear valid.

The comparative lack of development of graduate and research work in home-economics education accounts partly for the poor showing made in the amount of training of staff members. The conclusion is inevitable that improvement in faculty training is de-

cidedly desirable. Staff members should have some training in the techniques of research, and certainly should have advanced training above that of the seniors who graduate under them.

The possession of the M. A. degree or equivalent is the minimum requirement proposed for the majority of the home economics teacher-training staff. There is no justifiable reason for the low standing of the home economics education staff in respect to at least this amount of graduate training.

Faculty Ranks Held by Home Economics Teacher-Training Staff

The typical faculty rank given staff members in home economics teacher training is not so high as that of staff members in agricultural education or in industrial education; 19.5 per cent of the home economics teacher-training staff have the rank of professor, whereas 22.6 per cent have the rank of professor in industrial education; 35.1 in general education; and 40.5 per cent in agricultural education. There are a few more teachers proportionately who have the rank of associate professor in home-economics education than in agricultural education or in general education, but the percentage of instructors in the lowest ranks is proportionately higher in home economics education than in the other teacher-training units.

From a professional viewpoint, there would seem to be no reason why either salaries or faculty rank in home economics education should be any lower than that in other teacher-training units. If the home economics students of this country are to receive the type of service to which they are entitled, the home economics education staff must first of all have the institutional prestige, influence, and salary that will enable selecting officers to secure staff members fully as proficient as any comparable workers in the institutions.

Professional Training of Home Economics Teacher-Training Staff Members

One measure, inadequate in itself, but nevertheless of some value as an indication of the professional training of teacher-training staff members is the amount of training they have had in professional education subjects. In this respect, the teachers in home-economics education compare favorably with those in all other teacher-training units except those in general education. The typical number of semester hours in professional education subjects reported for teachers in home economics education is between 30 and 45 credit hours, the same as for industrial education and agricultural education staff members. Sound scholarship both in arts and sciences and in technical subject matter constitute essential elements of the training of all teachers, but the tendency in recent years is toward increasing the amount of training in professional education subjects for all

teacher trainers. This tendency may easily be carried to the extreme but for sometime will doubtless continue and it is unsafe in view of existing knowledge to set either a maximum or minimum standard. Judging by the practice in the most progressive land-grant institutions, about a year's professional work should be required as a minimum for all teacher trainers of professional rank.

Home Economics Teacher-Training Curricula

Home economics teacher training as conducted to-day involves well-rounded preparation of the prospective teacher in the many phases of home-making education. It is convenient and helpful to conceive of the whole high-school program as revolving about the life needs of students, many of which find origin in the environment of the home. This conception at once recognizes the necessity for the inclusion not only of the usual home economics and professional education subject matter and practice, but also art, social sciences, natural sciences, English and economics, physical education and health; in fact, elements of most of the arts and science subjects, as well as some entirely new material. The possible breadth of curricula for home makers is measured only by the breadth of life activities connected with the home.

Training in the related subjects of science and art, with reference to the needs of prospective home makers is not only desirable in connection with home-economics work, but also provides training in subject matter other than home economics for teachers called upon to give instruction in these subjects part time in small or medium sized schools.

Practically, of course, the relatively short period of institutional training is well taken up with only a fraction of the many topics that might be utilized in home-making education. Since education for home making in its present early stages is more a matter of selection from existing fields of subject matter than the upbuilding by research of an entirely new field, the redirection of emphasis in existing subject-matter fields is of considerable importance.

Distribution of Curricula Over Subject-Matter Fields

The approximate average number of semester hours required in 1928 for graduation in undergraduate home-economics curricula leading to a first degree is: Professional education, including psychology service courses, 20 semester hours; technical subject matter in home economics, 37 semester hours; arts and science and other required subjects, 58 semester hours; and electives, 18 semester hours; total, 133 semester hours.

The median distribution given in 1916–17 [7] was: Professional subjects, 18 semester hours; technical subjects, 49 semester hours; science and cultural subjects, 62 semester hours; electives, 5 semester hours; total median requirements, 142 semester hours.

While it is composed of subjects more or less important in technical home economics, there is a definite point of diminishing returns in the usefulness of natural science taken by prospective teachers of home economics. The actual needs of these teachers do not warrant the extreme emphasis put on chemistry and similar subjects in some institutions. There is no particular reason why a teacher of home economics, who is called upon to teach part-time arts and science subjects, should not do her work in social science, economics, English, or other similar subjects as well as in the natural sciences. Home making is both a science and art, and certainly the cultural needs of a teacher should not be neglected. To help high-school girls meet as many needs as possible is the concern of every public-school teacher of home making. Hence, much of the change in home-economics curricula in recent years has consisted in broadening the content of home economics to include usable subject-matter elements in the fields of economics and sociology. There are, however, a number of land-grant institutions with progress yet to make in this direction.

The rise in the number of group electives, on the whole, is a favorable tendency. A well-arranged system of group electives is very desirable in the larger institutions that must meet complex State needs. The authorities in charge of teacher-training are in a better position to determine for the student her needs in training than the student herself. The varying needs of the several States for teachers of different types, such as for combination subjects, is a matter concerning which prospective teachers are rarely well informed, and continuous study by teacher-training officials themselves is necessary properly to formulate teacher-training curricula to meet the needs of the teachers and of the State.

Inspection of lists of courses offered by the institutions discloses a reduction during recent years in the requirements in mathematics and foreign languages. English, of course, is everywhere required in liberal measure. Natural science has been slightly reduced in amount.

The work in technical home economics as offered is much the same in teacher training as in other fields, and is discussed in detail in the part of this report dealing with home economics.[8] Elements of the work of particular interest to teachers include most of the home

[7] Jarvis, C. D., Bureau of Education Bulletin, 1917, No. 38.
[8] See Vol. I, Part XI.

economics subject matter that is usable by high-school girls. Such materials include selected elements from clothing and textiles, food and nutrition, home management, family and community relationships, and child welfare and development.

An opportunity exists for the professional education departments to contribute to the technical field of family and community relationships. Some development of this field may be attained in character education, and in training pupils to adapt to social needs. The full development of this subject is not within the possibilities of the home economics units alone, at least in their present stage of development. More research work is highly desirable in this field. There are several practical ways, in which instruction other than in class-room work may assist prospective teachers in the techniques of such work. For instance, the provision by the institution of facilities for counciling prospective teachers on personal and social problems, informal instruction in related class work, the provision of a happy social situation within the institution, and wisely administered extra-curricular activities will help the trainee in her individual problems in the school community and will also assist her to give in turn similar service to her students.

Courses in Professional Education

In Table 55 are shown the typical requirements in courses in professional education in home economics teacher-training curricula. A large variation in the number of semester hours required may be noted for most courses; usually, however, each course is given two or three times per week for one semester.

Special courses in education given by only a few institutions are not listed in the table. Usually such courses are required for about the same amount of time as those shown.

TABLE 55.—*Typical requirements in courses in professional education in home economics teacher-training curricula*

Course	Semester hours required		
	Minimum	Typical	Maximum
1	2	3	4
Observation and student teaching	2	3	7
Special methods in home economics	1	3	8
General methods	1	2-3	4
Principles of education (or of secondary education)	2	2-3	8
Technique of teaching		2-3	
Educational psychology (including child study)	2	2-3	6
General psychology	2	3	6
Tests and measurements		2-3	
Administration and classroom management	2	3	4
Vocational education	2	2	6
History of education (or of home economics education)	2	3	4
Introduction to education (or to teaching)		2-3	
Educational or rural sociology	2	3	4

Study of the catalogues of land-grant institutions for previous years discloses a tendency toward the extension of requirements in observation and student teaching, educational psychology, introduction to education and, to a less extent, in a few other subjects. Decreased requirements are noted in the history of education, general methods, and vocational education.

The test most commonly applied nowadays to any course in education is the extent to which it results in better teaching or in greater ability to solve practical problems in professional work. Much study and research yet remains to be done concerning the relative effectiveness and value of courses in professional education. Functional, rather than formal, traditional, or merely logical content is emphasized at the present time.

Sequence of Required Courses in Education

No uniform practice is followed among land-grant institutions relative to the sequence of courses in professional education in home economics teacher-training curricula. A given course may be offered almost anywhere in the curriculum. The following order represents roughly the most common practice in so far as it may be discerned. General psychology is first in order, although in four institutions a course in introduction to education or teaching is offered first. Educational psychology is second in order; child psychology, third; history of education, principles of education or of secondary education, and general methods are next in order; thereafter, tests and measurements, administration and class-room management, vocational education, technique of teaching, special methods, and educational sociology are offered, without much differentiation as to the exact order. Special methods in home economics, and observation and student teaching are usually offered toward the close of the course.

Special Methods Courses

The Smith-Hughes program has contributed very greatly toward the development of really worth-while courses in special methods. Early in the decade, such courses often were too largely technical subject-matter courses; they were, in fact, subdivided and taught largely on the subject-matter basis of foods, or of textiles and clothing. Now such work is more nearly unified and there is larger professional content. Experienced instructors with adequate training in technical home economics, in arts and sciences, and in professional education, have in recent years, developed special methods courses that are among the most vital and most helpful of all the

courses given prospective teachers. There is still room, however, for considerable improvement. Subject-matter specialists who have no training in professional education usually can do little more, in teaching special methods, than offer another course in technical home economics. Their only professional asset is the possible possession of successful public-school teaching experience.

The omission of much borrowed material in professional education, advanced general psychology and other subjects, has been brought about in recent years. Advanced technical material in home economics is likewise not quite so often stressed, and the elimination of certain traditional materials included only to satisfy academic ideas and the requirements of logical arrangement has likewise been effected.

Part-Time and Evening School Teachers

The larger part of the present home economics teacher-training activities of the land-grant institutions have to do with the training of regular day school teachers. Present indications for expansion of Federal support of the vocational education program seem to justify the belief that a number of new teachers will be required in part-time and evening schools in the near future. The qualifications necessary for part-time and evening school teachers differ sufficiently from those of all-day teachers to justify special training. The land-grant institutions are in a better position to do this work than the State supervisors and some of the other agencies that now assist in training this type of teacher. Promise for development in this field of teacher training is given by the expansion of programs in a few of the land-grant institutions such as those in Indiana, Michigan, Minnesota, and Pennsylvania. The summer school affords a convenient entering wedge for beginning offerings in this field.

The upward extension of the State compulsory education laws relative to part-time attendance, the increasing public interest in education, and the establishment of educational offerings of genuine interest and use to young people have resulted in a considerable part-time program in the public schools.

About three-fifths of the States now have laws relating to part-time school attendance. In 1929, 11 States reported 168 Federally aided part-time units in home economics. Since a typical arrangement of class work in these units is 4 hours per week for 36 weeks and since the student body is very unstable, special organization of the work is necessary.

It is very difficult to secure teachers trained specifically for part-time work. This field is probably worthy of more development in the land-grant colleges than the limited number of part-time home economics vocational units would indicate.

Research in Home Economics Education

Probably the greatest weakness in home-economics education at the present time is the lack of scientifically validated findings in respect to the objectives, practices, and actual achievements in this field. Federal and State staffs have done the best work possible but personnel and facilities are very greatly limited. These staffs have many duties other than research. Only a comparatively few large public or private institutions, such as Teachers College, Columbia University, University of Chicago, University of Minnesota, Iowa State College, and a very few others, have undertaken large and continuous programs of research in the field. It is true that courses in home making may draw some of their content from related fields such as science, professional education, sociology, economics, and child psychology, but the field of home economics teacher training seems worthy of much greater development within itself. There is a marked scarcity of publications in the field of home economics teacher training; inspection of many bulletins and studies masquerading under the title of home economics teacher training in reality affords only discussions of purely technical subjects, often of little distinctive professional interest or concern to prospective teachers. Only by enlarging the existing staff of professionally trained workers and by providing sufficient facilities for research, will adequate development of the field be possible.

Year when trainee begins to differentiate his curriculum from that of students not preparing to teach.—In 8 institutions differentiation of work in home economics education begins in the freshman year; in 7 institutions, in the sophomore year; in 23 institutions, in the junior year; in 1 institution, in the senior year. The trainee, therefore, most commonly begins to differentiate her work in the junior year. The beginning of courses in education accounts for most of the differentiation. In 15 institutions at least, the curriculum taken by prospective teachers in the freshman and sophomore years is identical with that taken by those not preparing to teach. The courses in education account for most of the differentiation thereafter. The elevation of teacher training from a semitrade level to the level of professional education may in the future affect somewhat the nature of undergraduate curricula. In such case, careful study of future tendencies in the preparation of professional workers in fields other than teaching will be suggestive as to lines of future curricular organization.

Degrees Granted

The bachelor's degrees granted students whose primary interests are in home economics teacher training are as follows: B. S. in 14 institutions; B. S. in home economics in 11; B. S. in agriculture in 3; B. S. in education in 2; Ed. B.

in 2; and B. A. in 1. In some institutions more than one type of bachelor's degree may be granted prospective teachers of home economics.

Evidently little progress has been made toward the establishment of a strictly professional degree in home economics education. There is some tendency in State teacher-training institutions to set up professional degrees. In all probability, however, it will be some time before the degree of B. S. in home economics education will be established for all students in home economics teacher training in land-grant institutions.

The major divisions in which degrees are granted in home economics teacher training in 33 institutions are as follows: Home economics, 17; education, 8; agriculture, 6; arts and science, 2. The increase in the number of institutions in which the degrees are granted in education corresponds roughly to the comparatively recent increase in the number of such schools and colleges. The rather close affiliation of home economics education with the field of technical home economics, has not been greatly affected by this tendency.

Length of Home Economics Teacher-Training Curricula

Twenty-two institutions report home economics teacher-training curricula extending through the 4-year college courses; 2 institutions report curricula extending through the sophomore, junior, and senior year; 8 institutions, curricula extending through the junior and senior year; and 7 institutions, curricula confined to the senior year alone. However, as previously indicated, in most of the 4-year, 3-year, and even 2-year teacher-training curricula, very little differentiation exists between teacher-training curricula and curricula taken by the students in other home economics fields.

Changes Planned in the Extent of Offerings in Teacher Training

Seven institutions report that they plan to extend their offerings in teacher training; 16 report no changes contemplated; and no institutions report plans to decrease or discontinue any existing curricular offerings. Among the changes planned are: The establishment of graduate work in regular session in large institutions, and to a limited extent in medium-sized institutions as well; expansion of opportunities for observation and student-teaching facilities; establishment of nursery schools; extension of the professional education element of teacher-training curricula; enlargement of staff; and enlargement of offerings in adult education.

Professionalized Subject Matter

While the concept of professionalized subject matter is not accepted by all teacher trainers as a solution of the difficult problem of synthesizing work in professional education and technical subject matter, a comparatively large number of institutions report courses, the content of which meets the usual accepted definition. Almost every subject in home economics is reported by some institution as possessing content or organization specifically determined by the needs of teachers and not primarily by general aims other than teaching. Good teaching everywhere affords the first characteristic embodied in the definition of professionalized subject matter, regardless of the terminology employed to designate such teaching.

The desire to prevent a lopsided development of either technical home economics or of professional education is encouraging. This desire will continue to grow as college teachers become better trained professionally and more imbued with the idea of presenting work with the primary emphasis on the actual needs of trainees, rather than upon the mere mastery of education subjects or traditional subject matter.

The size of classes or class sections in home economics education is shown in Table 56. The percentage of classes with enrollments of 4 or fewer is 9.3 per cent. The typical enrollment is 15 to 19. Classes in home-economics education are larger as a rule than those in agricultural education.

Institutions maintaining the small classes of fewer than five students noted in the table should face frankly the reasons for their existence. Attention to this condition will usually result in reorganization of the work and the elimination of all but a few such classes.

TABLE 56.—*Size of classes and class sections in education courses in home economics teacher training*

Enrollment	Number of classes or class sections	Percentage	Enrollment	Number of classes or class sections	Percentage
1 to 4	14	9.3	25 to 29	15	10.0
5 to 9	37	24.7	30 to 39	17	11.3
10 to 14	18	12.0	40 or more	1	.7
15 to 19	28	18.7			
20 to 24	20	13.3	Total	150	100.0

Observation and Student Teaching

The average amount of observation and student teaching required in home economics education is 3 semester hours; the range is from 2 to 7 semester hours. The highest requirements are in the University of California at Los

Angeles, Connecticut Agricultural College, University of New Hampshire, Rutgers University [Women's College], Ohio State University, Pennsylvania State College, and the Agricultural College of Utah, all of which require six or more semester hours.

The course in student teaching is typically one semester in length. Five class sections per week are commonly taught. The usual length of the practice period is 90 minutes, reported in 19 institutions; 60 minutes in 12 institutions; and 45 minutes in 11 institutions. Other time allotments such as the 120-minute period were occasionally reported.

Nature of Training Facilities

Reports were received from 36 institutions having training schools or practice classes in home economics education. Data were given wholly or in part for 90 training schools or units. Of these, eight are utilized for apprentice teaching only. Typically each institution has the use or partial use of two or three separate schools. The range is from one to seven or more such units.

The organization of the schools for which reports were received and in which practice classes are organized is as follows: 46 are senior or regular 4-year high schools, 16 are junior high schools, and 14 are elementary schools. Sometimes two or three of these groups of classes are housed in one building.

Twenty-five of the 76 schools for which reports were received are regular vocational high schools. In 34 schools vocational classes are utilized. In about the same number nonvocational classes are used. Student-teaching classes should afford conditions as nearly the same as possible as the work later to be done on the job. Hence, vocational classes should be utilized for student teaching whenever possible by prospective teachers of purely vocational work. If the teacher plans for other types of teaching in home economics, appropriate facilities should be provided, such as for prevocational courses in the junior high school. Practice should be given in any other major subject-matter fields that later will be taught.

Fifteen of the schools for which reports were received are located in rural or semirural centers of fewer than 2,500 population, and 40 are urban schools in towns or cities of 2,500 or more population. Conditions in rural homes under such conditions scarcely affect the thinking, much less the practice, of the student teacher in urban situations.

Nearly all the practice schools are either public schools or institutionally owned campus schools; two are private schools. Ten training units are in university high schools or other schools owned by the institutions. No public schools are wholly controlled by the institution; nine are, however, under joint control of the institutions and of local public-school authorities. Fifty-two practice schools or more than half were reported as not controlled by the institutions. Conditions for student teaching are rarely satisfactory under such conditions.

Eleven of the 90 schools were utilized for observation only; the remainder were utilized for both observation and student teaching.

The total number of pupils available for student teaching reported by 33 institutions from which data were received on this point includes 3,514 vocational or semivocational pupils and 3,243 pupils not classified as vocational pupils. The average number of vocational or semivocational pupils available for each institution is therefore 108 and of nonvocational students slightly less. The range, however, in the total number of pupils available among institutions, is from none, to almost the entire home economics enrollment of large city school systems. It should be noted that the classification of pupils as vocational and nonvocational is more or less a matter of terminology in many institutions.

The average number of training school classes or class sections available for practice in each institution is 12; the average minimum is 10; the approximate median 16, and the average maximum 24.

Typically, the land-grant institutions are fairly well supplied with practice material in home economics education and in general, most institutions maintain reasonable standards in respect to the number of their practice classes. The problem would be difficult, however, if it were insisted that only vocational pupils, in the strict meaning of the term, be utilized for student teaching.

Officials Responsible for the Work of Supervisors

The administrative organization of the supervisory staff of the home economics teacher-training practice unit in relation to other teacher-training activities is not well defined in the majority of the land-grant institutions. Judging from the reports, the supervising teachers themselves receive little professional direction in their work. No coordinating agency for the supervisory program is reported by 14 institutions. In 10 institutions, however, the head of the department of home economics education coordinates or is in charge of the work of the supervising teachers.

In seven institutions, the principal of the school used for student teaching is in charge; in five institutions the head of a department of technical home economics officiates in this capacity; while in four institutions the head of a department of general education maintains oversight of such work. Other officials responsible for the direction of the work of supervising teachers are also reported. Among these officials are the deans of education, of home economics, and of arts and science; and certain professors within the institution. In three or four institutions a director of training, or officer of equivalent title, is reported in charge.

Demonstration and Supervising Teachers

Reports were received concerning 82 demonstration and supervising teachers in home economics education. Of this number, 37 were full-time and 45 part-time workers. The supervisor of student

teaching is ordinarily a member of the regular institutional staff and is usually on the home-economics faculty. Supervision is only a part and often a relatively small part of her job.

Ranks of 57 supervising teachers are: Professor, 5; associate professor, 5; assistant professor, 14; instructor, 27; and assistant, 8. Reports received show a much larger number of public-school teachers without faculty rank that are utilized as supervisors than of institutional staff members so utilized. Many of the institutions found it difficult to give very much information about these non-institutional supervising teachers other than that they are usually college graduates and perhaps as well qualified as any public-school teachers that can be found conveniently near the institution.

The demonstration and supervising teachers as a whole have lower rank than other members of the institutional faculty. Just why is not wholly clear. It is true their work constitutes a rather expensive element of the training program but it also constitutes probably the most important element. Teacher trainers rather generally agree that practice work has an absolutely essential place in their program. If it is essential, it is worth paying for.

Of 71 supervisors for whom reports were received, 37 have the bachelor's as their highest degree; 30 have the master's as their highest degree; while reports were received for only one supervisor with the doctor's degree. A large number of public-school supervising teachers should be added to the total; most of these have the bachelor's degree only.

Clearly the demonstration and supervising teachers are below the general average of the institutional staff in respect to training. The level of training of these staff members would be shown as even lower were it not for the fact that many regular teachers of college classes are included as part-time supervisors. More than half the supervising teachers have perhaps not more than one semester's work more than the seniors they instruct in student teaching.

Usually a supervisor at a given time has in charge four student teachers. The maximum reported by any considerable number of institutions is five. The maximum set in the standards of institutions primarily engaged in training teachers is six. Very few land-grant colleges exceed this number.

Fifty-seven per cent of the part-time supervisors teach subjects in education in their regular institutional class-room work, while 43 per cent teach technical subject matter other than education.

Salaries of Supervising Teachers

The salaries of home economics supervising teachers are shown in Table 57. Outstanding is the low typical salary of both part-time

and full-time staff members. Salary levels, of course, correspond to the low levels of training and faculty rank elsewhere noted. In several land-grant institutions, salaries of supervising teachers are no better than those of high-school teachers of home economics, many of whom, in fact, actually serve as supervising teachers for the land-grant institutions. It is evident, without further discussion, that immediate and material increases should be made in most land-grant institutions in the salaries of supervising teachers. It will then be possible to require more training and experience for this important group.

TABLE 57.—*Salaries of training school home economics demonstration and supervising teachers*

Salary range	Number of staff		Salary range	Number of staff	
	Part time	Full time		Part time	Full time
Less than $500	6	0	$2,501 to $2,750	0	5
$501 to $750	1	0	$2,751 to $3,000	2	3
$751 to $1,000	1	0	$3,001 to $3,250	3	1
$1,001 to $1,250	0	0	$3,251 to $3,500	0	1
$1,251 to $1,500	2	0	$3,501 to $3,750	3	1
$1,501 to $1,750	10	2	$3,751 to $4,000	0	1
$1,751 to $2,000	11	7			
$2,001 to $2,250	4	7	Total	45	31
$2,251 to $2,500	2	3			

The typical supervising teacher has been in her present position from two to four years. About one supervisor in five is engaged in her first year's work. About the same proportion has had five to nine years' experience. Reports were received for a few or no supervisors with more than 10 years' experience in their present positions.

From several viewpoints the qualifications and status of the home economics training supervisor are unsatisfactory. The turnover is relatively high, her professional prestige as represented by faculty rank is not satisfactory, her salary is poor, and she should have more graduate training. Typically, she can not claim even to have broad experience. It is very unfortunate that the important work of the training school should be given such unsatisfactory recognition on the part of responsible officers in the institutions.

Distribution of Student-Teacher's Time Spent in Observation, Participation, and Actual Practice

It is usually best for the student teacher to be inducted into her practice work gradually. Many progressive teacher-training institutions have set up a system of graded participation with this aim

in view. In home economics student teaching, the distribution of the time spent in practice classes is typically as follows: Observation, 15 per cent; participation, 20 per cent; and actual student teaching, 65 per cent. The work in participation seems to be the most poorly defined of these three stages of practice. Such work as preparation for special methods, courses, study of principles of education, conferences, etc., are often listed as participation. Work in participation is of chief value in the practice course when it serves as an actual introduction to class-room student teaching. Student teaching is a very definite and worthy training activity, and it seems entirely unnecessary to substitute work in other general education or subject-matter courses in order to meet the quantitative requirements of the student teaching courses.

Three institutions report that 40 per cent or more of the student-teaching courses is devoted to observation. Only the absence of sufficient student-teaching facilities appears to explain this relatively high proportion. Two institutions report that more than two-thirds of the work of student teaching is devoted to activities other than either observation or actual class-room teaching. Again, this proportion seems entirely too high.

In the field of technical home economics alone, practice is given typically in only two subjects. As indicated elsewhere, the expansion of the traditional field of home economics into all the diverse fields covered by the general term "home making" would indicate that the existing range of preservice teaching experiences should be considerably widened. Five institutions report progress in this direction. They afford practice in three or four topics in the general field of home making. The number of such institutions should be increased.

Apprentice Teaching

Returns were received from four institutions that employ the apprentice plan of student participation and teaching in home economics education: Connecticut Agricultural College, University of New Hampshire, Pennsylvania State College, and Rutgers University. Some idea of the nature and extent of their work in apprentice teaching is shown in Table 58.

TABLE 58.—*Nature and extent of apprentice teaching in home economics education in four institutions* [1]

Item	Connecticut Agricultural College	University of New Hampshire	Pennsylvania State College	Rutgers University
1	2	3	4	5
Number of years apprentice work has been established	10	10	9	4
Number of students receiving apprentice training	13	8	17	21
Number of weeks during which student is engaged in work (average)	6	12	6-18	8
Number of class periods per week	5-10	35	3-20	10-15
Length of class period (minutes)	90	45	45	60-90
Number semester hours credit usually granted each student for apprentice teaching	6	12	6	7
Typical number of subjects taught by each student	2	5	5	3
Number of schools utilized by institution for apprentice teaching	10	8	17	2

[1] With reference to the general results of this type of work 3 institutions reported excellent and 1, Connecticut Agricultural College, reported satisfactory.

In Connecticut good opportunities, at least from the standpoint of geographical location, are offered for apprentice teaching in home-economics education. One difficulty reported in this State is a common one in the apprentice system of student teaching. Well-trained and experienced high-school teachers comparable in ability with the institutional staff are not always readily to be found in the high schools utilized for apprentice teaching. While such teachers may meet the standards of the local high schools their qualifications by no means satisfy institutional officers who wish high-grade work of strictly collégiate character.

The difficulty is encountered in some States of providing effective oversight and supervision of the local high-school teachers who function as critics. In New Hampshire, the home-economics apprentice does her work in approved schools during the winter term and a professor in charge supervises the work directly and continuously.

A problem which arises in apprentice teaching is the provision of some means for harmonizing the demands of regular class-room instruction and the necessity for doing work at the same time away from the institution. In the New Jersey State College for Women, and elsewhere, a system of alternation of institutional work and student teaching has been worked out. This seems to be the most practical plan, since it leads to more concentration on student teaching at the time the course is taken.

Practice work offered especially for students training for Smith-Lever extension service.—While most of the land-grant institutions offer the same general type of instruction for prospective workers in Smith-Lever extension activities that is offered for their other

students in home economics, it is interesting to know that eight institutions have made beginnings in providing special practice work for such students. This training often is incidental only. Occasional demonstration work is required, and field service is offered in club work and in adult extension activities. In the University of Tennessee, assistance is given this program by the extension service. In Connecticut Agricultural College, six weeks' work in observation and participation in 4-H work and in adult extension work is offered. West Virginia University is planning to offer summer field work in home economics extension. Opinions differ as to the advisability of extensive programs in this field; but courses in professional education and teacher training that do not add materially to the effectiveness of Smith-Lever extension workers are in need of drastic revision and upbuilding. Extension work is teaching; it is a form of adult education, and many of the desirable skills and traits of an extension worker are much the same as those of any teacher.

Conclusions

The land-grant institutions may safely continue their present general program of development of the field of home economics teacher training, and should greatly expand their moderate program of refinement of instructional and related procedures in this field. The proportion of high-school girls who are taking courses in home economics is constantly increasing; while it is estimated that nearly 40 per cent of the high schools of this country do not yet offer home economics. Typical schools now offering this work are constantly expanding their curricula. Hundreds and perhaps thousands of public schools in many States will soon require additional new teachers of home economics as additional funds become available. The land-grant institutions constitute one of the very best among all agencies that train teachers of home economics. The potential field of service of home economics education to the States and to the Nation constitutes a challenge that may be confidently expected to insure constant upbuilding of home economics teacher-training in land-grant institutions.

Chapter XIV.—Vocational Agricultural Education

The annual requirement of new farmers in the United States is about 200,000. The task of providing for the systematic and relatively prolonged training of more than 99 per cent of the persons entering farming and of continuing the agricultural education of 6,000,000 adult farmers is one that will have to be carried out in the main through the local public schools if it is ever fully accomplished. The greatest opportunity that a land-grant institution has for influencing the agricultural practice of its State is in training an adequate personnel for the teaching of the agricultural courses which the public schools are obligated to provide.

Most of the land-grant institutions introduced offerings in agricultural education during the decade previous to the enactment of the Federal vocational education act of 1917. But two institutions had systematic courses of this sort before 1907.[9] At present all but two (Massachusetts Institute of Technology and the University of Porto Rico) have organized instruction in agricultural education.

Due to the influence of the Federal vocational education act, which set aside funds for training teachers of agriculture and subsidized State and local programs of agricultural education of less than college grade, the work of departments of agricultural education in the land-grant institutions has come to be almost entirely that of preparing teachers for the system of vocational education in agriculture which has been set up in their States under the auspices of the Federal Government. Other functions have either ceased or have never been assumed because of an absorbing interest in the Federal program and because the State funds available for agricultural education have been used in offsetting Federal funds.

With this in mind it is necessary to make a detailed study of the program of agricultural teacher training which has grown up in connection with the federally aided program.

Federally Sponsored Program of Agricultural Teacher Training

Land-grant institutions in each of the 48 States and in the Territories of Alaska and Hawaii receive the Federal funds for teacher training under the provisions of the Federal vocational education act.

[9] Report of the United States Commissioner of Education for 1910, Vol. I, p. 256.

One hundred and sixty-five agricultural teacher trainers were employed in these institutions in 1928–29. In that year there were 2,775 students in training for the teaching of agriculture in federally aided departments.

In 1928, 34.2 per cent of the graduates in agriculture in these institutions qualified for teaching in federally aided schools. In nine States more than 70 per cent of the agricultural graduates were trained for teaching. Seventy-one and one-half per cent of all the agricultural graduates trained for teaching in the United States in 1928 were placed the following year in positions where they taught federally aided classes in agriculture, so that 448 of the 1,834 graduates of that year, or 24.4 per cent, were actually employed as vocational teachers in 1928–29.

Financial participation.—The financial share of the land-grant institutions in the federally sponsored program for training teachers of agriculture is very limited. It should be borne in mind that the Federal aid available may be applied only on the salaries of teacher trainers. Buildings and equipment must be supplied by the training institution. Every dollar available from the Federal funds for teacher training must be matched by a dollar from some State source. The State funds used for this purpose are supplied by the land-grant institution, or by the State board for vocational education, or by both jointly.

Only one institution, the University of Vermont, bears as much as one-half of the total costs. Only four bear even one-third of the costs. Twenty-five pay less than 10 per cent. Eighteen contribute nothing. Nine institutions contribute 50 per cent or more of the money which is used to offset Federal funds. Nine more contribute one-fourth to one-half of the State costs. Thirteen bear some of the costs but less than one-fourth of the State costs. Eighteen, as already noted, make no financial contribution whatever to this program.

The foregoing statements account only for the regular teacher-training funds used in this program. In addition, according to Dr. C. H. Lane, chief in agricultural education of the Federal Board for Vocational Education, there was diverted into the teacher-training program in 1928–29 a total of $159,962.34 from the fund for salaries of agricultural teachers and supervisors. Moreover, $1,183.68 of the money designated as coming from the teacher-training institutions was actually supplied to those institutions from other sources. Having made these allowances, the share of the land-grant institutions in the costs of the federally sponsored program in 1928–29 is found to have been 9.39 per cent.

Forty-one institutions reporting in connection with the survey indicate that in 1927–28 they paid in salaries to instructors in agricultural education a total of $282,739. These same institutions received from the Federal Government in that year $307,993 for use in agri-

cultural teacher training. It should be understood that Federal funds may be used to provide general courses in professional education for persons preparing to become teachers of vocational agriculture, but it is significant that the funds received from the Federal Government were greater than the total salaries paid all specialists in agricultural education. The land-grant institutions expended for the salaries of teacher trainers in agricultural education in connection with the federally sponsored program a total of $92,923.98, or slightly more than one-tenth of 1 per cent of the total expenditure for salaries and wages.

Growth of the public-school agricultural program.—Extensive demand for the graduates of agricultural colleges as teachers has been occasioned by the expansion of the public-school program in agricultural education initiated by the Federal vocational education act. The growth of this program is indicated in the following table.

TABLE 59.—*Students enrolled in federally aided courses in agriculture of less than college grade in the United States, 1918–1929* [1]

Year	All-day classes	Evening classes	Part-time classes	Day-unit classes	Total
1	2	3	4	5	6
1918	15,455				15,455
1919	19,333				19,333
1920	31,301				31,301
1921	40,763	1,139	1,445		43,347
1922	52,961	1,133	5,942		60,236
1923	57,978	9,319	2,090	1,911	71,298
1924	65,358	15,227	2,143	3,256	85,984
1925	70,958	15,835	2,330	4,002	93,125
1926	82,431	19,239	2,716	5,142	109,528
1927	89,390	24,227	3,622	5,698	122,937
1928	96,941	35,192	4,458	8,310	144,901
1929	106,844	48,898	5,802	9,922	171,466

[1] Data from records of Federal Board for Vocational Education.

Possibilities for further expansion of the federally aided program.—There is no accurate means of determining the percentage of the persons who are entering farming for the first time who have availed themselves of the opportunities for training in agriculture which their local schools afford. It is probable, however, that somewhere between 10 and 20 per cent of our new farmers have had training in federally aided classes extended over periods of one to four years.

About eight-tenths of 1 per cent of the adult farmers in the United States were reached in 1928–29 by evening classes conducted as a part of the federally sponsored program.

According to the United States Office of Education there were in the United States in 1926 approximately 20,000 secondary schools.

Of these 13,751 were in villages with populations of fewer than 2,500. In 1928–29 there were 4,365 schools with high-school programs in agricultural education. Evening schools were also conducted in 1,831 centers and part-time classes in 337 schools. Most of these were in connection with schools having high-school programs in vocational agriculture.[10] It would appear that about a third of the high schools of the United States which are suitable for programs in vocational agriculture now have them in operation.

Part-time education is as yet reaching a very limited number (5,802 in 1928–29), though the 1920 census indicated that there were at that time 1,202,135 farm boys 14 to 20 years of age out of school. Undoubtedly this number has appreciably decreased since 1920 but the development of part-time education offers great possibilities in those regions where high-school attendance is not yet general and in all sections it has a place in the education of those in the age group, 18 to 25.

Until recently work with the high-school groups has claimed by far the greatest attention. It does not appear certain, however, that high-school instruction is going to continue the most important. There are at least six times as many employed farmers eligible for instruction in evening and part-time classes as there are high-school students who might be reached with instruction. In those sections where it is being tried out, work with adult farmers is proving fully as successful as work with the younger group.

Considering the large fields of service which yet remain to be occupied and the highly successful results which have already been secured in each of these fields, it appears that there will be very extensive development in all phases of vocational agriculture during the next decade or two and that this development will make heavy demands upon the land-grant institutions for teachers. It is important in making plans for teacher training in these institutions that all three fields, high-school, part-time, and evening work, be considered.

Teacher Supply and Demand

Fortunately, vocational agriculture is one of the few public-school fields in which a general surplus of legally qualified teachers does not exist. Only six institutions reported a surplus of graduates trained for this field; of these, only the University of Illinois trains any considerable number of agricultural teachers. On the other hand, 18 States, including some of the largest employers, reported a shortage of trained men. Twenty States indicated that supply and demand were just about balanced.

[10] Data from Table 1, p. 56, Thirteenth Annual Report Federal Board for Vocational Education.

Unless quite different methods are used for recruiting agricultural teachers it may be expected that the shortage will increase during the next five years, due to the new demand for such teachers which has been created by the enactment of the "George-Reed Act" in February, 1929, which provides funds which will make possible the establishment of 1,500 or more additional departments of vocational agriculture in the public schools of the country.

Some departments of agricultural education have suffered unnecessarily from a shortage of trainees because of their dependence upon the colleges of agriculture for students during a period when their enrollments have been low and falling. The collegiate enrollment in agriculture in the first year of operation under the Smith-Hughes Act was almost identical with the enrollment in 1927–28. In the meantime the number of teachers of agriculture in federally aided schools had increased 442 per cent. Had these departments been associated in some way with the colleges of education in their institutions, students might have been more easily drawn from the more crowded teaching fields to preparation for the teaching of agriculture.

Teacher preparation by States.—In the 32 States which reported satisfactorily on this point, an average of 69 per cent of the teachers of agriculture under the Smith-Hughes system were trained in the land-grant institutions. In a few States the number of home trained teachers exceeds 90 per cent; Kansas, Maine, Mississippi, Oregon, Pennsylvania, Virginia. In a few others the percentage of these teachers trained locally falls lower than 50: Arizona, Delaware, New Jersey, New York, North Dakota, and Wyoming.

Most of the institutions that have failed to supply the needs of their own States for teachers show by their 5-year record that they are attempting to correct the situation, the number of their graduates having risen gradually during that period. In two States, however, New York and New Jersey, this situation has prevailed, practically unchanged, during the entire period each of these States having secured approximately 60 per cent of its teachers from without the State during the five years studied (1923–1928).

Curricula

With but one exception, so far as noted, all of the curricula in the land-grant colleges for the training of teachers of agriculture lead to qualification for the teaching of vocational agriculture under the Smith-Hughes system.

Extent of differentiation from other agricultural curricula.—As nearly as could be determined from the study of the curricula laid out for Smith-Hughes teachers, 5 institutions only have special 4-year curricula; 23 lay out special curricula for the last two years; 2 have

3-year curricula following the freshman year when the general requirements for all agricultural students are obtained; and 16 have no special curricula, the students who are to enter teaching graduating from the regular agricultural courses.

In every case there are, of course, requirements in professional education, but departments of agricultural education exercise very little control over the subject-matter requirements of their trainees in most of these institutions. Even in institutions which have special curricula, these are not always followed since it is usually possible for the students to prepare for teaching vocational agriculture by following other curricula. The special curricula which have been outlined do not differ fundamentally in most institutions from those offered for other groups of agricultural students.

Special subject-matter needs.—In general, the subject-matter requirements of prospective teachers of agriculture are as broad as the requirements of any curriculum typically available in the college of agriculture. Persons graduating from the more highly specialized curricula should not usually be admitted to the teaching of vocational agriculture without supplementing their subject-matter preparation. There are a few communities in which the teacher of agriculture needs to be a specialist and special dispensations may be granted to care for these, but it is probably true that in at least 95 per cent of the communities having vocational agriculture the demand is for men with broad agricultural training. If there is another broad, well-balanced agricultural curriculum available, a special curriculum for teachers would not be justified unless other factors in the situation were unfavorable.

Agricultural education as a career.—In most States the teaching of vocational agriculture has been a temporary occupation for most agricultural college graduates. Because many of them have entered it intending to teach but a few years, they have not welcomed special subject-matter requirements in addition to the professional-education requirements which are now universally imposed. There are indications that, in some States at least, this situation is changing. More young men are looking upon agricultural education as a relatively permanent career and it is easier to find those who are willing to follow even a considerably differentiated 4-year curriculum in order to prepare for it. In 18 other States there is still a shortage of teachers so that there is hesitancy in setting up special requirements of this sort. In a number of these States the authorities are glad to get graduates from any agricultural course whatever to meet the need for teachers.

Availability of desirable curricula.—The curricula which are available outside the department of agricultural education have too commonly been unsatisfactory, even as general courses in agriculture. They are frequently unbalanced in content; important aspects of agriculture are often slighted; there are objections on the grounds of sequence and continuity; tradition and vested academic interests have apparently played too large a part in their determination. In such cases it is usually easier for the teacher-training department to secure a curriculum of its own than to secure desirable modification of existing curricula.

Opportunities for contacts with trainees.—There is growing recognition of the need for contacts, during the early college years, between persons training for teaching agriculture and the department of agricultural education. Departments which have been afforded these contracts through the administration of a 4-year curriculum in agricultural education seem unwilling to give up the privilege. Limited contacts can be provided otherwise through courses in agricultural education in the freshman year, counseling schemes, and student organizations, but these are not very satisfactory substitutes for the contacts that are possible when the student owes definite allegiance to a department as a trainee in one of its courses.

Conclusions.—The general conclusions are that, where the numbers are great enough to warrant it, there should be a special curriculum in agricultural education, usually four years long.

It would be unwise for most institutions to refuse to accept students from other departments for training. Such students should, however, be expected to meet requirements approximating those of the 4-year teacher-training curriculum. Strong efforts should be put forth meanwhile toward the strengthening of the agricultural education curriculum.

Requirements in courses for agricultural teachers.—In the tables which follow are brought together the requirements in the courses most frequently followed at each of the land-grant institutions in preparing for the teaching of agriculture in Federally aided schools. Data were supplied by the heads of the departments of agricultural education.

TABLE 60.—*Percentage of total credits included in each group of subjects in the curricula most commonly followed in training for the teaching of vocational agriculture*

Institution	Total semester-hour requirements	Agriculture	Education	Arts and sciences	Other requirements	Electives
1	2	3	4	5	6	7
University of Arizona	130	30.8	15.3	36.9	3.8	13.1
University of Arkansas	132	45.5	13.6	34.8	3.0	3.0
Colorado Agricultural College	160	31.9	12.5	43.8	10.0	1.9
Connecticut Agricultural College	143	52.4	12.6	35.0	.....	.....
University of Delaware	150	33.3	12.0	43.3	5.3	6.0
University of Florida	140	27.1	15.0	47.1	7.1	3.6
Georgia State College of Agriculture	150	26.7	13.3	34.7	17.3	8.0
University of Hawaii	136	29.4	13.2	26.5	8.8	22.1
University of Idaho	142	31.0	14.0	31.0	5.6	18.3
University of Illinois	130	37.7	15.4	29.2	4.6	13.1
Purdue University	155.6	41.8	12.3	37.8	8.1	.....
Iowa State College	134.6	38.1	14.9	32.8	4.5	9.7
Kansas State Agricultural College	128	55.5	14.1	27.3	3.1	.....
University of Kentucky	139.3	44.6	10.8	26.6	5.0	12.9
Louisiana State University	144	34.0	13.2	32.6	20.1	.....
University of Maine	140	44.4	10.7	38.5	1.4	5.0
University of Maryland	128	33.6	18.0	37.5	6.3	4.7
Michigan State College	140	37.1	13.6	33.6	7.9	7.9
University of Minnesota	136	48.5	11.8	.....	32.9	6.8
Mississippi Agricultural and Mechanical College	160	38.8	11.3	38.1	.....	11.9
University of Missouri	126	42.1	14.3	31.7	4.8	7.1
Montana State College	144	44.4	12.5	30.6	5.4	6.9
University of Nebraska	125	47.2	12.8	28.8	.....	11.2
University of Nevada	130	43.8	13.8	12.3	4.6	25.4
Rutgers University	141	42.6	8.5	39.0	5.7	4.3
Cornell University	122	45.1	14.8	37.7	.8	1.6
North Carolina State College [1]	140	34.3	15.7	32.9	17.1	.....
North Dakota Agricultural College	136	36.8	17.6	30.9	4.4	10.3
Ohio State University	126.6	27.0	15.9	31.7	4.8	20.6
Oklahoma Agricultural and Mechanical College	130	45.4	12.3	32.3	4.6	5.4
Oregon Agricultural College	138	41.5	11.6	26.1	11.6	9.4
Pennsylvania State College	153	37.6	15.7	33.3	8.5	5.9
Rhode Island State College	136	25.7	8.8	36.0	19.9	9.6
Clemson Agricultural College	154	21.4	11.7	29.2	6.5	31.2
South Dakota State College	136	31.6	11.0	39.0	2.9	15.4
University of Tennessee	138	39.9	13.0	40.6	2.2	4.3
Agricultural and Mechanical College of Texas	154	37.7	9.1	24.7	.....	28.6
Utah Agricultural College	124	25.8	14.5	33.9	8.1	17.7
University of Vermont	146	37.7	10.3	39.7	.....	12.3
Virginia Polytechnic Institute	148	38.3	15.3	30.6	14.5	1.3
Washington State College	128	39.8	12.5	32.0	15.6	.....
West Virginia University	144	48.6	14.6	36.8	.....	.....
University of Wisconsin	133	37.5	11.2	37.5	.....	13.5

[1] Students typically take about 25 hours more than are required for graduation.

Variations in course requirements.—The following table shows the variations from institution to institution in the requirements for graduation from curricula designed for the training of teachers of vocational agriculture in the 43 institutions reporting on this point.[11]

TABLE 61.—*Distribution of required credits in curricula most commonly followed by persons training for the teaching of vocational agriculture*

Curricula	Semester hours required		Percentage of credits allotted	
	Median	Range	Median	Range
1	2	3	4	5
Agriculture	52	32-75	38	21.4-55.5
Professional subjects	18	12-24	13	8.5-18
Arts and science subjects	46	0-66	33	0-47.1
Other required subjects	8	0-44.6	5	0-32.9
Free electives	10	0-48	8	0-31.2

In some cases where the requirements are apparently low, the elective privileges are restricted in such a way that additional subjects are, in practice, required. In all the foregoing groups the requirements are closely centered about the median for all institutions. Six institutions rule out entirely the opportunity for free election. Fifteen other institutions keep their electives below 10 semester hours. A few institutions still offer courses with majors essentially in arts and science, rather than in agriculture. In others, the arts and science requirements are very low, some leaving to their students most of the responsibility for determining how many credits will be earned in these fields and what special arts and science subjects will be taken. Some institutions are giving more than twice as much time as others to strictly professional subjects. "Other requirements" include military training, physical education, library training, orientation courses, and the like. In none of these is the requirement ordinarily very high, except that in military training in a few southern schools.

[11] Reports were not received regarding curricula at Alabama Polytechnic Institute, the University of New Hampshire, or the University of New Mexico. The data from Massachusetts Agricultural College and the University of Wyoming could not be entirely adapted to the classification plan adopted. The University of California has not recently had an undergraduate training curriculum for teachers of agriculture but has done its training of teachers principally at the graduate level. Alaska Agricultural College has only recently undertaken the training of teachers of agriculture and has a very limited program.

TABLE 62.—*Percentage of total credits required in technical agriculture which are included in each group in the curricula most commonly followed in training for the teaching of vocational agriculture*

Institution	Total semester hours	Electives and unspecialized agriculture	Livestock studies	Crops	Agricultural economics	Agricultural engineering
1	2	3	4	5	6	7
University of Arizona	40	27.5	17.5	27.5	15.0	12.5
University of Arkansas	60	8.3	23.3	43.3	10.0	15.0
Colorado Agricultural College	51	.....	56.9	33.3	5.9	3.9
Connecticut Agricultural College	75	42.7	12.0	21.3	16.0	8.0
University of Delaware	50	.....	28.0	60.0	6.0	6.0
University of Florida	38	.....	21.1	39.5	15.8	23.7
University of Hawaii	40	75.0	.....	25.0	.....	.....
University of Idaho	44	48.0	18.0	22.0	6.0	6.0
University of Illinois	49	42.9	16.3	28.6	6.1	6.1
Purdue University	65	23.1	31.8	28.2	13.4	3.5
Iowa State College	51.3	.....	29.8	37.6	11.6	21.0
Kansas State Agricultural College	71	25.4	15.5	15.5	18.3	26.4
University of Kentucky	62.3	43.5	19.4	17.7	14.5	4.8
Louisiana State University	49	.....	36.7	36.7	18.4	8.2
University of Maine	62	.....	27.4	35.5	18.3	17.7
University of Maryland	43	.....	30.2	37.2	23.3	9.3
Michigan State College	52	17.3	44.2	23.1	3.8	11.5
University of Minnesota	66	22.7	27.2	24.2	16.6	9.0
Mississippi Agricultural and Mechanical College	62	19.4	32.3	27.4	9.7	11.3
University of Missouri	53	11.3	32.1	24.5	15.1	17.0
Montana State College	64	.....	39.1	28.1	9.4	23.4
University of Nebraska	59	13.6	30.5	22.0	18.6	15.3
Cornell University	55	18.2	21.8	21.8	20.0	18.2
North Carolina State College	48	5.6	37.5	36.0	8.3	12.5
North Dakota Agricultural College	50	14.0	32.0	26.0	20.0	12.0
Ohio State University	34	5.9	29.4	29.4	11.8	23.5
Oklahoma Agricultural and Mechanical College	59	6.8	35.6	28.8	11.9	16.9
Oregon Agricultural College	57.3	.....	31.6	36.8	17.5	14.0
Pennsylvania State College	56	1.8	27.8	44.6	16.1	10.7
Rhode Island State College	35	.....	20.0	57.1	17.1	5.7
Clemson Agricultural College	33	.....	36.4	42.4	9.1	12.1
South Dakota State College	42.6	4.8	33.3	31.0	16.7	14.3
University of Tennessee	55.3	1.8	34.5	34.5	18.2	10.9
Agricultural and Mechanical College of Texas	58	12.1	37.9	19.0	20.7	10.3
University of Vermont	55	.....	38.2	29.1	21.8	10.9
Virginia Agricultural and Mechanical College	56.6	1.2	49.4	22.3	14.1	12.9
State College of Washington	51	3.9	27.4	27.4	19.6	21.7
University of West Virginia	70	30.0	28.6	28.6	10.0	2.9
University of Wisconsin	50	60.0	12.0	22.0	6.0	.....

Distribution.—In outlining high-school curricula in vocational agriculture four divisions are commonly used. When a full 4-year curriculum in high-school agriculture is offered, the following are the subjects usually included: Livestock studies, crops and soils studies, agricultural economics and farm management, and farm mechanics. When curricula shorter than four years are offered, an attempt is made to deal with all four of these in somewhat the same proportion. Since prospective agricultural teachers are being trained to offer these high-school curricula, there is some significance in a table which shows the extent to which they are being taught the subject matter of each of these fields.

TABLE 63.—*Requirements in the four major agricultural fields in the curricula most commonly followed by persons training for the teaching of vocational agriculture*

Field	Semester hours required		Percentage of total agricultural credits	
	Median	Range	Median	Range
1	2	3	4	5
Crops and soils studies	16	8–26	28	15.5–60
Livestock studies	16	0–29	29	0.0–56.9
Agricultural economics	7	0–13	14	0.0–21.8
Agricultural engineering	6	0–18	12	0.0–26.5

Here the central tendencies are clear. Agricultural economics, farm management, and agricultural engineering together receive less attention than is given to either of the other two subject groups.

We find here one important reason why public-school departments of vocational agriculture have been unable to meet satisfactorily the public demand for instruction in the economics and engineering of farming. In the type of agriculture which is rapidly evolving these two fields may be of greater importance than the technology of crops and livestock to which so much attention is now being given.

There are, however, certain institutions which are already giving considerable attention to economics and engineering in their agricultural requirements. Kansas State Agricultural College has gone farthest, prescribing 18 hours of agricultural engineering subjects and 13 hours in the agricultural economics and farm-management group, in comparison with 11 hours each in the livestock and crops groups.

Cornell University divides the agricultural requirements almost evenly among these four fields. Twelve hours each are required of livestock studies and of crops and soils studies; 11 hours of agricultural economics and farm management are required, and 10 hours of agricultural engineering.

A rather extensive set of requirements in the agricultural economics group is that of the Connecticut Agricultural College: Farm management, 3 semester hours; agricultural economics, 3; marketing, 3; farm organization, 3; total, 12. This requirement is supplemented by 6 hours of fundamental economics. The Texas Agricultural and Mechanical College requires 12 hours of agricultural economics and farm management: Agricultural resources, 6; agricultural economics, 3; farm management, 3. There is an additional requirement of a 3-hour course in elementary economics.

The University of Montana emphasizes marketing, requiring two courses in that field, agricultural cooperative marketing and marketing farm products, with total credits of 3⅓ semester hours.

Other institutions giving special attention to this phase are Iowa State College, the University of Maine, the University of Maryland, the University of Minnesota, the University of Nebraska, the University of New Hampshire, and North Dakota Agricultural College.

Agricultural engineering requirements.—A very complete statement of the requirements in agricultural engineering for teachers of

vocational agriculture as they existed in 1929 has been worked out by Prof. M. A. Sharp, of Iowa State College, on the basis of reports from 46 institutions and is available from the author. Professor Sharp directed a similar survey in 1926. It was found that 4 per cent on the average of the total requirements for graduation in courses for training teachers of vocational agriculture was then devoted to farm mechanics subjects. Apparently the time devoted to shop subjects has been increased by more than 40 per cent in three years.

Kansas State Agricultural College lists the following required subjects: Farm buildings, 2; farm sanitation and water supply, 2; farm equipment, 2; gas engines and tractors, 3; farm carpentry, 3; farm blacksmithing, 1; farm shop methods, 3. An additional four hours of elective agricultural engineering must be taken.

Montana State College requires 14⅔ hours chosen from among the following offerings: Farm shop-wood, 2; farm shop-forge, 2; irrigation farming, 2⅔; farm motors and tractors, 2⅔; auto mechanics, 2; repair of farm autos, 2; advanced farm shop, 2; farm equipment repair, 2; methods of teaching farm mechanics, 2.

Other institutions with rather liberal agricultural engineering offerings are: Colorado Agricultural College, Iowa State College, Mississippi Agricultural and Mechanical College, Cornell University, Oklahoma Agricultural and Mechanical College, Oregon Agricultural College, and Washington State College.

Veterinary science requirements.—About a third of the institutions require certain credits in veterinary science, usually three to five semester hours. In most cases, these apparently deal with animal hygiene, with the prevention rather than the cure of disease. If such courses are to be offered, this should certainly be the case. It is dangerous for teachers of vocational agriculture to assume, with their limited training, the responsibilities of veterinarians. It would be fatal to the development and maintenance of a satisfactory veterinary personnel in the rural regions of the country to turn over to teachers of agriculture, however well qualified, phases which properly lie in the domain of the veterinarian.

On the other hand, there is great need for training for these prospective agricultural teachers which will enable them to lead in community programs of hygiene and sanitation. Departments of animal husbandry are doing much to give this training; the help of veterinarians on the college staffs is also needed and should be expected. Colleges of veterinary medicine in the land-grant institutions would apparently aid the veterinary profession, while serving tremendously the profession of agricultural teaching and indirectly the farmers of their States, if they would offer brief courses in hygiene and sanitation especially adapted for prospective teachers. In such courses a desirable relationship might be established between teachers and veterinarians and teachers might be brought to understand more clearly the phases with which they are competent to deal and those which are more properly left to trained veterinarians. Continued aloofness on the part of these two groups can only lead to further misunderstanding.

Professional education requirements.—Requirements in professional education are more uniform than in any other phase, due probably to the standardizing influence of the Federal Board for Vocational Education and to State high-school certification requirements. The range is from 12 to 24 semester hours, but nearly all institutions are close to the median 18-hour requirement. Nearly all of the requirements fall between 15 and 20 semester hours.

TABLE 64.—*Percentage of total credits in professional subjects included in each group in the curricula most commonly required for teachers of vocational agriculture*

Institution	Total semester hours	Special methods, observation, practice teaching	General methods, technique of teaching	Principles, introduction to teaching	Psychology, educational and general	Vocational and rural education	Other requirements	Elective education
1	2	3	4	5	6	7	8	9
University of Arizona	20	45	15	------	30	10	------	------
University of Arkansas	18	38.9	16.7	16.7	16.7	11.1	------	------
Colorado Agricultural College	20	55	------	15	15	------	15	------
Connecticut Agricultural College	18	66.6	------	16.7	16.7	------	------	------
University of Delaware	18	------	------	------	------	------	------	------
University of Florida	21	57.1	------	14.3	14.3	14.3	------	------
Georgia State College of Agriculture	20	------	------	------	------	------	------	------
University of Hawaii	18	33.3	------	------	33.3	16.7	16.7	------
University of Idaho	20	40	------	------	------	10	50	------
University of Illinois	20	30	15	------	15	------	------	40
Purdue University	19	36.8	15.8	15.8	31.6	------	------	------
Iowa State College	20	30	20	20	20	------	------	------
Kansas State Agricultural College	18	33.3	------	------	33.3	16.7	16.7	------
University of Kentucky	15	46.7	------	------	------	------	------	53.3
Louisiana State University	19	36.8	------	15.8	------	47.4	------	------
University of Maine	15	46.7	20	20	------	13.3	------	------
University of Maryland	23	34.8	13	21.4	13	13	4.3	------
Massachusetts Agricultural College	14	50	21.4	------	28.6	------	------	------
Michigan State College	18.6	------	------	------	------	------	------	------
University of Minnesota	16	62.5	------	12.5	------	12.5	12.5	------
Mississippi Agricultural and Mechanical College	18	66.6	16.7	------	16.7	------	------	------
University of Missouri	18	66.6	16.7	------	16.7	------	------	------
Montana State College	18	33.3	11.1	22.2	22.2	11.1	------	------
University of Nebraska	16	43.8	18.8	------	18.8	12.5	------	6.3
University of Nevada	------	22.2	------	16.6	27.7	11.1	22.2	------
Rutgers University	12	50	25	------	25	------	------	------
Cornell University	18	33.3	------	16.7	22.2	------	27.8	------
North Carolina State College	22	45.5	18.2	9.1	9.1	------	18.2	------
North Dakota Agricultural College	24	29.2	8.3	------	12.5	4.2	8.3	37.5
Ohio State University	20	50	15	------	15	20	------	------
Oklahoma Agricultural and Mechanical College	16	50	18.8	------	18.8	12.5	------	------
Oregon Agricultural College	15.6	37.5	13.3	13.3	20	------	------	13.3
Pennsylvania State College	24	37.5	------	25	12.5	12.5	12.5	------
Rhode Island State College	12	------	------	------	------	------	------	------
Clemson Agricultural College	18	44.4	------	16.7	16.7	22.2	------	------
South Dakota State College	15	53.3	13.3	------	20	------	------	13.3
University of Tennessee	18	55.5	5.5	------	22.2	16.6	------	------
Agricultural and Mechanical College of Texas	14	57.1	------	------	21.4	21.4	------	------
Utah Agricultural College	20	50	------	10	20	10	10	------
University of Vermont	15	40	------	20	20	------	20	------
Virginia Agricultural and Mechanical College	22.6	61.6	------	8.8	8.8	------	20.7	------
Washington State College	16	31.3	------	18.8	25	------	18.8	6.3
University of West Virginia	21	57.1	------	14.3	14.3	------	14.3	------
University of Wisconsin	15	40	------	20	26.6	13.3	------	------

A study of the detailed professional requirements reveals considerable diversity. Due again to the emphasis of the Federal Board for Vocational Education, special methods in agricultural education and observation and student teaching are uniformly required, although the total amounts in these three fields vary from 4 to 14 semester hours. The median requirement is eight hours. Almost half of the total professional requrement is typically given over to these courses.

In some institutions the courses supplementing special methods and student teaching are mainly courses in rural and vocational education. In these cases, too, the student is confined to a narrower point of view than is desirable.

Educational psychology is the most commonly required professional subject outside the agricultural education group. All but eight of the institutions reporting require it. In nine institutions there is a requirement of general psychology as well. The highest total requirement in psychology is six semester hours; the median requirement is three semester hours.

The time given to general methods courses is apparently much less than it formerly was. Only 18 institutions require such courses.

Eighteen institutions retain courses of one kind or another in "principles of education" as requirements for teachers of agriculture. Eight others give a course known as "introduction to education."

The other courses which most frequently appear in lists of required courses are: Vocational education, 17 institutions; administration and class-room management, 7; rural education, 5; visual presentation, 3; methods of teaching farm shop, 3 (given in a number of other institutions but credited as farm mechanices); administration and organization of secondary education, 3; school law, 2; rural sociology, 2; tests and measurements, 1; rural journalism, 1; history of education, 1; enterprise analysis, 1; community leadership, 1.

TABLE 65.—*Percentage of total credits in required arts and sciences included in each group in the curricula most commonly followed in training for the teaching of vocational agriculture*

Institution	Total semester hours	English	Social science	Natural science	Mathematics
1	2	3	4	5	6
University of Arizona	48	12.5	6.25	72.9	8.3
University of Arkansas	46	26.1	10.9	63.0	-------
Colorado Agricultural College	70	17.1	-------	75.7	7.1
Connecticut Agricultural College	50	24.0	24.0	46.0	6.0
University of Delaware	65	16.9	20.0	58.5	4.6
University of Florida	66	13.6	9.1	72.7	4.5
Georgia State College of Agriculture	52	11.5	7.7	73.1	7.7
University of Hawaii	36	27.8	-------	55.5	16.7
University of Idaho	44	13.6	13.6	65.9	6.8
University of Illinois	38	15.8	23.7	60.5	-------
Purdue University	59	15.3	10.2	69.4	5.1
Iowa State College	44	27.3	13.6	52.3	6.8
Kansas State Agricultural College	35	31.4	-------	54.3	14.3
University of Kentucky	37	16.2	8.1	75.7	-------
Louisiana State University	47	25.5	6.4	68.1	-------
University of Maine	54	14.5	-------	73.3	9.2
University of Maryland	48	29.2	6.3	64.6	-------
Massachusetts Agricultural College	51.3	21.5	-------	54.9	23.5
Michigan State College	46.6	15.2	8.7	67.4	8.7
Mississippi Agricultural and Mechanical College	61	19.7	9.8	60.7	9.8
University of Missouri	40	15.0	-------	85.0	-------
Montana State College	44.6	31.8	9.1	54.5	4.5
University of Nebraska	36	27.8	16.7	55.5	-------
University of Nevada	16	37.4	6.2	56.2	-------
Rutgers University	55	16.4	21.8	50.9	10.9
Cornell University	46	13.0	17.4	37.0	-------
North Carolina State College	46	26.1	13.0	60.9	0
North Dakota Agricultural College	42	14.3	4.8	73.8	7.3
Ohio State University	40	8.3	0	83.3	8.3
Oklahoma Agricultural and Mechanical College	42	19.0	14.3	66.7	0
Oregon Agricultural College	35.3	28.6	11.4	60.0	0
Pennsylvania State College	51	23.5	17.6	58.8	0
Rhode Island State College	49	16.3	18.4	57.1	8.2
Clemson Agricultural College	44.6	22.2	13.6	56.8	6.8
South Dakota State College	53	22.6	18.9	52.8	5.7
University of Tennessee	56	21.4	10.7	60.7	7.1
Agricultural and Mechanical College of Texas	38	36.8	0	63.2	0
Agricultural College of Utah	42	19.0	9.5	71.4	0
University of Vermont	58	17.3	10.3	65.5	6.8
Virginia Agricultural and Mechanical College	45.3	30.9	11.7	48.6	8.8
State College of Washington	41	19.5	7.3	73.2	0
West Virginia University	53	18.8	0	73.6	7.5
University of Wisconsin	50	12.0	20.0	60.0	8.0

Natural science dominates.—The implications of Table 65 are obvious. The natural sciences have largely taken the field. On the average 63 per cent of the time allotted to arts and science subjects is given over to the natural sciences.

The status of the social sciences is in striking contrast with the favorable situation of the natural sciences. Nine institutions have no requirements whatever in this field. The median requirement in all institutions is 5 semester hours, the highest 13. This is in comparison with a median requirement of 29 hours of natural science and a range from 9 to 53 hours in the natural science requirements.

English occupies a place between the two groups just discussed although it does not approach the natural science requirement in scope. The median requirement in the English group is 10 hours. The range is a limited one—from 3⅓ to 14 hours. But three institutions require foreign languages and no account has been taken of them in this computation.

Mathematics receives the least time of the four groups studied. In 15 institutions there is no mathematics requirement. The median requirement in all is 3 and the maximum requirement is 12 semester hours.

The dominance of the natural sciences is not hard to account for historically. In the days before a curriculum in agriculture had evolved the agricultural colleges were forced to adapt the natural sciences to their purposes as substitutes for technical agriculture. Applied botany, agriculture chemistry and physics, and similar applications of the natural sciences became the core of the agricultural college curriculum. As more agricultural subject matter has been developed, there has been some displacement of natural science with agriculture. A few institutions have reduced their requirements to about 20 semester hours, but others are still requiring as many as 40 or more semester hours of natural science.

The subject in the natural science group which typically receives the most emphasis is chemistry. One institution requires 20 hours of chemistry, apportioning to that subject approximately half as much credit as to all agricultural subjects combined.

It is rather commonly true that the physical and chemical sciences receive more attention in the required courses than the biological sciences, though there seems to be no good reason why this should be the case. Zoology, botany, bacteriology and physiology certainly contribute as much to an understanding of agriculture and of education as do chemistry and physics.

In a few of the institutions certain sciences which are closely related to agriculture and to education are entirely omitted from the list of requirements. This does not appear desirable. Students in agricultural education are "practical minded" and often do not recognize the value to them of particular sciences. It is the obligation of those who make the curriculum to provide for an introduction at least to all of the basic sciences.

Social science requirements.—It is difficult to ascribe satisfactory reasons for the extreme neglect of social phases in the agricultural college curriculum. That neglect is most apparent and its effects on the training of teachers of agriculture are very undesirable. Certain institutions have recognized this need and, as noted previously, some have already built rather strong sequences in agricultural economics,

stressing the social aspects of the farmer's business, particularly co-operative marketing. These and other institutions are also developing the required blocks of subjects in history, government, and sociology. No phase of the entire course of study seems so greatly to need support and strengthening as social science.

English requirements.—The need of agricultural teachers for fundamental training in English is obvious. If English instruction is satisfactorily given it may well consume at least as much time as is commonly given to it at present. The median requirements of 10 semester hours for the entire group of subjects, which includes English, public speaking, and journalism, is certainly none too high.

Mathematics requirements.—The mathematics requirement is very low in nearly all of these courses for prospective teachers of agriculture. Sixteen institutions require none whatever. But two give more than 10 per cent of the arts and science credits to it. Three semester hours is the median requirement.

It is unfortunate that mathematics is being so much neglected. We are living in an age when thinking is more and more quantitative and this is as true in agriculture and education as in any other fields. Students in agricultural education need particularly to know fundamental statistics. It is unnecessary to give a large amount of time to mathematics to accomplish the purposes which are to be served, but it appears that all institutions should be giving approximately as much time to that subject as the median institution now gives, that is, three semester hours.

Sequence problems.—No practices with respect to sequence seem to have gained general acceptance among those who frame the curricula for training agricultural teachers. The order in which subjects appear varies greatly from curriculum to curriculum. Some institutions have their students spend the first two years in pursuing pure science courses, introducing the agricultural phases later. Others emphasize agriculture in the first two years.

Often the most forbidding subjects, those which commonly seem to the students most barren of practical interest or use, are placed in the freshman year, evidently with the intent of "getting them over with" early. The agitation for making the first year of college attractive and significant to students, which has been so general recently seems as yet to have affected the placement of these courses but little. Perhaps this accounts to a considerable extent for the loss of one-third of the students enrolled by the end of the first year, as reported elsewhere in this chapter.

The typical curriculum is likewise largely devoid of the continuity which is necessary for the spread and growth of interest, even if interest were developed in the introductory year of the course. Few

subjects continue more than a year; many are concluded at the end of a quarter or semester. Routing the students through a miscellany of a hundred or more unrelated subjects is not likely to result in the development of any permanent, central, integrating interest.

Relation of science and its applications.—The excessive departmentalization common in the land-grant institutions forbids relating science to its applications. A science and its applications are likely to be widely separated geographically and administratively within an institution. The courses in science and its applications are likely also to be widely separated in time. The science, therefore, seems barren to students primarily interested in practical agriculture. The agriculture, instead of being taught in relation to all that science has to offer, seems to the students to have no close connection with the science which they have studied.

The teaching of vocational agriculture calls for a large measure of independence and initiative. Graduates, unused to planning and working their own programs, often fail in their first years out of college to exercise sufficient initiative. It appears that serious thought should be given to a procedure for handling advanced students to give them more freedom, to place on them more responsibility, and to allow them opportunities for more creative planning and execution. Only students capable of reacting satisfactorily to such a regimen are likely to prove satisfactory in the work of the teacher of vocational agriculture.

Size of units.—There is evident, throughout the courses outlined for the training of teachers of vocational agriculture, a tendency to subdivide extremely the subject material prescribed. One institution requires 101 courses, an average of 8½ per quarter. Six or seven courses are typically carried in parallel. This practice has evidently grown up as a result of the continual accretion of required courses which has been characteristic in recent years.

It would appear the part of wisdom to cut the number of separate subjects offered per quarter to not more than four or five and to extend in many cases the length of time each subject is pursued, avoiding so far as possible 1, 2, and 3 hour courses which run for a quarter or semester only, unless their relationships to current and succeeding courses are kept exceedingly close. Nearly all of the institutions studied need a fundamental reorganization of the individual subjects with these considerations in mind.

Special 4-year curricula for farm mechanics teachers.—In a few States, most of them in the far West, special teachers of farm mechanics are commonly employed in schools having other teachers of vocational agriculture. In these States curricula for training farm mechanics teachers have been set up in the land-grant institutions.

There is general agreement that ability to teach the shop subjects does not always go with ability to teach the other agricultural subjects. Some hold that the two are rarely associated. In communities large enough to support two teachers of vocational agriculture, the best basis for their specialization is often aptitude and training for shop teaching. Communities would frequently do better to allot to their regular teachers of vocational agriculture the teaching of certain nonvocational subjects than to force them to direct the work in farm mechanics for which they are ill-adapted. In such cases, other teachers may be employed for the teaching of farm mechanics and such nonvocational subjects as they can teach.

The employment of a special teacher of farm mechanics is especially advantageous in situations where adult programs in this field are attempted. Relatively few teachers unspecialized in agricultural engineering are able to handle satisfactorily evening classes in this subject.

Proposed curriculum changes.—Judged by the response to that portion of the survey which dealt with proposed changes in the curricula in agricultural education, training courses are relatively stable, whether this is desirable or not. Only seven institutions specified contemplated changes. The University of Delaware, the University of Tennessee, and the Mississippi Agricultural and Mechanical College intend to improve and expand their practice teaching offerings. Virginia Polytechnic Institute is to give added emphasis to training for evening school teaching and is adding a course in agricultural methods. Agricultural and Mechanical College of Texas is expanding its research program and introducing itinerant teacher training. Iowa State College plans increased offerings at the graduate level. The University of Vermont has adopted a broader course for its trainees.

Staff

Criteria for the evaluation of the agricultural education staffs of land-grant institutions are few and relatively unsatisfactory.

Degrees.—A sample of 116 out of approximately 160 agricultural teacher trainers in the country includes 17 whose highest degree is the doctorate, 65 with master's degrees, 33 with no degree above the bachelor's, and 1 with no degree. In other words, approximately 30 per cent hold the bachelor's as their highest degree; 85 per cent have not gone above the master's; only 15 per cent hold the doctor's degree.

The reasons for this situation are in part patent. Agricultural education is a new field. It has been found desirable to recruit trainers of teachers from among those who have had experience in

the teaching of vocational agriculture in the public schools. The men available are young and have not had the opportunity for advanced education. Furthermore, the worth of the advanced training available has often been questioned, since the strongest institutions giving advanced degrees in education have not usually concerned themselves with agricultural education.

The situation is not, however, to be extenuated. Agricultural education is suffering in prestige and in the genuine worth of its programs because of it. The modern scientific viewpoint is needed and the training for research which is now provided only at the higher graduate levels. Training in colleges of general education can be turned to good account in agricultural education by persons intelligent enough to be eligible for teacher-training positions. Agricultural education is not so isolated from other fields of education that there is no transfer of training.

However, reliance must not be placed entirely upon institutions outside this field for the advanced training of staff members. A few graduate institutions strong in agricultural education need to be reared among the land-grant colleges.

As matters stand, considering the limited facilities for agricultural education available in the land-grant colleges, it is hardly advisable for staff members to take their doctorates entirely in that field. A combination of training in agricultural education at one of the stronger of these institutions with further training leading to a degree from a standard graduate school of education appears now to be most satisfactory. Such a combination can now be effected within certain of the land-grant schools of university type.

Professional training.—Trainers of agricultural teachers have received college credit for approximately the same amount of professional education as the teachers of education of the land-grant institutions taken as a whole. The median number of semester hours of such training falls at 38 for 115 agricultural teacher trainers reporting, and at 37.7 for the entire group of 627 teachers of education.

A quarter of the agricultural group has completed more than 60 semester hours of professional training or the equivalent of two years of special training. A third have less than a year of special training, that is, less than 30 semester hours of professional education. A few do not meet the standards set by accrediting associations for high-school teachers.

Ranks.—Agricultural education staffs have fared very well with respect to academic rank. Forty per cent of the staff members are full professors. More than three-fourths are above the rank of instructor. The high percentage of full professors is largely to be

accounted for by the small size of departments and the prevalence of the custom of ranking department heads as full professors.

The enrollments in 319 classes in agricultural education are shown in Table 66.

TABLE 66.—*Class size in courses in agricultural education, 1927–28*

Size of section	Number of classes	Percentage of entire number	Size of section	Number of classes	Percentage of entire number
1	2	3	1	2	3
1 to 4	53	16.6	25 to 29	18	5.6
5 to 9	73	22.9	30 to 39	13	4.1
10 to 14	53	16.6	40 and more	2	.6
15 to 19	71	22.3			
20 to 24	36	11.3	Total	319	100.0

It will be observed that the percentage of classes enrolling fewer than 30 is 95.3. The percentage with enrollments fewer than 10 is 39.5.

It is only reasonable to expect that classes in agricultural education will be smaller than in some other fields, particularly since practice-teaching courses, where much individual attention is required, are more common and more extended in this field than in most others. It would appear, however, that considerable thought might well be given to the matter of small classes.

Students

Enrollments in agricultural education in federally aided teacher-training courses have decreased materially in recent years. The enrollments by years since the inauguration of the Smith-Hughes program are shown in Table 67.

TABLE 67.—*Enrollments by years in the United States of students training to become teachers of vocational agriculture*[1]

School year	Number of students	School year	Number of students
1918–19	1, 334	1923–24	4, 747
1919–20	2, 310	1924–25	3, 808
1920–21	3, 470	1925–26	3, 927
1921–22	4, 049	1926–27	3, 187
1922–23	5, 087	1927–28	2, 394

[1] Twelfth Annual Report, Federal Board for Vocational Education, p. 35.

A decrease of 63 per cent in the past five years is a matter of considerable interest, particularly in view of the shortage of teachers reported in 18 States in 1927–28.[12] During the same period, the

[12] See Table 8, p. 128.

drop in agricultural college enrollments was but 10 per cent so that a major portion of the decrease must be attributed to other factors.

This reduction in numbers of students reflect mainly credit rather than discredit upon the teacher-training agencies. They are apparently performing better their function of selection. They are working with fewer persons in producing a given number of trained teachers. The persons they have trained are serving longer in the field for which they have been trained. It is regrettable, however, that in some States where the number of trainees has never been great enough to care for the need for teachers, the enrollments have fallen as decidedly as in other States with an oversupply of teachers.

Practice Facilities

All institutions training teachers of agriculture reported some provision for observation and student teaching. This provision is necessary under the regulations of the Federal Board for Vocational Education.

The arrangements for student teaching vary widely. The range in the length of the period over which practice teaching is extended is from 1 to 40 weeks, with the median falling between 16 and 20 weeks. The actual amount of time given to observing and teaching high-school classes in agriculture varies from 6 to 270 hours, according to the reports submitted, the median being 54 hours. The distribution, according to the amount of time required for observation and practice teaching, is shown in Table 68.

TABLE 68.—*Time devoted to observation and practice teaching in 34 institutions*

Hours of observation and practice teaching required	Number of institutions reporting	Hours of observation and practice teaching required	Number of institutions reporting
More than 250	2	101 to 150	3
201 to 250	0	51 to 100	12
151 to 200	1	50 or less	16

In 21 institutions students teach or observe regularly for at least one period per day each day of the week. In 15 other institutions students are required to be on hand for teaching or observation only on stated days, usually two or three per week.

Eight institutions own their own practice schools, which are usually known as university high schools. A typical arrangement, however, is the use of an established department of vocational agriculture in a near-by public school, which is jointly administered by the teacher-training department and the officials of the local school. Thirteen institutions follow some plan of apprentice teaching, some of them using apprenticeship as the exclusive form of student teach-

ing, and others supplementing their facilities near the institution with apprentice training centers which are more remote.

Types of schools utilized.—Forty-three institutions reported a total of 91 practice schools. Those reporting on this point indicated that 42 of their schools are urban while 33 are rural. Only 12 consolidated schools were indicated. There is apparent here a failure to provide for practice in situations that are typical of those provided under the Smith-Hughes program, which is essentially a program for rural high schools.

An apparent improvement over previous practice is noted, however, in the provision of vocational classes in most practice schools. Fifty-two classes utilize for practice purposes vocational students only; 12 practice schools have both vocational and nonvocational classes; only two practice schools utilize nonvocational pupils only and the institution in charge of these schools has other schools with purely vocational classes.

Apprentice teaching.—The University of California has an apprentice plan for the training of its teachers which provides that each must spend an entire year as an assistant teacher. Apprentices are paid an average salary of $1,000 per year. They are taught professional courses while engaged as apprentices, taking a minor part of their professional work before they receive the bachelor's degree. Unique conditions have called for the adoption of the California plan and it is unlikely that it would be warranted at present in any other State although it has served quite satisfactorily there.

Of the 13 institutions that follow one or another form of apprentice training, 8 report the plan to be excellent, 2 satisfactory, and 3 unsatisfactory. One of the institutions declaring it to be unsatisfactory advises that it suffices in most schools but that in one situation it has been undesirable. The evidence appears to justify considerable use of the apprentice plan, at least for a portion of the practice teaching period. The institutions reporting have had from 1 to 15 years' experience with apprenticeship, the University of Minnesota having used the plan longest, with the University of New Hampshire and Connecticut Agricultural College coming next. Other institutions with extensive experience in the use of apprenticeship teaching are Massachusetts Agricultural College, Mississippi Agricultural and Mechanical College, the University of Nebraska, and Pennsylvania State College.

The common arrangement is for a relatively short period of apprenticeship. Four institutions send their students out as apprentices for 2-week periods only; two require 3 weeks; three require 12 weeks. The other requirements are intermediate between 3 and 12 weeks with the median for all institutions 6 weeks.

The range in hours of credit for apprentice teaching is from 1 to 12 semester hours, the highest allotment being at the University of New Hampshire where the apprentice period is 12 weeks long. The most common number of credits given is three or four hours. California gives but 6 semester hours for the full 40 weeks of work.

Institutions using the apprentice plan usually employ a number of public schools for practice purposes. Pennsylvania State College has relationships with 22 schools in its apprentice-teaching plan. Only two institutions use as few as two schools. It would appear that the greatest efficiency in the use of the apprenticeship plan would result from the use of a somewhat limited number of the very best schools in the State. There is a danger that at its best the apprenticeship plan may result in a wide gap between the professional courses given at the institution and the student teaching provided at the apprentice schools. If the number of such schools is limited, relations can be kept closer than it is possible to keep them when a large number of schools and instructors is involved.

Utilization for research purposes.—Only 11 States indicated that they make any use of their practice schools for educational experimentation. Here is an apparent neglect which should be considered. In some institutions outside the field of agricultural education the so-called practice school is primarily a place for educational research and only incidentally a means of providing practice teaching. In many institutions which maintain a secondary school the research function is practically coordinate with the practice teaching. It is noteworthy that the list of institutions utilizing their schools for research purposes is almost identical with the list of institutions having university high schools. Apparently a cooperative arrangement with the public schools has not thus far lent itself well to educational experimentation. If a science of agricultural education is to be built, it is evident that a principal means of building it will be the utilization for research studies of the schools under the direction of teacher-training departments.

Portion of teaching done by students.—Thirty-eight institutions indicated the extent to which student teachers direct the classes in their practice. The distribution is shown by Table 69.

TABLE 69.—*Percentage of teaching in practice classes which is done by student teachers in 38 institutions*

Number of institutions reporting	Percentage of teaching	Number of institutions reporting	Percentage of teaching
2	100	2	40–49
4	90–99	3	30–39
2	80–89	6	20–29
5	70–79	3	10–19
4	60–69	1	1–9
6	50–59		

This is a significant table, particularly in its upper ranges. One who has had considerable experience in student teaching wonders what standards are possible when student teachers do 70 per cent or more of the teaching, particularly when the periods of practice teaching are as short and shifts are as frequent as they are at some of these institutions. The median amount of teaching falls at about 50 per cent. It would seem that this should be near the maximum for efficient results both in the training of student teachers and in caring for the pupils in practice classes.

Costs of practice teaching.—Colorado Agricultural College maintains six practice schools, part of them on an apprentice basis. The total cost to the institution of these six schools is $340. The University of Florida contributes $300 annually to its practice school. Iowa State College contributes $270 to each of its three practice schools. Clemson Agricultural College pays $1,425 for the use of three schools. South Dakota State College secures its very desirable practice facilities for $400.

There are a number of institutions that pay on the basis of the number of student teachers served. In these cases the rates vary from $15 to $50 per student per semester.

Probably the amounts cited are too small for the very best results, but they at least indicate a procedure more justifiable than payment of the entire salary of the supervisors in those situations where practice teaching is carried out in a cooperating public school.

The foregoing statement does not condemn the use of schools owned and controlled by the teacher-training institution. It is possible in such situations to secure a measure of control over student teaching, and make use of opportunities in these schools for research purposes that are impossible elsewhere. The one point that needs to be made is that, when a cooperative plan is followed, the cooperating public school should bear its fair share of the financial burden.

Attention to observation of teaching.—The percentage of the observation and student-teaching period devoted to the observation of teaching varies from 0 to 99 per cent. On the average about one-third of the period is devoted to observation.

TABLE 70.—*Percentage of entire time given to observation and practice teaching which is devoted to observation in 23 institutions*

Number of institutions reporting	Percentage
1	90 or more.
0	80 to 89
2	70 to 79
0	60 to 69
6	50 to 59
2	40 to 49
3	30 to 39
3	20 to 29
3	10 to 19
0	1 to 9
3	0

It seems likely that the practices indicated at the extremes of this table are not the best. Certainly more than 20 per cent of the period should be given to actual teaching. On the other hand it seems inadvisable largely to rule out observation as some institutions do. The worth of observation varies tremendously, of course, but if it is well directed it has an important place in a teacher-training program.

Relations of observation to teaching.—An interesting situation is found in the comparison of the practices in various institutions with respect to observation prior to actual teaching. The median requirement of preliminary observation is 12 periods, but 13 institutions require 15 or more periods for observation before teaching is attempted, two 40 to 60 periods, one 35 to 39, three 30 to 34, two 20 to 24, and five 15 to 19. A satisfactory combination of observation and teaching would seem to call for earlier provision of actual teaching practice. It is generally conceded that observation is more valuable after the student has had some teaching experience. It is probable with this theory in mind that 16 institutions require 9 or fewer periods of observation before the student is placed in charge of a class, 6 of these holding for 4 periods of observation or less. Observation and teaching should alternate if best results are to be secured with both.

Number of student teachers supervised.—The predominant arrangement under ordinary conditions is for one supervising teacher to supervise one student teacher. In 33 institutions this is the typical practice. In 8 other institutions student teachers are managed in pairs; in 1 it is common for the supervisor to have 3 student teachers at a time, and in another 4 student teachers. It has been demonstrated in a number of schools that 2 teachers in agricultural education can be supervised quite as well as 1 in some phases of the work, making possible the reduction of practice-teaching costs in comparison with the prevailing practice. With ample pupils available in the practice schools, it has been found possible to direct even more student teachers with a considerable measure of satisfaction. Here is a case where common practice may not be the best practice.

Keeping the number of student teachers low does not always make for individual attention; this is shown by the data submitted regarding the number of individual conferences per week per student teacher. Eleven institutions report but one such conference weekly, 7 report two conferences, 6 report three conferences, and 1 reports four conferences. Twelve institutions make a practice of holding five or more conferences weekly.

It would appear that the very minimum number of conferences necessary in schools where students teach regularly five days per week would be five conferences. Any arrangement which prevents the student teacher from meeting the practice class regularly dur-

ing the period he is engaged in student teaching is likely to be undesirable because of the interruptions which are necessary. A desirable standard would be, regular teaching five days a week with at least one conference with the supervisor each day.

Selection in the practice schools.—A major function of the student teaching period, particularly if it be long enough to reveal the student's real interests and aptitudes, is to select for agricultural teaching those most capable for it. It is difficult to deduce from the data at hand the extent to which the selective function is performed. It is noteworthy, however, that only nine institutions reported any failures among their student teachers. In all but three of these the percentage of failure was five or less. In many institutions students who do not perform creditably are directed away from teaching as a result of their poor student teaching record, but a question may be raised as to the standards of grading and selection which prevail in our practice teaching courses.

Lesson plan requirements.—Another respect in which apparent weaknesses in practice teaching are found is the requirement of lesson plans for those who are actually directing classes. While it is common to require a plan for each lesson taught it was revealing to find that six institutions do not have such a requirement; that one reported that in only 5 per cent of the cases do the students have a plan; while others reported plans somewhat more frequently required, but not as a common practice. It may be that this is a reaction against the extreme emphasis on lesson planning characteristic a decade ago but it is a reaction which seems to have gone too far in agricultural education. The reform that should have taken place is in the revision of the system of planning in use, rather than in the omission of all plans whatever. A principal outcome of student teaching should be the habituation of the student teacher in practice of regular, daily planning of his work.

The status of the supervisor.—Sixty-nine supervisors of student teaching were reported; 31 of these give full-time to such work. Of those who are engaged on a part-time basis, half spend the balance of their time in teaching education in the teacher-training institution, and half spend their time in teaching agriculture and other subjects in the practice schools with which they are connected.

The median supervisor has had four years' experience in that capacity; 26 per cent have had two years' experience or less.

Only about 55 per cent of the critic teachers reported are members of the general faculties of the teacher-training institutions they serve. Almost 40 per cent of them hold no rank in their institutions; another 25 per cent rank as instructors or lower. It is apparent

that 65 per cent of this very important group is on the outskirts of the university community.

Another unsatisfactory feature is the absence of an appropriate number of advanced degrees. Almost 45 per cent of the supervisors of practice teaching hold the bachelor's as their highest degree. Almost 50 per cent more have not gone beyond the master's.

It is common to refer to the student-teaching period as the most important part of professional training and this is probably a fair evaluation, yet little importance is accorded to those in charge of it in respect to rank or salary. This important responsibility is placed in the hands of the relatively inexperienced and untrained. The job of the supervisor should be made more attractive. It does not appear that this should be extremely difficult. When student teaching is jointly administered by the public schools and the teacher-training institutions and funds are provided from both sources, it should be possible to make the position desirable from the standpoint of salary, particularly since the Federal Government participates to the extent of 50 per cent in the payment. There seems to be no justification for the payment of a salary of less than $3,000 per year for this service.

Neither would it seem to be difficult to secure academic rank for supervisors in keeping with their positions, provided the salaries are high enough to attract and hold persons of desired maturity and training. There is nothing intrinsic in the supervision of student teaching which should call for lower rank for the persons engaged in it.

Administrative direction of student teaching.—The popular method of handling student teaching through the joint control of the teacher-training institution and one or more public schools involves rather difficult administrative problems. It is important that there be some one designated in the teacher-training department who will make the proper contacts with the cooperating school officials and who will coordinate the activities of the various practice schools. Few institutions have such arrangements. Those at Ohio State University and Iowa State College are among the most satisfactory.

In four institutions State supervisors of agricultural education assist in directing the practice teachers. In every State there should be some provision to bring the student teachers in touch with the State program, and to initiate them into it. The State supervisor, knowing the needs of the field, can be of material help in organizing student-teaching situations. Since most of the schools giving student teaching receive Federal reimbursement, through the office of the State supervisor, this coordination with his office is especially necessary.

Practice facilities for evening school work.—The growing importance of adult instruction in agriculture through evening classes has already been emphasized. With it goes an increased responsibility on the part of the teacher-training centers for providing experience in evening class work for persons who are to teach vocational agriculture. A number of institutions have been attempting to provide some evening school experience. Conspicuous examples are Clemson Agricultural College, Georgia State College of Agriculture and Mechanic Arts, Oregon Agricultural College, and Virginia Agricultural and Mechanical College.

Training in Service

Advanced training in technical agriculture.—Certain institutions have come to give special attention in recent years to keeping teachers of agriculture in their States up to date with respect to agricultural subject matter. The most notable examples are Virginia Agricultural and Mechanical College, Georgia State College of Agriculture and Mechanic Arts, and Clemson Agricultural College.[18] The principal device in each of these cases has been a special publication embodying recent results of research in agriculture at their own and other experiment stations. Most institutions are also giving some attention to agriculture in the special summer courses which have recently been organized.

The provision of supplementary training in agriculture is still a much-neglected field. Agricultural scientists are doing more effective work than ever before. Methods of farming are changing rapidly. The teacher of agriculture who has not kept up to date with respect to his agricultural information is likely soon to come to be considered a liability to his community.

Supplementary practical experience.—Since 1917 there have been requirements of practical farming experience for beginning teachers in federally subsidized schools. Usually this experience has been acquired at an early age and often under conditions quite remote from those in which the teacher is now situated. Perhaps the experience was secured on a farm using very inferior methods.

Recently agents for the Federal Board for Vocational Education have come to be very strong in their recommendation that practicing teachers be afforded opportunities for spending time in gaining experience in agricultural production by working with the very best farmers available, and that they gain first-hand experience in the marketing of farm products through work with marketing agencies. They hold that too much insistence on summer-school attendance

[18] See article by W. G. Crandall in Agricultural Education, August, 1929.

and on earning graduate credit is keeping many teachers from acquiring this added experience and making these needed contacts.

Training for promotions.—It is evident that not all teachers of vocational agriculture will receive their best promotions within that field. Yet there must be no suspicion that the teaching of vocational agriculture is a "blind-alley job." The Federal Board for Vocational Education has ruled that, if teachers are to absent themselves from their jobs during the summer for college attendance, they must take courses which are directly related to agricultural teaching. This is doubtless a proper ruling, for instructors are employed for the full 12 months and the board must see that reimbursements of their salaries are actually applied on the improvement of the federally subsidized program.

It appears that at present the only way a teacher of agriculture in the Smith-Hughes system can prepare for another occupation outside the system is by doing so on his own time and giving up his position as a teacher of agriculture.

Devices for training in service.—No extended investigation was made of the provisions of the land-grant institutions for training agricultural teachers in service. The two principal means of in-service training are apparently the use of itinerant teacher trainers, 20 States reporting that they have such officials,[14] the special summer session for teachers of vocational agriculture, and special conferences conducted usually in cooperation with the State supervisor.

Assisting in State programs of curriculum revision.—The University of Minnesota has done unusal work in redirecting the curricula of high-school agricultural departments. Prof. A. M. Field of the Department of Agricultural Education has taken the lead in planning the new type of curriculum program and in arranging for trying it out in the schools of the State.

In Iowa permanent curriculum committees have been set up for continuous revision of the day, part-time, and evening courses in vocational schools. The State director of vocational education is in general charge of these committees. The headships of the subcommittees are all held by members of the teacher-training staff at Iowa State College. Leading teachers in public-school departments of vocational agriculture have been named as committee members. During the first year of operation under this plan new course of study material has been developed covering about one-third of the high-school program in vocational agriculture.

[14] Attention is called to the study of itinerant teacher training made in 1927–28 by Dr. Sherman Dickinson, head of the Department of Agricultural Education of the University of Missouri, and available from the author.

State and Locally Supported Programs for Training Public-School Teachers of Agriculture

Their present status.—The information supplied by the institutions with respect to the positions in public-school agriculture, outside the Smith-Hughes system, is quite meager. Nine institutions were able to report the number of their graduates who are in such positions as well as the number engaged in teaching agriculture under the Smith-Hughes system. The total number of graduates in schools which do not receive Federal aid for agricultural education was 258. The number of graduates in federally aided schools in these same States was 570.[15]

Ten institutions were able to report the number or general agricultural positions in their respective States in comparisom with the number of Smith-Hughes positions. Table 71 gives the results.

TABLE 71.—*Agricultural positions in federally aided and other public schools in certain States*

State	In federally aided schools	Other agricultural positions	State	In federally aided schools	Other agricultural positions
Indiana	134	148	Mississippi	125	30
Iowa	109	354	Utah	20	36
Kansas	99	512	Vermont	6	21
Maryland	37	1	West Virginia	51	55
Massachusetts	67	5			
Minnesota	49	19	Total	703	1,181

It will be seen that, in general, in these States the positions outside the Smith-Hughes system exceed those in schools that are federally aided. This situation prevails in 6 of the 10 States. It is probable that the States reporting are those that have the most positions in State and locally supported schools. However, eight other States indicate that they have such positions, though data regarding them were not available.

In most of the States the number of positions in schools not federally aided has remained about constant for the past five years. The one conspicuous exception is Indiana where there has been an increase from 67 such departments in 1923–24 to 148 in 1927–28.

It can be expected that these schools will continue to function for a long time to come, even though the Smith-Hughes program eventually becomes universal. Other programs will be necessary to pave the way for it.

It is probable, however, that we shall always have some schools which do not wish to accept the restrictions imposed by the accept-

[15] The States are Indiana, Kansas, Minnesota, Mississippi, New York, South Carolina, Utah, Vermont, and Wyoming.

ance of Federal aid. No Federal program is likely to be so flexible that there will not be situations to which it is unadapted. There is a possibility, too, that it will ultimately be agreed that the Federal program is purely a pace-making program to be confined to superior schools in each State while offering models for the others. In that event it will be extremely important that the land-grant institutions provide adequate facilities for the training of teachers for the other schools which will constitute a decided majority.

These positions outside the Smith-Hughes system are almost invariably positions that call for ability to teach subjects other than agriculture, sometimes two or three such subjects. Usually, too, they call for ability in the management of special extracurriculum activities. If the land-grant institutions are to attempt to serve this field it is important that they study its demands.

It is unreasonable to expect most of these schools to drop their present arrangements for teaching agriculture in favor of a Smith-Hughes program which calls for the allotment of much more time to agriculture and in many cases for an increase in staff. Even with Federal aid available the cost of the program to the local community is in many cases increased materially. One reason for this increase is, of course, the requirement that the Smith-Hughes teacher be employed for 12 months while the teacher outside that system may be employed for 9 months only. It is obvious too, that, the ordinary agricultural college curriculum through which teachers in vocational agriculture go is not appropriate for the persons who are training for these positions.

Comparisons of salaries in the two fields are not available for 1929. However, a study made two years ago of relative salaries in the State of Iowa shows that when both were placed on a monthly basis there was a slight margin in favor of positions outside the Smith-Hughes system, the average monthly salary being $173 in State and locally supported schools and $171 in federally aided schools.

A teacher-training department that prepares for the wide variety of positions involving agriculture, which are outside the Smith-Hughes system, has a much better opportunity to provide for the needs and interests of the varied group of students who come to it for training. It is possible to divert into these positions students who are capable of becoming very good public-school teachers but who are not adapted for Smith-Hughes work. There is a definite gain to the Smith-Hughes program in such diversion. The department is able also to increase materially the number of students served because of these numerous additional outlets.

Expanding the program in this field.—While the Smith-Hughes program has been a growing one from the beginning and its prospects for further expansion were never better than at the present time, it is possible that a still greater field in teacher training lies in the preparation for teachers for positions outside that system.

Agricultural education in the public schools is no fad. It has been experimented with on a large scale for a quarter of a century. It has succeeded in a large number of schools in every State. No type of situation has been discovered in which a successful program has been found impossible, provided there are enough persons agriculturally engaged to warrant a program in this field. The conditions of success are relatively well known. It is now safe to foster a program of expansion. To delay further in promoting such a program is unnecessarily to retard the progress of the States served by the land-grant institutions.

A large part of the positions outside the Smith-Hughes system is now in the hands of persons trained outside the land-grant colleges. Expansion of the land-grant teacher-training program in agriculture must come in part through retrieving the privilege of training agricultural teachers for all types of situations, which should never have been lost.

It is mainly because of the indifference of land-grant college officials to the needs of the public schools of their States that other institutions have taken the lead and developed this field. The only thing which seems to have stirred some of these officials out of their lethargy with respect to public-school needs has been the spur of the Federal aid available under the Smith-Hughes Act. It is likely that most of them are quite as indifferent to the needs of the public schools for other kinds of teachers as they always have been. This difficulty, since it is generally encountered, can not be charged against any individual. The problem arises mainly because of the isolation of the land-grant institutions from the public schools of the State, and from the fact that the affiliations of their officials are mainly agricultural rather than educational.

Specialized training courses.—The first need, if land-grant institutions are to train for the teaching of combinations of high-school subjects, including agriculture, is the adoption of a specialized curriculum suited for that purpose. It has previously been recommended that there should be more specialization of the curriculum for students training for Smith-Hughes agriculture. It is now advocated that other special 4-year curricula be developed for those who are to teach outside the Smith-Hughes system. The survey revealed but one such curriculum in the United States, that of Iowa

State College. This curriculum was approved in 1928. This course in agriculture and science has proved to be popular with many students. It has also been heartily approved by the subject-matter departments in science who welcome this opportunity to train more of their graduates for the teaching of science in the public schools.

Specialization of staff members.—Training of teachers for positions outside the Smith-Hughes system is likely to receive little consideration as long as all staff members receive half of their salaries from the Federal Government and classify themselves as teacher trainers under the Smith-Hughes system. This is almost universally the case now. Every State with any considerable opportunity for development along this line should begin by setting aside some one whose duty it will be to study the needs and develop the program for training the other type of teacher.

Separate classes.—Differentiated courses in special methods and student teaching are also necessary. The problem of teaching agriculture to the groups now available for such classes outside the Smith-Hughes system is quite different from the problem of teaching the more specialized groups to be found in the Smith-Hughes situations.

An opportunity to train for rural leadership.—In preparing teachers for positions outside the Smith-Hughes field the teacher-trainer has an opportunity to train for rural leadership as distinguished from the purely agricultural leadership for which the Smith-Hughes courses fit. Out of courses such as have been suggested should come large numbers of persons who will later become rural school administrators, filling positions as superintendents of consolidated and village schools and county superintendencies. Broad in their own training, it would be expected that they would not seek to impose on a rural community a narrowly agricultural or a narrowly vocational program. At the same time, they would be rural minded in the best sense and sympathetic toward agricultural education. The development of such a group of superintendents would prove the greatest possible aid to the expansion of the Smith-Hughes program which so often is restricted at present because of the unsympathetic attitudes of the persons in charge.

Little training is available at present for positions of this sort. The rural schools are largely directed by persons untrained for their special problems, without special interest in rural service, and unattracted by rural life. Of course these men could not be entirely trained in the colleges of agriculture or by departments of agricultural education. To be superintendents they must devote some time to the special problems of administration and supervision. But they

could be started on their way toward rural superintendencies by framing for them a satisfactory undergraduate course and their special training for the superintendency could be completed, as graduate work, in colleges of education during the summers of their first years of teaching.

Other Elements in the Agricultural Education Program

Training junior college teachers.—The rapid rise of the junior college has been a striking educational phenomenon of the past few years. In general these colleges have given almost no attention to agriculture. The one State which presents an exception to this rule is California; there agriculture is securing a prominent place in the junior college curriculum. It is logical to expect that this tendency will extend to other States within the next few years.

The philosophy of the junior college now prevailing calls for the use of that institution not only for courses preliminary to university work, but also for terminal courses for those who will not go on to the university. Junior colleges are developing in the rural and semi-rural sections. Agricultural courses should receive a considerable part of the attention given to terminal courses in those sections. It has been found, too, that it is possible to develop 2-year junior college courses which will articulate well with the last two years of an agricultural course in a standard 4-year college.

Another tendency which is likely to make for more attention to agriculture of the junior college level is the desire in many quarters to free the high-school period from vocational specialization and to make it a period devoted wholly to general education. It may be expected that there will be further emphasis of this idea in the next few years, particularly if economic conditions continue favorable, making extended schooling possible for a large proportion of the population.

A factor which limits the expansion of junior college agriculture, in comparison with other types, is the lack of Federal aid which is available for high-school agriculture and for agriculture in the 4-year college.

It is to be recommended that departments of agricultural education give considerable attention in the near future to studying the junior-college situation with the object of arranging that the teaching of agriculture shall have its fair chance in this type of institution, and that preparation be made for training an increasing number of persons for this field.

Training junior high school teachers.—Another field which is opening up rapidly and in which departments of agricultural educa-

tion should have a share is that of the junior high school. A generally accepted function of this institution is the provision of occupational orientation and information. The great agricultural industries properly receive much attention. No teachers are so capable of dealing with these as agricultural college graduates.

Such graduates are also especially well fitted for teaching the introductory science courses offered at the junior high school level and for handling the shop courses, particularly in rural communities.

There is an increasing call for men for the principalships of junior high schools. There is no reason why persons might not be trained at the land-grant institutions for such positions, particularly in view of the general scarcity of men for these positions at other teacher-training institutions.[16]

Relationships

Relationships to the land-grant institution.—There have been three predominant arrangements for organizing the department of agricultural education within land-grant institutions: (1) Organization in the college of agriculture; (2) organization in the college of education; and (3) joint administration by the colleges of agriculture and education.

In some institutions it is difficult to determine the form of organization since a consistent plan is not followed in dealing with all administrative functions, however, the following grouping of institutions is fairly reliable.

1. Organization in a division or school or college of agriculture.—Twenty-two institutions—University of Arizona, University of Delaware, Georgia State College of Agriculture and Mechanic Arts, Iowa State College, University of Idaho, Massachusetts Agricultural College, University of Maine, Mississippi Agricultural and Mechanical College, Montana State College, University of Nebraska, University of New Hampshire, Cornell University (New York), North Dakota Agricultural College, Ohio State University, Oklahoma Agricultural and Mechanical College, Pennsylvania State College, Clemson Agricultural College (South Carolina), University of Tennessee, University of Vermont, Virginia Agricultural and Mechanical College, West Virginia University, and the University of Wisconsin.

2. Organization in a division in a college or school of education.—Fifteen institutions—Alabama Polytechnic Institute, University of California, Colorado Agricultural College, Connecticut Agricultural College, University of Florida, University of Illinois, Purdue University (Indiana), University of Kentucky, University of Maryland, University of Missouri, North Carolina State College, Oregon Agricultural College, Rhode Island State College, Agricultural and Mechanical College of Texas, and the University of Wyoming.

3. Jointly administered by college of agriculture and education.—Five institutions—University of Arkansas, University of Minnesota, Rutgers University (New Jersey), Utah Agricultural College, and the State College of Washington.

[16] Dr. C. V. Williams, of the Kansas State Agricultural College, has made an especial study of the relations of the agricultural college to the junior high school situation.

4. Organization in a division or college of arts and sciences.—Two institutions—Kansas State Agricultural College and the University of Nevada.

5. Jointly administered by college of agriculture and college of arts and sciences.—One institution—South Dakota State College.

There has been little shifting of forms of organization in recent years. However, there appears to be considerable dissatisfaction with the current definitions of relationship in those institutions in which a central agency for the coordination of teacher training has not been set up. Though the questionnaire did not seek directly for an opinion on this point, the officials of 11 out of 23 such institutions suggested the centralization of education within their institutions in a school of education.

Some sharing of control common.—The common arrangement in institutions which have already some central organization is to provide for some measure of joint control by the college of agriculture and college of education, though there are some institutions in which full control of the department of agricultural education appears to be vested in the officials of the college of education. In 10 institutions members of the staff in agricultural education hold voting power in both the agriculture and education faculties.

Institutions having this arrangement are the University of Arkansas, University of Idaho, University of Minnesota, Rutgers University (New Jersey), North Carolina State College, Oregon Agricultural College, University of Tennessee, Agricultural and Mechanical College of Texas, Agricultural College of Utah, and the University of Wisconsin.

In a small number of other institutions a measure of joint control is secured through joint approval of new appointments or of budgets or through joint determination of the agricultural education curriculum.

Control over curriculum.—There is still some complaint that subject-matter departments exercise too much control over the courses of students preparing for agricultural teaching. In eight States subject-matter department heads direct the students' programs throughout their college courses and in five others this function is performed by the dean of agriculture. In several institutions with schools of education, students commonly continue in their subject-matter departments, though it is intended that they transfer to the school of education for the last two years of work.

It appears that if students are to teach agriculture they should be drawn into special courses under the direction of the agricultural education department not later than on their entrance into the junior year and preferably earlier. It is as important that their subject-matter courses be selected in cooperation with specialists in agricultural education as it is that they take a prescribed number of professional courses.

Relations with programs of agricultural education in other institutions.—Duplications with the work of State teachers colleges in the preparation of teachers of agriculture were reported in only three States. There was no complaint of duplication by the State university in any of the 19 States with separate State colleges. In most States, the land-grant institutions have a monopoly of teacher training in agriculture.

In many States, situations calling for a combination of agriculture with other high-school subjects have been looked after in the past by State teachers colleges and by private colleges whose graduates are able to teach the scanty amounts of agriculture demanded. There has been but little progress under this arrangement toward the well-rounded program of agriculture which is now accepted as desirable for rural communities. Superficial textbook courses in agriculture, taught by persons largely unacquainted with either the practical or the technical phases of agriculture, are not well enough regarded by the patrons of these schools to lead to the provision of more time for agriculture in the high-school curricula or for the development of supplementary part-time and evening programs of instruction. In fact it would be the most exceptional teacher with this type of training who would be able to manage the more extensive program, even if it were provided.

The rapid growth of the program of agricultural education subsidized by the Federal Government has already been noted. There has been a requirement from the first in this program that teachers be agricultural college graduates. It is likely that a considerable part of the credit for the unusual development in vocational agriculture can be traced to the superiority of the training of these teachers from the agricultural colleges. From 1922 to 1928, the percentage of students taking agriculture in the high schools of nine States [17] fell from 4.56 to 3.17 while the enrollment in federally aided high-school classes in agriculture in these same States increased from 10,122 to 24,269 during the same period.[18] A portion of the general decline is traceable to a wiser selection of the persons to whom instruction in agriculture is given, and there are other factors involved, but it appears that agriculture is not even holding its own in the situations in which teachers especially trained in agricultural colleges are not employed.

In some cases, when the supply of agricultural college trained teachers of vocational agriculture has been low, States have resorted to the use of teachers trained otherwise. The general conclusion has been that the results secured with such teachers have

[17] California, Iowa, Louisiana, Massachusetts, Minnesota, New Jersey, Ohio, Texas, and Washington. United States Bureau of Education Bulletin, 1929, No. 22, p. 13.
[18] Data from reports of Federal Board for Vocational Education, 1922 and 1928.

been unsatisfactory. There has never been any serious questioning by State supervisors of agricultural education of the provision that agricultural college graduates should be employed in Smith-Hughes schools.

That the persons who teach agriculture in combination with other subjects in the smaller high schools should be trained in the agricultural colleges does not imply that the programs of these small schools are to suffer by turning over to specialists in agriculture subjects in which they are not prepared. It is entirely practical that land-grant institutions provide a prospective teacher with the training needed to teach the subjects ordinarily combined with agriculture in these schools while giving him training in agriculture far superior to that available in any other type of institutions. In fact, it is quite possible that the teaching of natural and social science subjects, mathematics, history, and English by such a person would prove more satisfactory in rural regions than an arrangement which provides for the teaching of these subjects by graduates of other institutions.

While the training of agricultural teachers of all sorts is distinctly the field of a land-grant college, it can not be expected that other types of schools will remain indefinitely outside of it unless the agricultural colleges aggressively work the field open to them.

Public-school relations and college enrollment.—An example of one benefit derived by the land-grant institutions from close association with the public schools of their States is offered by data from Iowa State College.[19] In 1919 that institution ranked ninth among the colleges of the State in the number of teachers it had trained who were teaching in the consolidated schools of Iowa. In 1927–28 and 1928–29 Iowa State College led all the others in this respect. While this growth in the number of graduates placed in consolidated schools has been going on, there has been a growth also in the numbers of freshmen at Iowa State College who have been enrolled from Iowa consolidated schools although the number of consolidated schools remained practically constant throughout this period.

Prof. J. A. James[20] of the University of Wisconsin has shown in a recent study that 52 per cent of the freshmen students recently entering that institution presented one or more years of high-school agriculture, and that 42 per cent of them presented two or more years of high-school agriculture, although only 20 per cent of the high schools of Wisconsin teach two or more years in this field.

Studies in Virginia, Nebraska, and Iowa have also shown clearly that the agricultural colleges of these States secure students from

[19] Data from Vocational Education Department, Iowa State College.
[20] Address before Land-Grant College Association, November, 1929.

schools teaching vocational agriculture in numbers far exceeding the average of the schools without vocational agriculture.

In Virginia it was discovered by Prof. E. C. Magill [21] that the 100 agricultural high schools contributed six times as many students in agriculture to Virginia Agricultural and Mechanical College as the other 250 high schools of the State. "The agricultural high school," says Professor Magill "has in reality prevented the agricultural college from going bankrupt because of lack of students."

Probably other factors influence the result but it appears very probable that the presence in the public schools of the State of graduates of the land-grant institution has been a dominant one in bringing about the enrollment situations cited in these States.

There is increasing evidence that integration of the Smith-Hughes and Smith-Lever programs in agricultural education is coming about and it is likely that it will take place rapidly in the next few years, whether or not official action is taken for their consolidation. The evening school program of the public schools is increasing at a rapid rate; extension workers are finding these groups larger and more satisfactory to work with than many of the adult groups assembled under the previous system. Agricultural club work is being conducted increasingly in connection with the public schools. Twenty-four States reported in connection with this survey that their extension departments are working with the schools in their club programs. Teachers of vocational agriculture are increasingly appreciative of the services available to them from the extension service. Public-school administrators are growing more favorable to the whole agricultural education program and are offering the facilities of their schools for its prosecution. There seems to be no good reason why, in many communities and in some entire States, there should not now be complete integration of the activities of "Smith-Hughes" and "Smith-Lever" workers in a program carried out through the schools.

Indiana has in fact given a demonstration of the possibility of such integration over a 12-year period, Dr. Z. M. Smith, State director of vocational education, having served since the Smith-Hughes Act was passed as a member of the teacher-training staff of Purdue University and as State Leader of Agricultural Clubs conducted under the Smith-Lever Act. In three Massachusetts counties "Smith-Hughes" and "Smith-Lever" work are carried on under the management of a single director and a single board of trustees. In a number of Texas counties similar coordination of

[21] Magill, E. C. Vocational Agriculture in Relation to Agricultural College Attendance in Virginia. Agricultural Education, April, 1929, p. 8.

their activities is secured through county organizations of the workers in the two fields which carry out joint programs.[22]

Relations with the Federal Government.—It has been indicated that the programs of agricultural education of the land-grant colleges are almost entirely Federally aided under the provisions of the vocational education act of 1917.

The survey revealed little dissatisfaction among the colleges with the methods in use by the Federal Board for Vocational Education in administering teacher-training funds. Six institutions reported that they had found some difficulty in providing the practice teaching facilities demanded, but there was no criticism of the justice of the provision. Other expressions of dissatisfaction were so few and scattered as to be insignificant.

There is no question that the program of teacher training that has been sponsored by the Federal Board for Vocational Education has been a most flexible one. There has been a desire on the part of its representatives to adapt it, so far as possible without undue relaxation of standards, to the individual institutions. Nevertheless, the fact remains that most departments of agricultural education in teacher-training institutions are too dependent on the funds available from the board to raise many questions with respect to the kind of program which is favored by the board. If Federal funds were withdrawn, the very life of most of these departments would now be at stake.

Too much dependence on the Federal program.—There has been too much reliance by the States upon the Federal program. There has been too much willingness to follow the mode in vocational agriculture, under the guidance of the Washington office, and too little consideration of special, local needs. Too many States have been content merely to match the Federal funds available for teacher training, though their needs may have been far in excess of the sums thus made available. Phases of the program of agricultural education for which Federal funds have not been available have been neglected, regardless of their importance.

There should be acceptance of the idea that there may be a State program of agricultural education which is relatively independent of the Federally sponsored program. Such a State program should be amply enough financed so that Federal funds could be entirely refused, without serious detriment to it, in case the policies of the Federal Board do not seem to make for the best interest of the State. It would be hoped, of course, that withdrawal from the

[22] See the September, 1929, issue of Agricultural Education for detailed descriptions of arrangements for Smith-Hughes and Smith-Lever cooperation now in force.

National program would be unnecessary, for there are definite gains from participation.

State programs are vitally needed to prepare the way for the further expansion of the Federal program in those schools and communities which are not yet ready for the high standards to which the Smith-Hughes arrangement would hold them. It has long been a truism in dealing with teacher certification that standards must be gradually raised. This has not been sufficiently regarded in agricultural education. It is a long step from teaching no agriculture at all, or teaching a short textbook course in agriculture, to the complex, exacting, and relatively expensive program which a community is expected to undertake when its school becomes worthy to be labeled a "Smith-Hughes school."

The Federal program has been intended from the outset to be a pace-making program, stimulating rather than stifling State and local action. There are too few funds to finance any adequate program of agricultural education for the country as a whole, and it is unlikely that there ever will be enough funds from this source to meet more than a small fraction of the total cost of agricultural education.

An illustration of the procedure which is recommended can be drawn from the experience of the State of Iowa in developing a program of vocational education. In 1913 a State law was passed there requiring that every high school in the State offer courses in agriculture, home economics, and manual training. The requirements for teaching agriculture and manual training have always remained almost nominal and the programs carried out in these fields have probably been a deterrent, rather than help, to the development of real vocational education in agriculture. But in the home economics field the standards have been gradually raised; for a number of years there has been a requirement of 30 semester hours of special preparation in home economics. With teachers even thus well prepared, it has been possible to offer a good many very satisfactory programs of home economics education in the high schools of the State. The possibilties of the program having been glimpsed, individual schools have gone rapidly ahead in their own advancement of standards for the teachers they employ so that the use of teachers with Smith-Hughes qualifications and the approximation of Smith-Hughes standards is now typical, even with the much lower State requirement and with Smith-Hughes funds available to assist in financing fewer than 5 per cent of the departments of the State.

It would be unwise for the Federal Board to lower its standards for teachers. It has been most fortunate that these have been kept high from the beginning in the face of protests and temptations to relax. But there must be some lower standards provided for those

schools which are unwilling or unable to come up to these high standards. The provision of such standards, adapted to local needs, is a responsibility which the States should no longer neglect.

Research relationships with the Federal Government.—The Federal vocational education act of 1917 provided, in section 7, for an annual appropriation of $200,000—

> for the purpose of making or cooperating in making the studies, investigations, and reports provided for in section 6 of this act, and for the purpose of paying the salaries of the officers, the assistants, and such office and other expenses as the board may deem necessary to the execution and administration of this act.

Section 6 of the act, referred to in this connection, provides that—

> It shall be the duty of the Federal Board for Vocational Education to make, or cause to have made, studies, investigations, and reports, with particular reference to their use in aiding the States in the establishment of vocational schools and classes and in giving instruction in agriculture, trades and industries, commerce and commercial pursuits, and home economics.

This was a very limited provision for research in an act providing $7,000,000 for other purposes and it would be subject to severe criticism in the light of the commonly accepted present theory that it is more important for the Federal Government, in its relations to the educational systems of the States, to carry on necessary research, than to subsidize or to assist in administering local educational project. However, the situation is even worse than this, for most of the $200,000 available under this provision of the act has been used for administration, rather than for research.

In recent years there has been some improvement in the situation. The George-Reed Act of 1929 added another $100,000 annually to this fund, and a specialist in research in agricultural education has been added to the staff. Such funds as are available are being used mainly for printing and distributing the results of researches carried on by individuals and State institutions, so that some encouragement has been given to local initiative.

Nothing would do so much to make for better relationships between the States and the Federal Government in the administration of agricultural education as the building up of an adequate body of scientific material regarding agricultural education, which could be used as the basis of practice in the schools under the jurisdiction of the board. Scientific principles, agreed upon by all, could then be accepted for guidance instead of the arbitrary opinions of either Federal or State officials.

Recommendations—Agricultural Education

1. Agricultural education is a major concern of the land-grant institutions of most of the States. One of the best means now avail-

able for performing this function is through the training of teachers of agriculture to serve in the public schools.

2. The training of teachers of agriculture for the public schools is already one of the most important functions of our agricultural colleges. It is a rapidly expanding program. As yet it has scarcely reached a quarter of its probable eventual scope.

3. Emphasis on the preparation of agricultural teachers has mainly been on the preparation of teachers for the Smith-Hughes system. This program should receive continued and increasing attention, but there are other important phases which should be developed.

4. The ultimate goal in agricultural education is to place a satisfactory form of such training within the reach of every farmer and of every person who is preparing for farming. To do this within a reasonable length of time calls for the expenditure of a considerable amount of effort and money on the part of each State supplementary to the assistance provided by the Federal Government. No State should be content with the program which results from merely matching the Federal funds available for agricultural education.

5. Unless there is a change in the financial policy with respect to training teachers of agriculture, control of such teacher training is likely to pass largely out of the hands of the land-grant institutions even though the program continues to be conducted through them. In 1928–29 these institutions contributed but 9.39 per cent of the salaries of the persons employed in the federally sponsored program of agricultural teacher training, which comprised almost all of the agricultural teacher training under way. In addition, buildings and equipment were provided by the land-grant institutions. However, the major share of all costs was borne by the Federal Government or by the State boards for vocational education. As yet there is little complaint of excessive domination by authorities outside the colleges but there is no question that the program of agricultural teacher training is being greatly influenced by the source of the funds which support it, and to a considerable extent adversely, mainly because of the tendency produced to neglect important phases which do not interest those who finance the teacher-training program.

6. The articulation of agricultural education with other phases of teacher training in the land-grant college needs to be materially improved through some plan of centralization of the educational forces within each institution. At the same time care must be taken that relationships with the agricultural college are kept close.

7. The land-grant colleges need a much closer relationship with the public-school systems of their States. This is particularly true of the separate State colleges. Members of the staff in general agricultural education should develop affiliations with general education.

Some means should be provided for keeping school administrators in touch with the agricultural education program.

8. Whenever it is possible to do so the land-grant institutions should carry out their programs of agricultural education through the local public schools, rather than through other local agencies. The work of the extension departments should be unified with that of the departments of agricultural education in conducting such agricultural programs in the public schools.

9. The land-grant institution is the logical one in each State in which to train all teachers of agriculture. When this responsibility has been taken over by other types of institutions it is commonly because of the negligence of land-grant college officials. This situation should be avoided by the provision of strong programs in the land-grant institutions for the training of all kinds of teachers of agriculture adapted to all sorts of schools to be found in a State. There appears to be no sound reason why most of the teaching of agriculture should be done by persons who have not been trained in an agricultural college as is now the case in certain States.

10. In order to make it possible to place teachers of agriculture in all the sorts of situations which exist it will be necessary that they be trained for teaching subjects other than agriculture. There is no reason why this can not be done satisfactorily in most land-grant institutions.

11. Departments of agricultural education should have closer relationships with the curricula for prospective agricultural teachers. Where the numbers warrant it, courses should be set up cooperatively which provide not only for the professional subjects required but for the subject matter necessary for such teachers. There should be special curricula, preferably four years in length, for teachers of agriculture in federally aided schools and also for other agricultural teachers.

Curricula now in use need strengthening through greater attention to agricultural economics, agricultural engineering, and the social sciences, and through more general observation of some of the fundamental principles of curriculum construction.

Persons entering teaching from other courses should be expected to supplement these courses with agricultural, as well as professional subjects, so that their training will approximate that of persons graduating from the course in agricultural education.

12. Each institution should have definite arrangements for recruiting desirable students to prepare specially for the teaching of agriculture. Departments of agricultural education should not depend upon the other departments of the institution for students. Closer association with the other branches of teacher training in their

respective institutions, resulting from the establishment of a central school of education, would in some cases make it much easier to divert desirable persons from preparing for overcrowded teaching fields into preparation for the teaching of agriculture.

13. Some interchange of teachers among States is desirable but each land-grant institution should be expected to train approximately as many teachers of agriculture as are required in its State. A few institutions fail to meet this criterion.

14. There is great need for research upon the problems of agricultural education. All other agricultural departments in land-gant institutions typically have rather abundant funds for research. The existence of problems which are suited for rewarding investigation should be recognized in this field as well. There has been much waste because it has been necessary for administrators and teacher trainers to proceed without adequate knowledge based on research.

15. In most institutions the training and qualifications of the staff in agricultural education need to be considerably improved. A considerable number of staff members need to supplement their training in agriculture by taking a broader type of training, particularly in the field of general education. Another group has had extensive professional training in education but lacks an adequate acquaintance with agriculture. Those who are responsible for the supervision of student teaching are in particular need of further training.

16. There needs to be further attention to student teaching. All institutions are requiring it but in some instances the requirement seems to be little more than nominal. In nearly all institutions the status of the persons in charge of student teaching should be improved materially.

17. The land-grant institutions have a responsibility for seeing that agriculture is recognized in the rapidly developing junior colleges. The principal means of discharging this responsibility is through the preparation of adequate numbers of agricultural teachers for these institutions.

18. The agricultural education department should have representatives in the extension department of each land-grant institution, as a means of giving better service to and maintaining better relationships with the schools of the State, and also of unifying the programs of the agricultural education and the agricultural extension departments.

19. Departments of agricultural education should recognize a responsibility by keeping up to date and useful its graduates who are engaged in teaching. This involves provision for familiarizing them with new agricultural subject matter as it develops, as well as for further professional training. Systems of extension work or

itinerant teacher training, if used, should make maximum provision for work with groups, to avoid undue expense.

20. Persons trained in agricultural colleges in agricultural and well-balanced related subjects, who have had consolidated school teaching experience and special training in administration and supervision in a college of education, are ideal persons to serve as superintendents of consolidated schools. The agricultural colleges should make definite provision for the type of training which will start such persons on their way. They have many students who would be attracted by such carriers.

21. There is room for the development of a limited number of situations in which graduate work in agricultural education extending to the doctor's degree can be provided. Care must be taken in developing these that there is ample provision for strong supplementary work in general education as well as for specialization in agricultural education.

22. Departments of agricultural education may be expected to play a part in helping the land-grant institutions to throw their influence toward the improvement of the whole rural education situation.

Chapter XV.—Summary and Conclusions

Foremost among the needs of the teacher-training units of the land-grant institutions is the provision of greatly increased facilities for scientific and semiscientific study of the field of professional education, and for the intensive and continuous dissemination of the findings of such study among the teacher trainers themselves. In addition to the results of such studies, teacher trainers should continue to utilize the findings of the educational philospher, as well as of the subject-matter specialists, public-school officials, administrators, supervisors teachers, expert curriculum builders, educational psychologists, and all the other sources from which the field of professional education has drawn its materials during recent years.

The new field of professional education is in a stage of rapid development. Traditional offerings and activities are being rapidly adapted to changing public-school needs. Only provisions for continuously increasing and improving the subject-matter and activity content of teacher-training courses will enable the trainers of teachers to keep abreast of their responsibilities.

The means by which the teacher-training program in land-grant institutions may best be maintained on a high level of effectiveness and good practice, or by which advancement of existing practices to higher levels may be attained, appear on the basis of the evidence available to be as follows:

1. More carefully defined and more scientifically validated objectives for teacher preparation in the institutions should be established. Existing analyses of the activities of the teachers in service, as determined by the life needs of pupils, should be used as the starting point for intensive study and research to the end that institutions may set up offerings that will best train teachers for the jobs they actually will have to do in the public schools. Offerings and activities should be based upon a thoroughgoing analysis of the needs of teachers in the territory served by the institution. This involves provision for extensive programs of investigation and research concerning the needs within each State or region.

2. Study should be undertaken of the conditions of supply and demand in each State and redirection of institutional activity made in the light of the findings secured. In many institutions redirection of institutional emphasis from academic offerings to wider vocational, nonacademic, and special fields is desirable. A progres-

sive program for the extension of graduate work to provide for the training of teachers on graduate levels must be provided in States now employing high-school teachers trained on such levels. Increased needs for teachers of vocational subjects, for which there is no prospect of an immediate oversupply, will result from recent increases in Federal subsidies. These needs must be met. Cooperation with State departments of education and with other teacher-training institutions should be increased to the end that steadily advancing standards in the training of teachers be maintained, and the continued oversupply of poor teaching material reduced.

3. The services of the land-grant institutions to public schools of the State should be rounded out by the extension and professionalization of the work of placement bureaus so that their services to the institutions may be extended in respect to revision of curricula, the selection of trainees, effective placement of graduates, follow-up of graduates on the job, and discovery and interpretation of the needs of public school employing officials.

4. The existing concept in some institutions of the preparation of teachers as an incidental function of the academic work in arts and sciences or of the technical work in agriculture, home economics, or similar subjects must be replaced by the concept of teacher preparation as a professional activity worth while in itself, and comparable in importance to the work of the other professional schools of the institution. The doubling of the enrollments of the State teachers colleges during the past 10 years, despite the handicaps faced by such institutions, should be significant to administrative officials of land-grant institutions who aspire to leadership in training public-school teachers.

5. In general, the present professional relationships of teacher-training units with Federal and State agencies set up to administer Federal funds are satisfactory, but the professional assistance rendered the local institutions by State and Federal agencies might well be extended. Additional cooperation between State departments of education and the teacher-preparing units is desirable in respect to such matters as cooperative study of certification requirements, the regulation of the production of an oversupply of poor candidates for teaching positions, and educational research and study undertaken in the institutions.

Opportunities for further professional service to the public schools of the States could be utilized to much greater extent by a number of land-grant institutions, in respect to public-school surveys and cooperative projects undertaken with the public schools. More effective cooperation with local public-school systems, community organizations, and other local agencies would be of benefit in a number of land-grant institutions.

6. The decided movement during recent years to unify administratively and professionally the separated teacher-training activities prevalent in land-grant institutions should be continued with vigor. The administrative organization of teacher training in many institutions is admittedly chaotic. In each institution a centralized authority or agency for the coordination of teacher training should be set up if such authority or agency has not yet been provided. Any organization set up should be established with the sole aim of advancing the professional education of teachers; its powers should be extensive enough to enable it to perform its functions with the maximum efficiency. Such organization will, of necessity, render more satisfactory the performance of functions such as the determination of curricular content taken by prospective teachers, selection of training staffs, control over the professional advisement of trainees, control over student teaching facilities, placement of graduates, and all the other professional activities bearing specifically upon the professional preparation and placement of teachers.

7. In view of the fact that from 25 to 75 per cent of the graduates of the colleges or divisions of arts and science, agriculture, home economics, industrial education, the graduate school, and other units of the land-grant institutions enter teaching, financial support of teacher training should be more definitely and amply provided. Such data as are at hand indicate that the present financial support of teacher training is not adequate and that it may well be extended in keeping with recent intensive and extensive development of the field of public education as a whole.

8. The material needs of the teacher-training units in respect to physical plant, housing, and equipment have been generally provided for in keeping with the general provisions for the institutions as a whole. Improvements desired are the provision of classrooms better suited to instructional purposes, better service facilities affecting the material conditions under which staff members work, the provision of conveniently grouped classrooms, and further provision of well-equipped rooms for special methods classes. These improvements are desirable in a number of the institutions. Especially necessary is the provision in many institutions of a campus training school for practice and experimental purposes. In the larger institutions the provision of a separate building for the school or college of education is desirable when plant facilities permit. In smaller institutions classrooms, laboratories, offices, special rooms, and the training school should be grouped in convenient proximity whenever possible.

9. Since the most important element of any educational program is the instruction staff, improvements in the applications of the

teacher-training staff will advance the whole teacher-preparing program more rapidly than any other means. The general level of training, experience, and personal qualifications of teachers of education, except those in the training schools, compare favorably with that of other institutional staff members. It is well recognized, however, that the land-grant institutions must continue to provide for raising the level of qualifications of all staff members as rapidly as financial means permit.

10. Teachers of courses in education do not yet compare favorably with teachers in other major fields in respect to their professional training in the field of their specialty. The median of one year's training of staff members in professional education is less than one-half year more than that of the average graduate of teacher-training curricula in land-grant institutions. Teachers of education should have more than one semester's work in professional education above that of the prospective teachers whom they instruct. Progress in this respect may rapidly be attained by insisting upon more training in professional education on the part of entrants into positions on the education staff. This need is especially marked in the nonacademic or special teacher-training units and to a somewhat less extent in the vocational teacher-training units.

Outstanding among needs for the improvement of qualifications of staff members in professional education is improvement in the training of demonstration and supervising teachers, and increased requirements for wider public-school and training-school experience for such instructors.

11. Rapidly rising standards for teachers in the public schools necessitate numerous institutional provisions for management of student personnel to meet these standards. Hence, the development and use of selective measures based on scholarship marks in high school and college, tests of personality and related traits, intelligence tests, health examinations, and similar means is highly desirable. Institutional provisions for guidance of prospective teachers in respect to the best fields of educational work to enter, the courses to take, extracurricular activities in which to participate, and positions for which to apply should be extended. Coordination of teacher-training activities within the institution will assist in rendering such provisions more effective. Provisions for the upbuilding of professional attitudes on the part of young trainees should be provided: For instance, education clubs, honorary education fraternities, and other similar student organizations should be more frequently established and more vigorously conducted.

12. The needs of prospective public-school teachers should be given more consideration in the instructional work in technical and academic subject-matter fields. Such content should be whenever possible, selected, arranged, and organized with the needs of prospective teachers always in mind. In most institutions training in two or three fields of subject matter rather than primarily in one is desirable in order to meet the needs of the high schools for teachers of combination subjects. Curricular emphasis on subjects for which there is little demand for teachers, should be lessened in keeping with the needs of the public schools. At least some professional association should be maintained whenever possible with the arts and science or technical courses taken by prospective teachers. Such relationship may be cooperative in nature but should be none the less effective.

13. Courses in professional education are susceptible of great improvement. Such improvement should follow increasing research and experimentation. No one is sure how much professional work should be required, nor has any exact measure of its value been devised. Stabilization of content in such courses has not yet been attained. Variations in course requirements are too large. Course nomenclature is confusing. Sequences in courses taken are not sufficiently uniform. Undesirable duplications in content of courses exist. Present wide divergencies in requirements and practices in respect to educational courses should be continued only for the purpose of controlled experimentation.

14. Programs of curricular study and revision, either institutional or cooperative, should be undertaken much more vigorously in the land-grant institutions so that knowledge of the best curricular offerings and practices so far attained may be more readily disseminated among the teacher-training staffs.

15. One of the greatest needs of the teacher-training units of the land-grant institutions is more adequate provision for training school facilities. Student teaching is commonly considered the center about which many teacher-training activities should revolve. It is an expensive element of the teacher-training program, but one which offers perhaps greater returns than any other professional course. In general, requirements in student teaching should be increased. This involves further provision for student teaching facilities; whenever possible a campus teaching school should be established in connection with the use of typical public schools for practice.

Typically, institutional control over public schools utilized for practice is entirely inadequate. Undirected observation should be largely dispensed with. Better gradation of the course is desirable.

Outstanding among the needs of student teaching is the raising of standards of qualification for demonstration and supervising teachers. In training, faculty rank, salary, teaching load, institutional prestige, and other respects, the status of this group is much below that of the general staff. Since their work is admittedly of vital importance, immediate efforts should be made to raise the qualifications of such teachers.

In many institutions the coordination and direction of student teaching should be put in the hands of a single authority. The establishment of the office of director of training in some institutions is suggestive. One much needed change that a coordinating officer should help to bring about in the general training program is the establishment of closer professional relationships between the training school staff and the academic, technical, and professional education staff members. Utilization of the training school by regular subject-matter teachers is highly desirable for purposes of observation and demonstration. When professional endeavors do not bring about such cooperation, administrative means should be employed.

PART IV.—MILITARY EDUCATION

Chapter I.—Historical Introduction

As specifically required by the Morrill Act, military education has been included in the courses of study of every land-grant college from the date of its organization. In those institutions which were in existence before 1862 but which became land-grant colleges by acts of legislatures, military education was at once introduced.

In all of these institutions instruction in military tactics has been continued without interruption down to the present. No land-grant college has appealed to Congress or to the legislature of its State for exemption from the requirement to include military tactics among its departments of study. The land-grant colleges have fulfilled the obligation imposed upon them by their Federal charter in good faith.

As in the case of higher education in agriculture, no precedent or example existed of military education in the type of institution evidently contemplated by the Morrill Act. There were national institutions of collegiate grade specifically organized and conducted to educate men for the profession of arms, of which the United States Military Academy at West Point was a conspicuous example. There were also military colleges in which the military atmosphere predominated, but the land-grant college was to be predominatingly a civil institution, and its primary object was to furnish instruction in the civil pursuits of agriculture and industry. Military education was to be included in the curriculum of the land-grant college, but was distinctly forbidden to be the first concern. Manifestly, therefore, the famous military academies could not serve as models for the new type of institution which was to prove the outstanding American contribution to the organization of higher education.

Compelled to blaze a new trail and to invent methods to include military instruction in curricula designed primarily to prepare youth for civil pursuits, it is not strange that the new colleges of agriculture and the mechanic arts required time to develop a plan and procedure of military education which would be consistent with

their primary aim and also realize the purpose which led Congress in the midst of the Civil War to prescribe that the national colleges should afford instruction in military tactics.

At first some member of the faculty who had seen military service—and neither in the North nor in the South was it difficult to find such a member—was appointed to have charge of the military instruction, usually in addition to full-time duties in other fields. A notable example was Dr. George W. Atherton, later president of the Pennsylvania State College, who had sole responsibility for military instruction at Rutgers University while serving as professor of political science.

During these early years there was no clearly defined objective, no authorized provision for equipment or uniforms, and, of course, no syllabus or outline of studies. Everything depended upon the inventiveness and forcefulness of the instructor, but even the best men could do little more than impart some ability in the simplest field movements. This was the "military drill" period of collegiate military instruction. The title is still in current use among the uninformed, although it has long ceased to be descriptive of the principal aim and content of courses in military science.

A great advance was made in 1866 when Congress made it possible for the War Department to detail officers of the Army as professors of military science and tactics in the land-grant colleges by the enactment of the following statute:

> That for the purpose of promoting knowledge of military science among the young men of the United States, the President may, upon the application of an established college or university within the United States, with sufficient capacity to educate at one time not less than 150 male students, detail an officer of the Army to act as president, superintendent, or professor of such college or university; that the number of officers so detailed shall not exceed 20 at any time, and shall be apportioned through the United States as nearly as practicable according to population, and shall be governed by general rules, to be prescribed from time to time by the President.

Such detail became the usual custom and the military instruction became much more efficient in the hands of men professionally trained who had the military department for their sole responsibility. Many distinguished officers of the Army served as commandants at land-grant colleges, including Gen. John J. Pershing, who was on duty at the University of Nebraska 1891–1895.

But the greatest advance in military education in American educational institutions was accomplished through the passage by Congress of the national defense act in 1920. Under that great definition of the military policy of the Nation, instruction in military science in colleges came first to have a definite objective. That objective

was the preparation of young men as reserve officers, with education in military matters sufficient to justify commissioning them as second lieutenants in the organized reserves. Military education in each institution was organized in units of the Reserve Officers' Training Corps under appropriate regulations of the War Department. The military departments in the land-grant colleges became integral parts of the plans for national defense. With such definite objective and organization the military instruction took on added importance. The educational content of the instruction was largely increased. "Military drill" gave way to "military education."

Since the national defense act contemplated a supply of reserve officers in each branch of military service proportionate to estimated needs in case of national emergency, it was a logical step to establish units of the Reserve Officers' Training Corps in the various branches of the service. Soon units in 12 different branches were in active operation. These were infantry, cavalry, field artillery, engineers, coast artillery, signal corps, ordnance, medical, dental, veterinary, air corps, and chemical warfare.

Definite curricula in each branch, subject to revision as experience might indicate, were prescribed by the War Department. In the advanced courses there is wide differentiation between branches of the service, as between the cavalry and the Signal Corps. In all branches there are many subjects quite beyond the simple field movements of the "military drill" period, such as hygiene and first aid, command and leadership, sketching and map reading, and military law.

Instruction is in charge of officers of the Army detailed for the purpose, ordinarily for 4-year periods. Each unit is in charge of officers of that particular branch, e. g., an infantry unit is taught by infantry officers, a field artillery unit by officers of the field artillery. Only in exceptional cases are retired officers detailed to Reserve Officers' Training Corps duty. The policy of the War Department is to assign to each unit of infantry, cavalry, field artillery, and coast artillery, two officers for the first 100 students enrolled, and one additional officer for each additional 200 students or major fraction thereof. To units of other branches one officer is detailed for 50 to 150 students, and an additional officer for each 150 students or major fraction thereof. Enlisted men are also assigned to each unit to assist in instruction, care of equipment, and keeping of records.

Military instruction in the land-grant colleges is under the active direction and supervision of the War Department. The General Staff, the offices of the chiefs of branches, and corps area organiza-

tions give to the work their cordial and sympathetic support. Here, then, is a project of size, organized under Federal law, conducted through cooperation of a department of the Federal Government with each land-grant college, and operating as an integral and important element in the establishment effected by Congress in discharge of one of its primary constitutional obligations, "to provide for the common defense." That the land-grant colleges are performing their part of this project with efficiency and with substantial results will be evinced in the following pages.

Chapter II.—Organization and Operation

A degree-granting institution in which students are habitually in uniform and constantly under military discipline is classified by the War Department as a military college (class M. C.). Three land-grant colleges are so classified—Clemson Agricultural College of South Carolina; Agricultural and Mechanical College of Texas; and Virginia Agricultural and Mechanical College. All others are defined as not essentially military (class C).

The typical land-grant college is primarily and predominatingly a civil institution, but with a military department. Uniforms are seen on the campus only on the two or three days a week on which military formations are scheduled. The military department has nothing to do with the ordinary discipline of the institution. In all the institutions military instruction is provided under regulations prescribed by the War Department for the Reserve Officers' Training Corps.

Thirty-four institutions reported in 1929 that these regulations were entirely satisfactory, while 10 expressed the judgment that they should be amended in some particulars. The matters requiring improvement in the judgment of these institutions are:

University of Delaware.—When uniforms are issued in kind overcoats should be issued whenever climatic conditions indicate the necessity therefor. Further, the Tables of Equipment Special contained in A. R. 145–20 should be revised to meet actual conditions at institutions.

University of Maryland.—Recommend that Table 1, *a*, paragraph 20, A. R. 145–20 be amended so as to authorize the maintenance of 25 per cent in excess of the present clothing allowance in order to insure a satisfactory fit and condition of uniform issued to students. Recommend that the table referred to be further amended by adding one overcoat for each student, whether or not the student draws commutation or uniform or uniform in kind. This provision to be made applicable in the judgment of the corps area commander where weather conditions make such action advisable. It has been the experience in this institution that a considerable number of drills which might have been held outside during the winter season had to be held indoors due to severe weather The issue of overcoats will correct this condition.

With reference to paragraph 16, A. R. 145-20, it is recommended that if the present system of payment of commutation of uniform is to be continued that the amount be increased to $40 for each two years' enrollment in the senior unit of the Reserve Officers' Training Corps. This will insure purchase of a suitable uniform for both basic and advanced course and will eliminate the necessity for the present allowance of $6 for maintenance.

Michigan State College.—Restriction of negro enrollment where fewer than 50 would otherwise enroll in a course similar to citizens' military training camp regulation.

Mississippi Agricultural and Mechanical College.—Reports of physical examination involves a great deal of effort and accomplishes no purpose. A list of men physically fit would be sufficient.

University of Missouri.—Change paragraph 48 A. R. 145–10 to conform to change in law to allow credit for military training other than in Reserve Officers' Training Corps.

University of Nebraska.—Need slight adaptation to convenience of different institutions.

Ohio State University.—Commutation of uniforms should be restored to $30 in first and third year with maintenance of $6 in second and fourth years.

Pennsylvania State College.—Should be amplified.

Agricultural and Mechanical College of Texas.—The method of payment of commutation for uniforms should be simplified. Pay-roll forms should be used.

University of Wyoming.—A. R. 145–10, paragraph 48. It is understood that these Army Regulations are now in process of revision.

The definite objective being the preparation of reserve officers in numbers proportionate to estimated needs for the several branches of the service, the military instruction in each institution is organized in units of the Reserve Officers' Training Corps. Each institution has one or more units which are organizations for instruction in a particular branch, such as infantry or cavalry. A unit includes all the students enrolled in an institution for instruction in a particular branch, and may be composed of several thousand students in a large institution or of a hundred or two in a college of smaller enrollment. In no institution is there more than one unit in any particular branch. But it may be possible and desirable for an institution to make its contribution to the potential defense of the Nation through preparation of reserve officers in several arms, and, therefore, a single college may have several Reserve Officers' Training Corps units in different branches.

The number of units in the institutions varies from six at the University of Illinois, Massachusetts Institute of Technology, and Ohio State University to single units in 24 of the 46 institutions reporting on this subject. The University of Minnesota, Oregon Agricultural College, and the Agricultural and Mechanical College of Texas have five units each.

Two large institutions, Colorado Agricultural College and Purdue University, have single units of field artillery. Since the Infantry requires by far the largest number of reserve officers, infantry units predominate and 20 colleges of 46 reporting have infantry units only.

The distribution of units among the institutions is determined by the War Department, primarily on the basis of what are termed procurement needs, the estimate of the relative number of reserve officers required for the different branches of the service. Manifestly there would be no justification in training a superfluous number of reserve officers in a technical branch like the Signal Corps, especially if thereby a shortage was caused in a combatant branch such as Field Artillery. Regard must also be had to geographical distribution, since it is desirable that in each corps area there be maintained a proportionate number of reserve officers in each branch.

Consistently with the foregoing principles consideration is given to the desires of the institution and to its excellence and reputation

in particular fields related to special branches. For example, a college with a strong school of engineering is regarded as a favorable location for an Engineer or Signal Corps unit.

That there is general satisfaction with the distribution of units is indicated by the fact that 30 institutions report that within the past five years they have made no attempt to secure new units. On the other hand, 11 institutions report that they have made such effort, and have been unsuccessful.

Through the land-grant colleges young men are training for commissions as reserve officers in all corps areas of the United States, and also in the Departments of Porto Rico and Hawaii. Since no other type of institution is required to offer military education, it may be said that it is by virtue of its national system of higher education in the land-grant colleges that the Nation is maintaining a reserve officer personnel distributed through all the States. The distribution of Reserve Officers' Training Corps units by corps areas in continental United States is shown in Table 1.

TABLE 1.—*Distribution of land-grant colleges and R. O. T. C. units by corps areas, 1927–28*

Corps area	Number of institutions	Infantry	Cavalry	Coast Artillery Corps	Signal Corps	Ordnance	Air Corps	Engineers	Chemical Warfare Service	Field artillery	Medical	Dental	Veterinary	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
First	7	5	1	1	1	1	1	1	1	------	1	------	------	13
Second	3	3	------	------	1	1	------	------	------	1	------	------	1	7
Third	3	3	------	1	------	------	------	2	------	------	------	------	------	6
Fourth	8	8	------	1	1	------	1	1	------	1	------	------	------	13
Fifth	4	3	------	------	1	------	------	1	------	2	1	1	1	10
Sixth	3	3	2	1	2	------	1	1	------	2	------	------	------	12
Seventh	9	8	------	2	1	------	1	1	------	2	1	1	------	17
Eighth	5	3	2	------	1	------	1	------	------	2	------	------	------	9
Ninth	8	7	2	------	1	1	1	2	------	1	1	------	------	16
Total	50	43	7	6	9	3	6	9	1	11	4	2	2	103

The content of instruction in these 12 different branches varies as greatly as does the instruction in mathematics and psychology, history, and chemistry in a college of liberal arts. The instruction prescribed for the training of officers for the Signal Corps is a specialized course in communication engineering. It differs from a regular course in that subject only in its special applications to military conditions. Field artillery and coast artillery involve advanced mathematics and the elements of mechanical engineering. Military engineering is the oldest of all engineering subjects and the parent of them all. Down to comparatively recent times it was the only engineering discipline from which civil engineering or engi-

neering for civil needs was differentiated, which later in turn has offshoots, mechanical, electrical, industrial, chemical, and others. The military engineer must be competent not only to construct fortifications and defenses and to lay out a camp, but also to build and repair highways, bridges, railways, hospitals, docks, warehouses, and many other structures. Military education in the medical, dental, and veterinary corps is far removed from anything popularly regarded as military, having to do with special demands upon members of those callings when called upon for their professional services to armies in camp or field. The foregoing examples may serve to illustrate the wide variety of subjects embraced in the general title "military education."

The same examples evidence the grade and educational content of the courses offered in the military departments of the land-grant colleges. They are courses proper for college students and their contents could be understood and mastered only by students of college grade.

In each branch there are two courses of two years each, called basic and advanced. The former is adapted to freshmen and sophomores, and consists largely of the fundamentals necessary to a soldier in any branch of the service. A student who completes one year in any branch should be competent to serve as a corporal, and the completion of the basic course of two years should qualify a man as a sergeant.

Enrollment in the basic course and military instruction through freshman and sophomore years is required of all physically qualified male students in all land-grant institutions except the University of Wisconsin, in which institution it became optional in 1923 by act of the Wisconsin Legislature. Under the elective system at the University of Wisconsin student enrollment in military education has diminished from 1,528 in 1922–23 to 648 in 1927–28. The prevailing sentiment in the land-grant colleges appears to be strongly in favor of the required feature. The Association of Land-Grant Colleges has declared itself repeatedly in favor of this policy.[1]

It is in the basic courses that by far the greater number of students are enrolled. Students who complete these courses learn to execute military movements and are trained in the command of the squad and the platoon. They are taught to acquire the bearing of the soldier and the customs prevailing in military service. They receive instruction in camp sanitation, hygiene, and first aid. In the combat arms they become familiar with the appropriate weapons and are schooled in markmanship. Outstanding features in the military

[1] Proceedings of Thirty-ninth Annual Convention of the Association of Land-Grant Colleges, 1925.

history and policy of the United States are treated in lectures and classroom exercises.

While the results of collegiate military education are now usually measured by the numbers of graduates from the advanced courses, it must not be overlooked that great benefits are received by those who go no further than through the basic courses. They learn at least that a competent soldier can not be made overnight. If called to active duty, they would start far in advance of those who had never heard a military command. Indeed it is probably true that graduates of the present basic courses have received as much military education as did all but a very few of the students who took "military drill" in college before the reorganization following the passage of the national defense act in 1920. That even such elementary service is not valueless is demonstrated by the record of land-grant college graduates in the World War.

The advanced courses are elective for juniors and seniors in all the land-grant institutions with the exception of the Clemson Agricultural College of South Carolina. The objective to train officers has controlled in the selection of material for the advanced courses and is constantly borne in mind in the instruction. The juniors and seniors taking the courses become cadet officers and serve as such in formation and movements. Stress is laid on leadership and on powers of command. Except the athletic field the drill ground furnishes the only opportunity open to the college student to develop powers of control in a large organization of men. The work appeals to young men of force and ability and usually a good proportion of the more ambitious and energetic leaders in the student body are found among the cadet officers.

The theoretical work of the advanced courses in branches such as engineers and Signal Corps is highly technical. It can be done only by students who are taking corresponding courses for a degree, and enrollment in such courses is limited to registrants in corresponding curricula. The advanced courses are the full equivalent of the usual semester course in other subjects, and the practice of the institutions is to give academic credit for military science on an hour-for-hour basis, practical or field work counting as a laboratory period.

The work in the institution is supplemented by attendance for six weeks during the summer vacation upon a military camp conducted by the Army for instruction purposes. No student who is registered in an advanced course may receive his diploma until he has completed this camp requirement. Here the work is intensive and thorough. The student finds himself under different officers than those he has known in the home institution and subject in all respects to the discipline of a soldier. The camp instruction is an important

element in the training which entitles him to a commission as an officer subject to call for actual military duty.

In 1927–28 the Army detailed 337 commissioned officers and 424 enlisted men to Reserve Officers' Training Corps duty in land-grant colleges. Instruction was given to 43,782 students in basic courses and 7,411 students in advanced courses, a total of 51,376. At the close of the year 3,191 commissions were granted in the various branches of the service. The Army personnel, student enrollments by branches, and commissions issued in 1927–28 are shown in Table 2.

TABLE 2.—*Military personnel and student enrollments by subject-matter fields, 1927–28*

Personnel	Commissioned officers	Enlisted men	Basic course enrollments	Advanced course enrollments	Total students in branch	Commissions issued at close of year
1	2	3	4	5	6	7
Infantry	188	104	15,121	3,592	18,713	1,506
Cavalry	24	87	3,020	506	3,526	153
Field Artillery	70	90	7,141	1,133	8,274	461
Engineers	20	9	2,648	599	3,247	248
Coast Artillery	28	22	3,398	621	4,019	323
Signal Corps	7	7	748	226	974	156
Ordnance	3	1	182	108	290	76
Medical Corps	5	0	301	165	466	69
Dental Corps	2	0	208	125	333	45
Veterinary Corps	4	0	198	72	270	37
Air Corps	5	3	738	235	973	86
Chemical Warfare	1	1	79	29	108	31
Total	357	424	43,782	7,411	51,376	3,191

Institutions enrolling more than 3,000 students in all units in 1927–28 were Ohio State University with 3,596 and the University of Illinois with 3,371. Enrollments in individual land-grant colleges in each year from 1920–21 to 1928–29, inclusive, are presented in Table 3.

TABLE 3.—*Students enrolled in military education, 1920–21 to 1927–28*

Institution	1920–21	1921–22	1922–23	1923–24	1924–25	1925–26	1926–27	1927–28	1928–29
1	2	3	4	5	6	7	8	9	10
Alabama Polytechnic Institute	543	678	888	1,006	1,143	1,150	1,180	1,108	1,145
University of Arizona	161	272	410	379	457	474	500	575	613
University of Arkansas	213	278	354	504	531	562	599	602	590
University of California	1,660	1,888	2,048	1,960	2,111	2,043	1,975	1,838	1,810
Colorado Agricultural College	418	488	481	446	527	481	509	530	566
Connecticut Agricultural College	142	174	199	167	220	214	223	260	241
University of Delaware	212	236	273	264	280	280	323	289	281
University of Florida	270	451	560	721	874	1,065	1,139	1,108	1,227
Georgia State College of Agriculture	505	510	515	516	657	660	724	648	746
University of Hawaii		123	167	210	208	220	242	260	263

TABLE 3.—*Students enrolled in military education, 1920–21 to 1927–28—Cont.*

Institution	1920–21	1921–22	1922–23	1923–24	1924–25	1925–26	1926–27	1927–28	1928–29
1	2	3	4	5	6	7	8	9	10
University of Idaho	262	357	407	501	629	597	620	610	655
University of Illinois	2,421	2,770	2,983	3,046	3,395	3,313	3,315	3,479	3,371
Purdue University	1,218	1,216	1,250	1,265	1,439	1,470	1,590	1,614	1,642
Iowa State College	1,110	1,160	1,245	1,390	1,443	1,493	1,443	1,621	1,530
Kansas State Agricultural College	654	819	1,021	1,176	1,292	1,412	1,426	1,243	1,321
University of Kentucky	368	521	611	703	817	730	864	957	999
Louisiana State University	341	448	460	611	778	669	722	763	753
University of Maine	483	492	511	512	469	518	424	424	546
University of Maryland	238	274	358	388	421	418	414	458	498
Massachusetts Agriculture College	165	237	236	226	277	252	262	289	305
Massachusetts Institute of Technology	1,131	1,415	1,410	1,446	1,415	1,360	1,231	1,215	1,285
Michigan State College	449	376	653	630	822	1,014	975	1,230	1,198
University of Minnesota	1,692	2,038	2,070	2,139	2,461	2,640	2,941	3,074	2,913
Mississippi Agricultural and Mechanical College	629	676	755	809	842	787	791	940	921
University of Missouri	966	1,343	1,180	1,334	1,302	1,358	1,410	1,356	1,258
Montana State College	180	182	229	228	317	310	360	355	410
University of Nebraska	1,059	1,210	1,435	1,521	1,515	1,437	1,527	1,669	1,627
University of Nevada	133	173	181	209	217	211	206	198	200
University of New Hampshire	345	384	500	529	505	505	617	649	658
Rutgers University	383	552	520	476	478	469	479	710	758
New Mexico College of Agriculture and Mechanic Arts	143	136	140	108	139	140	138	150	141
Cornell University	1,509	1,887	2,023	2,186	1,984	1,993	2,017	1,983	1,903
North Carolina State College	544	629	698	691	799	696	619	657	755
North Dakota Agricultural College	44	184	304	408	393	389	480	540	562
Ohio State University	2,216	2,748	2,697	3,142	3,466	3,454	3,593	3,700	3,596
Oklahoma Agricultural and Mechanical College	313	375	756	740	1,007	1,000	977	974	1,059
Oregon Agricultural College	1,127	1,245	1,063	1,099	1,260	1,260	1,233	1,397	1,366
Pennsylvania State College	1,210	1,373	1,560	1,698	1,790	1,649	1,649	1,874	1,966
University of Porto Rico	101	129	167	264	495	378	336	365	390
Rhode Island State College	190	210	199	276	269	269	273	265	328
Clemson Agricultural College	584	753	769	913	1,032	912	1,000	1,047	1,080
South Dakota State College	305	206	249	394	448	494	529	562	575
University of Tennessee	282	384	486	538	619	600	618	681	693
Agricultural and Mechanical College of Texas	1,016	1,206	1,597	2,070	2,262	2,153	2,071	2,515	2,66
Agricultural College of Utah	226	193	230	240	301	230	316	290	351
University of Vermont	340	401	487	461	530	483	456	477	455
Virginia Agricultural and Mechanical College	556	648	665	777	880	865	829	977	1,025
State College of Washington	487	664	752	880	965	925	822	894	995
West Virginia University	501	663	579	643	757	686	782	954	825
University of Wisconsin	1,357	1,587	1,528	1,126	1,124	804	631	648	645
University of Wyoming	118	138	169	208	251	291	316	354	373
Total	31,520	37,500	41,018	44,174	48,613	47,783	48,716	51,376	51,979

Chapter III.—Administration of Department

Under both university and college organizations the department of military science and tactics in a land-grant institution is an independent department. It is not a part of any other division and the professor of military science and tactics, who is the senior officer detailed to the institution, reports directly to the president. This is the appropriate organization, since the military department has relations with all undergraduate instruction divisions alike.

In all cases the senior military officer holds the rank of a full professor and other officers and noncommissioned officers are accorded appropriate rank. Military personnel have full faculty status according to their rank and in accordance with the custom of the institution as to other departments. Where there is a university senate, the professor of military science and tactics is usually a member of that body. Officers frequently serve on faculty committees and bear their share in the general activities of the institution according to their tastes and capacity. In no case may they be called upon for any teaching outside of the military department.

In recent years it has often been impossible for an institution to secure an adequate military staff for the number of students enrolled. Institutions have increased their student numbers beyond the apparent ability of the War Department to detail officers to Reserve Officers' Training Corps duty. Twenty land-grant colleges in 1927–28 found their military staff below the numerical standard of War Department practice. Overloading of instructors has the same unfortunate results in military instruction as in any other field. Contrary to the impression that sometimes has prevailed, Reserve Officers' Training Corps schedules call for full-time efforts of active men.

To an inquiry whether officers detailed for Reserve Officers' Training Corps duty have been men of sufficient general education and culture for academic positions, 21 institutions replied that such has always been the case, while 22 answer "usually," and one "infrequently." In general it may be said that officers on duty in the land-grant institutions are well qualified for their positions both by professional training and by character, devotion to duty, and enthusiasm for their work. Military education has now been so long established in these institutions that it is taken as a matter of course and particular administrative difficulties almost surely occur.

Officers on Reserve Officers' Training Corps duty have a dual responsibility, on the one hand to their military superiors, and on the

other to the institutional authorities. This is a situation which might easily give rise to misunderstanding and trouble, and it speaks well, both for the military authorities and the executions of the land-grant colleges, that such difficulties have been rare. Where they have occurred, the particular trouble has usually been settled speedily to the satisfaction of all concerned and the cause of friction has been removed.

With two exceptions, units of the Reserve Officers' Training Corps in land-grant institutions have no relations with the organized militia of the State or the National Guard. Those exceptions are the University of Missouri and West Virginia University. Probably it is better that the military organizations in educational institutions should have relations exclusively with the Federal military establishment and that students pursuing an education should not be liable for local military duty. When great emergencies occur, however, institutional authorities do not hesitate to place their military organizations, as well as other facilities, at the disposal of the public authorities. This was done in the case of the great flood of the Mississippi a few years ago, during which the Reserve Officers' Training Corps units of Louisiana State University and Mississippi Agricultural and Mechanical College and the University of Arkansas rendered much appreciated service. Similar action was taken by the University of Vermont after the great flood in that State in 1927.

One chronic subject of discussion, perhaps it should not be said of difficulty, has been the rating of institutions by the War Department according to the excellence of their military instruction. Each year a certain number of institutions, after careful inspection and study of their records, were published to the world as "distinguished colleges." There was no other classification, and the public was left to draw what inference it might as to institutions not pronounced "distinguished." There was much discussion of the rating sheet used in the comparison of institutions and some criticism of methods sometimes employed in the inspections, but no common argument as to practicable methods of reform. Objections raised frequently were that colleges essentially military had an unfair advantage, and that the public understood that the adjective "distinguished" applied to the institution as a whole and not merely to its military department. On the other hand, it was urged that institutions which had superior military departments should have some official recognition of their merit, and that the annual inspection and award served as an incentive to both officers and students.

No progress seemed to be made in the argument and the War Department in 1928 settled the discussion by abolishing the practice of rating educational institutions. A year thereafter 29 land-grant

institutions recorded their approval of the discontinuance, while 17 registered their disapproval. By a vote of 36 to 7 the institutions declared that if rating should be restored, some means should be found to grade M. C. and C. institutions separately. Inquiry has brought forth no practical suggestions as to methods by which institutions could be rated or classified by the War Department in a manner to meet with general satisfaction.

During the years succeeding the World War the stock of uniforms left in the hands of the Government was drawn upon for issue to students in Reserve Officers' Training Corp units. With all patriotism it must be said that they were not such as to inflame the college men who wore them with pride in their personal appearance. In the same period there was a widespread dissatisfaction with the allowances for cadet officers' uniforms. Both of these difficulties have been resolved. The allowances for uniforms have been increased and the supply of war uniforms is reported to be nearing exhaustion.

The requirement of six weeks' attendance upon a summer training camp which is imposed upon students in advanced courses is generally regarded favorably. Four institutions—University of California, University of Delaware, Michigan State College, and the Agricultural College of Utah—however, report that they have not found the results beneficial. The cost to the student in spending time at camp which he might employ in a gainful occupation is not found a serious difficulty.

In a few of the corps areas conferences of college executives and officers on duty in the institutions located within the corps area, including others than land-grant colleges, have been arranged by corps-area commanders. In the Fourth Corps Area such conferences have been held annually. When held they have been exceedingly helpful and stimulative to all participants. Both military and institutional authorities have learned to appreciate their mutual problems and personal contacts have prepared the way for ready solution of subsequent difficulties. The practice is to be commended for general adoption as well worth the time and trouble involved.

In the land-grant colleges and universities, accustomed to military education in some form for more than a half century, the presence of the Army officer on the campus is regarded as a matter of course and his work is given place in the schedule of studies with no more thought of reconsideration of its value than is paid to retention of studies in chemistry or English. Popular agitation against certain phases of military education evidently have had little impression on administrative officers, faculties, or students.

To the inquiry "What is the general public sentiment in your State toward military education in the land-grant college?" 40 institutions replied that it is favorable, 6 answered that it is neutral, and none reported that it is un-

favorable. Such opposition as has existed is believed to have diminished in recent years in 32 States, and to have increased in 4 States. Five reported no marked change in sentiment.

Such favorable attitude toward military education could not exist unless benefits therefrom were clearly in evidence, and unless, further, the instruction was not thoroughly in accord with the prevailing sentiment of a Nation which seeks and pursues peace and cultivates only such measures of preparedness as are required by enlightened patriotism. The Reserve Officers' Training Corps in the land-grant colleges, while it makes ready a considerable body of the choicest youth of the Nation for exceptional service in case war should come, does nothing to refute the teaching of the department of economics that modern war is fearfully wasteful to all nations concerned in it, nor the lessons of international law that there are wiser methods than armed conflict to settle disputes between nations, nor the holy influences of the college chapel toward meekness, forbearance, and love.

Chapter IV.—Financial Phases of Military Education

Military education in the land-grant colleges being a cooperative enterprise between the Federal Government represented by the War Department and the land-grant institution in each State, the expense of its operation is shared by the Government and the institutions.

The United States pays the officers and men of its Army on duty in the institutions direct through Army channels at the same rate and with the same allowances officers and men of corresponding rank receive in other forms of service. The Army also furnishes an allowance for uniforms and rations of cadet officers and pays them while on active duty in camp. All equipment is also supplied by the Army, arms and ammunition for the various branches of the service, horses for cavalry and field artillery, uniforms for privates and noncommissioned cadet officers, band instruments, and a variety of special equipment for the more technical branches.

Here is an indirect annual Federal appropriation to the land-grant institutions of quite substantial size. As reported by all the institutions for 1927–28 it amounted to $2,101,222 for personnel and $1,427,648 for equipment, or a total of $3,528,870.

This indirect appropriation is not noted in annual reports of the institutions, since the funds do not pass through the hands of their treasurers nor does it appear in the statistics of the Federal Office of Education. It is, however, a real contribution for educational purposes and in fairness should be included in any statement of the Nation's support of higher education. The expenditures of the Federal Government for military education for 1927–28 are shown in Table 4.

TABLE 4.—*Expenditures of the Federal Government for military education in the land-grant colleges, 1927–28* [1]

Institution	Personnel [2]	Equipment	Total
1	2	3	4
Alabama Polytechnic Institute	$63,909	$51,232	$115,141
University of Arizona	36,284	20,632	56,916
University of Arkansas	21,714	9,178	30,892
University of California:			
Berkeley	84,483	42,533	127,016
Los Angeles	29,118	18,811	47,929

[1] Extracted from War Department appropriation bill for 1930, Part I, p. 889.
[2] Pay and allowances of Regular Army personnel on duty with unit, officers and enlisted men.

TABLE 4.—*Expenditures of the Federal Government for military education in the land grant colleges, 1927–28*—Continued

Institution	Personnel[1]	Equipment	Total
1	2	3	4
Colorado Agricultural College	$39,834	$48,937	$88,771
Connecticut Agricultural College	10,509	6,221	16,730
University of Delaware	21,570	9,398	30,968
University of Florida	30,559	21,084	51,643
Georgia State College of Agriculture	49,139	31,367	80,506
University of Hawaii	13,613	4,650	18,263
University of Idaho	17,217	8,931	26,148
University of Illinois	152,123	115,087	267,210
Purdue University	65,637	48,257	113,894
Iowa State College	70,922	34,586	105,508
Kansas State Agricultural College	54,468	27,397	81,865
University of Kentucky	34,082	17,405	51,487
Louisiana State University	19,175	14,422	33,597
University of Maine	22,411	10,942	33,353
University of Maryland	20,958	10,587	31,545
Massachusetts Agricultural College	32,930	14,947	47,877
Massachusetts Institute of Technology	57,794	33,161	90,955
Michigan State College	59,789	50,473	110,262
University of Minnesota	74,487	36,901	111,388
Mississippi Agricultural and Mechanical College	37,945	21,188	59,133
University of Missouri	22,993	43,538	66,531
Montana State College	12,875	2,967	15,842
University of Nebraska	40,367	16,128	56,495
University of Nevada	8,256	1,921	10,177
University of New Hampshire	26,292	16,072	42,364
Rutgers University	23,585	8,334	31,919
New Mexico College of Agriculture and Mechanic Arts	7,334	7,245	14,579
Cornell University	111,710	49,706	161,416
North Carolina State College	29,169	21,984	51,153
North Dakota Agricultural College	15,550	31,092	46,642
Ohio State University	130,802	84,654	215,456
Oklahoma Agricultural and Mechanical College	29,849	20,732	50,581
Oregon Agricultural College	75,721	60,280	136,001
Pennsylvania State College	51,416	12,947	64,363
University of Porto Rico	14,252	3,341	17,593
Rhode Island State College	11,889	6,766	18,655
Clemson Agricultural College	29,001	44,827	73,828
South Dakota State College	14,006	49,221	63,227
University of Tennessee	29,475	14,291	43,766
Agricultural and Mechanical College of Texas	100,580	104,211	204,791
Agricultural College of Utah	12,196	5,272	17,468
University of Vermont	28,401	10,150	38,551
Virginia Agricultural and Mechanical College	48,864	40,810	89,674
State College of Washington	33,491	11,851	45,342
West Virginia University	31,179	24,853	56,032
University of Wisconsin	31,582	19,944	51,526
University of Wyoming	9,717	6,184	15,901
Total (52 land-grant institutions)	2,101,222	1,427,648	3,528,870

[1] Pay and allowances of regular Army personnel on duty with unit, officers and enlisted men.

The share of the institutions in the cooperative enterprise of military education is in the erection and maintenance of armories, storehouses, drill fields, rifle ranges, recitation and lecture halls, and other features necessary for instruction. For units of cavalry and field artillery considerable land must be available. In the techni-

cal branches the military department must make use of the institution's laboratories.

In no case has the Federal Government provided an armory for the military instruction required by Federal law. In a majority of States armories have been erected through State appropriations, but in several instances the only facilities available for the military department are gymnasiums erected from private gifts. It is impossible to give a figure of the total cost of lands and buildings occupied for military use in land-grant institutions, but the total must run into several millions. The upkeep of these structures is also a considerable item.

Many institutions pay a small additional stipend to officers and enlisted men serving in their faculties. The justification for such payments is the fact that suitable living accommodations usually are not available at the prices allowed by Army regulations for the purpose.

Thirty institutions reported payments under this item aggregating $73,137 in 1927–28. In the same year 25 institutions reported State appropriations specifically for military education aggregating $97,732. This by no means represents the total of State expenditures for the purpose, since in many States appropriations for general maintenance are used in part for military work.

TABLE 5.—*Commissions issued to graduates of land-grant institutions by years 1920–21 to 1927–28 by branches of service*

Branch of service	1920–21	1921–22	1922–23	1923–24	1924–25	1925–26	1926–27	1927–28	Total
1	2	3	4	5	6	7	8	9	10
Infantry	307	775	1,111	1,045	1,244	1,513	1,483	1,506	9,084
Cavalry	3	46	67	95	130	150	138	153	782
Field Artillery	50	190	238	268	380	439	461	461	2,487
Engineers	32	127	155	140	183	239	227	248	1,351
Coast Artillery	56	151	212	222	216	276	308	323	1,764
Signal Corps	46	70	134	137	121	119	128	156	911
Ordnance	22	67	79	70	113	122	106	76	655
Medical Corps	0	0	31	56	59	90	60	69	365
Dental Corps	0	14	29	59	39	33	40	45	259
Veterinary Corps	24	32	36	20	20	30	31	37	230
Air Corps	2	5	50	48	58	78	92	86	419
Chemical Warfare	0	0	0	0	0	16	22	31	69
Total	602	1,477	2,142	2,160	2,563	3,105	3,096	3,191	18,336

Chapter V.—Results and Accomplishments

The direct and specific contribution of the land-grant colleges to the military preparedness of the United States since the national defense act went into effect are presented in Table 5. It shows that during the period from 1920 to 1928, 18,336 graduates of these institutions took their places in the organized reserves of the Army, each with adequate training to justify the issuance to him of an officer's commission. They have been enrolled in 12 different branches of the service, in several of which only college graduates could qualify as officers, and in all of which a college education is desirable. They are distributed through all sections of the country. In case of need they would be supported by many thousands more of their former fellow students who did not advance to a commission, but who received sound training in the fundamentals of military discipline.

Whether ways and means are in operation to keep these commissioned graduates in the organized reserves, and to stimulate their further studies to enable them to earn advancement in rank, is a subject beyond the scope of this survey. But at least the land-grant colleges are doing their work and are furnishing to the Nation a large fraction of the men upon whom the country would be compelled to rely if required to exert its military power.

It would be of great interest if report could be made of the military services of all graduates and students of land-grant colleges since their establishment. Unfortunately records in this respect are sadly deficient. Only 15 institutions are able to make partial report as to the number of men who had received military training in their institutions who served in the Spanish War in the Army, Navy, and Marine Corps. Even this is worthy of record, and if other institutions made similar contributions, which there is every reason to believe they did, the total was large in proportion to the men enlisted in that conflict.

TABLE 6.—*Men who served in the Spanish War who had received military training in 15 land-grant colleges*

Institution	Officers	Enlisted men	Total
1	2	3	4
Alabama Polytechnic Institute	30		30
Connecticut Agricultural College		6	6
Georgia State College of Agriculture	53		53
University of Idaho	1	39	40
Kansas State Agricultural College	1	47	48
University of Minnesota	53	227	280
Mississippi Agricultural and Mechanical College	28	92	120
North Dakota Agricultural College		35	35
South Dakota State College	13	17	30
University of Tennessee	60	31	91
Agricultural and Mechanical College of Texas	21		21
Virginia Agricultural and Mechanical College	10	19	29
State College of Washington	4	23	27
West Virginia University	12	5	17
University of Wyoming	3	17	20
Total	289	558	847

Records of services in the World War are more satisfactory, but it must be recorded that 13 institutions either have no record of their graduates and former students who served in that great conflict or were unwilling to take the trouble to report them. From the 39 institutions from which information is available, 28,447 men served as commissioned officers and 50,554 as enlisted men, a total of 79,001 in the Army, Navy, and Marine Corps. A tabulation by institutions showing the number of officers and enlisted men in the three divisions may be found in Table 7.

TABLE 7.—*Men who served in the World War who had received military training in land-grant colleges*

Institution	Army		Navy		Marine Corps		Total	
	Officers	Enlisted men	Officers	Enlisted men	Officers	Enlisted men	Officers	Enlisted men
1	2	3	4	5	6	7	8	9
Alabama Polytechnic Institute	369	500	20	50	25	40	414	590
University of California	1,850	1,578	334	307	54	35	2,238	1,920
Colorado Agricultural College	201	235	3	7			204	242
Connecticut Agricultural College	35	125	0	8			35	143
University of Delaware	142	87	10	21	4	3	156	111
University of Florida	134	169	25	81	1	7	160	257
Georgia State College of Agriculture	1,600	400	12	0	25	0	1,637	400
University of Idaho	197	1,050	9	54	1	8	207	1,112
University of Illinois	2,992	2,370	263	575	25	65	3,280	3,010
Purdue University								2,110
Iowa State College	900	2,500	100	500	10	100	1,010	3,100
Kansas State Agricultural College	400		21		10		431	1,703
University of Kentucky		[1] 829		[1] 103		[1] 27	829	[1] 959
University of Maine	353	1,247	33	63	1	3	387	1,313
Massachusetts Agricultural College		[1] 386		[1] 48		[1] 4		[1] 438

[1] Includes both officers and enlisted men.

TABLE 7.—*Men who served in the World War who had received military training in land-grant colleges*—Continued

Institution	Army		Navy		Marine Corps		Total	
	Officers	Enlisted men	Officers	Enlisted men	Officers	Enlisted men	Officers	Enlisted men
1	2	3	5	4	6	7	8	9
Massachusetts Institute of Technology	1,935	650	.....	1,063	0	[1] 36	1,935	[1] 3,684
Michigan State College	425	1,500	25	0	.....	.....	450	1,500
University of Minnesota	.....	.....	.....	.....	.....	.....	1,415	2,112
Mississippi Agricultural and Mechanical College	1,742	.....	63	.....	104	.....	1,909	3,814
Montana State College	.....	[1] 91	.....	[1] 22	.....	[1] 18	.....	[1] 131
University of Nebraska	.....	.....	.....	.....	.....	.....	.....	2,200
University of Nevada	94	258	10	26	0	4	104	288
University of New Hampshire	221	321	32	107	6	0	253	428
Rutgers University	381	311	38	102	1	5	420	418
Cornell University	2,680	3,484	320	298	30	38	3,030	3,820
North Carolina State College	383	828	30	146	3	9	416	983
North Dakota Agricultural College	100	200	.....	[1] 30	.....	[1] 4	100	234
Ohio State University	1,790	4,229	158	324	11	49	1,959	4,602
Oregon Agricultural College	.....	.....	.....	.....	.....	.....	1,178	753
Pennsylvania State College	956	990	86	97	0	26	1,042	1,113
Rhode Island State College	118	117	18	41	6	2	142	160
Clemson Agricultural College	212	377	8	31	8	2	228	410
South Dakota State College	125	313	0	25	0	10	125	348
University of Tennessee	960	1,400	50	300	15	150	1,025	1,850
Agricultural and Mechanical College of Texas	.....	.....	.....	.....	.....	.....	.....	[2] 2,300
Virginia Agricultural and Mechanical College	623	495	82	52	11	25	716	572
State College of Washington	255	473	34	177	12	36	301	586
West Virginia University	550	593	31	69	10	38	591	700
University of Wyoming	114	121	5	12	1	7	120	140
Total	22,837	28,237	1,820	4,739	368	731	28,447	50,554

[1] Includes both officers and enlisted men.
[2] Estimated for both officers and enlisted men.

If figures were available from all land-grant institutions, undoubtedly they would show that more than 100,000 graduates and former students of land-grant colleges wore the uniform of their country during the great conflict. That at least 30,000 of these became officers indicates that even before the organization of the Reserve Officers' Training Corps military education in these institutions was not without its practical value.

Information is available from 39 institutions as to the highest rank attained during the war by their graduates and former students. Fifteen became major generals and 28 brigadier generals. The facts so far as reported appear in Table 8. It should be noted that figures are lacking from several large institutions, including the University of Minnesota, the University of Nebraska, the Agriculture and Mechanical College of Texas, and the University of Wisconsin. But incomplete as it is, the record is impressive.

TABLE 8.—*Highest rank attained during World War by men who had received military training in 39 land-grant institutions*

Institution	Major General	Brigadier General	Colonel	Lieutenant Colonel	Major	Captain	First Lieutenant	Second Lieutenant	Total officers
1	2	3	4	5	6	7	8	9	10
Alabama Polytechnic Institute	2	1	5	6	15	75	90	175	369
University of California		1	11	29	98	351	1,360	-------	1,578
Colorado Agricultural College					4	15	70	112	201
Connecticut Agricultural College					2	4	22	7	35
University of Delaware			2	1	11	24	50	54	142
University of Florida			1	2	6	12	36	77	134
Georgia State College of Agriculture		2	12	40	50	500	500	543	1,647
University of Idaho			1	1	6	23	55	111	197
University of Illinois	2	4	11	29	132	624	875	1,317	2,992
Purdue University			2	14	51	211	300	497	1,075
Iowa State College		1	10	15	30	150	300	400	906
Kansas State Agricultural College	4	1	6	6	10	47	72	285	431
University of Kentucky			2	5	7	46	103	117	280
University of Maine		2	3	3	18	52	92	183	353
Massachusetts Agricultural College			3	1	13	41	91	237	386
Massachusetts Institute of Technology	3	2	30	48	207	560	436	649	1,935
Michigan State College			2	4	6	85	117	201	415
Mississippi Agricultural and Mechanical College		2	------	[1] 10	42	291	------	[2] 1,501	1,846
University of Nevada					1	13	26	64	104
University of New Hampshire			2	------	3	23	193	-------	221
Rutgers University	2	1	2	3	20	61	110	182	381
Cornell University	1	1	10	15	148	465	------	[2] 2,040	2,680
North Carolina State College			1	3	14	52	94	219	383
North Dakota Agricultural College					4	20	35	41	100
Ohio State University	1	3	16	32	109	329	597	703	1,790
Oregon Agricultural College			1	2	6	77	212	328	626
Pennsylvania State College			4	15	38	133	258	508	956
Rhode Island State College					2	15	33	68	118
Clemson Agricultural College			1	1	4	34	68	104	212
South Dakota State College			3	1	5	26	------	[2] 89	124
University of Tennessee		2	5	13	28	154	262	495	960
Agricultural College of Utah		1	------	1	-------	-------	1	-------	3
Virginia Agricultural and Mechanical College		2	1	7	32	122	154	305	623
State College of Washington			1	2	13	47	87	151	301
West Virginia University		1	4	8	19	94	187	237	550
University of Wyoming			2	3	3	14	28	61	111
Total	15	28	154	320	1,157	4,790	6,912	12,061	25,437

[1] Includes colonels.
[2] Includes first lieutenants.

Complete information as to decorations and awards received during the World War by men who had previously received military training in land-grant institutions is not available. Table 9 gives the number of these citations from 28 institutions, although doubtless some of these did not have a full record.

TABLE 9.—*Decorations and awards received by men from 28 land-grant institutions in the World War*

Institution	Medal of honor	Distinguished service cross	Distinguished service medal	Foreign decorations	Total
1	2	3	4	5	6
Alabama Polytechnic Institute		10	6	15	31
University of California		11	3	67	81
Colorado Agricultural College			1		1
University of Delaware		4	2		6
University of Florida				6	6
University of Idaho		1		3	4
University of Illinois		18	1	60	79
University of Maine				7	7
Massachusetts Agricultural College		5		15	20
Massachusetts Institute of Technology		23	14	76	113
Michigan State College	1	6	2	27	36
Mississippi Agricultural and Mechanical College		131		55	186
University of Nebraska	4		1	9	14
University of New Hampshire		2	1	3	6
Rutgers University				6	6
Cornell University	2	40	1	87	130
North Carolina State College		8		6	14
Ohio State University	1	15	11	75	102
Oregon Agricultural College	2	2	1	9	14
Pennsylvania State College	48	22	3	18	91
Rhode Island State College	7	1		2	10
Clemson Agricultural College		5			5
South Dakota State College				1	1
University of Tennessee	2	15	6	38	61
Agricultural College of Utah		1			1
Virginia Agricultural and Mechanical College	1	4		17	22
State College of Washington	1	1		2	4
West Virginia University		2		6	8
Total	69	327	53	610	1,061

It is probable that taps were sounded during the war over the graves of more than 2,000 men who had been students in land-grant universities and colleges. Record of 1,759 fatalities during the official period of the World War is furnished from 39 institutions. It may be hoped that Table 10, which lists, by institutions, the number of those who made the supreme sacrifice, will be noted especially by all institutions whose gold-star men are not therein noted in order that their records may be compiled by them before it is too late.

TABLE 10.—*Men who had received military training in 39 land-grant institutions who lost their lives in military service between April 6, 1917, and July 2, 1921*

Institution	Army		Navy		Marine Corps		Total men	
	Officers	Enlisted men	Officers	Enlisted men	Officers	Enlisted men	Officers	Enlisted men
1	2	3	4	5	6	7	8	9
Alabama Polytechnic Institute	15	12	.....	2	1	1	16	15
University of Arkansas	.....	.....	.....	.....	.....	.....	2	20
Colorado Agricultural College	1	8	.....	.....	.....	.....	1	8
Connecticut Agricultural College	2	1	.....	.....	.....	.....	2	1
University of Delaware	3	1	.....	1	.....	1	4	2
University of Florida	6	9	.....	3	.....	1	6	13
Georgia State College of Agriculture	37	3	.....	.....	5	.....	42	3
University of Idaho	5	29	.....	1	.....	.....	5	30
University of Illinois	.....	.....	.....	.....	.....	.....	.....	[1] 181
Purdue University	.....	.....	.....	.....	.....	.....	.....	67
Iowa State College	21	86	1	7	2	1	24	94
Kansas State Agricultural College	13	35	.....	.....	.....	.....	13	35
University of Kentucky	12	6	1	1	.....	1	13	8
University of Maine	9	31	.....	4	.....	.....	.....	[1] 35
Massachusetts Agricultural College	22	21	1	.....	.....	.....	23	21
Massachusetts Institute of Technology	74	22	8	6	.....	.....	82	28
Michigan State College	17	38	.....	.....	.....	2	17	40
University of Minnesota	.....	.....	.....	.....	.....	.....	.....	[1] 96
Mississippi Agricultural and Mechanical College	.....	.....	.....	.....	.....	.....	.....	[1] 86
Montana State College	.....	.....	.....	.....	.....	.....	.....	[1] 16
University of Nebraska	.....	26	.....	1	.....	1	21	28
University of New Hampshire	.....	9	.....	1	.....	1	7	11
Rutgers University	9	10	.....	2	.....	.....	9	12
Cornell University	.....	.....	.....	.....	.....	.....	.....	[1] 240
North Carolina State College	16	15	.....	1	.....	1	16	17
North Dakota Agricultural College	.....	[1] 11	.....	.....	.....	.....	.....	[1] 11
Ohio State University	47	51	4	11	.....	3	51	65
Oregon Agricultural College	.....	.....	.....	.....	.....	.....	18	47
Pennsylvania State College	33	35	2	2	.....	1	35	38
Rhode Island State College	7	12	.....	2	1	.....	8	14
Clemson Agricultural College	11	9	1	2	.....	.....	12	11
South Dakota State College	2	17	.....	1	.....	.....	2	18
University of Tennessee	20	4	2	3	.....	.....	22	7
Agricultural and Mechanical College of Texas	.....	.....	.....	.....	.....	.....	.....	[1] 51
Agricultural College of Utah	.....	.....	.....	.....	.....	.....	5	24
Virginia Agricultural and Mechanical College	11	13	1	.....	1	.....	13	13
State College of Washington	8	19	.....	3	1	2	9	24
West Virginia University	12	9	1	.....	.....	1	13	10
University of Wyoming	3	3	.....	2	.....	1	3	6
Total	444	545	22	56	11	199	494	1,265

[1] Includes officers.

None will desire more earnestly that there may never come another objective test of the value of collegiate military education than the graduates of the land-grant colleges. In their military courses they have learned something of what is involved in war. That alone is worth the cost of their military education. But they have learned much more which will be of value to them as citizens of the Nation. They have learned how to give a command and have it obeyed. They have acquired the more difficult knowledge of obedience to an order given by rightful authority—prompt, exact, and eager obedience.

They have been taught that citizenship involves obligations as well as privileges, that those who enjoy the protection of their country are liable for duty to defend their country. If in other departments they hear that internationalism should take the place of love of country, that patriotism is not a virtue in the present era, that speech in honor of the flag is an indication of limited intelligence, it is perhaps well then in their military instruction they have come in contact with a different point of view. It may at least save them from too hasty committal to views which are in wide divergence from those still held by a large majority of American citizens.

By the inclusion of military science and tactics in their curricula, by the side of courses designed to prepare men for the several pursuits and professions of life, the land-grant colleges more nearly than any other instruments of higher education realize the ideals set forth in the classical definition of education by John Milton: "I call, therefore, a complete and generous education that which fits a man to perform justly, skillfully, and magnanimously all the offices, both private and public, of peace and war."

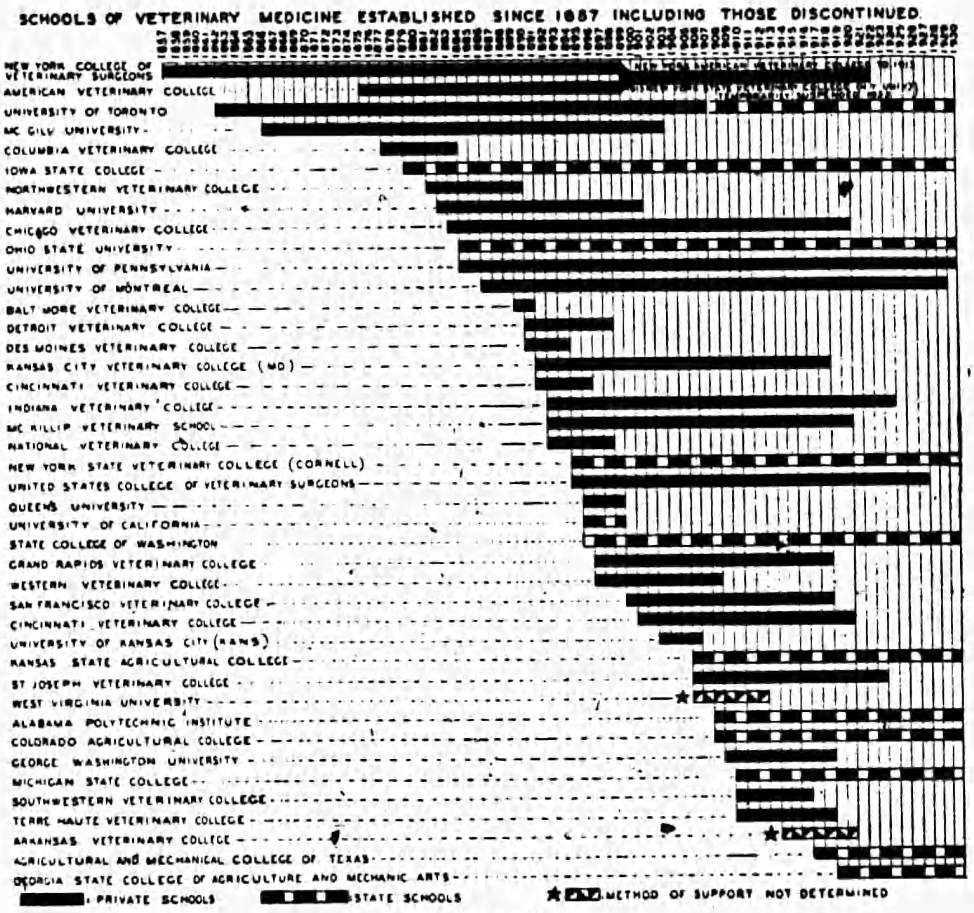
PART V.—PROFESSIONAL VETERINARY MEDICINE

Chapter I.—Historical Introduction

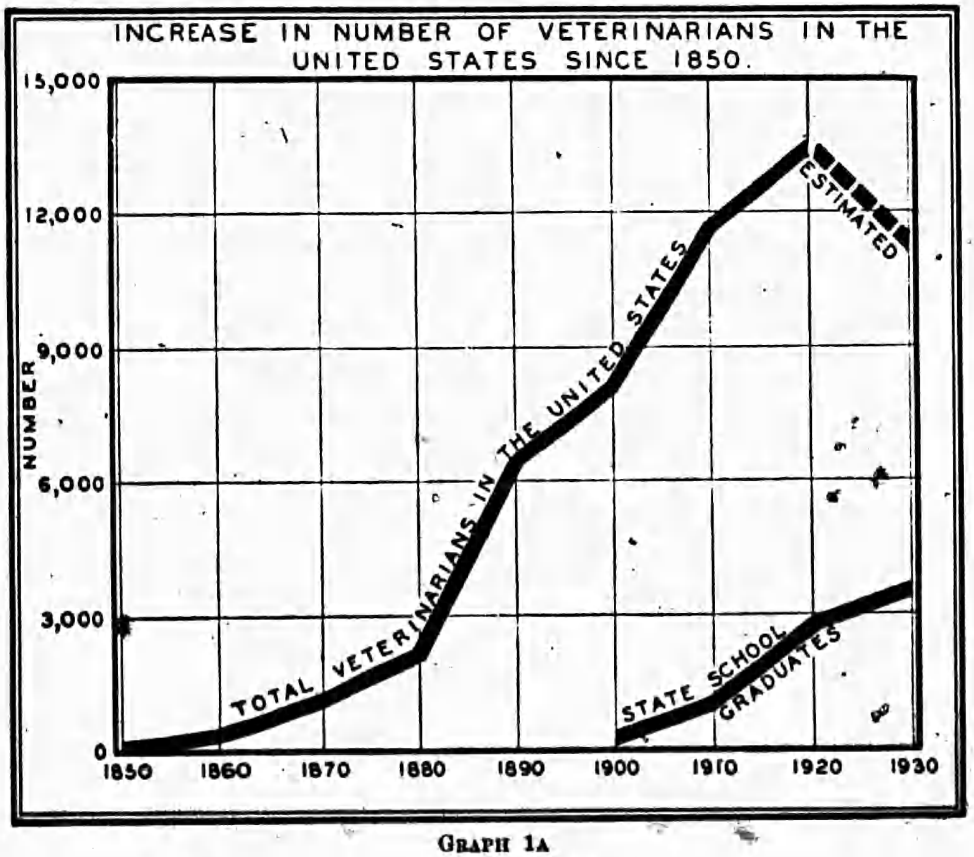
A study of veterinary education in the United States necessarily involves a study of the veterinary profession. The present personnel, with the exception of a comparatively few and constantly decreasing number of empirics, is the product of the veterinary colleges of the United States and Canada (Ontario). The Canadian school, formerly a private institution, graduated many members of the profession who practiced in the United States. However, comparatively few of its graduates have come to the United States during the last two and a half decades. For this reason the Canadian institution is not included in our consideration except when necessary to harmonize and clarify statements which otherwise might seem incorrect.

No attempt has been made to make this report a historically complete survey of all colleges offering work in veterinary medicine. A few of the land-grant institutions have at some time offered two years of work in veterinary medicine, following which the student completed his education at a recognized veterinary college granting degrees. Such schools are not considered veterinary colleges for the purpose of this report.

While this report deals primarily with veterinary education in State institutions, it is necessary in order to secure an understanding of the situation in veterinary education to give considerable attention to the work of private veterinary colleges. The State institutions during their existence have graduated probably fewer than 3,500 of the approximately 12,000 veterinarians in the United States at the present time. The remainder are almost entirely the product of private veterinary colleges now closed.



GRAPH 1



GRAPH 1A

TABLE 1.—*Veterinary colleges of North America contributing to the veterinary profession of the United States*[1]

I.—PRIVATE COLLEGES

Institution	Date of organization	Date of closing	Date of graduation first class	Number in first class	Total number graduates
1	2	3	4	5	6
New York College of Veterinary Surgeons	1857	1899	1867	2	292
Ontario Veterinary College[2]	1862	.....	1866	.....	3,363
University of Montreal Veterinary College (later McGill University)	1866	1903	1869	3	268
American Veterinary College	1875	1899	1876	16	629
Columbia Veterinary College	1877	1884	1879	12	80
Northwestern Veterinary College	1881	1890	1885	1	3
Harvard University School of Veterinary Medicine	1882	1901	1886	5	128
Chicago Veterinary College	1883	1920	1884	3	2,406
University of Pennsylvania	1884	.....	1887	10	905
University of Montreal Veterinary College	1886	1928	1887	4	282
Baltimore Veterinary College	1889	1891	1891	1	1
Detroit College of Veterinary Medicine	1890	1898	1892	4	35
Iowa (Des Moines) Veterinary College	1890	1894	1892	2	13
Kansas City Veterinary College	1891	1918	1892	3	1,789
Cincinnati Veterinary College	1891	1896	1892	16	67
Indiana Veterinary College	1892	1924	1893	3	879
McKillip Veterinary College	1892	1920	1897	10	1,212
National (later Columbia) Veterinary College	1892	1898	1893	6	32
United States Veterinary College	1894	1927	1895	2	419
Queen's University (Kingston)	1895	1899	1897	6	9
University of California Veterinary College	1895	1899	1897	3	10
Grand Rapids Veterinary College	1897	1918	1898	6	597
Western Veterinary College	1897	1908	1898	5	191
New York-American Veterinary College	1899	1922	1900	10	180
San Francisco Veterinary College	1899	1918	1900	4	332
Cincinnati Veterinary College	1900	1920	1903	3	397
Kansas City University Veterinary College	1902	1906	1903	17	54
St. Joseph Veterinary College	1905	1923	1908	13	413
West Virginia University	1905	1912	1910	2	4
George Washington University, College of Veterinary Medicine	1908	1918	1911	25	100
Southwestern Veterinary College (Texas)	1909	1916	1912	2	22
Terre Haute Veterinary College	1909	1918	1911	5	146
Arkansas Veterinary College	1913	1920	1916	2	24

II.—STATE AND PROVINCIAL COLLEGES

Ontario Veterinary College (University of Toronto)	(?)	.....	.....	3	933
Iowa State College	1879	.....	1880	4	594
Ohio State University	1884	.....	1887	1	898
New York State Veterinary College	1894	.....	1897	3	703
State College of Washington	1896	.....	1902	2	194
Kansas State Agricultural College	1905	.....	1907	7	303
Alabama Polytechnic Institute	1907	.....	1909	5	216
Colorado Agricultural College	1907	.....	1909	.....	236
Michigan State College	1909	.....	1913	1	132
Agricultural and Mechanical College of Texas	1916	.....	1920	4	33
Georgia State College of Agriculture	1918	.....	1921	3	37

[1] This table was prepared from data kindly furnished by Dr. J. P. Foster, Minneapolis, Minn.
[2] Private college from the time of its organization in 1862 until 1908, at which time it became a government institution affiliated with the University of Toronto.

In an attempt to estimate the future and its problems on one hand and its possibilities on the other, as they relate themselves to the

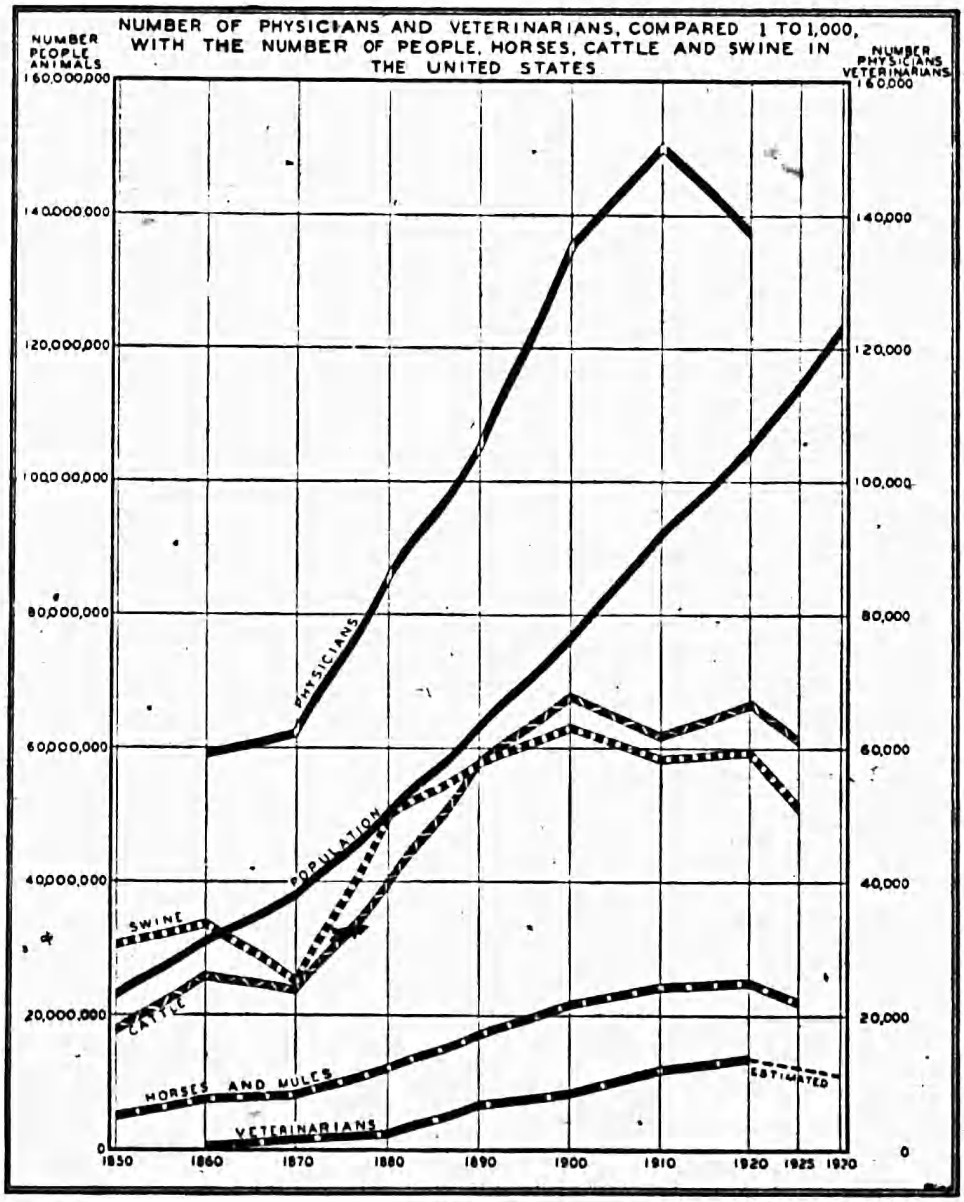
land-grant college system of education, it is necessary to understand what factors have operated in the development of both the veterinary profession and the veterinary colleges.

The entire field of medicine is fundamentally the same, but varies in its application. The basis of veterinary medicine is the same as human medicine. The practice of medicine in any of its branches was very largely empirical until the development of the fundamental sciences underlying the entire structure. Little real progress was made until the sciences of bacteriology, chemistry, and physics enabled us to understand the phenomena which for all the centuries before had remained a mystery. Scientific facts are not always immediately accepted, however, and as a result practical application frequently lags behind scientific knowledge. In the entire field of medicine the scientific basis on which to render service is very recent. Perhaps naturally human medicine has taken the lead in the application of science to practice, but development in the field of veterinary medicine depends just as fundamentally upon utilization of scientific knowledge.

While continental Europe started veterinary education by a system of colleges at about the time the United States was developing into an independent Nation (1762–1800), no significant development occurred until the last half of the past century. The rapid development of the veterinary profession in the United States occurred from 1880 to 1920, as is shown by graph No. 2. This period coincides with the development of our fundamental sciences and knowledge of etiology of disease. Koch announced the cause of tuberculosis in 1882. Schutz discovered the cause of glanders in 1882. Pasteur was in the midst of his greatest discoveries from 1870 to 1890. Lister during the seventies was making a strenuous effort to secure the adoption of antiseptic methods in surgery. The discovery of the cause of tick fever in cattle, which was the foundation for later discoveries on insect-borne diseases of the human, was made by Smith and Kilborne in 1889. Preventive innoculation or vaccination against the infectious diseases was quite naturally not attempted except in smallpox of man until bacteriology had revealed the nature of the causative agents. Indeed, during the 25-year period ending the nineteenth century the real development of modern medical science was made possible.

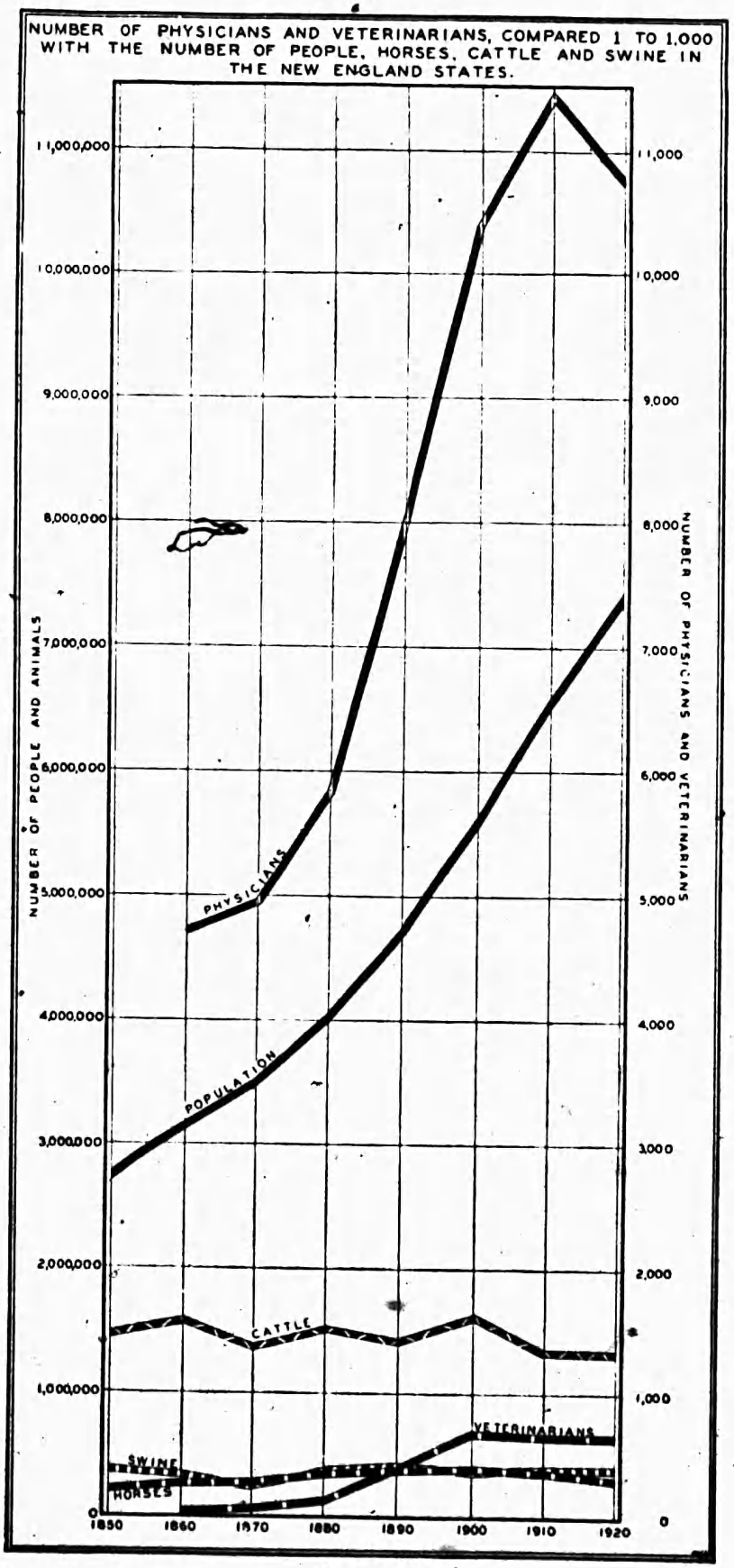
It is not strange, therefore, that a great development of the membership of all the professions dealing with medical sciences should follow immediately. Graph No. 2 indicates the development in the United States of the medical as well as the veterinary profession.

Scientific background is not the only thing, however, which is necessary in the development of a profession. There must be a demand for the services of its members. In the case of the veterinary profession this service is both direct and indirect. The direct serv-

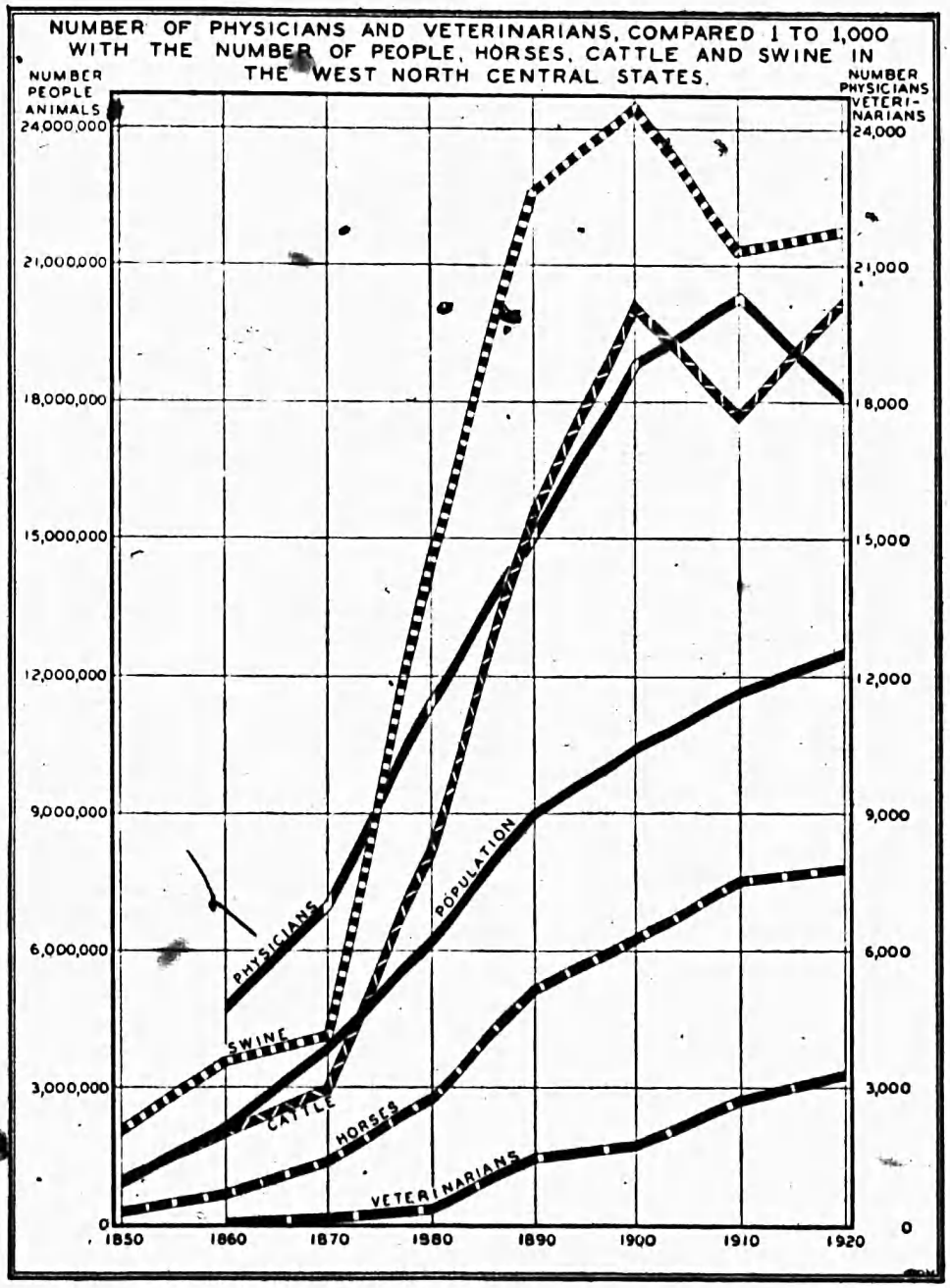


GRAPH 2

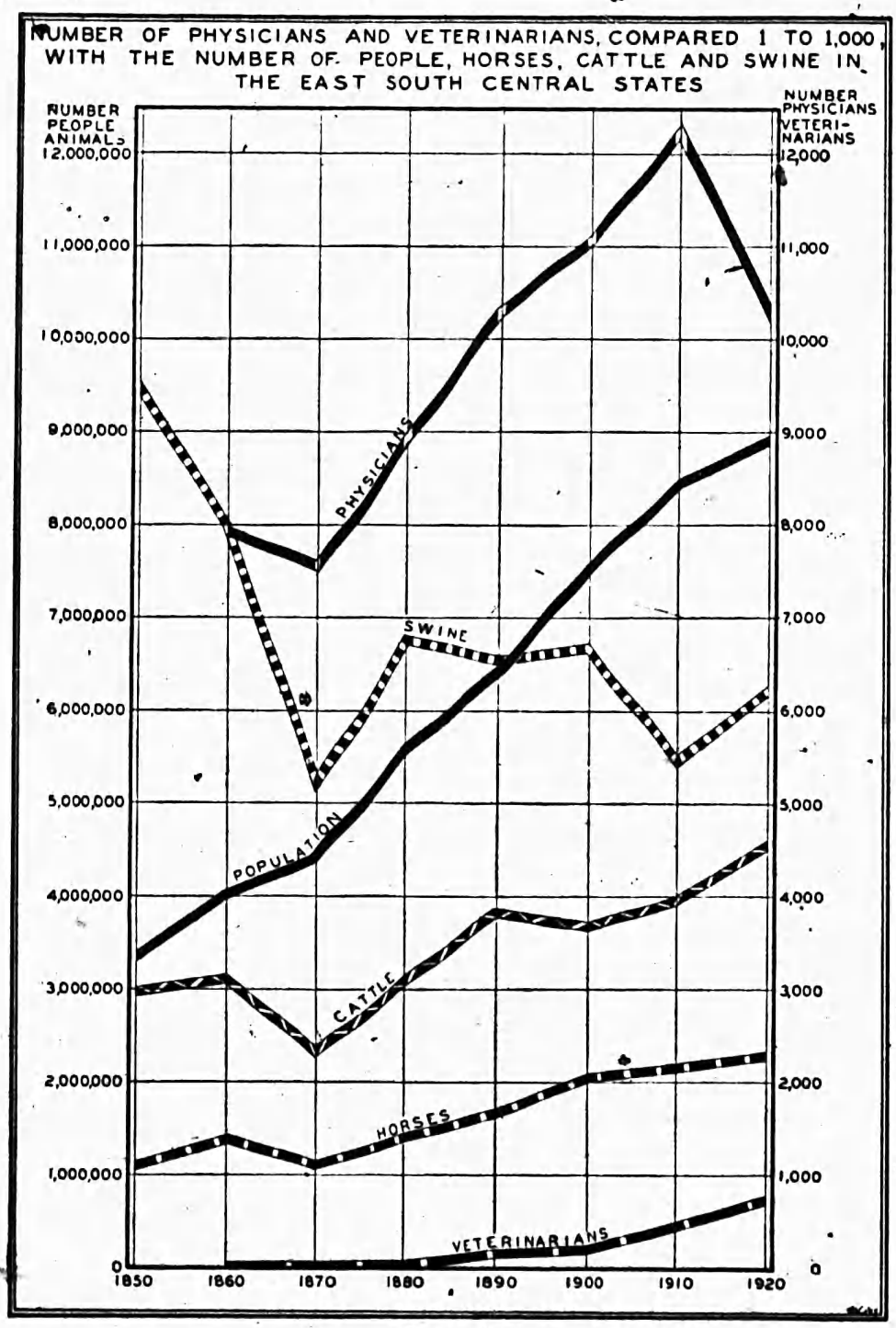
ice consists of safeguarding the wholesomeness of the human food supply, especially that of animal origin and preventing the transmission of intercommunicable diseases. The indirect service is to the livestock industry which in turn serves humanity by supplying food, clothing, transportation, and motive power.


NUMBER OF PHYSICIANS AND VETERINARIANS, COMPARED 1 TO 1,000 WITH THE NUMBER OF PEOPLE, HORSES, CATTLE AND SWINE IN THE NEW ENGLAND STATES.
NUMBER OF PEOPLE AND ANIMALS
NUMBER OF PHYSICIANS AND VETERINARIANS
11,000,000
10,000,000
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3000
2,000
1,000
0
PHYSICIANS
POPULATION
CATTLE
VETERINARIANS
SWINE
HORSES
1850
1860
1870
1880
1890
1900
1910
1920

GRAPH 8

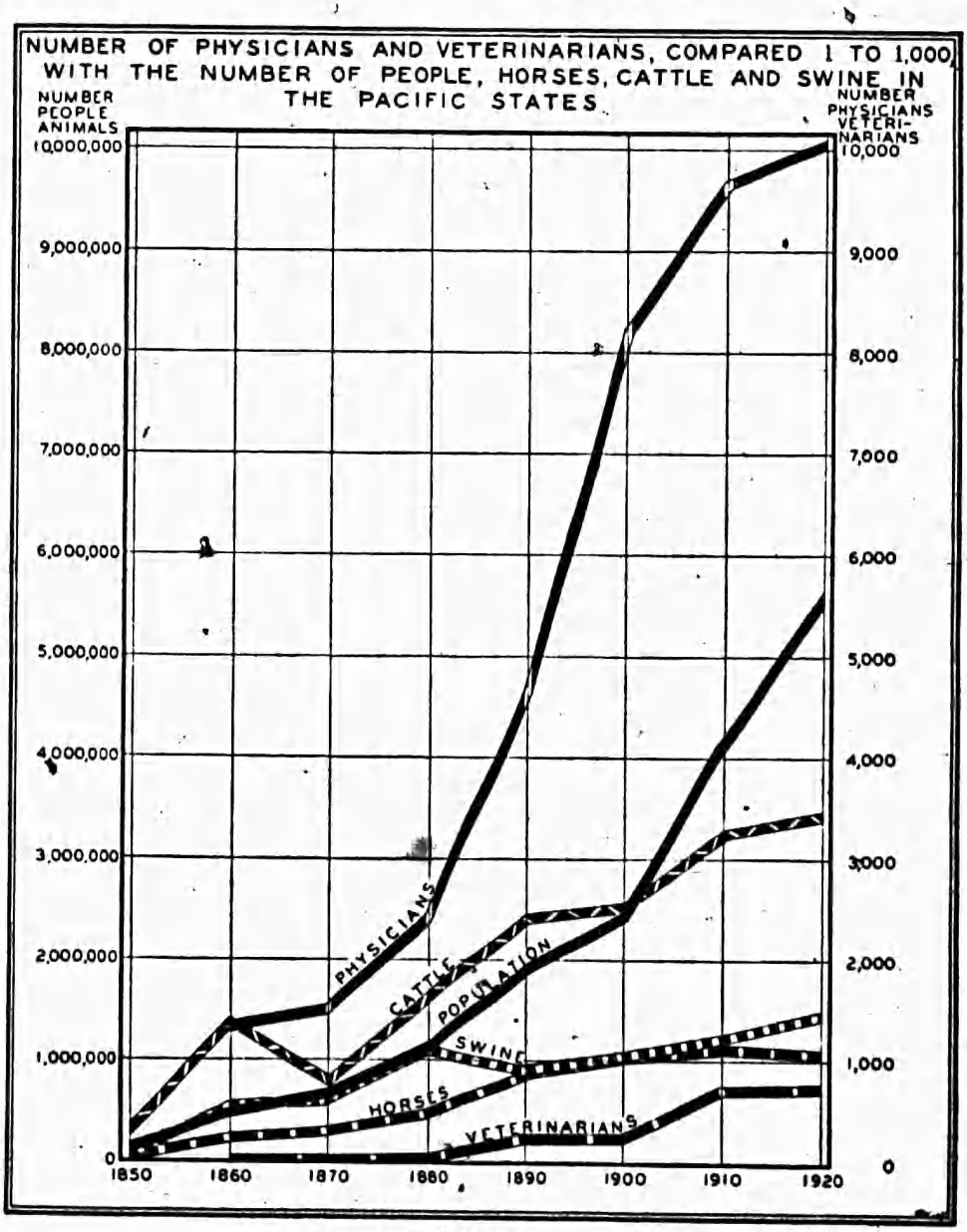

NUMBER OF PHYSICIANS AND VETERINARIANS, COMPARED 1 TO 1,000 WITH THE NUMBER OF PEOPLE, HORSES, CATTLE AND SWINE IN THE WEST NORTH CENTRAL STATES.
NUMBER PEOPLE ANIMALS
NUMBER PHYSICIANS VETERINARIANS
24,000,000
21,000,000
18,000,000
15,000,000
12,000,000
9,000,000
6,000,000
3,000,000
0
24,000
21,000
18,000
15,000
12,000
9,000
6,000
3,000
0
1850
1860
1870
1880
1890
1900
1910
1920
PHYSICIANS
POPULATION
SWINE
CATTLE
HORSES
VETERINARIANS

GRAPH 4


NUMBER OF PHYSICIANS AND VETERINARIANS, COMPARED 1 TO 1,000, WITH THE NUMBER OF PEOPLE, HORSES, CATTLE AND SWINE IN THE EAST SOUTH CENTRAL STATES
NUMBER PEOPLE ANIMALS
NUMBER PHYSICIANS VETERINARIANS
12,000,000
11,000,000
10,000,000
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
PHYSICIANS
SWINE
POPULATION
CATTLE
HORSES
VETERINARIANS
1850
1860
1870
1880
1890
1900
1910
1920

GRAPH 5

If the demands for veterinary service were entirely a question of the domesticated food-producing animals, one would expect the number of veterinarians to correlate with the development of the livestock industry. As a matter of fact the demand for veterinary service in all its branches increases more rapidly than the increase



GRAPH 6

in the livestock industry because the mere increase in human population brings with it increasing problems in disease control. This is due to more complex commercial activities, contamination of the soil, demand for more and better service, and for better and more wholesome food supply.

That the livestock industry is not the sole guiding influence is indicated by graph No. 2 which shows that while in 1870 we had in

the United States one veterinarian to approximately every 49,000 domestic animals (horses, cattle, swine), in 1920 there was one veterinarian for every 11,000 such animals.

In the New England States the number of veterinarians increased from about 30 in 1870 to 540 in 1920, while the number of domestic animals remained practically stationary.

On the other hand in the West North Central States the number of veterinarians increased from about 175 in 1870 to 3,300 in 1920, but the number of domesticated animals also showed an increase from 8,339,000 in 1870 to 49,695,327 in 1920. Most of the increase in the livestock in this area, it will be noted, came from 1870 to 1900, while the number of veterinarians showed a decided increase from 1880 to 1920.

It is to be noted that there was no marked development in the veterinary profession throughout the Southern and Western States until 1900, about 20 years after it showed a marked development throughout the East and North Central States. This fact is in all probability due to differences in density of population and to the differences in the nature of the animal industry. Range animals are usually not given the attention the more closely housed and fine bred dairy breeds require. This may be noted in the Pacific States, where the cattle industry trebled from 1870 to 1900, whereas from 1900 to 1920 there was only about a 40 per cent increase. However, the character of the industry in the latter period showed a decided change from range to dairy breeds. (See graph No. 6.)

Much has been said about the decreased need for veterinarians because of the decline in the use of horses for transportation in cities and for traction on farms. A study of graphs made from census figures for all sections of the United States shows clearly that the growth of the veterinary profession in the United States is much more closely linked with increase in population and the development of the fundamental medical sciences than with the development of the horse industry. In fact, a study of graph No. 2 reveals that, considering the physicians, swine, cattle, and horse curves, the curve for veterinarians is less related to the horse industry curve than to any of the others. It follows almost exactly the same trend as that of the medical profession, although the development lags about 10 years behind that of human medicine.

The influence of population on the veterinary profession comes as a result of two principal factors. The first is the natural tendency toward division of labor as our communities develop. The second factor is the increased and more complicated problem of securing an adequate food supply. This leads to more intensive agricultural methods, increased production, and more extensive commerce; the

soil becomes contaminated with parasite eggs and disease-producing agents of various kinds.

The foregoing conditions lead inevitably to sanitary regulation. The rapid increase in our urban population as compared with the rural has required a food inspection system which alone employs more veterinarians than any one of our State institutions has produced during its entire existence. The Federal meat inspection service, which was inaugurated in 1891 and reorganized in 1906, now employs 2,480 people, 750 of whom are required to be trained veterinarians. Another 660 veterinarians are employed in the field inspection service for the control of contagious diseases, many of which are communicable to man. The total number of veterinarians employed by the Bureau of Animal Industry varies from time to time. A number of other bureaus and departments of the Federal Government also employ veterinarians in varying numbers. In August, 1929, there were veterinarians connected with the Federal Government in one capacity or another as follows: Bureau of Animal Industry, 1,353; Food, Drug, and Insecticide Administration, 6; Biological Survey, 2; Bureau of Dairying, 1; Agricultural Economics, 2; Panama Canal, 6; Regular Army, 126; Veterinary Reserve Corps, approximately 1,018; and attached to National Guard, 155.

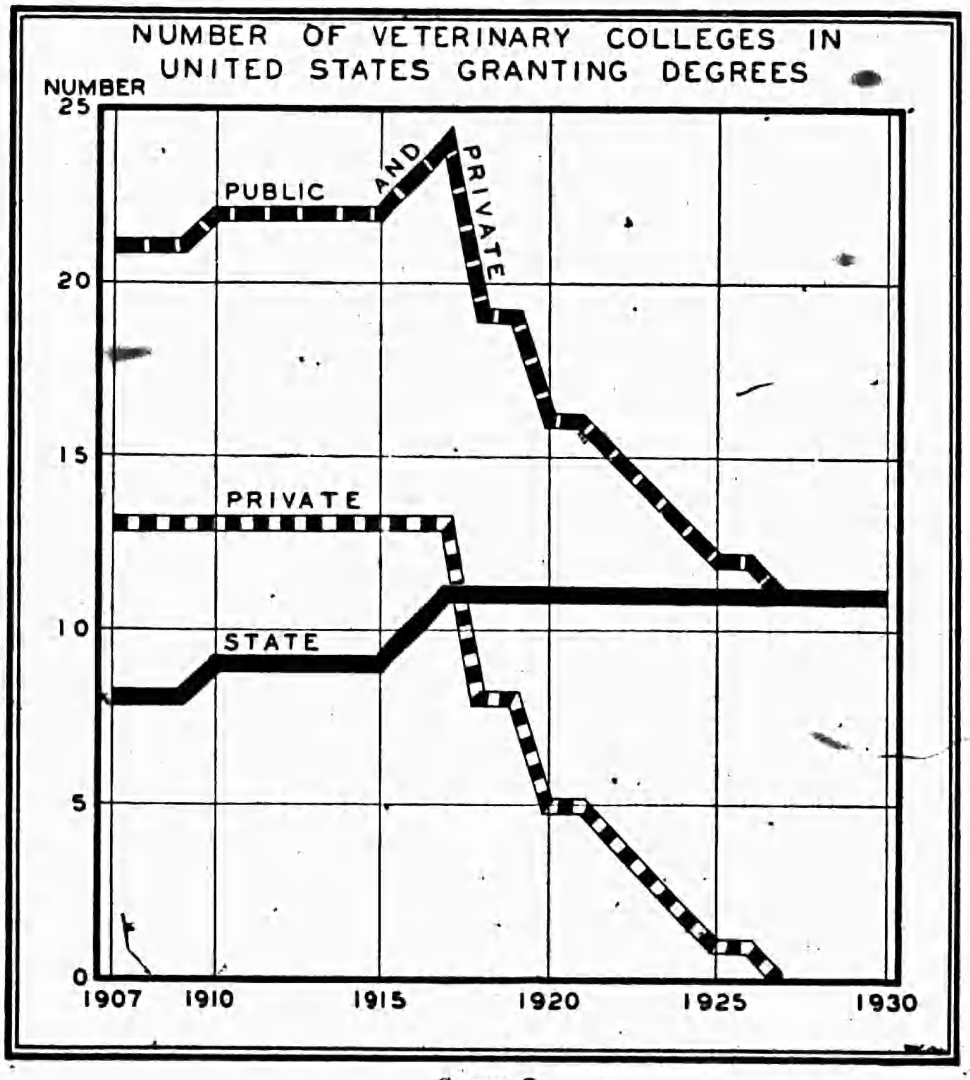
The eradication of bovine tuberculosis, which is now under way in every State in the Union, is one of the most extensive projects ever attempted for the control of an animal disease communicable to man. Even before this work was started the meat-inspection service stimulated the development of the veterinary profession and resulted in the opening of a number of veterinary colleges during the period from 1890 to 1910. (See graph No. 1.)

The history of veterinary colleges and their influence on the profession is much the same as was the case with human medicine. They developed as a result of a demand for veterinary service. They had very little influence on the creation of the demand. But the veterinary profession as it now stands is the product of the colleges and the responsibility for its weaknesses and shortcomings can be charged directly to the colleges. There is no escaping this responsibility. Likewise the veterinary colleges should be given credit for the advancement of the profession from its empiricism to its present greatly augmented efficiency and improved scientific status.

It is a very difficult task to get land-grant college authorities to appreciate that the veterinary colleges which produced practically 75 per cent of our present profession are no longer in existence. (See graph No. 1). The State-supported veterinary colleges, in other words, have contributed only approximately 3,600 veterinarians during their entire history. The figure is approximate because it

was impossible to secure complete reports from one of the more recently established State institutions.

Graphs Nos. 1 and 1a show the period of existence of the veterinary colleges, whether they were State or privately supported. It should be noted here that many of the veterinarians added to the profession from 1860 to 1890 came from a private school located in Canada (Ontario Veterinary College) already referred to. This institution



GRAPH 7

has to date graduated more veterinarians than any two colleges in the United States combined. (See Table 1.) There are undoubtedly also a considerable number of nongraduates included in the totals, as census figures so far as can be learned do not eliminate nongraduate veterinarians from the list. In addition to the Government service there are according to our most reliable data between 7,500 and 8,000 graduate veterinarians in private practice in the United States. It should be noted also that all except three of the private veterinary

colleges were established prior to 1900, while less than half of the State institutions date their beginning before that time.

The influence of a system of meat inspection has already been mentioned and is clearly shown. While it was not the only factor, it was the announced purpose of some of the private veterinary colleges to prepare men for the meat-inspection service. The private veterinary colleges also appealed to the prospective student with the argument that they were "practical" institutions, which in a sense was true, in that their faculties were composed largely of practitioners. On the whole they were more nearly "trade schools" than colleges for the training of professional men. Quite naturally some good men found their way into these schools and graduated and continued to develop. They are a credit to the profession to-day. Unfortunately, with them came a large number of men, many with little more than the most ordinary common-school education and a smaller number with even less than that. It is not contended that all the sediment in the veterinary profession came from privately owned colleges, but the contest in the American Veterinary Medical Association from 1909 to 1919 between the State institutions which demanded higher educational requirements and the private schools which insisted upon only a common-school education "or its equivalent" is evidence of the trend in the two types of institutions. The following information is illuminating in this connection and is compiled from information furnished by the deans of the 11 veterinary colleges of the United States with reference to the veterinary profession as it exists to-day. With reference to the personal qualifications of the graduates of different periods not only of their own schools but of all veterinarians in their respective regions the deans indicate that on the whole the graduates prior to 1900 were deficient in adaptability and to a somewhat greater extent in personality.

The greatest deficiency was in general education. All deans agreed upon this point. The graduates from 1900 to 1910 showed some slight improvement in general education and adaptability but not in personality. The next period, 1910 to 1920, according to these reports, brought a very decided improvement in all three of the aforementioned qualities. However, general education was still not satisfactory to 75 per cent of those replying. Since 1920 most of the deans seem satisfied with the personality and adaptability of their graduates. Nearly half (3 out of 8) indicate, however, that general education is still deficient in the men who have been graduated since 1920. It should be remembered that practically all private veterinary colleges have been closed since 1920.

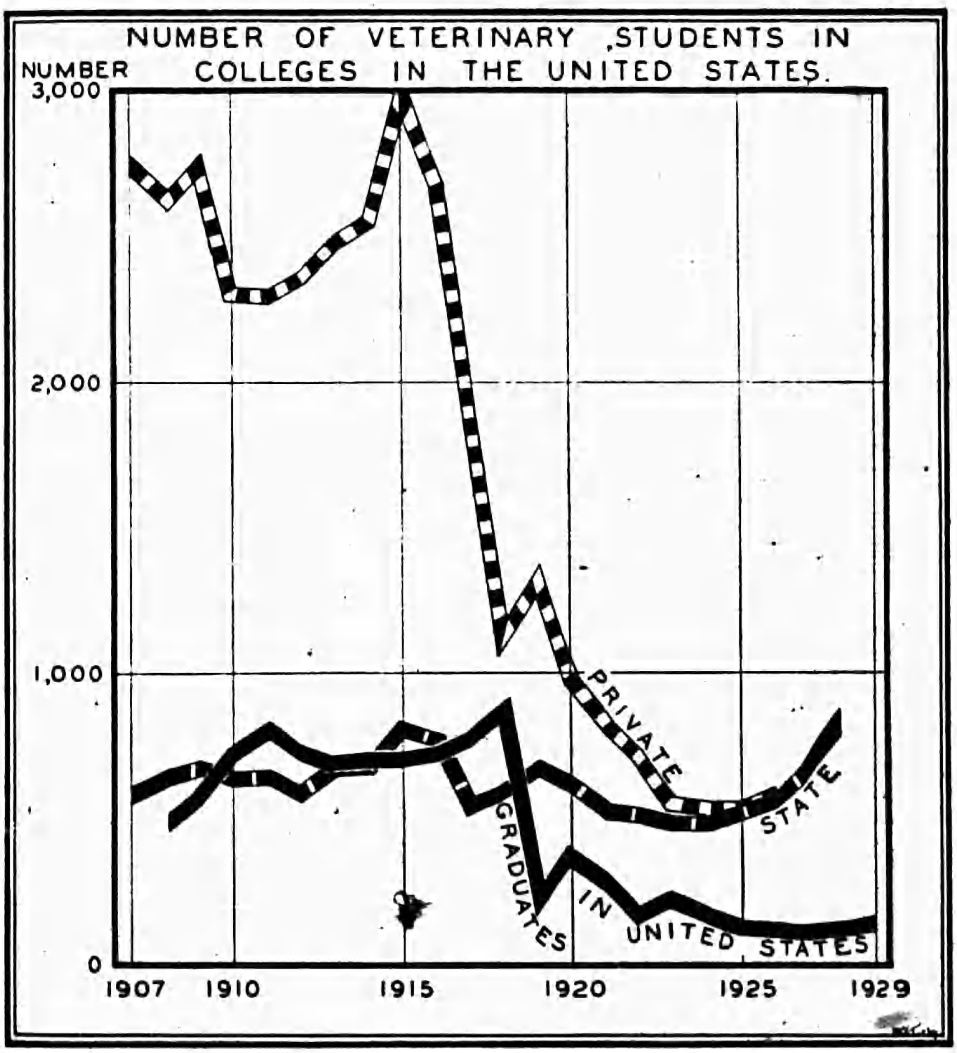
An attempt was also made to secure information on the efficiency of the graduates of the different periods with respect to different

phases of their professional work. Nearly one-half the deans indicated that veterinarians graduating prior to 1900 were deficient in the diagnosis and treatment of diseases. Nearly all reported that the same group was deficient in the prevention of disease and in sanitation. It should be understood that this does not mean that all veterinarians graduating prior to 1900 were deficient in these respects, but all deans reporting think that as a class they were not as well trained in these branches as they should have been. Those graduated from 1900 to 1910 showed some improvement over the older men, more especially in regard to the diagnosis and treatment of diseases, but as a class not much improvement in sanitation and prevention of disease. The men leaving the veterinary colleges as graduates from 1910 to 1920 had the approval of the majority of the deans on all four qualifications with the exception of disease prevention. Since 1920 graduates seem better prepared in all four of the qualities most essential in a qualified practitioner. As to their efficiency in dealing with diseases of the different species of animals the survey indicates that equine diseases had the lion's share of attention until 1910.

Efficiency in diseases of equines runs at a level throughout the entire period, 75 per cent indicating that the graduates have always been efficient in this respect; great deficiency in the education of veterinarians with respect to the other species of animals existed until after 1910. Apparently those graduating from 1910 to 1920 received much better training in regard to bovine, porcine, canine, and feline diseases, but not all the deans believe that these graduates were satisfactorily prepared for such work. The training in regard to ovine and avian diseases remained unsatisfactory until after 1920, and training in ovine diseases is still reported unsatisfactory by as many deans as report it satisfactory.

Since 1920 the reports indicate that graduates are best trained in diseases of cattle, swine, and small animals, but that some improvement is needed in diseases of horses and poultry. Several factors have been at work to bring about this condition. The United States Bureau of Animal Industry reorganized its meat-inspection service in 1906 and required a much broader training. The motor industry directed attention away from the horse and emphasized the importance of food producing animals. The demand for service to pet animals increased rapidly as the horse disappeared from the life of city dwellers. It should also be noted that until 1915 the private veterinary colleges not only outnumbered the State institutions but had by far the larger enrollment. The highest total enrollment was reached in 1915 with 805 in State institutions out of a total of 2,992 thus giving the State institutions only 26 per cent of the entire student body. (See graph No. 8.) Due to the World War the

number of veterinary students decreased rapidly after 1915. The requirement that a minimum of 15 units of high-school work be presented for entrance was adopted by the American Veterinary Association and the United States Civil Service Commission, as well as by the Surgeon General of the United States Army. The private veterinary colleges all collapsed, therefore, during the war. Three that did not close by 1920 were no longer a factor in veterinary education.



GRAPH 8

Quite naturally there came a change in the kind of education offered the veterinary student after 1920. The private schools were located in cities where a number of practitioners were located; clinical work was incidental to private practice.

Very little laboratory space and equipment were available. Only teaching of the most "practical" sort was possible and research was not to be thought of. Except for the New York College of Veterinary Surgeons started in 1857 and the American Veterinary College, both of New York City, which were reorganized and combined in 1899 and then reorganized again in 1913, the average period of

existence of the 14 leading private veterinary colleges of the United States was a little more than 19 years. All but one of the private veterinary colleges have disappeared from the field of veterinary education because it was necessary for them to have a large number of students in order to be financially successful and this is impossible with increased entrance requirements. Further, the public is demanding a service which requires broader training and a more thorough education in the fundamental veterinary and other sciences. This can not be given without considerable equipment and other resources not available except in our larger universities and colleges. Another factor which had considerable influence is the fact that isolation of any one particular branch of education is contrary to the modern conception of good educational environment. A veterinary student reared and educated in a city, whose college associates are all studying the same subjects is inclined to come out a narrow, unsympathetic man, the burden of whose thoughts is his own and his profession's welfare. He is likely to have little to contribute to the community in which he lives except strictly professional service. Of the thirteen veterinary colleges established since 1900, six were connected with State institutions and are in operation while all seven of the private institutions have expired.

The State veterinary colleges in most cases developed out of veterinary courses offered to agricultural students. Some of the State legislatures in passing acts establishing agricultural colleges provided for the inclusion in the curriculum of veterinary science.

When a good teacher with a strong personality was secured for the veterinary subjects it often led to the establishment of a school or college with a veterinary faculty and graded course of study, provided the animal industry of the State could not easily secure its veterinarian from adjoining States. Some of the colleges and universities conferred a limited number of veterinary degrees before they had a definite faculty organization and an outlined course of study (Cornell and Ohio State). In most cases, however, a professional school was organized before degrees were conferred. This report will deal with the State institutions from the time of their organization into professional veterinary colleges or divisions.

Only one of the State institutions was organized prior to 1890 (Iowa, 1879). During the period 1890 to 1900 schools were started at Washington State College, Cornell University, and Ohio State University. More than one-half of the State veterinary institutions are less than 25 years old. Most of the land-grant colleges have one or more veterinarians connected with the agricultural colleges and agricultural experiment stations. A few, in fact, have a better veterinary staff than some of the present-day veterinary colleges.

Chapter II.—The Nature of Veterinary Service

The location of the existing veterinary colleges was dependent upon two principal factors. One, and perhaps the most important, was the demand for veterinary service. The other, a personal factor, decided many States in favor of establishing a veterinary college and others against such a procedure. It is quite natural that Iowa, a rapidly developing agricultural State, should organize a veterinary "school" as early as 1879 when the other veterinary colleges were two private schools in New York City. Harvard University established a veterinary college in 1883, but it was a private institution, as was the New York Veterinary College, until its connection with New York University. The institutions, except in name, had all the characteristics of private institutions. The University of Pennsylvania School of Veterinary Medicine is the only veterinary college in the United States not associated with a land-grant college. It is, however, a part of a great university which receives State aid. The New York State Veterinary College, Ithaca, N. Y., and the College of Veterinary Medicine, Ohio State University, were established at institutions where there had been much interest in and favorable attitudes toward veterinary medicine. Law at Cornell and Detmers at Ohio, Stalker in Iowa, and Huidekoper of Pennsylvania were men of vision and realized the need for a good system of veterinary education.

However, the machinery of universities and colleges moves slowly in such matters and the private colleges embraced the opportunity to turn out thousands of men into the profession. They then closed their doors and left the solution of the profession's problems with the State institutions.

The problems in veterinary education are as numerous and difficult to-day as they ever were. Many of these problems result, as was the case in medicine, from the fact that a system of private schools dominated the professional educational system. The scientific development of the veterinary profession was not as rapid as demands warranted and many of the State institutions were very slow in developing research programs. Some, in fact, have none to-day. What has been done was done largely in the United States Bureau of Animal

Industry and in the agricultural experiment stations. The contribution of the private institutions to the scientific development of the profession was practically nothing.

The objectives of the veterinary profession fall into two groups viz, scientific development (research and graduate work) and preparation of men to apply such developments. Every veterinary college should have a strong research staff. Whether this is also a teaching staff will depend largely on individuals. A veterinary college that is doing teaching work only is discharging but one-third of its obligation to the profession and to the community which supports it. It is afflicted with a form of sterility. Scientific facts based on careful research are the first essentials in the success of any branch of the medical profession. Trained men to apply such facts are also essential to a full realization of the possible benefits offered by the known sciences, but without scientific development it is not possible to produce either trained men or to give men, be they trained or untrained, the equipment with which to secure practical results. Less than one-half of the State veterinary colleges have had research work in progress. In some cases this has not been due to the unwillingness of the staff to attempt research. In most of the State-supported educational institutions it is difficult to secure ample funds to carry on the most essential work. The students are on the campus and must be taught, and as a result research suffers or is left out of the program entirely. It has been argued by a few that a fair division of labor is to ask the States having veterinary colleges to turn out the trained men and permit the experiment stations of the States without veterinary schools to do the research work. The great objection to this proposal is that the veterinary sections in most experiment stations are "service departments."

Many veterinary units in experiment stations continued the manufacture of anti-hog-cholera serum for years after ample serum was being made under the supervision of the United States Government by regular commercial agencies. Such work is not research. If the States desire such service from their institutions well and good, but the point to be emphasized here is that less than 20 per cent of the agricultural experiment stations have contributed much of value to the fundamental veterinary sciences. The experiment stations that have men of sufficient ability to do real research work along veterinary lines could give much-needed service in the veterinary colleges. Veterinary students need the contact with such men. The men need the inspiration and atmosphere of the veterinary college. Both would be very much benefited by such association. In veterinary medicine as in human medicine the administration and application of the results of research in themselves require a high degree of

skill and training. Veterinary research, therefore, both on account of its nature and application should be associated with veterinary colleges. It should be pointed out here also that veterinary research by veterinary colleges provides training for graduate students in veterinary medicine. It is impossible to conceive of an institution doing successful graduate work in veterinary medicine without research work. At no time in the history of veterinary medicine in the United States has there been such a demand for veterinarians with advanced training. The advancement of the veterinary profession will depend in the future on men with more liberal education in the humanities and more thorough training in the sciences fundamental to the field of medicine.

Only 3 of the 11 veterinary colleges in the United States are organized and equipped to do research and graduate work within their own colleges.

The animal industry of all countries has found it necessary in order to be successful to control devastating animal diseases. This becomes increasingly difficult as the country becomes older. The food-producing animals consume an enormous amount of coarse food and transform it into a palatable, easily digested food for humans. Even the hides and hair, hoofs and horns go to make useful articles for human beings but are "manufactured" from coarse feeds and fodders which in their original state would be quite useless. The animal husbandry man's function is that of production; the function of the veterinary profession is that of conservation. Maintenance of the health of animals is becoming increasingly difficult as methods of production become more intensive, as feeding and housing become more artificial, and as people demand more and better products.

Graph No. 2 gives a concise and clear picture of the numbers of principal food-producing animals (swine and cattle) as compared with population. In 1850, for example, when population was only a little more than 23,000,000 there were about 48,000,000 swine and cattle, or over twice as many as people. This gradually changed until in 1920 the population was slightly more than 105,000,000, or four and one-half times as many as in 1850. Of cattle and swine there were 126,000,000, or less than two and two-thirds times as many as in 1850. Population is increasing much faster than animal industry.

Indeed the number of cattle and swine decreased about four and a half millions from 1900 to 1920, while population increased about 29,000,000. Whereas there were two of the principal food-producing animals per person in 1850, at the present time there is probably less than one per person. In 1860 there was one veterinarian for every

169⅓ thousand of the principal domestic animals (horses, cattle, swine), whereas at this time there is approximately one veterinarian for every 13,700 such animals.

During these years the average beef consumption is less per person but consumption of dairy and poultry products has increased. These changes brought with them enormously increased demands for veterinary service, not only because of the food inspection already referred to but because dairy herds require a great deal more service than is required by herds of beef animals. The veterinarian's attention previous to 1900 was given largely to equines. This is no longer the case, but the automobile which destroyed this type of practice saved the veterinarian by making it possible for a single veterinarian to serve three times as many clients as was possible with the old system of transportation.

It appears probable that in the future the veterinary profession will be called upon to serve highly specialized groups of animals composed of high producing individuals. The problem of conservation of the individual animal will thus become more important and veterinary service must increase in efficiency at a rapid pace. The principal fundamental difference between human and veterinary medicine lies in the utilitarian or economic valuation placed on the application of veterinary medicine. A mistaken assumption is that in due time existing diseases will be eradicated and will no longer cause worry. The fact is that new problems and new diseases are being encountered more rapidly than the old and well-known enemies are being stamped out.

Present commercial intercourse with other nations and constantly improving means of transportation multiply the problems of keeping many foreign diseases from invading herds and flocks. The supervision of livestock movements from State to State in this country requires increasing numbers of men each year. The discovery of sero-diagnostic methods for a number of contagious diseases and serum-therapy are not only responsible for large biological institutions but require veterinarians for application.

Its relation to public health is a very important factor in the future of the veterinary profession. Protection of the public against communicable diseases by means of food inspection has led to the opening of several veterinary colleges in the past. This inspection service will become more extensive. Food products susceptible of contamination and deterioration are being used increasingly. Long-distance transportation to centers of dense population becomes greater. The general public is acquiring better knowledge and appreciation of good sanitary and hygienic conditions and is demanding more thorough protection.

The medical and veterinary professions have had to combat many diseases known to be common to man and animals since Koch obtained a pure culture of the anthrax bacillus in 1876. Researches during the past few years have brought to light an additional one, Malta or undulant fever, which promises to be of considerable significance and may become as important as bovine tuberculosis. Hundreds of cases in humans apparently of animal origin are already on record.

Even after the scientific knowledge to eradicate a disease is available, public support is frequently insufficient to accomplish that end. This is the case, for example, in the instance of rabies. The public is satisfied with the insurance provided by a preventive, which does not lead to eradication. This is shown by the extensive use made of antihog-cholera serum which is applied purely as insurance against heavy losses and not to eradicate the disease. In other words, the veterinary profession will continue to "vaccinate" swine by the millions every year instead of attacking the problem of eradicating the disease. The attitude of the public does not encourage eradication measures; hence the annual "job" of the veterinary profession is to keep the losses as low as possible. The whole tendency is in the direction of requiring more service and consequently more veterinarians instead of decreasing the problems and reducing the service needed.

The field of education is the most pressing need to-day. Most of the veterinary colleges are undermanned, some seriously so. The additions should be men with better training than those now on the staff. The problem lies in where such men can be secured. Evidently it is the business of the veterinary colleges to produce them or to see to it that they are produced. One factor which would be of great assistance has already been discussed; that is, the combination of veterinary colleges with veterinary research and graduate work. More training in fundamental sciences and in the field of human medicine is essential. It is not clear that the present tendency to regard the Ph.D. degree as a prerequisite to appointment on a teaching or research staff should be recommended to the veterinary schools. Veterinary colleges do not so much need men on their staffs who are narrowly specialized as they do men who have been well grounded in the general sciences before taking up the study of the medical sciences. After receiving a veterinary degree specialization is in order. This should be done at a medical or veterinary school. Highly specialized knowledge of the etiological factor can not be substituted for knowledge of the host, which is often 50 per cent or more of the research problem.

The question naturally arises whether the present veterinary faculties can train men who will demonstrate greater ability than they themselves have. This is entirely possible and is occurring continuously but presents greater difficulties for the student doing post-graduate work. Ability to transmit knowledge is a valuable asset, but ability to inspire graduate students to labor on and on in search for facts is a still more valuable qualification. More men are needed with both these qualities in the veterinary colleges and it is one of the objectives of veterinary medicine to produce them.

There are a number of other objectives of the veterinary profession which should be mentioned in this connection. Among them is the training of young men for service in the United States Army. Since the World War and the combination of the Veterinary Corps with the Medical Corps, the Army positions have proved attractive to young men who have the ability to render good service and well represent the profession. The development of the profession in the European countries was centered around problems of national defense and service to the country. In the United States the same view was never held with reference to veterinary medicine and the teaching in the veterinary colleges of the United States has always been along the line of service to the animal industry and to public health instead of care and treatment of military animals. A change has been in progress in both Europe and America in that the Europeans are giving more attention to food-producing animals, and in the United States more attention is being given to veterinary training for the Army and to other phases of national defense previously neglected. The change has been in the right direction in both cases. Other industries developing from time to time require the assistance of the veterinary profession. A good illustration of this is the fur-farming industry which has developed very rapidly during the past decade and like the livestock industry, is beset with many problems of disease which unless kept under control threaten ruin to the industry itself.

Chapter III.—Demand for Veterinary Education

The first question that must be considered with reference to the service that the profession should render is the number of men the veterinary colleges should graduate in order to maintain the personnel of the profession on an efficient basis. The first step in making an estimate of this kind is the determination of the average period of professional service rendered by all men graduating from veterinary colleges. This is variously estimated and probably about 25 years is near the correct period. The medical colleges have had an average annual enrollment for the 10-year period 1918–19 to 1927–28 of 16,376 students and the average number of graduates each year during the same period was 3,433. At this rate it would require about 43½ years to replace the 149,500 physicians in the United States.

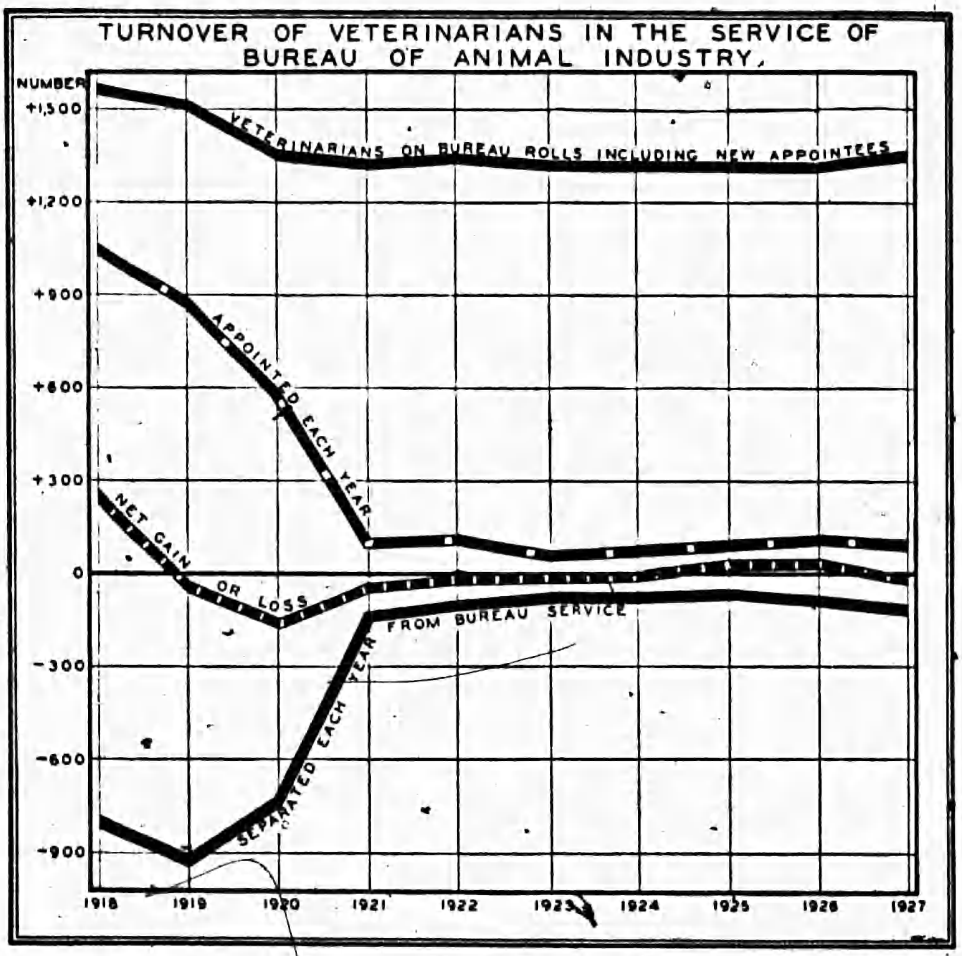
Veterinary medicine graduated during the same period an average of 139 veterinary students per year from the 11 veterinary institutions. At this rate the profession of 13,000 would be replaced in 93½ years. The 1920 census records 13,493 veterinarians in the United States and, accordingly, 13,500 veterinarians would need to be produced every 25 years by 11 institutions. On the basis of this calculation 540 veterinarians should be graduated each year, an average of 50 men per school. This does not make allowance for probable expansion of the activities of the profession.

Graph No. 9 on the veterinary situation in the Bureau of Animal Industry indicates that the Bureau of Animal Industry needs about 90 appointees annually. This would leave an average of fewer than 10 veterinarians per State for replacement. Naturally some States would not need that many while others would need many more.

A study of the needs for veterinary service shows that the problem is not merely one of maintaining the present status numerically but that increased numbers will be required. Mention has already been made of the fact that dairy cattle require much more veterinary service than the beef breeds. Census figures show that dairy cattle and poultry are the only domesticated animals that have increased consistently since 1850. From 1920–1925 when the number of all other animals decreased, dairy cattle were not similarly affected and they are from the standpoint of value now the most important class of

livestock on farms. There is one milk cow for each average family of five people. Dairy cattle increased 27 per cent from 1890 to 1920, while population increased 68 per cent; beef cattle decreased 22 per cent from 1894 to 1920 and have shown a sharp decline from 1920 to 1925.

The swine industry which is annually requiring and receiving more veterinary service reached its highest point, according to census reports, in 1900, although there are probably years falling between



GRAPH D

census years when the figures were larger. Swine are quite largely an annual crop and the veterinary profession's problem is to see that the crop is not destroyed by the ravages of disease before it reaches the consumer. In 1916, 57 per cent of the meat consumed was pork and during 11 of the 15 years from 1907 to 1922 the per capita consumption of pork and lard has exceeded that of beef, veal, lamb, and mutton combined. A survey made in 1921 in the State of Iowa showed that 3.5 per cent of the total cost of producing hogs was for veterinary service.

Horses on farms are estimated to have decreased from 16,470,000 in 1925 to 14,029,000 in 1929. The decrease in the combined total of horses and mules was from about 25,000,000 to 22,000,000. Nevertheless all studies show that the decline of the horse industry has reduced the demand for veterinary service to a much less degree than it has been increased by service required for other species of food-producing animals, pet animals, and the fur bearers. Another change is indicated by the rapid development of the poultry industry. Poultry in the United States increased from 280,341,000 in 1910 to 409,291,000 in 1925. The attention given by veterinarians to poultry previous to 1910 was very slight indeed, whereas to-day some veterinarians are devoting a considerable proportion of their time to poultry disease work. In veterinary research and diagnostic laboratories the poultry industry requires practically as much attention as does cattle and swine work. This attention to poultry has increased very rapidly since 1920. Poultry packing plants are being established and considerable veterinary inspection service is required.

The sections of the United States that will need the most extensive veterinary service in the future can not, of course, be determined exactly at the present time, but some study of this question is important in determining the best locations for the veterinary colleges. Since the real growth of the veterinary profession in the United States began (1860) the center of population has moved from southern Ohio, near Portsmouth, almost due west to a point a short distance east of the Illinois-Indiana line. The center of value of farm property in 1860 was at practically the same point as the center of population but moved westward much faster than the center of population and by 1920 had reached a point not far from Chillicothe, Mo. The center of veterinary population has shown a still more rapid movement. In 1860 it was near the Ohio-Pennsylvania line but by 1920 had moved to a point near the central part of northern Illinois.

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TABLE 2.—*Rank by States in the value of livestock, number of veterinarians, veterinary students, and by population*

Rank	Value of livestock, 1925		Veterinary college	Rank in number of veterinarians	Rank in number of 1928–29 veterinary students	Rank in population
1	2	3	4	5	6	7
1	Iowa	$420,349,285	Iowa State College	2	1	16
2	Texas	284,697,546	Agricultural and Mechanical College of Texas.	11	11	5
3	Illinois	281,401,981		1		3
4	Nebraska	238,605,247		14		31
5	Minnesota	229,976,511		12		17
6	Missouri	207,397,958		7		9
7	Kansas	195,100,130	Kansas State Agricultural College.	9	6	24
8	Ohio	193,378,086	Ohio State University	3	3	4
9	New York	170,419,127	New York State Veterinary College.	4	2	1
10	California	158,809,964		13		8
11	Indiana	156,261,980		5		11
12	Pennsylvania	149,878,423	University of Pennsylvania	6	4	2
13	South Dakota	146,222,212		17		37
14	Michigan	143,662,160	Michigan State College	8	8	7
15	Oklahoma	102,998,393		14		21
16	North Dakota	94,302,899		23		36
17	Montana	88,869,249		36		39
18	Colorado	86,356,774	Colorado Agricultural College	22	7	33
19	Kentucky	85,513,239		17		15
20	Tennessee	83,473,478		24		19
21	North Carolina	77,553,544		30		14
22	Virginia	72,630,566		27		20
23	Georgia	72,133,244	Georgia State College of Agriculture.	25	9	12
24	Mississippi	63,129,269		28		23
25	Oregon	62,698,734		31		34
26	Alabama	62,031,018	Alabama Polytechnic Institute.	24	10	18
27	Wyoming	58,548,413		44		48
28	Arkansas	56,864,560		21		25
29	Washington	55,313,145	State College of Washington	20	5	30
30	New Mexico	52,671,161		45		44

TABLE 3.—*Rank by geographical divisions in the number of animals, in number of veterinarians, veterinary students, etc.*

Rank	Division	Number of horses, mules, cattle, and swine	Rank in number of animals	Number of veterinarians	Rank in number of veterinarians	Number of dairy cattle	Rank in number of dairy cattle	Number of veterinary colleges	Rank in number of horses and mules
1	2	3	4	5	6	7	8	9	10
1	West North Central	50,664,000	1	3,317	2	4,403,000	2	2	1
2	East North Central	25,048,000	2	3,837	1	5,877,000	1	2	3
3	West South Central	16,113,000	3	1,017	4	1,730,000	4	1	2
4	Mountain	10,679,000	4	533	8	723,000	8	1	5
5	South Atlantic	10,140,000	5	885	5	1,549,000	6	1	6
6	East South Central	9,131,000	6	704	7	1,593,000	5	1	4
7	New England and Middle Atlantic	6,905,000	7	2,402	3	3,590,000	3	2	7
8	Pacific	5,011,000	8	733	6	1,249,000	7	1	8

TABLE 4.—*Per cent of distribution of dairy cows*

States by region	Percentage by decades				
	1890	1890	1900	1910	1920
1	2	3	4	5	6
New England	6.00	4.98	5.21	4.08	4.28
Middle Atlantic	19.64	15.32	15.19	12.59	12.70
East North Central	24.04	22.72	23.12	23.42	25.67
West North Central	19.38	27.18	26.42	25.83	22.92
South Atlantic	10.29	8.29	8.07	8.78	8.50
East South Central	9.21	7.95	7.38	7.89	8.53
West South Central	8.05	9.19	9.54	10.91	9.57
Mountain	1.00	1.32	1.92	2.49	3.15
Pacific	2.39	3.04	3.13	4.01	4.68

It is worthy of note that the principal gains were made in the West, Mountain, and North Central States. This is in harmony with the general westward movement of the center of value of farm property and the center of the veterinary profession. Table 2, based on the 1925 census, gives the 30 States having the highest rank in livestock valuation, the rank in number of veterinarians, and rank in number of veterinary students in those States having veterinary colleges. No one factor is sufficient basis for judging the future need for veterinary graduates.

Table 3, showing groups of States by regions and the ranking of these regions according to number of horses, mules, cattle, and swine, number of veterinarians, and dairy cattle, is illuminating in that the ranking in number of veterinarians corresponds very closely with that of dairy cattle. In three places where the numbers of dairy cattle were very close this ranking varied, but it should be noted that the number of veterinarians was also quite close. A part of this can be explained by the South Atlantic States, including the District of Columbia, where a considerable number of veterinarians are employed by the Bureau of Animal Industry. Note also the last column showing the numbers of horses and mules. These figures bear but little relationship to rank in number of veterinarians. That part of the animal industry which requires the most veterinary service shows a development more closely related to population curve than any other, and the value of the animals is steadily increasing. This is verified by the following figures on the number of purebred dairy cattle registered over a period of years. The increase has been gradual but only two figures will be given for each breed.

TABLE 5.—*Purebred dairy cattle registered by breeds*

Breed	Dairy cattle (1900)	Dairy cattle (1928)
1	2	3
Ayrshire	[1] 3,233	10,111
Guernsey	1,504	39,027
Holstein	4,746	121,726
Jersey	11,548	73,909
Total	21,031	234,773

[1] 1910.

This improvement is further indicated by the fact that the average farm value of milch cows increased about $7 per head from 1918, when most prices were abnormally high, until 1928. During this period the farm value of most other animals decreased.

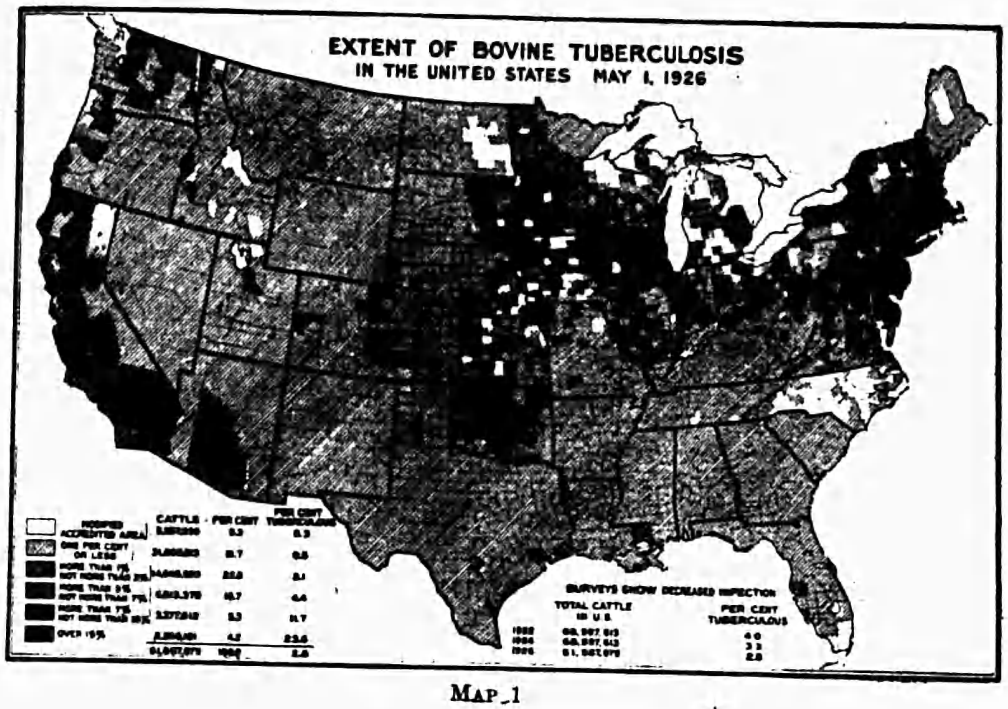
Another illustration shows the fallacy of the contention that the number of veterinarians should be regulated by the horse industry. That the big problems confronting the veterinary profession concern food-producing animals is demonstrated by the work being done on tuberculosis eradication. This is best summarized in the following table. For the sake of brevity the early and the most recent figures only are given.

TABLE 6.—*Tuberculosis eradication in food-producing animals*

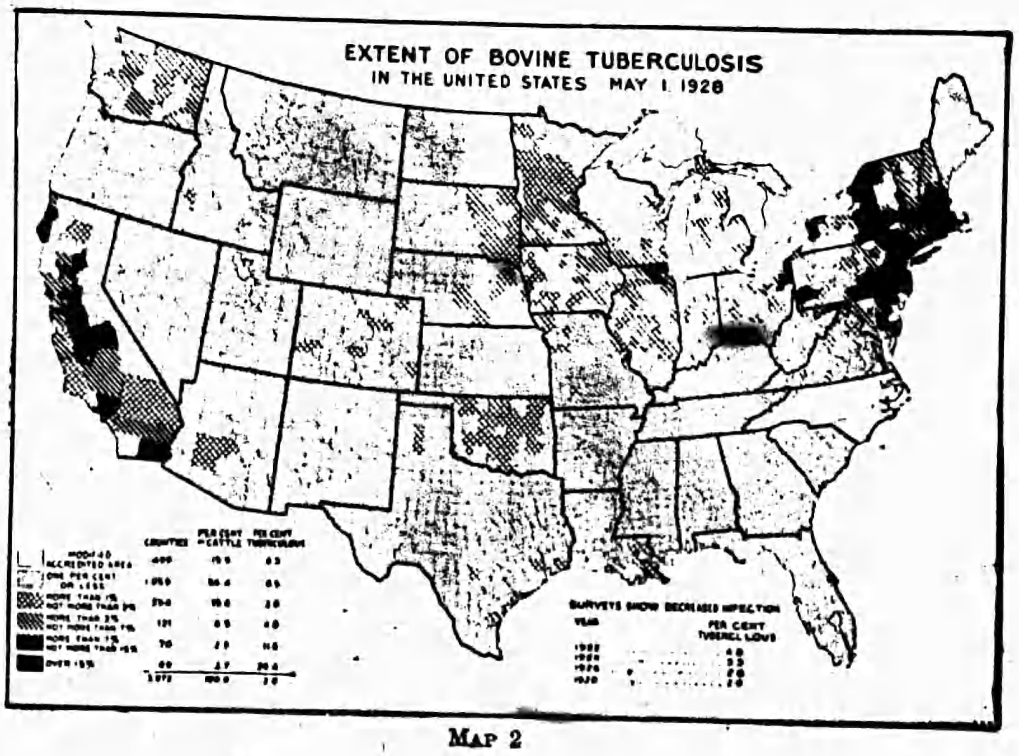
Year	Cattle tested	Per cent of reactors found	Herds accredited
1	2	3	4
1917	20,101	3.2	204
1918			
1928	11,281,490	2.3	38,880

That this work is successful is shown by the following maps prepared by the Bureau of Animal Industry, United States Department of Agriculture.

A study of some of the European countries as compared with the United States is interesting. While conditions are not exactly comparable, the United States will continue to approach European conditions more and more as time passes in so far as food supply and veterinary problems are concerned. It may be pointed out that the United States now has more physicians per 100,000 population than any of the leading European countries. We are inclined, therefore, to make more extensive use of the medical sciences in this country than are the Europeans. In veterinary science we have not approached European conditions.


EXTENT OF BOVINE TUBERCULOSIS
IN THE UNITED STATES MAY 1, 1926

MAP 1


EXTENT OF BOVINE TUBERCULOSIS
IN THE UNITED STATES MAY 1, 1928

MAP 2

TABLE 7.—*Population, physicians per 100,000 population; number of horses, swine, cattle, etc., in different countries*

Country	Year	Population	Physicians per 100,000 population	Number of horses, swine, cattle	Number of veterinarians	Veterinarians per 100,000 animals	Number of veterinary students in 1927
1	2	3	4	5	6	7	8
Austria	1923	6,526,661	113.89	3,923,000			
Belgium	1926	7,874,601	53.76	3,116,000	833	21	87
France	1926	40,424,387	58.88	23,887,000	4,000		566
Germany	1925	62,348,782	64.43	44,651,000	13,053	29	928
Hungary	1924	8,160,000	73.15	5,392,000	1,036		274
Sweden	1923	6,053,562	34.57	4,074,000			
Switzerland	1925	3,936,330	79.93	2,326,000			
British Isles	1921	47,146,506	111.35	18,403,000	2,313		472
Denmark	1925	3,419,056	70.07		2,309		327
United States	1928	120,013,000	124	133,695,000	12,000	9	589

Aside from numbers, the great change that has come over the character of service required of the veterinary profession necessitates the production of men who are capable of dealing with veterinary problems of State and national scope. Not that there are no such men in the profession to-day, but the future will need such men in larger numbers. They must be men of vision, personality, character, energy, and good education.

Need there be any concern over veterinary education and the number of students graduating annually from our veterinary colleges? An examination of the present membership of the profession which must be replaced should give some light on this subject.

The following is taken from the census reports. Unfortunately the same age grouping was not used in 1920 as in 1910; nevertheless, the presentation is very helpful.

TABLE 8.—*Present membership of the veterinary profession*

Census, 1910			Census, 1920			Census, present [1]		
Age	Average age	Number	Age	Average age	Number	Age	Average age	Number
1	2	3	4	5	6	7	8	9
16 to 20	18	129	20 to 24	22	472	(2)		1,336
21 to 24	32–33	6,558	25 to 44	35	7,252	30 to 34	32	468
45 and over	55	4,965	45 to 64	55	4,600	35 to 54	45	7,150
			65 and over		1,142	55 to 74	65	3,000
Total		[3] 11,652			13,466			

[1] Present estimates are taken from the 1920 census reports and all the men living to-day would be 10 years older in 1930.
[2] Graduated since 1920.
[3] Total for 1900 was 8,149.

The only reductions made for 1930 in the 1920 figures were calculated on the basis of the average death rate of men of the age in-

dicated, which was necessarily also an average for the group. No allowance was made for withdrawals from the profession for reasons other than age. The total number of veterinarians in the United States, therefore, is probably not more than 11,000, a loss of from 2,000 to 2,500 during the past 10 years. The greatest production of veterinarians in the United States so far as available records show was during the 10-year period 1908 to 1918, inclusive. Seven thousand two hundred and sixty-two veterinarians were graduated from the accredited veterinary colleges of the United States, an average of 726 per year, while during the following 10-year period 1,913 men were graduated, or an average of 191 per year. As a result the 1920 census gave the unusually large number of 7,252 veterinarians between the ages of 25 and 44. The first of the large group graduating from 1909 to 1918 have now been out 20 years, and while they will not leave veterinary service in the same order in which they entered it, it may be expected that many of them will have to be replaced during the next five years.

It is fortunate that many will be able to continue in service for some years longer, since the veterinary colleges to-day are in no position to turn out seven to eight hundred veterinarians per year. In addition, 1,142 were lost from active service who were 65 or over in 1920. Of the 3,000 estimated as remaining from the 4,600 who were 45 to 64 years of age in 1920, and who now would be 55 to 74 years of age, certainly not more than 50 per cent would be in active service. This would reduce the estimate of men available for active veterinary service to approximately 10,454, whereas in 1920 there were 12,352 veterinarians under 65 years of age. It is no cause for wonder that seniors in veterinary colleges are definitely located before graduation. Their problem is to decide which location or position of the many openings offers the greatest opportunities.

The numerical problem during the next 10 years so far as students are concerned, then, is one of increasing the number to at least 2,000 in order to bring it back to the 1920 basis and supply growing needs. Three thousand veterinarians will retire because of age and it is estimated that 150 more will die during the next decade. This makes a total of 5,150 veterinarians to be supplied by State veterinary colleges during the next 10 years, or approximately 500 per year. This would require that there be an average of about 2,200 veterinary students each year. The average number of students in all accredited veterinary colleges during the 10-year period from 1910–11 to 1919–20, inclusive, was 2,189. The number of accredited veterinary colleges varied during this period from 19 to 24. To-day there are approximately one-half that number of colleges and only about 30 per cent as many students. On the basis of the distribu-

tion of veterinary students among the veterinary colleges during the college year 1928–29 as reported by the deans and compiled by Dean White, of Ohio, the enrollment should be about as follows:

TABLE 9.—*Enrollment in veterinary colleges*

Institution	Estimated enrollment	Per cent
1	2	3
Iowa State College	390–410	18
New York State Veterinary College	365–380	16.5
Ohio State University	285–300	13
University of Pennsylvania [1]	230–245	10.5
State College of Washington	220–235	10
Kansas State Agricultural College	195–210	9
Colorado Agricultural College	180–195	8
Georgia State College of Agriculture	90–100	4
Alabama Polytechnic Institute	65– 75	3
Agricultural and Mechanical College of Texas	45– 55	2

[1] Not a land-grant institution.

The number of students in the veterinary colleges of the United States during the college year 1928–29 varied from 18 to 148. This is obviously not the most desirable condition from the standpoint of good education in veterinary medicine. Either some of the schools are not properly located or for other reasons do not attract the veterinary student.

Chapter IV.—Organization and Support

How well prepared are the veterinary colleges to meet the future problems that veterinary medicine will offer in the field of education and research? A study of the replies to questionnaires sent out during 1928 provides the best answer available at the present time. The organization of a faculty, the securing of the necessary prestige and support, and on the whole "making a place" for a veterinary college in one of the large State institutions requires some years. Certainly State institutions contemplating the establishment of a college of professional veterinary medicine should do so with a full appreciation of the needs of veterinary education.

The existing veterinary colleges already have the recognition in their respective institutions necessary to successful continuation of their work. If any of them do not develop as the needs of the profession warrant, it must be because veterinary medicine and its needs are not considered to be so essential as the other branches of the institution's work.

One unfortunate situation exists in regard to the present nomenclature of the veterinary colleges. This results, of course, from the variation in designations used by various State institutions for their principal divisions. At the present time there are four using the name college, five are known as divisions, and two as schools. The word college is not used uniformly, but in higher education is better understood and generally accepted as an institution conferring the first degree and requiring completion of an accredited secondary school for entrance. The word school in connection with universities and colleges is often used to designate the "grouping of subjects to a definite end" or "is applied to part of a university, the standard admission to which is not less than the equivalent of two years' work in college." The words division and department are confusing because of their wide variety of application. They are almost worthless as conveying any definite meaning in educational circles. Five veterinary colleges are designated as divisions, all of which meet the definition of college. A number of veterinary divisions are, however, merely subdivisions of the department of animal husbandry in colleges of agriculture. These are service departments

to the work in animal husbandry and do not pretend to give work looking to veterinary degrees. A veterinary division may, therefore, mean almost anything from the very superficial teaching of a few subjects to animal husbandry students to the oldest and largest State veterinary institution in the United States. It is highly desirable that the institutional unit responsible for professional veterinary education be known as a college.

It is difficult to visualize a veterinary college without a "dean" but there are two such institutions. One of the administrative officers is known simply as "head" and the other as "chairman." Often such matters are determined locally in order to secure uniformity. But each one of the veterinary "colleges" is a part of the system of veterinary education in the United States. It has, moreover, some responsibility to the profession. The veterinary colleges are not, therefore, strictly State institutions. All are regional in character in every sense except finance. There are 11 veterinary colleges and 48 States or an average of 4 4/11 States per school. What each State having a veterinary college does, therefore, is of concern to more than the State in which the school is located.

It is noted that the veterinary college is administered in 4 of the 11 colleges by an institutional committee. In two cases this committee is entirely within the veterinary college and in two cases it is not. The advantage of such administration to the institutions is not apparent from institutional statements. Adminstrative matters in a technical or professional school, while necessary, should be reduced to a minimum. As a rule it is best to take such time as may be necessary from one man who has administrative abilities and permit the remainder of the staff to devote itself to the development of academic and research work. There has been too much tendency in the past to reward those who have done outstanding work in education or research by promoting them to administrative positions. This has been responsible for "sidetracking" a number of men who were more competent in the work upon which they were engaged prior to promotion. Capable men should be compensated, certainly, but kept in the work where their greatest future lies and where the greatest good would accrue to medical science. As a rule the simplest and most efficient administration is secured by placing authority and responsibility with one competent person.

Veterinary College Finances

Ten colleges reported in regard to their finances. The following facts and conclusions are derived from these reports. The 10 veterinary colleges reporting received a total of $26,529 from Federal

funds and $510,727 from State funds, a total of $543,785 from these sources. This sum included $79,070 devoted to research, leaving a balance of $464,715 for undergraduate veterinary education. These 10 colleges had during the year the report was made 668 students to whose education State and Federal funds contributed to the extent of $655.96 per student. The remainder was contributed by students themselves and from other sources of income. Owing to the variable systems of accounting, as well as to the different methods of collecting and using clinic receipts at different institutions, it is impossible to make further estimates. In several institutions no report was made of the clinic receipts and in only one case was it reported how these receipts were used. It is not possible, therefore, to go further with a calculation as to the average cost of veterinary education in the United States.

During the year 1926–27, 63 of the 74 medical schools in the United States expended $11,308,800. The 63 colleges had an enrollment during the same year of 16,042 students who paid in $4,057,304 or an average of $254 as compared with an average expenditure of $704 for each student. In making any comparison, however, it must be remembered that the medical schools are running to capacity, while the veterinary colleges are by no means doing so. It can not be estimated how much increase there will be in total expenditures when the enrollment reaches that point, but it is quite apparent that although the total cost for veterinary education will be greatly increased during the next decade the average cost per student may tend to decrease.

In the six veterinary colleges that were able to report it is found that from 1920 to 1927, inclusive, 3,097 students enrolled, or an average of 387 per year. Included in this number were 879 registrations from outside the States where the veterinary colleges are located. In other words, during the 8-year period preceding this survey and following the closing of most of the private colleges, 28 per cent of the student registrations were from outside the State. The highest number (46 per cent) of out-of-State students was recorded in the institution in which out-of-State fees have been eliminated. It is quite likely that at many of the other colleges many out-of-State students establish a residence in the State or at least register from within the State in order to avoid paying out-of-State fees.

TABLE 10.—*Income and expenditures of veterinary colleges in 10 institutions, 1927–28*

State	Income						
	Total	Student fees	State	Federal	Clinic receipts	Biological products (sales)	Endowment
1	2	3	4	5	6	7	8
Alabama			$20,000				
Colorado	$27,946	[1] $2,376	18,850	$9,096	[1] $65		
Georgia	22,925	425	20,300	2,100	[2] 3,437	$100	
Kansas	38,446		38,446		[2] 5,225	[1] 5,533	
Michigan [3]	71,611		65,000	9,600	[2] 5,000		
Iowa	131,278	7,794	109,273	3,000	14,211		
New York	163,570	800	162,220				$550
Ohio	55,210		55,210				
Pennsylvania [4]	82,938		4,000				
Washington	23,961	[6] 3,800	17,428	2,733			
Grand total	643,885	15,195	510,727	26,529	27,938	5,633	550

State	Expenditures				
	Total	Staff salaries	Maintenance	Research exclusively	Other expenditures
1	9	10	11	12	13
Alabama	$20,000	$13,400	$5,350		$1,250
Colorado	27,946	24,100	3,636		210
Georgia	22,400	17,400	4,500		500
Kansas	38,446	29,266	5,410	$3,770	
Michigan [3]	74,611	48,500	14,406		11,705
Iowa	134,277	60,240	25,807	40,000	8,230
New York	163,570	100,520	[4] 25,950	35,000	2,100
Ohio	55,210	46,027	5,760	300	3,123
Pennsylvania [5]	82,938	66,768	12,170		4,000
Washington	23,959	14,420	6,212		3,327
Grand total	643,357	420,641	109,201	79,070	34,445

[1] Fees collected by the institution but not available for veterinary medicine, therefore not included in total.
[2] Fees collected by the institution but not indicated under expenditures.
[3] Bacteriology for entire institution (M. S. C.) is included, and item in column 10 should be reduced at least $10,000—others discounted.
[4] Includes $3,000 for repair of buildings.
[5] Income is from general university funds.
[6] From receipts fund.

Taking again the same six institutions it is found that the combined appropriations (public funds) for educational work in the six institutions was $379,902, of which $372,069 was appropriated by the States (and endowment) in which the colleges are located and $7,833 was appropriated from Federal funds. The six veterinary colleges received a little more than 2 per cent of their appropriations and 28 per cent of their student enrollment from outside of the State. This discrepancy would be even greater if we could determine the origin of the matriculants as accurately as we can the funds. It would seem reasonable that veterinary colleges rendering a regional service, as they are, should be financed more largely from Federal appropria-

tions. Every State has its own land-grant college. One-half of the States support medical schools and six more give the first two years of the course in medicine, but every State that has a veterinary college must serve in addition to its own State, more than three additional States.

Three methods of securing additional funds for financing the veterinary colleges are possible, endowments, financial aid from the States from which out-of-State students come, and Federal aid.

Properly endowed institutions have considerable advantage in freedom of establishing policies. Veterinary medicine, however, has never had the appeal to those financially able to endow educational institutions although it has many of the same qualities of humane interest as has human medicine.

The persons who are financially able and at the same time much interested in domesticated animals usually endow some organization for the prevention of cruelty to animals. The prevention of suffering among dumb beasts is one of the functions of the veterinary profession. It is suggested that this endowment might better be given to the support of veterinary education. Endowments in adequate amount for the veterinary colleges seem improbable, however, in the immediate future and the various States must be depended upon to meet the problems that are immediately pressing.

Financial aid from the States wherein no veterinary colleges are located is hardly to be thought of at the present time. It would be practically impossible to convince a State legislature that it should appropriate money for the institution of another State. The States that do not have veterinary colleges, and that do not need one to supply the number of veterinary graduates demanded may well provide scholarships for the students who are qualified and desire to study veterinary medicine in another State. Eleven States are now appropriating from $17,482 to $128,570 or an average of $37,423 for veterinary education, exclusive of research, while 37 States make no appropriations for this purpose, but depend upon the service rendered by their neighbors.

Buildings and equipment vary greatly with the conceptions of the various deans and with the significance that veterinary medicine has in the State where the veterinary college is located. In most cases there is some relationship between the material equipment and the strength of the faculty, but this does not hold in all cases as some institutions are more concerned about good men than elaborate buildings. Generally speaking, an institution that does not support a good staff is very reluctant to appropriate money for buildings. Eleven institutions represented in Table 11 are arranged in order of their investment in buildings, and the number of veterinarians

on the teaching staff is set opposite in each case. In a few cases the cost of the buildings could not be secured.

TABLE 11.—*Investment in buildings and number of veterinarians on staff*

Institution	Cost of buildings	Statement of needs	Veterinarians on staff
1	2	3	4
State College of Washington	$20,000		5
Georgia State College of Agriculture	30,000		5
Alabama Polytechnic Institute	50,000		4
Michigan State College			6
Colorado Agricultural College	120,000		5
Agricultural and Mechanical College of Texas			6
Ohio State University	140,000		9
Kansas State Agricultural College	180,000	$40,000	8
Iowa State College	180,000	125,000	14
University of Pennsylvania	350,000		16
Cornell University	516,000		20

It should be noted that the wide range in buildings and equipment either has little significance with reference to the quality of work these institutions have been doing or there must be some very weak veterinary colleges in the United States. The difference in the estimated present value of the buildings shows a wide range from $20,000 to $900,000. In the past the American Veterinary Medical Association has classified all these institutions as Class A.

It requires just as much and just as thorough training to render veterinary service successfully and efficiently in California or Oregon as it does in New York or Missouri. Nature is just as reluctant to give up its secrets to the research worker in Mississippi or Alabama as she is in Minnesota or Iowa. There is, in other words, no regional demand for graduates from anything but a high-grade veterinary college. It is apparent that approximately one-half of the veterinary colleges of the United States need considerably more in the way of capital improvements in order to make them first-grade institutions.

While it is generally conceded that the better colleges in the United States are superior to those of Great Britain, it is also admitted that the better veterinary colleges of continental Europe have considerable advantage over the leading ones in this country. Unless the States that now maintain veterinary colleges as a part of their system of higher education can afford class A institutions, they should confine their efforts to veterinary service to agriculture as is the case in some 30 States at the present time. Too many responsible persons in some of the land-grant colleges still think of veterinary education as did the pioneers in this field when a few months of association with a practitioner was all that was necessary as preparation for a professional career in veterinary medicine. It

was possible then for from three to six practitioners to pool their educational efforts, secure a building for the assembling of students, and a new "college" had come into being. Medical science has passed far beyond this stage and valuable equipment and a well-trained personnel are necessary to start a "respectable" institution. Veterinary medicine is to-day one phase of the medical sciences.

The present veterinary colleges, with one exception, grew out of chairs of veterinary medicine in agricultural colleges. The subject is, therefore, quite naturally still regarded by many as an aspect of agriculture. The fact is, however, that veterinary medicine has little more in common with agriculture than a college in human medicine has with home economics. The service rendered by the profession touches agriculture, vitally, as does human medicine the home, but the training of young men for the profession must be from the standpoint of science and medicine. For these reasons equipment and personnel reasonably comparable to human medicine must be available if the veterinary colleges are to discharge their obligations satisfactorily.

Chapter V.—Classrooms, Laboratories, and Clinics

As may be expected from Table 12, accomodations for students in classrooms and laboratories show a variation comparable to that of the capital invested. The institutions arranged in the same order reported as follows:

TABLE 12.—*Laboratory and classroom accommodations for students*

Institution	Anatomy		Medicine and surgery		Pathology		Physiology		Clinic accommodations for animals			
	Classroom	Laboratory	Classroom	Laboratory	Classroom	Laboratory	Classroom	Laboratory	Horses	Cattle	Dogs	Swine
1	2	3	4	5	6	7	8	9	10	11	12	13
State College of Washington	45	30	30	30	30	30	60	30,72	14	.....	25	.....
Georgia State College of Agriculture	40	.....	.....	.....	.....	.....	50	.....	6	6	29	3
Alabama Polytechnic Institute	50	.....	.....	.....	.....	.....	.....	.....	8	8	.....	.....
Michigan State College	.....	.....	.....	.....	92	100	75	.....	.....	.....	.....	.....
Colorado Agricultural College	65	.....	.....	.....	.....	.....	.....	.....	15	.....	20	.....
Agricultural and Mechanical College of Texas	.....	.....	.....	.....	.....	.....	.....	.....	40	30	50	400
Ohio State University	225	.....	400	50	150	.....	72	72	22	.....	160	.....
Kansas State Agricultural College	300	75	90	.....	125	48	(1)	(1)	35	7	30	.....
Iowa State College	60	76	72	.....	50	30	56	24	25	34	46	8
University of Pennsylvania	.....	30	.....	25	.....	30	.....	36	39	.....	.....	.....
Cornell University	200	80	300	100	500	55	(2)	(2)	45	8	64	.....

[1] See anatomy. [2] See pathology.

Not only is there the wide variation in the capacity of the rooms assigned to the same subject group in the various institutions, as, for example, 45 in anatomy at one institution to 300 in another and a variation of 30 to 500 in pathology, but there is in addition, in some cases, a wide discrepancy between classroom capacity and laboratory accomodations. Either such classrooms were designed with the idea of offering the work largely by didactic methods and providing plenty of room for growth, or the relationship between laboratory work and classroom teaching was not carefully considered when the buildings were constructed. It is apparent that classroom and laboratory facilities will be inadequate in approximately one-half of the veterinary colleges when the enrollment reaches the number required to maintain the veterinary profession on an adequate basis.

Clinics and clinical facilities.—Some special mention should be made of the clinics as this is undoubtedly the weakest part of veteri-

nary education to-day and is the greatest limiting factor upon enrollment. In veterinary medicine as in human medicine the young graduate usually, if he enters into general practice, is left largely to his own resources, but in veterinary medicine he does not have experience as an interne before starting his professional practice. Certainly it is not justifiable for an institution to accept more students than can be efficiently taught in the clinical subjects and then require them to acquire their clinical experience almost entirely at the expense of those they are being paid to serve. According to the reports, the buildings used for clinics are all quite satisfactory as to construction, lighting, and ventilation. The handicaps lie in other directions.

It will be noted that animal accommodations harmonize with the variations in other directions among the various colleges. Unfortunately this variation is more serious than the others, because institutions can limit their enrollment to suit their classroom and laboratory accommodations, but in clinical instruction 10 students need just as wide a variety of cases for observation and treatment as 40 students would require. The same may be said in regard to species of animals. The number and kind of clinical cases can not, therefore, if students are to have good clinical training, be considered simply from the standpoint of student enrollment. Neither can good clinical instruction be carried out with too many students in a single group. When the present veterinary colleges graduate two to three times as many students as they are doing at present, additional clinical staff must be provided. From 100 to 150 students in clinics each day presents a problem in organization and quantity of clinical material of proper variety which very few schools are at present prepared to meet.

There are several bases for dividing and classifying clinics, for illustration, horse, cattle, swine, small animals, etc., or clinics according to species of animals, or surgical, medical, consulting, or out-clinic, depending on the nature of the patient's particular ailments. In all but one veterinary college (Alabama), clinics are further divided into hospital and ambulatory, according to whether the patient is brought to the student or the student is transported to the patient.

The following tables indicate the clinical material available to the various veterinary colleges and the number of each of the various species in hospital and ambulatory clinics. On account of misunderstanding on the part of several in reporting the number of diseased conditions treated in the various clinics, these facts could not be included. This would have been valuable in studying the prevalence of various diseased conditions in the various States and in determining the real value of the clinical material.

TABLE 13.—*Clinical material—horses and mules, cattle, swine, sheep, pets, and poultry*

HORSES AND MULES

Institution	Number of animals in 25-mile radius	Number in hospital	Number in ambulance clinic	Total number of cases
1	2	3	4	5
Colorado Agriculture College		185	515	700
Georgia State Agricultural College		188	26	214
Iowa State College	46, 130	400	284	684
Kansas State Agricultural College	16, 668	342	163	505
Michigan State College		95	187	282
Cornell University	20, 205	475	365	840
University of Pennsylvania		175	1, 208	1, 383
Ohio State University	13, 000	281	253	534
Agricultural and Mechanical College of Texas	7, 500	600	150	750
State College of Washington	43, 300	186	285	471

CATTLE

Alabama Polytechnic Institute	200			
Colorado Agricultural College		123	340	463
Georgia State Agricultural College		17	631	648
Iowa State College	130, 146	688	1, 272	1, 960
Kansas State Agricultural College	72, 081	394	1, 830	2, 224
Michigan State College		18	278	296
Cornell University	51, 330	1, 001	3, 504	4, 505
University of Pennsylvania		3	5, 047	5, 050
Ohio State University	36, 000	42	1, 219	1, 261
Agricultural and Mechanical College of Texas	27, 500	150	500	650
State College of Washington	30, 671	230	626	856

SWINE

Alabama Polytechnic Institute	300			110
Colorado Agricultural College		21	420	
Georgia State Agricultural College		97	86	183
Iowa State College	300, 731	911	10, 616	11, 527
Kansas State Agricultural College	12, 250	345	4, 325	
Michigan State College		22	1, 041	1, 063
Cornell University	11, 421	362	500	862
University of Pennsylvania		1	134	135
Ohio State University	53, 000	76	607	683
Agricultural and Mechanical College of Texas	4, 000	600	800	1, 400
State College of Washington	50, 000	49	2, 716	2, 765

SHEEP

Alabama Polytechnic Institute	25			
Colorado Agricultural College		13		13
Georgia State Agricultural College		1	395	396
Iowa State College	5, 889	15	4	19
Kansas State Agricultural College	2, 327	17	550	567
Michigan State College		9	630	639
Cornell University	26, 169	72	494	566
University of Pennsylvania			5	5
Ohio State University	25, 000	12	4	16
Agricultural and Mechanical College of Texas	1, 800	150	400	550
State College of Washington	37, 065	41	149	190

PETS

Alabama Polytechnic Institute	50			348
Colorado Agricultural College		246	102	348
Georgia State Agricultural College		1, 489	1	1, 490
Iowa State College	3, 000	769	4	773
Kansas State Agricultural College	2, 280	1, 323	67	1, 390
Michigan State College		1, 731	152	1, 883
Cornell University		2, 103		2, 103
University of Pennsylvania		11, 441		11, 441
Ohio State University	15, 000	3, 182	2	3, 184
Agricultural and Mechanical College of Texas	1, 500	900	25	925
State College of Washington	10, 301	196	41	237

TABLE 13.—*Clinical material—horses and mules, cattle, swine, sheep, pets, and poultry*—Continued

POULTRY

Institution	Number of animals in 25-mile radius	Number in hospital	Number in ambulance clinic	Total number of cases
1	2	3	4	5
Alabama Polytechnic Institute				680
Colorado Agricultural College		3		3
Georgia State Agricultural College		78	1,905	1,983
Iowa State College	1,264,172	4		4
Kansas State Agricultural College	355,317			
Michigan State College		12	36	48
Cornell University	614,931		418	418
University of Pennsylvania			695	695
Ohio State University	300,000	85	247	332
Agricultural and Mechanical College of Texas	30,000	400	4,000	4,400
State College of Washington	190,651	10	20	30

TABLE 14.—*Summary of clinic material—Horses and mules, cattle, swine, sheep, pets, and poultry*

Institution	Number of animals in—			Cases	Clinics coordinated		Business management under same supervision	
	25-mile radius	Hospital	Ambulatory clinic		Yes	No	Yes	No
1	2	3	4	5	6	7	8	9
Alabama Polytechnic Institute				2,241	X		X	
Colorado Agricultural College		623	1,533	2,156	X		(1)	
Georgia State College of Agriculture		1,873	3,044	4,917	X		X	
Iowa State College	1,750,068	2,787	12,180	14,967	X			X
Kansas State Agricultural College		2,421	6,935	9,356	X		X	
Michigan State College		1,892	2,326	4,218	X		X	
Cornell University	724,830	4,013	5,281	9,294		X		X
University of Pennsylvania		11,620	7,189	18,014		X		X
Ohio State University	444,000	3,707	2,342	6,046	X		X	
Agricultural and Mechanical College of Texas		2,850	5,875	8,375	X		X	
State College of Washington	3,621,131	714	3,903	4,982	X		X	

(1) In part.

The efficiency with which the various clinic staffs use the material presented can not, of course, be determined by reports. Detailed personal investigation would be necessary to accomplish this. It should be possible for students to select a college that offers strong clinical instruction in the particular line of work in which there is greatest demand where they intend to locate. To illustrate, a man who intends to locate in a community devoted very largely to dairying is not well equipped if his hospital clinics as a student consist of 3 to 10 bovines and from 8,000 to 12,000 small animals.

The ambulatory clinics that have been developed as a part of veterinary education have been accepted as a valuable factor in the

teaching of clinical subjects. But unless carefully administered and in the hands of a competent and willing person they may become an interference rather than a help to the hospital clinics.

A hospital clinic is absolutely essential in addition to the ambulatory clinic. In the first place, a hospital patient is available for observation by all the students classified in clinics, and the students can take a more active part in the treatment than the owner will usually permit on his own premises. In addition the progress of the case can be closely followed, so that the student may better familiarize himself with the variations in symptoms and treatment at the various stages of the development of the numerous pathological processes. The hospital has, in the second place, facilities and equipment which make it possible to perform operations with animals properly restrained and under correct aseptic and antiseptic procedure. The argument advanced by some that such conveniences are not available to the graduate when he takes up the practice of his profession and consequently that "farm conditions" should be reproduced so far as possible, is not consistent with good education. Such training can develop nothing more than "barnyard" surgeons. The student must have opportunity, in fact, should be required to use the finest and most modern technique known to veterinary science. Afterwards he may adjust it to the varying conditions which he may find in his daily practice. Sloppy and careless methods acquired while in college, whether taught or developed because of the lack of proper teaching, are rarely corrected after the student has graduated.

There is no intention of minimizing the value of the ambulatory clinic, but in the interest of securing the greatest amount of educational value from the rather limited number of cases available to most veterinary colleges for clinical instruction, the two clinics, hospital and ambulatory, must be coordinated. The person conducting the ambulatory clinic will set a good example for the student, have a much wider acquaintance among the people who are prospective patrons of the clinics, and can quite largely increase or decrease the hospital cases available for student study. An ambulatory clinic can never successfully replace a hospital clinic from an educational standpoint. Usually only a limited number (three or four) students can accompany the clinician to the owner's premises. The professor's time is taken up entirely by only a fraction of the class (often less than 10 per cent) while the remainder of the class not only has no opportunity to see the case, but in a very high percentage of calls the few who do accompany the clinician never see the case again and many times do not know whether the treatment was a success or failure.

The ambulatory clinic has the advantage of teaching the students proper methods of approach to their clients, how to overcome difficulties in lack of desired facilities, and how to conduct the business side of their professional practice. In addition, there are many cases of an acute contagious nature which can not be hospitalized safely. There is no doubt as to the value of the ambulatory clinic in clinical instruction. Eight out of the eleven veterinary colleges maintain one or more automobiles for ambulatory clinic work.

Most of the better veterinary colleges have come a long way in the past 20 years in the application of science in clinical subjects, but much more could be done to advantage. In veterinary medicine laboratory methods have not been brought to the assistance of the diagnosis and treatment of cases in a sufficiently large measure. Microscopic examinations of tissues and excreta have not been sufficiently utilized and in fact were spoken of in a spirit of levity by many only a few years ago. Some of the younger and more progressive practitioners have, however, during recent years developed their own laboratories and make good use of the laboratory technique taught them while they were students. Very few will do this in their practice, however, if it is not done in connection with the clinical cases..

Chapter VI.—The Staff

Only such members of the staff as are devoting all or most of their time to teaching are included, as research and extension work are not covered by this section of the survey. In some cases the information furnished in the reports was quite incomplete and it was necessary to search many other records in order to secure the desired information. If any injustice is done, it is entirely unintentional and because exact information was not supplied.

The faculty is probably the most difficult subject of the entire report to discuss, first, because it becomes more or less a matter of personality, and, second, because the varying characteristics of faculty members and their abilities as teachers are difficult to evaluate and almost impossible to compare. Table 15 shows the number of men assigned to the various subject groups and the variation in the 11 institutions in the United States. The deans are represented by footnote 1, because in most institutions there is considerable administrative work connected with that position, which interferes considerably with the regular work of instruction.

TABLE 15.—*Distribution of faculty among various subject groups*

Institution	Anatomy					Physiology					Pathology		
	Professor and head	Professor	Associate professor	Assistant professor	Instructor	Professor and head	Professor	Associate professor	Assistant professor	Instructor	Professor and head	Professor	Associate professor
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Alabama Polytechnic Institute	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....
Colorado Agricultural College	.....	.....	1	.....	.....	.....	1	.....	.....	.....	1	.....	.....
Georgia State Agricultural College	.....	.....	1	.....	.....	.....	.....	1	.....	.....	[1]1	1	.....
Iowa State College	1	.....	.....	1	1	1	.....	.....	1	.....	1	.....	1
Kansas State Agricultural College	½	.....	½	.....	.....	½	.....	½	.....	.....	1	.....	1
Michigan State College	1	.....	.....	1	.....	.....	.....	1	1	.....	[1]1	1	1
Cornell University	1	.....	.....	1	.....	1	.....	.....	1	.....	[1]1	1	.....
Ohio State University	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....
University of Pennsylvania	.....	1	.....	.....	1	.....	1	.....	.....	1	.....	1	.....
Agricultural and Mechanical College of Texas	[1]1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
State College of Washington	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....
Total	4½	3	2½	4	3	2½	3	3½	4	1	6	6	5

[1] Time divided.

TABLE 15.—*Distribution of faculty among various subject groups*—Continued

Institution	Pathology—Continued		Surgery					Medicine					Total faculty members
	Assistant professor	Instructor	Professor and head	Professor	Associate professor	Assistant professor	Instructor	Professor and head	Professor	Associate professor	Assistant professor	Instructor	
1	15	16	17	18	19	20	21	22	23	24	25	26	27
Alabama Polytechnic Institute	1			1					1				6
Colorado Agricultural College	1			1				[1] 1		½			6½
Georgia State Agricultural College					1							1	6
Iowa State College	1	1	1		1			[1] 1		1	1		14
Kansas State Agricultural College	1		[1] ½			½		[1] ½	1		½		9
Michigan State College	1	1	1			1							11
Cornell University	3	2	1				1	1			2	1	17
Ohio State University	1	1		2		1		[1] 1			1		10
University of Pennsylvania	2	1		1			1		1		1		12
Agricultural and Mechanical College of Texas			½					½		2			6
State College of Washington	1		[1] 1								1		5
Total	12	6	5	5	2	2½	2	5	3	3½	6½	2	102½

[1] Time divided.

In the faculty, as in the course of study, there is a wide range of conditions. It will be noted that there is a total ranging from 5 to 17 veterinarians of the grade of instructor or above on the strictly teaching staff of the veterinary faculties. For this summary only those members of the staff of the rank of instructor or above who would probably come in contact with students in teaching or educational work were included. According to the records there are 17 persons of the rank of instructor or above engaged in the teaching of anatomical subjects, 14 in physiology, 35 in pathology, 16½ in surgery, and 20 in medicine. In some institutions the work is not divided into departments, the college as a whole operating as a single department. This would have some influence on the ranking of the men in charge of major subjects, but a study of the table will show that the ranks vary from assistant professor to full professor and head in the various subject groups of the 11 veterinary colleges. A few cases are also found in which staff members divide their time between two major subject groups. This may serve as a temporary arrangement, but rapid development of the field of medicine during the past quarter century has made it impossible for one man to master more than one major subject. It is highly desirable that each member of the staff devote his energy to a single major group. Even

then it will probably be necessary to restrict his efforts to some limited phase of the whole subject.

There is little justification for an extended course of study or increased entrance requirements until faculties are brought up to a high degree of efficiency, both as to training and teaching ability. It would be a useless expenditure of time and money, as well as an educational disaster, to require two years of college training for entrance on the part of students and then require them to sit before a professor who is neither a master of his technical subject nor a scholar from an educational viewpoint. In other words, increased entrance requirements must bring increased efficiency on the part of the faculty if satisfactory progress is to be made. Some of the leading veterinary colleges have faculties of very high character. Others can not hope to obtain men of the caliber required nor can they be retained when the rank of assistant or associate professor is the best the institution can offer. It will be noted that some of the faculties have only one or two full professors on the entire staff. In anatomy, for example, there are only 7 professors in 11 veterinary colleges. In physiology there are only 5½ professors in 11 veterinary colleges.

There has been a decided tendency on the part of some institutions to employ only graduates of their own institutions. In one case every staff member, except an assistant, is a graduate of the institution in which he is serving. It is also apparent that some institutions place no value whatever on graduate work subsequent to receiving the baccalaureate degree. One institution indicated that absolutely no graduate work on the part of any member of the entire staff was permitted. The table summarizing the number and kind of degrees, together with the total amount of graduate work reported in the faculties, gives a factual basis for the standard in this respect. However, the table may be somewhat misleading if graduate work has been taken by only one member of the staff. This may lead to the conclusion that the time devoted to graduate work is evenly distributed throughout the staff. As a matter of fact, there is a wide variation in this respect. The table merely serves to indicate the institutions that attach some significance to graduate work as a qualification for institutional service.

Salaries.—Table 16 records the number of veterinarians on the teaching staff, the maximum, minimum, and average salaries. For obvious reasons the names of the institutions as well as the salaries of individuals are not recorded. The data in the case of some institutions were somewhat incomplete, but all data available were used to set forth the actual condition in veterinary education.

TABLE 16.—*Analysis of staff—age, training, and salary*

State	Institution number	Number of veterinarians on teaching staff	Maximum salary	Minimum salary	Average salary	Baccalaureate degrees before D. V. M. degree	D. V. M. degree from own institution	Number of graduates from any one institution
1	2	3	4	5	6	7	8	9
Washington	1	5	$4,400	$2,400	$3,000	2	2	2
Georgia	2	5	4,200	1,500	2,790	0	2	2
Alabama	[1] 3	5	5,200	2,000	3,325	2	0	2
Michigan	4	6	6,000	1,740	3,527	0	2	2
Colorado	5	6	4,000	2,400	3,066	5	2	3
Texas	[1] 6	6	6,000	2,400	4,125	2	1	3
Ohio	7	9	7,500	3,150	4,294	0	9	9
Kansas	8	8	5,000	2,500	3,362	2	2	2
Iowa	9	14	6,000	1,800	3,750	4	9	9
Pennsylvania	[2] 10	12	6,000	----------	3,858	----------	10	10
New York	11	18	7,000	1,900	3,720	5	17	17

State	Number of graduates from other State institutions	Graduate degrees	Years spent in graduate work	Average age	Minimum and maximum teaching experience in years	Total teaching hours	Maximum teaching hours
1	10	11	12	13	14	15	16
Washington	3	1	3½	39	3-19	68	27
Georgia	2	0	0	38	1-15	63	17½
Alabama	3	1	3½	42	1-37	87	41
Michigan	3	2	6	39	3-22	71	22
Colorado	1	2	3	45	3-30	115	32
Texas	4	0	0	45	1-39	71	30
Ohio	0	2	7½	47	4-36	172	40
Kansas	6	2	5½	38	3-18	140	26¾
Iowa	5	3	14	38	2-21	208	25
Pennsylvania	2	1	----------	----------	----------	----------	----------
New York	1	7	10	42	----------	----------	----------

[1] Reports received on 4 members only. [2] Has some part time men on staff.

Generally speaking, the average salaries in veterinary colleges seem rather high as compared with some other departments in the same institution. This is due to the fact that there is a small percentage of men of lower rank in veterinary education because of the small faculties. Salaries must also be higher than in the branches that are strictly academic. A professor of history or of a number of other subjects common to most universities would find positions in his chosen field rather few in number outside educational institutions. In veterinary medicine as in human medicine, however, the man of more than average ability in his chosen profession is always confronted upon graduation with the problem of deciding between institutional service and other types of opportunity within his profession. During more recent years the opportunities for men of fine personality who are well educated in veterinary medicine have been so attractive, especially in the commercial field, that some of the men badly needed in educational work have gone to the field where the financial

considerations are more attractive. On the whole, educational institutions can not compete with commercial interests on a salary basis. But many persons would prefer institutional work if they could be certain of sufficient salary to keep themselves and families in reasonable comfort.

Institutions that do not have a satisfactory arrangement for retiring and pensioning members of their staffs are at a distinct disadvantage not only in securing strong men to recruit their faculties, but also in retaining men who have developed into strong men during their connection with the institutions. College professors, on the average, admitting that they have been acceptable teachers, should retire at 65 or before they are 70. There is much more unrest in the faculties where no retiring allowance is provided, because some of the most devoted and valuable teachers are not successful financiers. Salary is not the only factor to be considered in determining the benefits accruing to staff members of the various veterinary colleges. The institutions that are sufficiently well financed to pay good salaries are also the ones who provide retiring allowances. Thus they have a twofold advantage.

It will be noticed that there is a wide range in the maximum salaries ($4,000–$7,500). One would expect that the highest average salary would be found in the smaller faculties where there is only one veterinarian for each major subject. In the older colleges a department usually has one or more instructors and assistant professors in addition to the head. The lowest average salaries, however, are paid in the small faculties. The only conclusions possible are that the annual budget will not permit a sufficient number of competent staff members and that the money available is not sufficient to compensate properly the few already on the staff. A few colleges with liberal salary budgets can to a considerable extent attract all the strong men in veterinary education to these institutions. This is not to the best interest of veterinary education as a whole. It "robs Peter to pay Paul" and leaves the less fortunate colleges with vacancies very difficult to fill.

Veterinary education should prepare more young men for institutional work. In the case of veterinary physiology, for instance, according to the reports there is only one man in the United States with the rank of instructor. The fields of surgery and medicine each have two such men. Upon the basis of actual positions in most branches of veterinary education there is little opportunity for a young man to start as an instructor and work his way up. There is one other source from which veterinary colleges may possibly draw men, with reasonable assurance that they have had some training which will qualify them to a certain extent for positions on the

faculties of veterinary colleges. This source is the agricultural colleges which in some States maintain one or more very competent veterinarians on their faculties. Some of the veterinary colleges have found it necessary to go to this source when filling positions on their staffs. One of the difficulties encountered here is that the salary scale in many cases is higher in the agricultural college than in the average veterinary college. In the interest of the future of the veterinary profession and all it serves, those best qualified for educational work should be on the staffs of the veterinary colleges, and all veterinary colleges should develop a limited number of young men for institutional service by providing instructorships and fellowships with opportunities for graduate work.

Such men need not necessarily be developed for their own alma mater; in fact, excessive inbreeding would lead to stagnation. It is much better for the man as well as for the institution he is to serve; if he has taken either his undergraduate or his postgraduate work in some other institution. With three exceptions, veterinary colleges have been quite free from too much inbreeding. The numerical distribution among the faculty of the D. V. M. degree, according to the source of the degree, is indicated in Table 16. In one case it will be noted that every member of the staff is an alumnus of the institution he is serving. In another case all but one of the staff are serving their own alma mater; in the third case there are two staff members from other institutions. This may be compensated for in part if some of the staff members have had a number of years experience at other institutions. A man coming from another environment where somewhat different educational methods and ideals are accepted is able to broaden and enrich a staff provided, of course, that the administration and staff of the institution to which he is coming is a progressive one. Unprogressive and narrow attitudes are one of the commonest results of inbreeding and are often encouraged by alumni who strive to prevent graduates of other colleges from securing positions that in their judgment belong to fellow alumni.

Academic preparation by various faculty members before taking up the study of veterinary medicine is an interesting study, especially since there is increasing strength of opinion that at least two years of preparation of collegiate grade should be required for entrance to veterinary colleges.

Table 16 shows the number of baccalaureate degrees held by the staff members of the various veterinary colleges before studying veterinary medicine. It will be noticed that in three institutions no staff member held a baccalaureate degree before beginning professional studies. For one institution these data were not furnished, but the catalogue would indicate that one member of the staff held such a

degree prior to receiving his veterinary degree. In the other institutions the number varies from two to five.

The same table also shows the amount of graduate work pursued by the faculty as a whole, the number of graduate degrees they have received, and whether or not they were received from the school they are now serving. In two cases no graduate work was reported. All other institutions report graduate work varying from 3 to 10 years and from 1 to 7 graduate degrees. In one case no report was made on the amount of graduate study, but referring again to the catalogue, it indicated that the institution should be credited with at least two graduate degrees.

Table 16 also gives the number of teaching hours as reported for the last term or semester of the year 1927–28. While in most cases these hours are undoubtedly quite accurate, there are cases in which the number of hours reported is clearly beyond the limits of probability. One case will suffice for illustration. The report showed that this staff member was carrying 7 subjects that required 10 lectures and an average of 51 laboratory hours per week, making a total of 61 actual hours in classroom or laboratory per week. In addition he reported that he was giving one-third of his time to State work of a non-educational nature, as well as holding a position in his own institution which in most cases requires considerable work of an executive nature. The inference is strong that in some cases classes and laboratories are not regularly met. In a few cases this has been confirmed by consultation with those having personal knowledge. This condition is especially likely to develop where staff members carry on a private practice in addition to their educational work. The more conscientious can safely be trusted in this respect, while others require the assistance of a strong administrative hand to keep them regularly at their institutional duties. On the whole it may be said safely that this abuse is confined to a few. Most staff members are employed full time by their institutions and report little outside income. In a few institutions reply to this question was avoided.

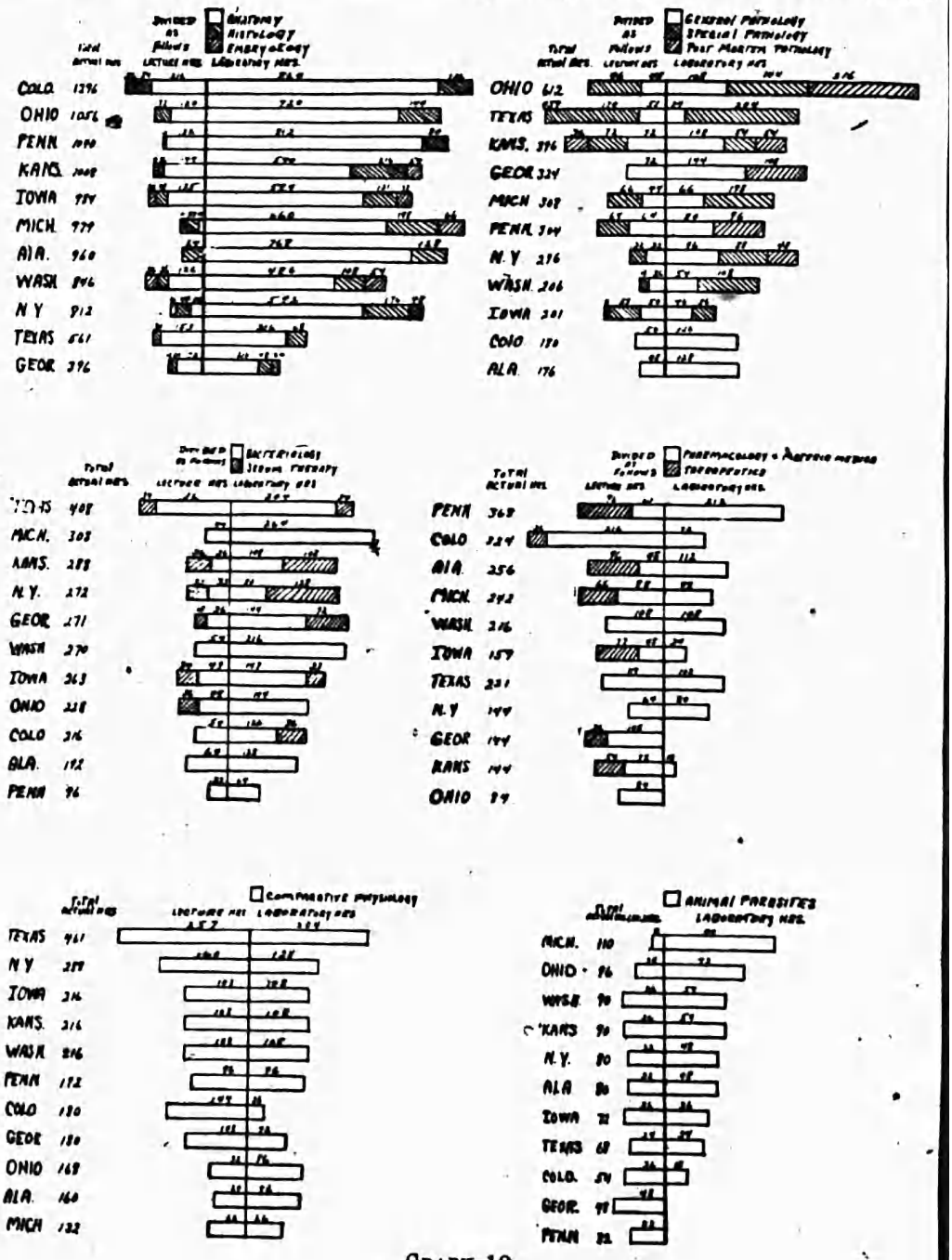
The important consideration is not criticism of staff members but criticism of institutions that permit conditions and a salary scale which encourage abuses of this kind, or in some cases almost require such practices if the staff is to have a decent income. In some institutions outside work is encouraged because of the experience thus gained; experience thus obtained is considered more important than the financial returns. This viewpoint is not without merit if practice is kept within the limits of its contribution to educational efficiency. A man with no practical experience certainly can not be as good a teacher as the experienced man, other things being equal.

But neither can the man who neglects to meet his students regularly or fails to prepare for lectures or laboratories because he is busy making another dollar, be considered a desirable member of the staff of any veterinary college.

Two fundamental things are necessary in educational work, students who desire knowledge and some means by which such knowledge may be secured. The most efficient means for providing knowledge is a teacher thoroughly trained in the particular subject or subjects on which the student seeks further information. The effectiveness with which the teacher is able to transmit the information and attitudes that he possesses to the student determines the quality of teaching. Equipment is only an adjunct, though often very effective, to assist the various members of the teaching staff in their efforts to enlighten the student. The staff is, therefore, the most essential part of any educational institution. It is the heart of the college; it is the college itself.

Chapter VII.—The Curriculum

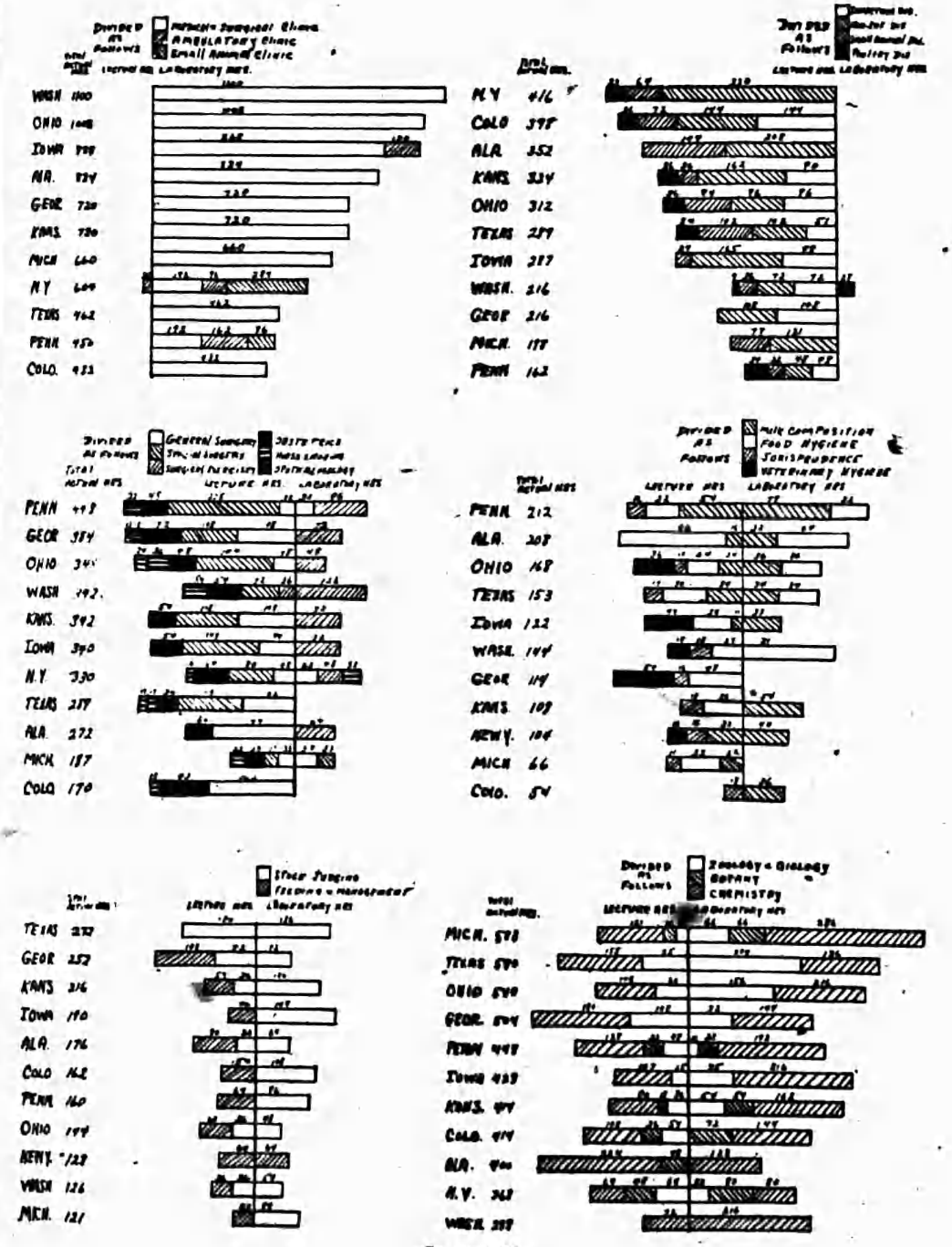
For convenience of consideration the courses have been divided into subject groups. Those usually taught by the members of the



GRAPH 10

veterinary faculty within the veterinary division of the college will receive special consideration and will be considered first in this discussion.

Taking these courses as they most frequently appear in the outlined course of study, the anatomical group usually continues throughout the freshman and sophomore years. The graphs following show the number of hours devoted to the different subjects



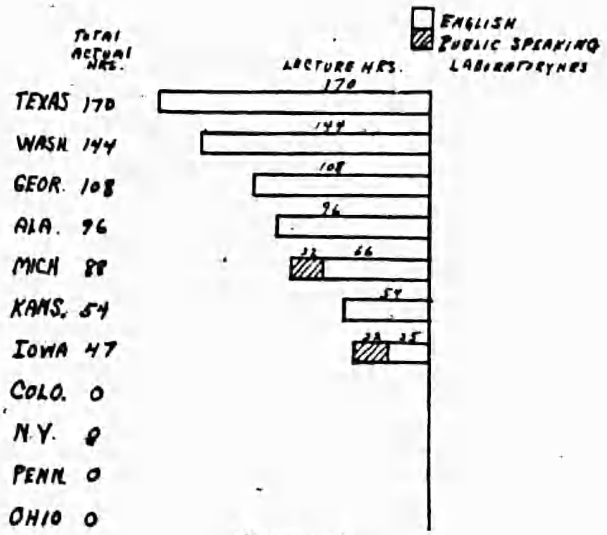
GRAPH 11

at the various institutions and indicate the actual conditions as reported much better than lengthy discussion. Anatomy varies from 188 hours at one institution to 1,080 at another. The number of lecture hours varies from 11 to 216 and the laboratories from 216 to 864. The subject group which includes histology and embryology

with anatomy varies from 396 to 1,296, while an average for all institutions is 912.

Certain conclusions may be drawn in this connection: First, that the conditions existing in the various States now supporting veterinary colleges do not vary sufficiently to justify such an extreme range in amount of time devoted to various subjects in the curriculum. Fundamentally, veterinary medicine is the same no matter in what part of the United States it is being taught.

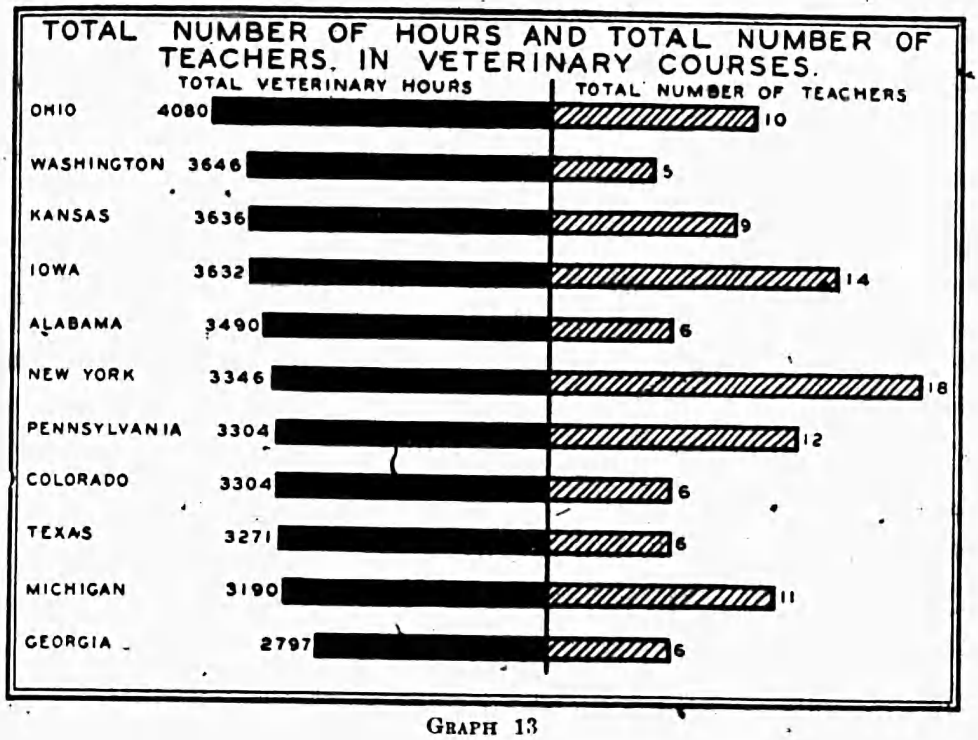
There must be some other reason, therefore, for this great variety of total hours allotted to various subjects. For example, bacteriology and serum therapy, subjects which may be classed as among the newer sciences, are so obviously important in any branch of medicine that they may be classified as among subjects essential to any student in medicine. Yet a range is found from 96 to 408 hours in



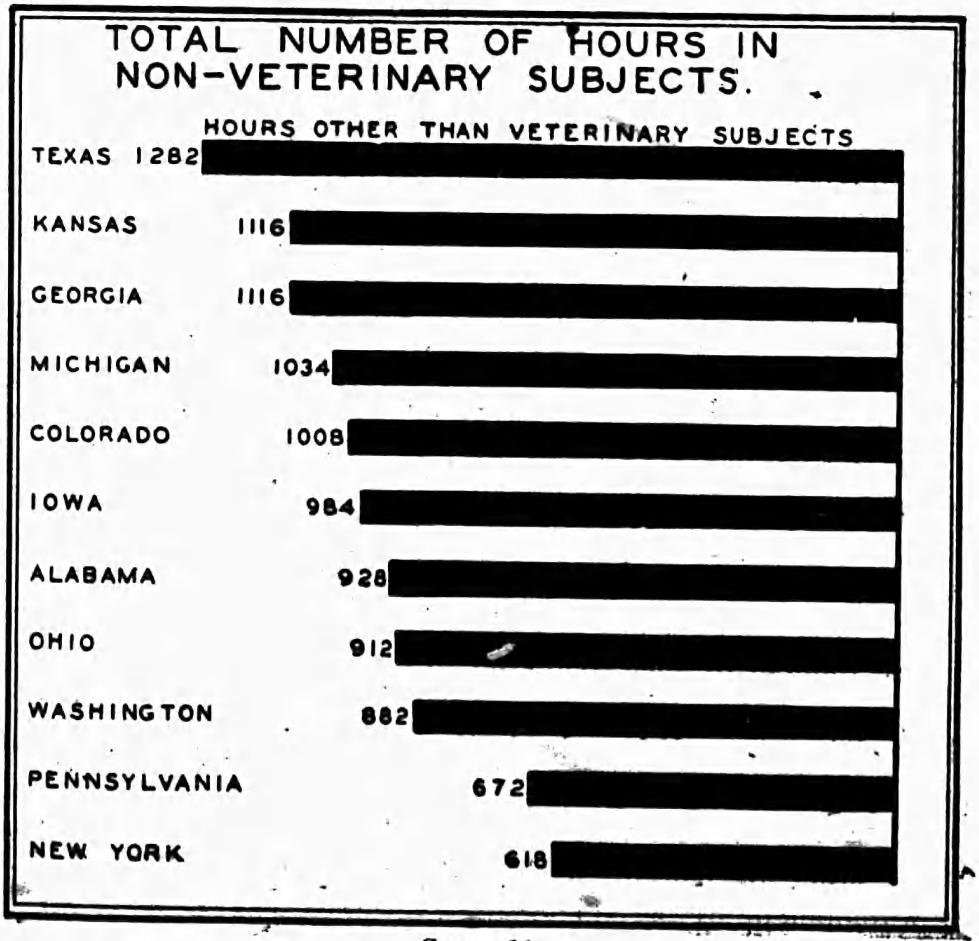
GRAPH 12

the amount of time assigned to these subjects by the different institutions. The average is 266. While standardization and complete uniformity of courses in the various institutions is not recommended, such wide variation can lead but to one conclusion, that in veterinary education there is no agreement among the deans and other responsible persons in veterinary faculties as to what constitutes a good course of study. If 96 hours of bacteriology and serum therapy are sufficient, several hundred hours of time are being wasted in the other institutions. It is to be hoped that a careful study by the deans of the various colleges will lead to some adjustment of this wide variation.

The course of study for veterinary students is already too short and must soon either be extended to five years, or a year of preveterinary work of collegiate grade must be required. Under these circumstances it is important to determine how the time available for undergraduate instruction is utilized.

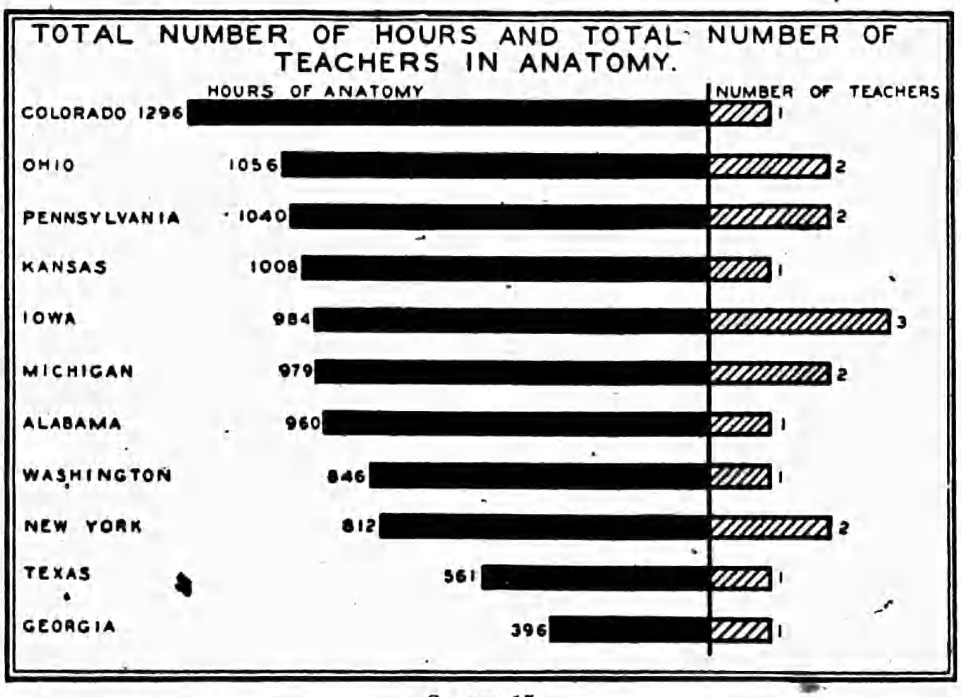


GRAPH 13



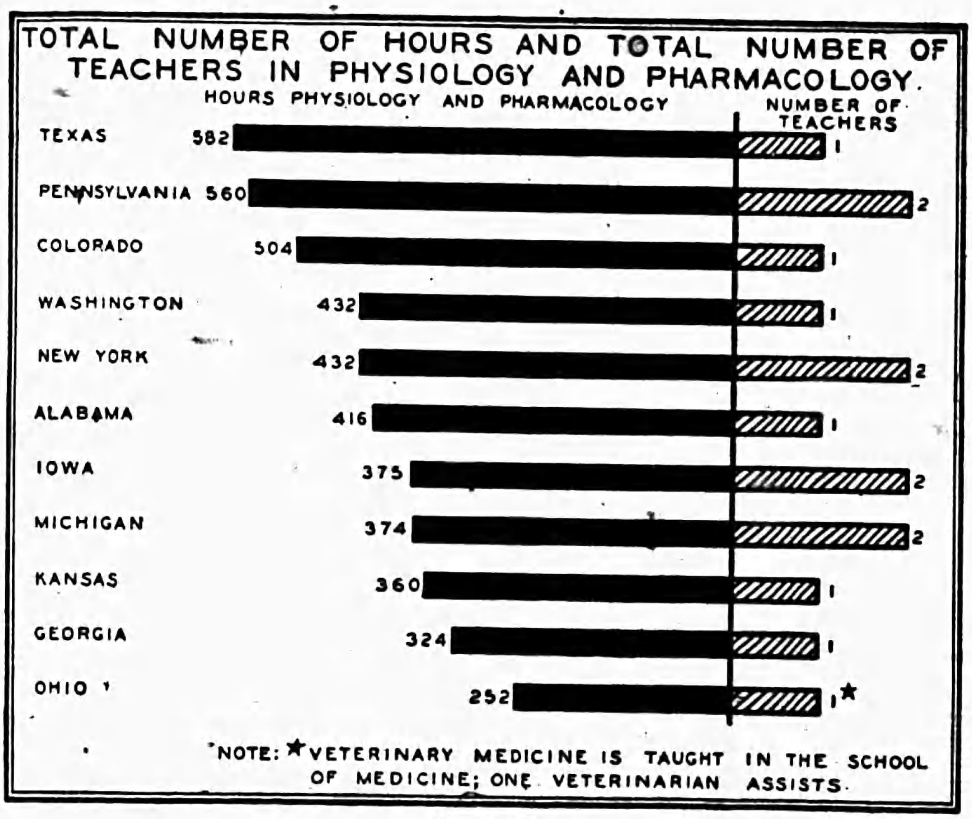
GRAPH 14

On the whole, courses in veterinary medicine are crowded with required subjects, leaving no room for electives and affording no opportunity for the student to give special attention to any special subject in which he may be interested. It may be argued that specialization should not begin in undergraduate years, that it should be reserved for graduate work. The number of courses offered varies widely. The total number of hours in the various curricula varies from a little more than 3,900 to nearly 5,000. One might suppose that the institutions that are handicapped by insufficient faculty would be the ones with the smaller number of hours. This, however, is not the case as the one having the largest staff is next to the lowest in the total number of hours offered.

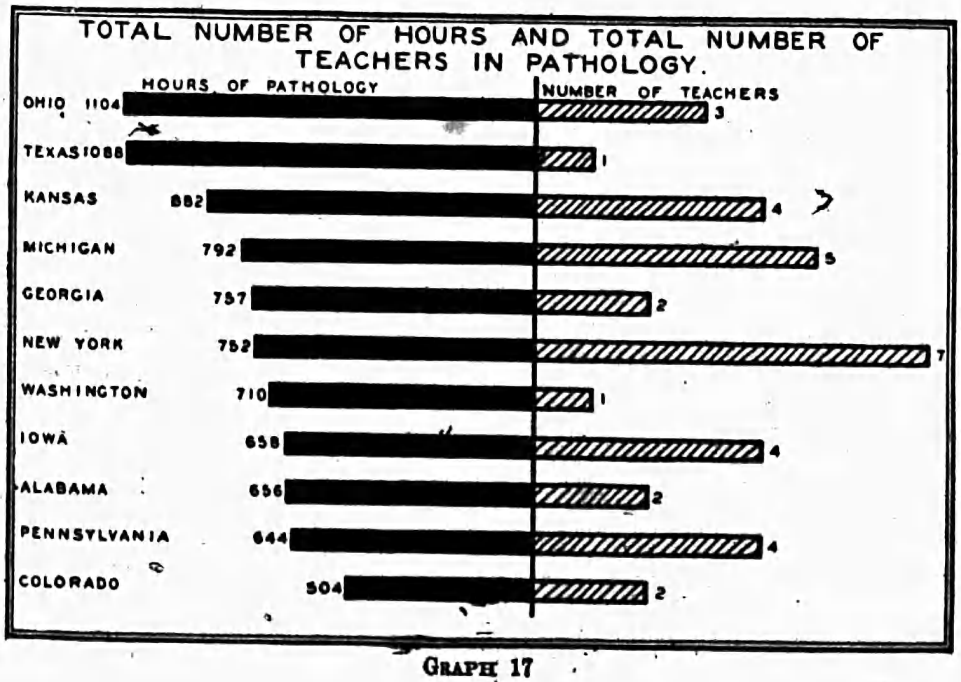


GRAPH 15

Comparing the institutions and the number of hours required with the number of men available on the teaching staffs is an interesting study. The facts are shown by graph 13. The first column is the subject group and the second column indicates the number of men available on the staff for the teaching of the subject group. It will be noted that the number of men available for handling the work does not seem to govern the amount of work offered. Either poor instruction is offered in some of the schools or others have more help than is necessary. How a college can expect four or five men to handle the same number of hours handled by three or four times that many men in other institutions and still require them to contribute to the development of satisfactory professional character is difficult to understand.

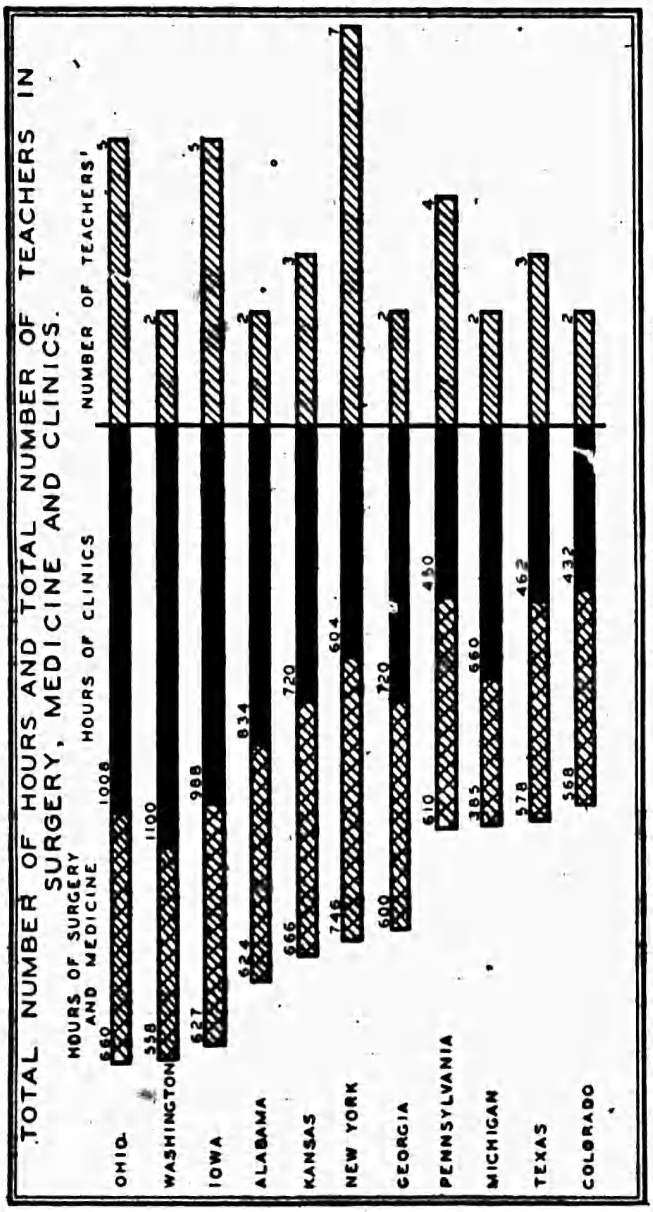


GRAPH 16



GRAPH 17

A study of the graphs seems to indicate that the number of hours in the course of study has not been the most important determining factor in the success of the graduates of the various institutions. Hours assigned in a course of study simply provide an opportunity for contact of teacher with student. The benefits derived from this



contact depend on many factors other than frequency. A survey of the number of hours assigned to various subjects is, therefore, not to be accepted as a final index of the grade of an institution. Classroom and laboratory periods provide at best only one opportunity for the student to secure the information for which he has come to college.

Chapter VIII.—Alumni

The question as to whether graduates of veterinary colleges are staying in the profession, what their incomes are, and what the character of their work is are topics of frequent inquiry.

An attempt was made by the survey to discover the present occupations of veterinary graduates from the land-grant institutions. Three hundred and twenty-one graduates and 59 ex-students returned questionnaires dealing with this and other matters. Tabulation of occupations gave the following results: No reply, 2; farming, 29; engineering, 4; forestry, 1; veterinary medicine, 301; education, 5; commerce and business, 24; and others, 14.

Inasmuch as only graduates can engage in the practice of veterinary medicine, it is evident that the 301 in veterinary medicine all came from the 321 graduates. This would indicate that approximately 94 per cent of those who graduate in veterinary medicine follow their profession.

From data collected by Dr. V. A. Moore, of the New York State Veterinary College, it is learned that 55 per cent of the 676 graduates of that institution are in general practice. About 8.5 per cent are engaged in education and research in connection with veterinary or agricultural colleges; 6.36 per cent are employed by the Bureau of Animal Industry of the United States Department of Agriculture; 5.5 per cent are employed by large dairy companies; 3.1 per cent are employed as county veterinarians; 2.8 per cent are veterinary officers in the United States Army; 2 per cent are engaged in State veterinary service; 1.8 per cent are in city inspection and public health work; 2.36 per cent are employed by commercial drug and biological houses; 0.88 per cent are in human medicine; 4.8 per cent are in other business; and 7.39 per cent are dead. Of the 511 living alumni engaged in veterinary work, 400, or 78.2 per cent, are within the State of New York. Thus it appears that 94.3 per cent are engaged in some phase of veterinary medicine.

Of the 596 alumni of the Iowa State College 34 are reported in other business than veterinary medicine. This leaves about 94.3 per cent in the profession.

The figures from three entirely independent sources agree very closely, that between 94 and 95 per cent of the men graduating in veterinary medicine follow that profession.

As to the origin of the veterinary students there has been considerable discussion. Of the 380 graduates and ex-students concerned in the land-grant college survey, 239, or approximately 62.9 per cent, were farm reared. The survey of the Iowa State College alumini indicated that 58 per cent were farm reared.

Income.—Reports from 206 graduates and 59 ex-students in veterinary medicine at land-grant colleges revealed the following concerning their incomes 10 years after leaving school: Less than $500, 1; $500 to $999, 3; $1,000 to $1,999, 33; $2,000 to $2,999, 73; $3,000 to $4,999, 67; $5,000 to $7,499, 16; $7,500 to $9,999, 12; and $10,000 to $19,999, 1.

A survey made by one veterinary college (Iowa) in 1925 which included alumni who had graduated from 1880 up to and including the year 1925, revealed a wide range of income as indicated by the following figures: Less than $500, 1; $500 to $999, 2; $1,000 to $1,999, 11; $2,000 to $2,999, 30; $3,000 to $4,999, 30; $5,000 to $7,499, 12; $7,500 to $9,999, 2; and $10,000 and more, 3.

Chapter IX.—Conclusions and Recommendations.

The field of veterinary medicine is based on the medical sciences and the service of the veterinarian consists of the application of these sciences to problems in animal industry, public health, and national defense in the interest of human welfare. There is only one source of trained men for this service—10 veterinary colleges connected with land-grant colleges and universities and one a part of a university receiving State support. The quality and policies of these institutions determine, therefore, the future character of the profession and the kind of service it renders. The nature of the service demanded of the veterinary profession is gradually becoming more variable and touches the field of human medicine on the one hand and the problems in animal industry on the other hand.

Little or no specialization has been permitted up to the present time in veterinary education. If students are well trained in the fundamental veterinary sciences (anatomy, including biology, pathology and bacteriology, physiology and pharmacology) they will be prepared with slight additional training to render a wide variety of service.

In order to maintain the veterinary profession and provide men for additions to the present service, not fewer than 500 to 600 graduates are needed every year. Most of the veterinary colleges to-day are inadequate in the equipment and personnel required to provide the graduates required. Further, insufficient provision is made for a research program with adequate funds and well-trained personnel without which no veterinary college should be rated as a class A institution.

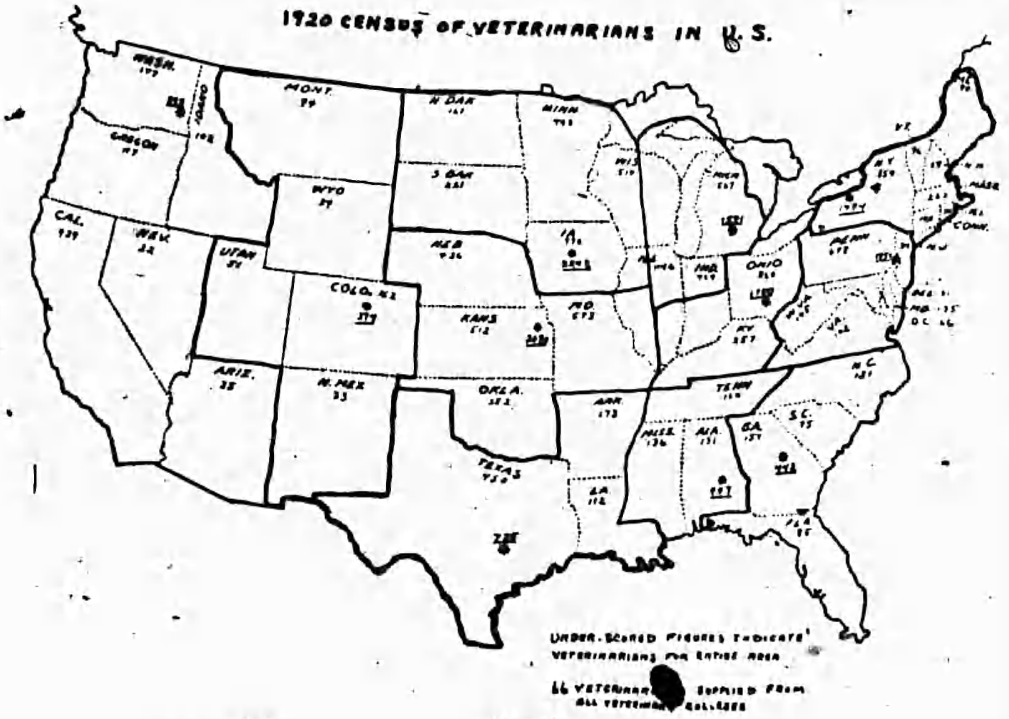
Apparently some of the 11 veterinary colleges are not properly located. Others have very inadequate faculties or buildings and equipment, and poor financial support, while the course of study shows no uniformity as to the amount of time devoted to the various subjects.

There is no need for a veterinary college in each one of our 48 States. In fact, 10 or 12 schools, each with an average graduating class of from 50 to 60 would seem at the present time to be sufficient.

It would seem logical that the veterinary colleges should be located with some consideration as to the distribution of the profession in the

United States. This to a certain extent has automatically taken place. The exceptions to this have been in the South and West. The map indicates the number of veterinarians in the United States by States and the area from each school might reasonably be expected to draw most of its students. The approximate number of veterinarians in the area is indicated by the underscored number near the location of the college.

It will be noted that the number of veterinarians in the areas served by the veterinary colleges of Alabama and Georgia is very small, fewer than 450 in each area. If these two veterinary colleges were united the combined demand of the two sections, as represented



MAP 3

by replacements in the profession and by natural development, should be sufficient to support a strong school of veterinary medicine. Even then the combined areas would not have the veterinary population represented by most of the other areas.

The area west of the Rocky Mountains might be best served by having a veterinary college in California. California is at present giving more support to veterinary medicine in the University of California, although it does not have a veterinary college, than Washington is giving to the veterinary college at Pullman. A glance at the map will show that the State of Washington had in the 1920 census report only 177 veterinarians and the veterinary college is, very properly from the standpoint of Washington alone, being supported on the basis of its own needs. California has about one-half of all

the veterinarians west of the Rockies within its own borders, while the only veterinary college in this area is removed almost as far as possible and still be in the United States and west of the Rockies.

The States having veterinary colleges draw their students more largely from within their own borders than from without, although each veterinary college should serve to provide veterinary education to an average of more than three States in addition to its own.

Data relating to the extent to which veterinary colleges have served other States than their own in the past are available from only two institutions. In the case of New York, 581, or nearly 86 per cent of the 676 graduates, came from the State of New York. A little over 12 per cent came from the other States, and a little less than 2 per cent came from foreign countries.

Of the 623 graduates of Iowa State College (including 1930), 468 or 75 per cent, came from the State of Iowa, approximately 2 per cent came from foreign countries, a little over 13 per cent came from States adjoining Iowa; the remainder came from the various other States. From 1920 to 1929, inclusive, the 214 graduates, however, show a different distribution, as 80, or over 37 per cent, came from outside the State of Iowa. There can be no doubt that the closing of the two veterinary colleges in Illinois, as well as the two in Missouri (all private), is largely responsible for this change. Several States with a large veterinary population—Illinois, Missouri, Indiana—had thriving private veterinary colleges for a number of years, and these schools have been closed for a period of only about 10 years. The present land-grant colleges will therefore need to serve these States to a much greater extent in the future than they have in the past unless these States establish veterinary colleges of their own. It would be logical to locate any new veterinary college in one of the Central West States—Indiana, Illinois, or Missouri.

Each State that supports a veterinary college extends to its neighboring States a considerable service in training veterinarians. To what extent should the 11 States now supporting colleges of veterinary medicine tax themselves to educate young men from neighboring States? Besides funds from tuition or service by the veterinary college, there are three principal sources of financial support, the States, the Nation, and endowments. The private veterinary college subsisted on tuition and service fees, but the faculty and equipment necessary to operate even a fair college offering instruction in any branch of medicine to-day requires expenditures far beyond what could reasonably be collected in this manner. Veterinary education is now supported almost entirely by the public funds of the 11 States in which the veterinary colleges are located. No national funds have been appropriated for this purpose. Some of the veterinary colleges

are receiving Morrill funds, but they are not given to veterinary education as such and could be diverted to other divisions of the land-grant institutions by simple administrative action.

Federal funds are not considered desirable by some because of the fear of Federal supervision and perhaps domination of veterinary education. Whether Federal supervision would be detrimental or not can not, of course, be determined beforehand, as it would depend entirely upon the character of the supervision. It could be made immensely helpful. It would not seem unwise, however, in view of the fact that the veterinary colleges are of seminational character, and the men graduating from them are rendering a State and national service of large significance.

State support.—A study of Table 10 showing the sources of funds for the various veterinary colleges and of the map showing the distribution of the veterinarians in the United States will show that there is considerable correlation between the veterinary population of the State and the financial support the veterinary college receives. This is to be expected, but there is a minimum below which no satisfactory veterinary college can be operated. Certain essentials as regards faculty and equipment must be provided, and these are necessarily quite independent of the number of students.

The idea that a recently graduated, inexperienced teacher can be put in charge of a major subject just because there are only a few students, seems to prevail in some institutions. The students suffer as a result and because of small enrollment the State does not feel justified in providing anything better. The several States now maintaining veterinary colleges should study their problem carefully and either maintain a high-grade veterinary college or abandon professional veterinary education and maintain a service department to agriculture as is done by some 37 States at the present time.

Much criticism was aimed at private veterinary colleges because of the unsatisfactory type of education offered by them. Undoubtedly most of the profession will agree now that this criticism was justified. If the same type of education is offered in the name of the State, its results will be no better than if offered by private institutions. It may be said with considerable justification that private veterinary colleges have been replaced by relatively poor State institutions whose product in many instances falls far short of desirable professional standards. Supervision of veterinary colleges is very much needed by some agency having authority and the courage to enforce reasonable standards with judgment and vision, and with sufficient firmness to insure progress commensurate with the needs.

The suggestion that the States that have no veterinary colleges provide scholarships or otherwise assist the States having such institutions, although reasonable, does not appear entirely practicable. Although this proposal would be much less expensive for those States which do not have a large veterinary population than starting veterinary colleges of their own, it is difficult to persuade State legislatures to support their own State institutions; it is improbable that they could be persuaded to make appropriations either directly or indirectly to other States.

Endowments.—Humane society work is being well supported chiefly by endowments and gifts. This work is very closely related to that of the veterinary profession. If the persons sponsoring such work to-day would lend support to veterinary education, the whole structure would be greatly strengthened.

The large sums being expended annually on the construction of more and larger medical centers as well as their support come quite largely from endowments. It is fortunate that many public-spirited citizens devote wealth to enterprises of this kind. It would enhance the value of these investments very materially if their conception of the field of medicine were enlarged to include all branches. Close relationships exist between all diseases affecting living things. Fundamentally, the afflictions of animals and man are the same. Their relief and control vary only as to detail and not as to principle.

Staff.—Any suggestion for adjustment of faculty organization is almost certain to lead to violent opposition. There are, however, a few general principles involved in faculty organization upon which all should agree.

The time is past when one man, no matter how competent, with a few assistants can be a "college." Veterinary education naturally and logically divides itself into groups of subjects which should be organized into departments. Each department should have at its head a man who is not only an authority upon the major subject of his department but who is also an inspiring teacher and good executive. If he has research ability in addition, this is greatly to the advantage of the college.

The function of the dean is not to direct in detail the work of the departments, but rather to coordinate the efforts of the several departments, and to keep his faculty working together. He must have the courage to remove "dead timber" and to keep his organization a live, progressive, and productive group of men. Heads of departments must have all the liberty possible in the conduct of their work consistent with the general program of the college. They should be encouraged to "produce" and become known as authorities in their fields within and outside the profession.

Every veterinary college should have not fewer than five and preferably six distinct departments. Research may be an additional department by itself or organized within the teaching departments. Each department head should have at least one assistant and as many more as enrollment and other conditions require.

It is difficult to see how any college can do creditable work in veterinary medicine with a staff of fewer than 10 to 12 veterinarians in addition to men in other departments teaching the usual service courses in science, agriculture, etc. If a staff member is expected to follow the literature in his subjects, organize his material, and present it to his classes and still have from 27 to 37 actual hours of student contact each week, he must either neglect his students or his preparation. In either case the veterinary profession will suffer in the end.

The present veterinary colleges are all a part of universities or State colleges and the veterinary faculty should be equal in general educational attainments to the faculties of the other professional colleges of the same institutions. This can not be accomplished immediately in all institutions but should nevertheless be the goal. Young men who are added to the faculties should be required to complete courses of graduate study in the subjects in which they desire to develop.

The undergraduate and graduate work should be taken at separate institutions, and if a number of the members of the staff have taken both at institutions other than the one they are serving, it will be stimulating to the entire institutional program.

Buildings and equipment.—If it is admitted that the staff is of first importance, the material resources are nevertheless very important so long as we depend so largely upon laboratory exercises and clinical facilities for instructional purposes. A number of the veterinary colleges need additional buildings and one (Michigan) has begun a well-outlined building program since this survey was started. This program involves the expenditure of $375,000 for buildings in addition to those already available. In order to start a veterinary college at the present time, not less than $500,000 should be made available for material resources in addition to institutional provision for supporting subjects such as chemistry, biology, etc., usually taught in departments outside of the veterinary college.

Entrance requirements.—Entrance requirements have a close relationship to the course of study and quality of teaching. The accepted length of course in practically all branches of education is four years. Just why it should be four years is not clear, but, nevertheless, this has become so well established that the prospective student has no other thought in mind when embarking on his educational career. In veterinary medicine four years is not sufficient

time to enable a college to cover the technical courses necessary in a veterinary curriculum and at the same time include the most essential basic sciences and other fundamental subjects. Some important subjects have been literally squeezed out and others have never been included because of efforts to hold the curriculum to four years of nine months each. It is desirable that more than 36 months be given to veterinary medicine, or that students upon entrance have credit in fundamental arts and science subjects which are now included in the veterinary curriculum. It seems reasonable that veterinary colleges should require for admission at least one year of college work which should include the courses in the arts and sciences now required in many of the veterinary curricula. This would not only provide better-prepared students but would, in addition, clear the veterinary curriculum of some of the present congestion and make it possible to include more work in preventive medicine and a number of other subjects deserving more attention than they have received in the past.

The extension of the entrance requirements to two years of college work would undoubtedly follow the success of the 1-year requirement. There is a certain amount of general education necessary aside from the technical subjects in the development of any professional man. If the regular curriculum is full of essential technical subjects other qualities must be sacrificed in the veterinary graduates produced.

Enrollment.—Without doubt one factor that is preventing the adoption of the requirement of one year of college work for entrance is the fact that it is thought that student enrollment will suffer. Most veterinary colleges are sensitive on this point because of the great decrease in numbers of veterinary students in all the colleges for the 10-year period following the World War.

Increasing standards nearly always lead to a temporary decrease followed by an increase above the previous number. In human medicine since the entrance requirements were increased, there have been more applicants than medical colleges could admit and teach satisfactorily.

In the case of veterinary colleges the enrollment should be limited to the number that can be efficiently taught with the staff and material resources available. Perhaps the one limiting factor which would operate in most institutions (if it is not ignored) is the clinical facilities and material. In the case of medical schools clinical material can be brought together from considerable distances even in small cities, but the transportation of clinical cases for veterinary colleges is quite a different problem. Most of the cases for veterinary clinics undoubtedly come from a radius of 10 miles, cer-

tainly comparatively few from a distance of more than 25 miles. If a veterinary college has from 80 to 100 students in clinics each day considerable material and a large staff of instructors must be available if the student is to become proficient in this important phase of his education. There is only one substitute in case enrollment exceeds the number that can be efficiently taken care of in the clinics, that is a period of "interneship" with an experienced veterinarian before the degree is awarded. With the best clinical facilities now available in any of our veterinary colleges, an enrollment of 250 would seem to be the maximum that can be cared for efficiently. Laboratories other than clinics can be enlarged, additional instructors provided, and material prepared to accommodate any reasonable number of students.

Teaching load.—It is impossible to prescribe the number of student clock-hours which will be most efficient in all cases. This varies with individuals and with subjects. It does not require much thought, however, to reach the conclusion that five members of a staff with a total teaching load of from 2,797 to 3,646 actual hours must provide some very poor instruction. When an instructor reports that he is carrying from 10 to 13 classroom appointments and 15 to 24 laboratory hours per week in three or four different subjects, it is clear that the instruction given to students can not be of high character. Fortunately the majority of the 11 veterinary colleges do not depend on four or five members of the staff to carry the instructional burden. Several provide their staffs with opportunity for at least some research in their chosen fields and for other contacts necessary to enthusiastic inspirational teaching. There is probably no way of correcting the conditions in the others except by a definite rating plan which would place such institutions in a C or D class.

Curriculum.—It is most difficult for faculties of various institutions, as well as members of the same faculty to agree upon a reasonably standard curriculum. The points of controversy concern the subjects to be included and the amount of time to be devoted to each subject. The graphs showing the courses of study in the different institutions indicate the time in actual hours devoted to the various subjects as reported by the several veterinary colleges. The course of study, especially the exact number of hours devoted to various subjects, is not so important as casual consideration might suggest. It is at best an arrangement for faculty student contact for the consideration of specified subjects. The character of the instruction is much more important. Most veterinary curricula are criticized because of the total number of hours required. In the opinion of some authorities on medical curricula the total hours in most of

the veterinary curricula would be about right if those courses not usually taught in the veterinary college were eliminated. An additional criticism is that the student has no freedom in choice of subjects during his senior year.

Increasing the entrance requirements as is suggested would solve much of the difficulty concerning the total number of hours. An average of the total number of essentially veterinary hours is 3,560. Even this is more than should be required if the colleges received better-prepared students. With competent and experienced members of the staff this total could no doubt be reduced to 3,000 hours without in any way impairing the end results. The suggestion would naturally follow that veterinary colleges reduce the hours in those subjects which are shown in the graphs to have a total number of hours considerably above the average, and that those extremely low be increased.

It must be kept in mind, however, that courses at different colleges are not the same as to content even though they are listed under the same name. For example, surgery may include only work relating to surgical exercises in one institution, while in another it may include horse shoeing, opthalmology, some obstetrics, or other related subjects. The later condition will be found to prevail in institutions where there has been an attempt to abolish 1 and 2 hour courses. This is commendable since the educational efficiency appears to be higher in 5 and 6 hour courses than it is in 1 and 2 hour courses.

There has been some demand for specialization in veterinary medicine. Little has been allowed up to the present time, largely because there has not been sufficient time to master the general course that is admittedly necessary before specialization should be considered. Undoubtedly there should be some opportunity for veterinary students to elect some subject or group of subjects in their senior year which would better prepare them for service in special capacities following graduation. The present congested condition of curricula must first be relieved, however, before provision can be made for specialization.

Another method of providing specialization is suggested in the form of postgraduate work. This is usually pursued only by those who are preparing themselves for institutional service (education or research) and should be of a different character and grade than undergraduate work.

Degrees.—The degree of doctor of veterinary medicine is the one that has finally been adopted by all veterinary colleges. It must be recognized that the educational requirements necessary to receive the degree are really those usually required for the bachelor's degree in other lines. For this reason there is some feeling that the veterinary

colleges of the United States should grant the bachelor of veterinary medicine degree and confer the doctor's degree only after satisfactory postgraduate work. If the entrance requirements are advanced within a reasonable time to two years of college training, it would be advisable to permit the degree to remain as it is. If this is not done the doctor of veterinary medicine degree should be conferred as a graduate degree, and should, therefore, represent more than the regular four years of work of collegiate grade.

Research and graduate work.—Research is perhaps the greatest stimulus to educational work. The possibility of constantly adding new facts and ideas to the material presented to students encourages and stimulates the teacher. There are undoubtedly fewer good teachers than there are members of the various faculties; there are a still smaller number of outstanding research men. The combination of a good research man and successful teacher is rare.

There is great need for more extensive research work in the field of veterinary medicine. Graduates must now be turned out without definite information on too many important phases of their professional work.

Research and teaching should not be entirely divorced by organization but should be correlated in such a way that the one will act as an aid to the other. The research organization can assist very materially with the graduate work which should be developed more extensively in at least one-half of the veterinary colleges. It should naturally be developed in those having sufficient financial support and personnel to do creditable work. Not all research institutions offer graduate work, but it is difficult to conceive of good graduate work without research of some character. The two are so closely linked that colleges which do not have provision for research should not pretend to offer work for graduate students. Considerable research in veterinary medicine is being carried on at agricultural experiment stations where there is insufficient opportunity for graduate courses in veterinary medicine. Veterinary colleges considering additions to their staff should when possible draw men from agricultural or other colleges instead of from veterinary colleges. It does not help veterinary education if the veterinary colleges attempt to rob one another of strong men. Faculty personnel should be built up by additions of the strongest men in education and research not now in veterinary colleges. This will be necessary until the veterinary colleges can train more young men for institutional service through their own organizations.

Supervision.—Veterinary colleges have been under more or less supervision since 1908 when the Bureau of Animal Industry of the United States Department of Agriculture conducted a survey of all

the veterinary colleges of the United States. Regulations were formulated as set forth in Bureau of Animal Industry Circular No. 128. Graduates from the colleges not complying with the requirements of this circular were ineligible to take the civil-service examinations for the veterinary inspection service in the Bureau of Animal Industry. The influence of this supervision has always been for improvement. But in the matter of entrance requirements these regulations have been conservative and did not specify four years of high school until all the colleges were forced to this requirement by other agencies. The United States Department of Agriculture is the largest single employer of veterinarians in the United States; it is reasonable that it should have an interest in the veterinary colleges. It is also perfectly proper that minimum requirements should be set forth for the colleges from which it receives graduates.

Any Federal supervision of veterinary education will be subject to criticism so long as the institutions are entirely State supported. On the other hand, as has already been pointed out, veterinary colleges are necessarily doing an "interstate business." Supervision of the technical material offered might quite naturally come within the range of the Bureau of Animal Industry. Just now the great problem is one of coordinating and adjusting veterinary education with our entire scheme of higher education in all professional lines. Veterinary education needs the support, sympathy, and encouragement of persons engaged in other branches of higher education until the necessary adjustments have been made. The state of veterinary education is critical at this time, and firm yet sympathetic supervision and ample support is very important if the profession is to become the useful agent in serving humanity that it should.

The American Veterinary Medical Association has for years shown a keen interest in educational problems and has done much to elevate standards. It has acted in much the same capacity for veterinary education as did the American Medical Association with the medical colleges. It is always difficult, however, to secure the adoption of a constructive plan which continues over a period of years in an organization numbering thousands of individual memberships. Too frequently members of organizations think of future educational standards in terms of their own educational equipment. Increased educational standards have always had opponents inside the veterinary colleges. In the last analysis much of this opposition is due to the fact that staff members lack scientific background themselves. The American Veterinary Medical Association can do much, but its classification of all the present veterinary colleges as class A institutions does not stimulate correction of the weakness in the system of veterinary education as it now exists.

There is one other organization which might reasonably assume the responsibility of supervising and assisting the veterinary colleges, the Association of Land-Grant Colleges and Universities. Whether this organization which includes all but one of the institutions now maintaining colleges of veterinary medicine would be willing and able to exercise leadership and the degree of compulsion upon its own membership that will be needed is doubtful.

To many this report will seem very critical. It was meant to be so. The presence of veterinary education in our land-grant colleges needs no apology or defense. Volumes could be written concerning the valuable service the graduates of veterinary colleges have rendered. Much praise could properly be bestowed on some features in connection with some of our present veterinary institutions. Space in this report is too limited to permit the publication of this material. It is the object of this report to call attention to the imperfections rather than to praise the perfect.

PART VI.—SUMMER SESSION

All except four land-grant institutions—Alaska Agricultural College, Connecticut Agricultural College, Montana State College, and Rhode Island State College—maintain summer sessions which are fast becoming as much a part of the college year as the regular term from September to June. Only 39 institutions, however, having summer courses replied to the questionnaire on the summer session, so this chapter is based mainly on the 39 returns, and does not include the following institutions which conduct summer terms: University of Arizona, University of Maine, University of Maryland, Mississippi Agricultural and Mechanical College, University of Missouri, New Mexico College of Agriculture and Mechanic Arts, Ohio State University, University of Porto Rico, and University of Wyoming.

The summer session is often independently managed in the land-grant colleges, although credits earned by students apply to the requirements of the regular session. College plants, buildings, and equipment which would otherwise lie idle during the summer months are turned over for mutual benefit of both students and administration. As the demand for summer training increases new courses are added and new incentives increase enrollments. In the past decade several institutions have opened summer courses where none was given previously.

Summer sessions provide professional instruction to public-school teachers and administrators during their long summer vacations in 18 institutions. Regular students may shorten their college courses by attending summer schools; in some instances a 4-year course may be completed in three college years and three summer sessions; they may also make up work in which they have failed during the regular term. Additional college credits may be earned. Opportunity is offered to qualify as vocational teachers in the southern institutions. Teachers may renew or extend their teaching certificates through summer work and adults may complete a college education. Graduates may pursue graduate work. Master's degrees may be earned in three or four summers. Subfreshmen have opportunities to make up entrance requirements. Normal school students may receive the bachelor's degree for work in summer sessions. Administrators find their greatest opportunity to improve teachers in service. School people of the State become acquainted. Complete

units of work are provided for those who can take only summer work. Student expenses are less than those of the regular session. Sometimes the summer session is a tryout for teachers who are under consideration for regular terms. A general survey of summer schools in the land-grant institutions is given in Table 1.

TABLE 1.—*Summer schools—Staff and enrollment year ended June 30, 1928*

Land-grant college located in—	Weeks in summer session	Members of instructional staff		Enrollment of students							
				Noncollegiate or secondary		Collegiate or undergraduate		Graduate		Total	
		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
1	2	3	4	5	6	7	8	9	10	11	12
Alabama	12	39	16	24	13	329	110	111	34	464	157
Arizona	12	23	2	0	0	100	117	34	24	134	141
Arkansas	6	30	18	24	58	143	491	33	34	200	583
California	6	316	71	------	------	1,790	4,733	1,020	2,315	2,810	7,048
Colorado	11	53	20	16	54	108	224	112	61	236	339
Delaware	6	9	20	------	------	27	267	------	------	27	267
Florida	8	62	19	205	364	180	434	40	46	425	844
Georgia	9	73	36	------	------	276	1,394	63	41	339	1,435
Hawaii	4	15	4	------	------	30	147	20	39	50	186
Idaho	9	21	6	2	2	59	166	39	19	100	187
Illinois	8	193	40	------	------	901	759	435	159	1,336	918
Indiana	9	47	9	------	------	385	100	68	24	453	124
Iowa	11	105	59	4	17	513	623	334	159	851	799
Kansas	13	101	31	3	------	276	499	117	71	396	570
Kentucky	10	82	11	------	------	428	578	236	90	664	668
Louisiana	12	67	22	------	------	293	472	115	72	408	544
Maine	6	28	7	------	------	132	167	20	15	152	182
Maryland	6	37	16	------	------	120	378	58	16	178	394
Massachusetts:											
Amherst	5	15	4	------	------	26	75	27	21	53	96
Cambridge	15	123	2	------	------	1,332	116	------	------	1,332	116
Michigan	10	65	12	------	------	221	263	79	17	300	280
Minnesota	11	352	104	0	0	1,735	2,609	734	366	2,469	2,975
Mississippi	9	30	5	3	141	165	106	------	------	168	247
Missouri	8	132	27	63	119	462	858	380	275	905	1,252
Nebraska	12	129	63	43	144	716	2,220	222	243	981	2,607
Nevada	6	11	5	9	20	5	24	7	65	21	109
New Hampshire	6	32	4	------	------	146	142	------	------	146	142
New Jersey	6	57	32	31	36	419	828	15	16	465	880
New Mexico	8	8	9	0	0	21	64	------	------	21	64
New York	6	176	22	0	0	537	534	161	168	698	702
North Carolina	6	56	2	0	0	180	85	11	0	191	85
North Dakota	6	19	3	0	0	41	116	15	18	56	134
Ohio	11	233	16	0	0	890	1,145	749	296	1,639	1,441
Oklahoma	8	138	55	30	109	307	835	35	40	372	984
Oregon	6	19	24	202	354	196	342	51	90	449	786
Pennsylvania	6	128	49	0	0	851	1,744	130	74	981	1,818
Porto Rico	6	22	14	190	413	149	396	2	5	341	814
South Carolina	6	17	0	------	------	33	0	------	------	33	0
South Dakota	6	24	4	6	15	46	70	17	4	69	89
Tennessee	12	30	11	0	0	370	740	73	83	443	823
Texas	12	70	0	0	0	486	52	47	0	533	52
Utah	6	62	16	0	0	176	218	78	28	254	246
Vermont	6	26	15	2	0	123	750	------	------	125	750
Virginia	12	32	0	1	2	166	31	24	1	191	34
Washington	9	25	10	0	0	79	197	55	42	134	239
West Virginia	12	98	17	------	------	430	547	140	75	570	622
Wisconsin	6	184	52	10	57	1,270	2,126	770	942	2,050	3,119
Wyoming	11	46	33	0	0	147	761	51	28	198	789
Total	------	3,660	1,017	868	1,918	17,815	29,656	6,728	6,116	25,411	37,690

Objectives

While the objectives of the summer sessions are somewhat alike in the matter of training teachers, providing professional training for public-school teachers and administrators who have time and inclination to study, offering graduate courses, and shortening the length of time that a student must put in for a degree, it is perhaps more enlightening to quote from the reports exactly what the different institutions claim as the objectives of their summer schools:

Alabama Polytechnic Institute.—(1) In part the same as for the regular session. (2) In part the training of teachers in service. (3) All work carries college credit except that done in demonstration schools for teachers.

University of California.—The courses in the summer session are designed to meet the needs of the following persons:

(1) Teachers who wish to increase their professional skill, to revise and extend their knowledge of a chosen field, or to qualify in new subjects, preparing to meet the special demand for instruction in various fields. Teachers who desire to be prepared for service in vocational schools and classes maintained under the provisions of the State and Federal vocational education acts, and the State compulsory part-time education act. Courses designed primarily for this purpose are listed under the department of education in the bulletin.

(2) School suprintendents, supervisors, and other officers.

(3) Graduate students, to whom the advantage of smaller classes and more direct and intimate personal contact with the professors in charge of the courses offered are peculiarly possible during the summer session.

(4) Undergraduate students, and especially those registered in the fall or spring sessions of the university, who may use a portion of the vacation to take up studies which they are unable to include in their regular programs, or to make up deficiencies, or to shorten their courses.

(5) Properly recommended high-school graduates who are about to enter upon regular university courses and who desire to broaden their preparation for university work. To meet their needs, courses are offered in chemistry, French, German, Greek, home economics, Italian, mathematics, physics, and Spanish.

(6) Housewives, graduate nurses, social workers, Americanization workers, students of public health, and all adults who are qualified to pursue with profit any course given, whether or not they are engaged in teaching or study.

The courses in the intersession are designed primarily to meet the needs of students attending, or about to attend, the courses of the fall or spring sessions.

(1) Lower division students will find opportunity to enroll in a number of courses which may be offered in satisfaction of junior certificate requirements in the college of letters and science as well as in courses prerequisite to advanced study in several fields. (2) Upper division students in the larger departments will find opportunity to continue their work in smaller classes. (3) Graduate students will find opportunity to enroll in upper division major courses and in seminars.

In general, by combining the intersession and the summer session, it will be possible for students to obtain in a single summer credit for one semester's residence and for 8 to 12 units of work, thus reducing by six months the time required for completion of work for a degree.

Colorado Agricultural College.—(1) Training of teachers in vocational agriculture. (2) Training of teachers in vocational home economics. (3) Training of teachers in trades and industries. (4) Training of teachers and principals and superintendents of consolidated schools. (5) Regular college courses for students who wish to complete their work in a shorter period than four years, who are irregular or who have failed in certain courses.

University of Delaware.—(1) To give prospective teachers an opportunity to meet certification requirements to teach in elementary school. (2) To give teachers in service an opportunity to raise the grade of certificates previously obtained. (3) To give elementary teachers and principals of elementary schools an opportunity to fulfill in part the requirements of a college degree.

University of Florida.—The work to be offered in the summer school of 1928 will be divided into five separate and distinct groups, each serving a specific purpose: (1) Review courses in all subjects required for teachers' certificates. (2) Professional courses meeting the requirements for the extension of teachers' certificates without examination. (3) Normal courses leading to the normal diploma. (4) College courses leading to standard bachelor's degrees. (5) Graduate courses leading to advanced degrees.

Georgia State College of Agriculture.—(1) For teachers to complete undergraduate and graduate courses and professional work. (2) Agricultural and home economics agents preparation. (3) Adult education. (4) Undergraduate work to shorten time in college.

University of Hawaii.—Organized to meet the following needs: (1) Undergraduates who wish to take extra work or work not offered in the regular session. (2) Graduate students who are candidates for advanced degrees. (3) Teachers or school administrators who need advanced training or who are candidates for degrees. (4) Others who for various reasons wish to take advantage of special work.

University of Idaho.—(1) Graduate student working for master of science. (2) Undergraduate student working for bachelor of science. (3) Improvement of teachers in service. (4) Conferences with Idaho education.

University of Illinois.—To duplicate so far as appropriations permit regular semester courses offered by the university and to offer additional courses in education on account of large registration. Two summer sessions equal in residence and amount of work accomplished one semester.

Iowa State College.—(A) To provide opportunities for undergraduate study to the following groups: (1) Regular students. (2) Teachers, principals, and supervisors. (3) Any mature individual who can carry work offered. (B) To provide opportunities for advanced and graddate students: (1) Teachers and supervisors of agriculture, home economics, manual training, and industrial arts. (2) Superintendents, principals, and supervisors in the field of vocational education. (3) Science teachers. (4) Regular graduate students. (5) Teachers and investigators in technical school.

Kansas State Agricultural College.—(1) To train teachers in service. (2) To give regular students an opportunity to make up back work. (3) To give regular students an opportunity to complete work for B. S. degree in less than four years. (4) To give teachers and others an opportunity to take graduate work.

University of Kentucky.—The University of Kentucky summer session is planned to meet the needs of the following groups: Public and private school teachers, supervisors, and administrators; college teachers and administrators;

undergraduates who desire to shorten the period of their college work; persons desiring training for Y. M. C. A. and Y. W. C. A. and social-welfare work including playground directors; and high-school and college coaches.

Louisiana State University.—The purpose of the summer session is to enable teachers who are unable to attend the regular session to earn college credits during their vacation periods and to enable students of the regular session to earn additional credits so as to shorten the time necessary to earn a degree. Especial attention is given in the summer session to the needs of students working for advanced degrees in the graduate school.

Massachusetts Agricultural College.—To provide further training for: (1) School superintendents, principals, and teachers connected with high schools, normal schools, colleges, or universities who seek advanced instruction either with or without relation to an academic degree. (2) College students. (3) Teachers for special-course training. (4) Any serious student who finds courses suited to his preparation and needs.

Massachusetts Institute of Technology.—(1) Supply advanced subjects and research for graduate students. (2) Course for science teachers. (3) Additional summer training in some engineering courses. (4) Supply subjects for students who have been ill, also for students transferring from other colleges.

University of Minnesota.—(1) To carry on the regular work of the university through the summer session. (2) To furnish an opportunity for teachers and others to do graduate work during the summer. (3) For graduate and undergraduate students who wish to reduce their period of residence at the university by accumulating credits during the summer. (4) For superintendents, principals, supervisors, teachers, and others of professional interests who desire further training in their professions. (5) For persons who seek an opportunity for intellectual pleasure. (6) For graduates of accredited high schools who do not meet the special subject-matter requirements to enter some of the colleges and professional schools. (7) For high-school graduates who wish to become acquainted with the methods of instruction and the policies and practices in collegiate work before registering in the regular session during the academic year.

University of Nebraska.—(1) To offer graduate and undergraduate work to those who are unable to attend regular sessions. (2) To furnish the opportunity to complete work for an A. B. degree in 3 years instead of 4. (3) To give teachers the opportunity to meet additional certification requirements for the renewal of teachers' certificates.

University of Nevada.—To assist rural teachers.

University of New Hampshire.—(1) To meet the needs of teachers, superintendents, administrators, and supervisors of secondary and elementary schools in method and conduct. (2) Normal-school graduates may secure master's degree. (3) Undergraduates may reduce period of college attendance by attending continuously.

Rutgers University.—In-service training for teachers. (1) Certificate credit. (2) Credit toward B. S. degree in education. (3) Credit toward advanced degrees.

Cornell University.—The primary object of the summer session is to advance education by helping those engaged in it. The instruction is adapted to the needs of the following classes: (1) Professors and teachers in colleges and schools, superintendents, and supervisors of special branches of instruction. (2) College students in Cornell or other universities who wish to make some educational use of the long vacation, especially those whose college studies

may have been interrupted. (3) Students entering the university and wishing to obtain surplus credit at entrance, or to complete the entrance requirements. (4) All persons qualified to pursue with profit any course given, whether or not they are engaged in formal study or teaching.

North Carolina State College.—(1) To train teachers for the secondary schools of the State, especially in science and the technical fields. (2) To prepare industrial-arts teachers to extend the opportunity for students to do college work, and through short courses to extend the service of the college to groups of people who can come for only a week or 10 days.

North Dakota Agricultural College.—To provide courses suitable for: (1) Recent high-school graduates. (2) Freshmen who enter late in the year. (3) College students in arrears. (4) Teachers and others employed during regular college year.

Oklahoma Agricultural and Mechanical College.—(1) Regular college work toward degrees in all schools. (2) Graduate work. (3) Special courses for vocational students. (4) Special courses for public-school teachers. (5) Courses for high-schools students in training high school. (6) Courses for grade pupils in elementary demonstration school.

Oregon Agricultural College.—(1) To provide opportunity for teachers and others holding bachelor's degree to use the summer to carry on graduate work and proceed to a higher degree. (2) To allow teachers and others, graduates of normal schools (2-year), etc., not holding college degree to complete requirements for degree. (3) To allow students in college to make up work or shorten their term of residence or enrich course. (4) A few courses for high-school students deficient in a unit or two of entrance requirements.

Pennsylvania State College.—(1) To advance teachers' standing in the matter of State certification. (2) To provide opportunity for teachers in service to obtain the bachelor's, master's, or doctor's degree. (3) To open possibilities for study in institutes and special departments either nonexistent or else not so extensively developed during the winter term (the institutes of English, French, music, and progressive education; administration; education and psychology; nature camps; art education; physical education; demonstration school; vocational education, etc.) (4) To offer summer training to regularly enrolled undergraduate and graduate students. (5) To promote the interests of general culture in combination with recreation and social pursuits. (6) To fill academic needs of those not able to take courses on the campus but desirous of pursuing work in the branch session.

Clemson Agricultural College.—(1) Vocational. (2) Teachers in rural and mill communities. (3) College students who have back work.

South Dakota State College.—The summer-session courses are especially adapted to meet the needs of the following groups: (1) Teachers desiring to increase their professional efficiency by broadening their general education, to secure special technical training and equipment, or to keep in touch with recent educational developments. A large number of teachers use the facilities of the summer school in pursuing their work toward a collegiate degree. (2) College and university students, regularly enrolled as undergraduates in some higher institution of learning, who wish to make up deficiencies, or secure work not offered during the academic year. (3) Those seeking general culture who wish to spend the summer to satisfy a special interest in some field of study. Several popular courses are open to those who may not wish to work formally for credit. (4) New teachers in the State who secured their academic training in colleges or normal schools of other States find the summer session of South Dakota State College a pleasant and profitable means of becoming thoroughly at home in their new environment. (5) Graduate students form a

group in the summer session, for whom a program of advanced work has been arranged. Students of serious purpose, who are unable to spare a year from gainful occupations, find summer sessions a practical means of work toward the master's degree in the various departments.

University of Tennessee.—(1) To give college students opportunity to further their college work. (2) To give college graduates opportunity for special work, or work toward a master's degree. (3) To give graduates of standard high schools opportunity to enter college before fall. (4) To give teachers opportunity to fit themselves better for work.

Agricultural and Mechanical College of Texas.—(1) To provide college opportunities to those who can not attend regular session. (2) To permit students to shorten period in college by doing summer work. (3) To offer special courses of highly specialized character in the various trades and professions.

Agricultural College of Utah.—To encourage teachers to prepare for advanced certification and in general better equip themselves for better service; also to give the general student an opportunity to make up deficiencies and also to give advanced standing.

University of Vermont.—To meet the needs of: (1) Those working toward the master's degree. (2) Those working toward an undergraduate degree. (3) Superintendents, principals, and teachers desiring professional courses. (4) Teachers desiring to earn credit toward State teachers' certificates of high school and grades. (5) Students wishing to remove college entrance conditions. (6) Those desiring instruction in art, music, physical education, or commercial subjects.

Virginia Agricultural and Mechanical College.—(1) For the benefit of students from the regular session to make up back work or to work ahead. (2) For high-school teachers, particularly Smith-Hughes teachers.

State College of Washington.—(1) To make the facilities of the institution available to teachers, principals, and superintendents during their summer vacation period. (2) To enable students of this and other institutions to make up deficiencies, or to shorten time required to secure a degree.

West Virginia University.—(1) To afford school superintendents, principals, and high-school and junior high-school teachers who are employed throughout the regular academic year an opportunity to continue their education and professional training. (2) To keep the university plant in operation throughout the year so that students who desire to do so may continue their work uninterruptedly until their courses are completed.

University of Wisconsin.—(1) It is preeminently a teaching session. (2) Research is carried on by good students in good seminaries and research courses.

Organization and Administration

Summer sessions are organized as a single session in 24 institutions, as a double session in 7 (Georgia State College of Agriculture, University of Idaho, University of Kentucky, Louisiana State University, Massachusetts Institute of Technology, West Virginia University, and the University of Wisconsin), and as two independent sessions in 10 (Alabama Polytechnic Institute, University of Arkansas, University of California, Colorado Agricultural College, State University of Iowa, University of Minnesota, University of Tennessee, Texas Agricultural and Mechanical College, Virginia Agricultural and Mechanical College, and University of Wisconsin).

Four institutions maintain no summer school, and nine others make no report.

Three institutions (Alabama Polytechnic Institute, Iowa State College, and Virginia Agricultural and Mechanical College) operate on a four-quarter basis with the summer term as one quarter, but the general plan for land-grant colleges is a separately administered session with finances managed independently of the regular college terms. Exceptions are Louisiana State University, Oklahoma Agricultural and Mechanical College, and South Dakota State College.

As a rule institutions do not charge the summer session for use of buildings, although this is done in the University of New Hampshire and the University of Wisconsin. Janitor service is charged in 10 institutions but not in 29 others. Repairs are not charged except in Colorado Agricultural College, University of New Hampshire, Rutgers University, Virginia Agricultural and Mechanical College, and the University of Wisconsin. Care of grounds is charged to the summer session in only two institutions—University of New Hampshire and University of Wisconsin. Registrar's service is charged in eight institutions—Alabama Polytechnic Institute, University of California, Colorado Agricultural College, Georgia State College of Agriculture, University of Hawaii, University of New Hampshire, West Virginia University, and University of Wisconsin. Clerical and stenographic service is charged to the summer school in 14 institutions but not in 23 others.

The administration of buildings and grounds during the summer session is seldom under the supervision of the head of the summer session, but is generally in charge of the regular superintendent of buildings and grounds who serves throughout the college year. In five institutions (Alabama Polytechnic Institute, University of Delaware, University of Florida, Oklahoma Agricultural and Mechanical College, and Virginia Agricultural and Mechanical College) the business manager has charge of the buildings and grounds in the summer, and in three (Kansas State Agricultural College, South Dakota State College, and Agricultural College of Utah) the president of the institution has charge.

The educational administration of the summer session is conducted independently of that of the regular session in all but 10 institutions which are located in Colorado, Iowa, Louisiana, Michigan, North Dakota, Oregon, Pennsylvania, Texas, Utah, and Washington.

Several institutions reported other pertinent facts regarding the type of organization and control of the summer session which are not readily summarized:

Colorado Agricultural College.—The director of the summer session is associate in the department of rural and vocational education.

University of Delaware.—The head of the department of education in the university is the director of the summer school. For the most part, the courses given in the summer session are the same as those given in the regular sessions. The instructional staff in the summer session is made up very largely of members of the regular university staff.

Georgia State College of Agriculture.—A 6-week and a 9-week session both begin on June 24.

University of Hawaii.—A 6-week session under the control of a director who is responsible directly to the president.

University of Idaho.—The summer school is directed by the school of education.

Purdue University.—The head of the department of education is director of the summer session, and has the same authority over the session that a school head has over his school, except that he is responsible directly to the president and not to a dean.

Massachusetts Agricultural College.—The summer school along with the winter school and the Stockbridge School of Agriculture (2-year course) are conducted by the director of short courses, through the short-course officer.

Massachusetts Institute of Technology.—Salaries and fees are set by a committee. Other administration details conducted same as regular session.

Michigan State College.—Michigan State College offers nine weeks of work in modern languages for a year's credit of four hours. This course meets three hours five days a week from June 25 to August 23. A student may take first or second year French, German, or Spanish.

University of Nebraska.—Under the direction of the summer-school director subject to approval of chancellor and board of regents.

University of Nevada.—The summer session is managed by the dean of the school of education under the general supervision of the president. The registrar is the registrar of the regular session. All classes except laboratory classes are held in the education building.

University of New Hampshire.—Members of staff who are on 12 months' contract assist in summer school if needed.

Cornell University.—Besides the summer session proper (offering courses largely in arts and sciences, a few in engineering) there is, at Cornell, a New York State summer session (offering courses in agriculture and home economics) operating on a separate budget and a summer school of biology, having also a separate budget. These three schools work together and are described in the one pamphlet. Quite distinct is the summer session of the law school, June 25 to September 7.

North Carolina State College.—The faculty council which is the executive body of the college has the same relation to the summer school. The director administers the school under the general direction of the council.

North Dakota Agricultural College.—Summer school committee, provides a degree of separate administration, in connection with special expenditures for instructors and incidentals.

Ohio State University.—The general direction is under the director of the summer school (also dean of school of education) who works with the president in organizing the summer school. The program within each school is under the direction of the dean of that school.

Pennsylvania State College.—Each school functions independently in the registration of its own regular students. Summer registrants who are not

regular classified students are almost entirely teachers and are registered for the summer by and in the school of education. The dean of the school of education is director of the summer session but is chiefly a coordinating officer.

University of Tennessee.—Director consults with heads of departments as to faculty members and courses. Budget made by director and approved by president.

Agricultural and Mechanical College of Texas.—The executive committee of the college is also the executive committee of the summer session.

Virginia Agricultural and Mechanical College.—The summer session is in charge of a chairman and committee from the faculty appointed by the president of the institution.

State College of Washington.—Regular organization functions in the planning of summer session. It is supervised by the dean of the school of education who is director of the summer session.

University of Wisconsin.—Departmental organization and control are the same, except that budget, staff, and program are approved by the director of the summer session instead of by the college deans.

Sixteen institutions report 6 weeks' summer session with 28 to 30 days given to instruction, excluding 6 to 13 holidays and Sundays. Two report 8-weeks' summer sessions with 44 days of instruction and 8.5 Sundays and holidays. Five report 9-weeks' sessions with 43 days of instruction and 14 Sundays and holidays. The University of Wisconsin reports 10-weeks' session with 50 days of instruction. Sixteen report double sessions; averages for the first session indicate that 30.8 days are given to instruction with 6.5 Sundays and holidays, and for the second session 32.5 days for instruction and 6.6 Sundays and holidays. From 6 to 9 and from 10 to 20 term-hour credits are possible to be earned during this period by students who register. The minimum number of semester or term hour credits for which a student may register is generally two or three.

TABLE 2.—*Average number of days devoted to instruction and to holidays and number of credits that may be earned during the summer session.*

Weeks in summer session	Number of institutions reporting	Number of days		Number of semester-hour credits		
		Instruction	Holidays and Sundays	Maximum obtainable	Maximum for which student may register	Minimum for which student may register
1	2	3	4	5	6	7
6	16	29	8.5	7.5	7.5	2
8	2	44	8.5	9	9	
9	5	43	14	10	10	3.5
10	[1] 1	50		8	8	
Double session:						
First	16	30.8	6.5	6.6	6.5	3.5
Second	16	32.5	6.6	7.2	7	3.5

[1] University of Wisconsin.

Direction of Summer Sessions

The president of the institution has the general direction of the administration of summer schools in 25 institutions, but not in 6 others. In 13 the general direction is delegated to a special committee. In the University of Georgia this committee is composed of the chancellor, president of the State College of Agriculture, dean of the university, president of State Teachers College, and director. In the University of Illinois the executive committee of the session is appointed by the president. Theoretically its members have general direction but practically they limit their duties to the division of the appropriations among the departments. In Iowa State College this committee serves in an advisory capacity. In Massachusetts Agricultural College the general committee passes on courses of study to be offered. In Massachusetts Institute of Technology the committee sets salaries and fees and appoints staff members. Such a committee in the University of Minnesota holds advisory powers. In the University of Nevada all arrangements are made by the dean of the school of education; when he wishes to do so he is actually director during the session, otherwise he nominates another for this responsibility. The administrative board at Cornell University is appointed by the trustees, chairman, secretary, three deans, and director of New York State summer session. General control, except discipline, is handled by a regular committee on student affairs. In North Dakota Agricultural College a typical committee of college council is charged with the duty of promoting the summer session. In the Agricultural and Mechanical College of Texas final approval of finances such as pay roll, budget, etc., is left to the president; the executive committee passes on the list of courses, teaching staff, and prepares budget and pay roll to be approved by the president. In Utah and Vermont the committee serves in an advisory capacity. The committee in Virginia Agricultural and Mechanical College has general supervision of the educational program and administration of the budget, and in West Virginia University the committee approves dates and courses offered.

In 10 institutions the summer session is administered under the immediate direction of the dean or head of teacher training. The list includes the University of Arkansas, University of Delaware, University of Florida, University of Idaho, Louisiana State University, University of Nevada, Rutgers University, University of North Carolina, Oklahoma Agricultural and Mechanical College, and South Dakota State College.

The head of the summer session is selected generally by the president of the institution. Sometimes the president recommends and

the board of control elects, and sometimes the dean of the college of education is automatically appointed as director; rarely the board itself selects.

Among other duties of the head of the summer school, the following are significant:

	Number of institutions
Prepares budget for submission to president	34
Responsible for summer-school program	29
Fixes salaries for summer school teaching staff	25
Appoints clerical help for summer session	22
Joint responsibility with heads of other colleges or units for summer-school program	16
Prepares budget for submission to trustees	9

Program

Between June 10 and 18, 21 summer sessions open in the land-grant institutions, 8 open before and 10 after these dates. Of the 16 which have 2 summer sessions, 12 second sessions begin between the middle and the end of July, 3 before and 1 on August 4. Classes generally begin the day following registration, but in a few cases two days later when registration day falls on Saturday. The single sessions vary from 6 to 8 weeks in length, while the double sessions are from 9 to 12 weeks in length and 15 in the Massachusetts Institute of Technology.

The detail of summer-session programs will be discussed later but mention should be made here of the principal factors which restrict development and those which determine expansion of summer educational programs. To show these trends it is necessary to give the views of each institution reporting.

Principal Factors Restricting Development of Summer Schools

Alabama Polytechnic Institute.—Limited finances; summer session has to be practically self-supporting.

University of Arkansas.—Summer session must be largely supported by student fees.

Colorado Agricultural College.—Limited number of teachers in vocational education to which an appeal can be made. So few cultural courses are offered by the institution. Teachers of general education do not wish to go to an agricultural college for teacher training. Several largely attended schools offering general education in immediate vicinity.

University of Delaware.—Lack of financial support.

University of Florida.—Increased attendance; 922 students in 1926 which grew to 1,269 in 1927 and to 1,686 in 1928, but board of control refused increase of money. Increases largely cared for by larger classes.

Georgia State College of Agriculture.—Lack of funds.

University of Hawaii.—Lack of money. All expenses paid out of student fees. Offerings limited to expected income.

University of Idaho.—Finances.

University of Illinois.—Larger appropriations would make possible the employment of more major professors, which would of course influence enrollment.

Purdue University.—Budget limitations.

Iowa State College.—Very little restriction.

Kansas State Agricultural College.—Finances.

University of Kentucky.—Funds with which to develop.

Louisiana State University.—Need of additional funds for expansion.

Massachusetts Agricultural College.—Small enrollment and impression that an agricultural college program must contain only strictly agricultural subjects.

Massachusetts Institute of Technology.—None.

Michigan State College.—Lack of permanent policy and especially a permanent director. The appointments in the past four years have been for one year only. No director can plan; he simply drifts along on the impetus of preceding years.

University of Nebraska.—Lack of funds.

University of Nevada.—Lack of funds and lack of any great demand.

University of New Hampshire.—Competition of other schools; conservatism of administration.

Rutgers University.—Space; equipment and funds.

Cornell University.—Principally the necessity of making the summer session meet its expenses without drawing on general university funds. This policy, however, may be modified in the future. In the meantime additions to the work now offered are likely to be made slowly and tentatively. Even now the work of the summer session and the enrollment in courses, though somewhat fluctuating from year to year, are by no means discouraging.

North Carolina State College.—Lack of knowledge of what the summer session offers.

North Dakota Agricultural College.—Seasonal employment of college students and the number of summer schools open in the territory.

Oklahoma Agricultural and Mechanical College.—Lack of a separate budget for summer session. Lack of interest on part of faculty members due to lack of separate budget. Oklahoma climate in July and August.

Oregon Agricultural College.—General restriction of field allowed institution as a whole.

Pennsylvania State College.—Lack of funds.

Clemson Agricultural College.—Lack of dormitories for women. Too small an enrollment to justify overhead.

South Dakota State College.—Division of labor for State educational institutions by board of regents—Rules 1923—"The primary purposes of each of the State's institutions in the teacher-training field shall be as follows and shall be so advertised: State College—The department of education of State College shall concern itself chiefly with the preparation of Smith-Hughes vocational teachers of agriculture, home economics, and the industries."

University of Tennessee.—Lack of funds to include other departments and courses.

Agricultural and Mechanical College of Texas.—A limited budget which prevents our offering more courses.

Agricultural College of Utah.—Lack of funds.

University of Vermont.—Financial limitations; limited facilities.

Virginia Agricultural and Mechanical College.—Limitation of funds.

State College of Washington.—Restricted finances; location in small town and sparsely settled region.

West Virginia University.—None.

Principal Factors in Determining the Expansion of the Educational Program of the Summer Session

Alabama Polytechnic Institute.—Expanding course offerings. Bringing in distinguished professors from outstanding colleges and making better selection from own faculty. Studying needs of summer session students and adapting course offerings accordingly.

University of Arkansas.—Demand of teachers.

University of California.—Continuation of the regular work of the university. Demands of qualified students.

Colorado Agricultural College.—Development of undergraduate and graduate work in vocational education.

University of Delaware.—Demand on the part of elementary teachers and principals of elementary schools for work in advance of that required for certification. Increasing demand for college degree courses.

University of Florida.—Students wish to reduce time of residence in commerce, journalism, and law. Legislature appropriated $2,000 for summer law school—unrequested. Increased demand for arts and science work.

Georgia State College of Agriculture.—Needs of the people of the State.

University of Hawaii.—Money. All expenses paid out of student fees; offerings limited to expected income from this source.

University of Idaho.—Needs of teachers for specific preparation. Desires of teachers and administrators for graduate work. Desire of undergraduate students to shorten time for getting degree.

University of Illinois.—Apparent demand for instruction in specific departments where the registration has proved to be extremely low lead the committee to drop work in these fields.

Purdue University.—Requests of students for opportunity to secure credit during the summer.

Iowa State College.—Opportunity for students irregular in their courses to regularize themselves. For public-school superintendents, principals, supervisors, and teachers to secure training in agriculture, home economics, industrial arts, and the sciences. For teachers in technical schools to carry on research and take advanced work in the fields mentioned. For regular students to hasten the date of graduation or secure additional nontechnical work from which they are excluded because of close prescription of subjects in technical courses. For graduate students to pursue work in the various technical and scientific departments.

Kansas State Agricultural College.—Demand of students.

University of Kentucky.—Demands of students—undergraduate and graduate. Growth of the graduate school has been the largest factor.

Louisiana State University.—Academic and professional needs of teachers. Needs of regular session students. Requests for special service such as library science.

Massachusetts Agricultural College.—Demands or needs of the teacher group which makes up the greater part of the summer-school clientele. Courses to serve make-up needs or advanced credit needs of undergraduates.

Massachusetts Institute of Technology.—More students are attending colleges and increasing percentage of them taking graduate work. More mature persons such as teachers desire further training. Development of new fields such as radio and aviation.

University of Minnesota.—Natural growth and consequent development.

University of Nebraska.—General demand.

University of Nevada.—Purpose to meet the needs of rural teachers with little or no training.

University of New Hampshire.—Demands of increasing number of students registered. Financial independence of the school. Unusual facilities of the university.

Rutgers University.—Demands from the field.

Cornell University.—Largely a matter of demand. Thus, astronomy at first experimental, is now regularly provided in the summer program. Greek, for a time omitted, is now offered each summer. Summer courses in physical and health education were added in 1926. There have been additions in the department of education. The demand for Spanish is falling off; that of German increasing; significant also is the larger number of courses for graduate students.

North Carolina State College.—Demands from the teachers of the State.

North Dakota Agricultural College.—Manifest needs of prospective students.

Oklahoma Agricultural and Mechanical College.—Growth of the public high schools in the State and the raising of standards for teachers' certificates. An increase in the demand for graduate work. Increasing number of regular college students who hasten the course by studying during one or more summer schools. A steady decrease of noncredit courses formerly needed for county (not State) teachers' certificates.

Oregon Agricultural College.—Demand for work. Students in some divisions as agriculture and engineering, largely engaged in practical work during summer. Work required by teachers or students in regular summer session who will remain.

Pennsylvania State College.—Demands from the teachers of the schools of the State. Courses of the college in which there are most numerous student failures. Legislation concerning qualifications for certification of teachers. Innovations which have succeeded largely in other summer schools. Subsidies available from special interests or institutions as the American Red Cross or Smith-Hughes funds.

Clemson Agricultural College.—Fine climate; demand for vocational courses.

South Dakota State College.—Need of educational advancement for county superintendents, principals, and superintendents of consolidated and small town schools.

University of Tennessee.—Demands and needs of students.

Agricultural and Mechanical College of Texas.—Increasing enrollment of teachers—especially agricultural and industrial arts and industrial education teachers—in the summer school. With increased enrollment in the regular session the number of students failing in some course or courses is increasing. To become "regulars" and graduate with their class these students attend summer school.

Agricultural College of Utah.—Most urgent demands of students as reflected in experience of the past.

University of Vermont.—Increasing general service of the university.

Virginia Agricultural and Mechanical College.—Needs of our own students and high-school teachers, especially Smith-Hughes teachers.

State College of Washington.—Growth of graduate work in the institution. General increase in enrollment of the institution as a whole with which the

summer session has kept pace. Meet the needs of increasing number of teachers attending summer session.

West Virginia University.—Increasing demand on part of school superintendents, principals, teachers, and others for summer work leading to the bachelor's and master's degrees. Increasing demand of students enrolled in regular session who desire to continue their work through the summer.

University of Wisconsin.—Student elections. We give the work which our clientele needs.

Finances

In 1920, 26 institutions reported that they received one-half of their summer-session income from student fees, 42 per cent from State funds, and the remainder from miscellaneous sources. In 1925, 35 institutions reported their summer-session income as derived from student fees, 57.5 per cent; from State funds, 35.6 per cent; and the remainder from miscellaneous sources. In 1928, 38 institutions reported that they received 58.7 per cent of their summer-session income from student fees and 35.5 per cent from State sources. Students, then, are paying increasingly more of the expenses of summer schools. Table 3 details the revenue for summer sessions in each of 38 institutions for the years 1920, 1925, and 1928. With three exceptions, North Carolina State College, South Dakota State College, and the Agricultural College of Utah, the incomes of land-grant institutions have increased in the 8-year period. The largest incomes for summer session reported are the University of California, $159,127; University of Wisconsin, $145,331; Massachusetts Institute of Technology, $136,000; the University of Minnesota, $134,264; and Pennsylvania State College, $83,580. Summarizing this table the income of summer sessions is shown below:

TABLE 3.—*Summer session incomes by sources, 1920, 1925, 1928*

Source	1920			1925			1928		
	Number institutions reporting	Amount	Per cent	Number institutions reporting	Amount	Per cent	Number institutions reporting	Amount	Per cent
1	2	3	4	5	6	7	8	9	10
State funds	26	$271,351	42.3	35	$408,362	35.6	38	$574,653	35.5
Student fees	26	323,226	50.4	35	658,920	57.5	38	950,830	58.7
Miscellaneous	26	46,924	7.3	35	78,667	6.9	38	93,793	5.8
Total	----------	641,501	100.0	----------	1,145,949	100.0	----------	1,619,276	100.0

TABLE 4.—*Income for summer session*

Institution	State funds			Student fees			Miscellaneous			Total		
	1920	1925	1928	1920	1925	1928	1920	1925	1928	1920	1925	1928
1	2	3	4	5	6	7	8	9	10	11	12	13
Alabama Polytechnic Institute		$5,000	$5,000		$17,227	$21,216			$212		$22,227	$26,428
University of Arkansas					12,000	13,925					12,000	13,925
University of California				$100,225	132,620	159,127				$100,225	132,620	159,127
Colorado Agricultural College				2,890	9,875	13,322				2,890	9,875	13,322
University of Delaware	$4,000	6,000	6,000	320	1,340	1,475	$707	$158	610	5,027	7,498	8,085
University of Florida	3,000	17,404	32,660	1,899	10,418	24,271				4,899	27,822	56,931
Georgia State College of Agriculture	7,500	6,000	10,000	16,809	27,715	40,331	3,704	2,961	5,908	28,013	36,676	56,239
University of Hawaii						7,426						7,426
University of Idaho	5,727	5,574	8,309		1,057	1,515				5,727	6,631	9,824
University of Illinois							34,613	67,512	77,573	34,613	67,512	77,573
Purdue University	1,133	3,607	4,594	1,075	11,003	14,464		1,296	990	2,208	15,906	20,048
Iowa State College	25,000	25,000	20,000		26,150	38,000	7,900	4,225	1,225	32,900	55,375	59,225
Kansas State Agricultural College	35,000	40,000	42,500	8,500	15,200	19,560				43,500	55,200	62,060
University of Kentucky			10,000		22,595	31,344		2,214	1,765		24,809	43,109
Louisiana State University				2,175	4,663	9,859				2,175	4,663	9,859
Massachusetts Agricultural College		5,425	4,800		60	1,422					5,485	6,222
Massachusetts Institute of Technology						136,000						136,000
Michigan State College	18,107	17,925	20,840							18,107	17,925	20,840
University of Minnesota				58,414	129,966	134,264				58,414	129,966	134,264
University of Nebraska	51,498	55,000	69,407							51,498	55,000	69,407
University of Nevada	2,758	2,076	2,168	963	1,749	1,657				3,721	3,825	3,825
University of New Hampshire					5,655	12,665					5,655	12,665
Rutgers University	19,804	28,455	33,550	7,328	17,247	28,466				27,132	45,702	62,016
Cornell University				50,120	65,701	70,653				50,120	65,701	70,653
North Carolina State College	6,000	3,937	7,500	26,835	7,550	669				32,835	11,487	8,169
North Dakota Agricultural College		5,000	5,000	455	1,007	1,562				455	6,007	6,562
Oklahoma Agricultural College					3,927	4,773					3,927	4,773
Oregon Agricultural College	2,500	15,000	21,130	950	2,350	2,953				3,450	17,350	24,083
Pennsylvania State College				40,200	67,740	83,580				40,200	67,740	83,580
South Dakota State College	4,000	4,000	3,364							4,000	4,000	3,364

TABLE 4.—*Income for summer session*—Continued

Institution	State funds			Student fees			Miscellaneous			Total		
	1920	1925	1928	1920	1925	1928	1920	1925	1928	1920	1925	1928
1	2	3	4	5	6	7	8	9	10	11	12	13
University of Tennessee		$20,000	$20,000		$17,866	$24,674		$215	$1,300		$38,081	$45,974
Agricultural and Mechanical College of Texas		12,000	20,000		1,500	[illegible]000					13,500	26,000
Agricultural College of Utah				$1,856	19,991	[illegible]870		86	3,580	$1,856	20,077	13,450
University of Vermont		2,500	3,500	1,077	10,683	19,979				1,077	13,183	23,479
Virginia Agricultural and Mechanical College					10,944	12,148			630		10,944	12,778
State College of Washington	$4,294	8,000	9,000	1,135	3,121	3,660				5,429	11,121	12,660
West Virginia University			70,000									70,000
University of Wisconsin	81,030	120,459	145,331							81,030	120,459	145,331
Total	271,351	408,362	574,653	323,226	658,920	950,830	$46,924	78,667	93,793	641,501	1,145,949	1,619,276
Per cent of total	42.3	35.6	35.5	50.4	57.5	58.7	7.3	6.9	5.8	100	100	100

Salaries of Summer Session

Salaries paid the teachers in the summer session bear a direct relation to the salaries of the teachers of the regular session in most of the land-grant institutions, being on a prorated basis. Two college report that their teachers are on a 12-month basis. They receive no additional compensation, therefore, for teaching in the summer session. Another institution reports that there is no relation between the summer and regular-session salaries. In the following summary is presented the situation existing in the colleges filing reports.

Alabama Polytechnic Institute.—All home faculty people receive one-tenth of annual salary up to a maximum of $400 per term of summer session; $200 is minimum per term except student laboratory assistants. Visiting professors are paid as high as $1,000 per term and as low as $200; average $400.

University of Arkansas.—One-tenth of yearly salary.

University of California.—Approximately one-sixth of regular session for local faculty members; for visiting faculty a set scale.

Colorado Agricultural College.—Instructors on a 9-month basis receive five-thirty-sixths of their annual salaries for teaching five and one-half to six weeks.

University of Illinois.—Summer session salary is fixed as one-sixth of regular salary with a provision that the minimum salary paid for full-time service regardless of rank is $250 and the maximum salary paid regardless of rank is $900.

Iowa State College.—Summer session salaries for each term have been for several years one-seventh of regular annual salary with a maximum of $500. In 1929 summer session, salaries will be 15½ per cent of the regular annual salary with a maximum of $750.

Kansas State Agricultural College.—Summer session salaries are two-ninths of the regular annual salary.

University of Kentucky.—Summer session instructors are paid one-ninth of their annual salaries for each 5-weeks' summer session.

Massachusetts Institute of Technology.—Summer session salary is based on regular salary.

Michigan State College.—Summer session salaries are on the prorated basis of 10 per cent of the minimum salary of their rank.

University of Minnesota.—One-eighth of regular salary. The salary scale for summer session teaching shall be one-eighth of the instructor's annual salary with the understanding that the minimum shall be $175 and the maximum $600 for full time. (1922.)

University of New Hampshire—One-ninth of regular sessions salary for those who taught in both sessions.

Rutgers University.—One-seventh of basic salary adopted for first time in summer session 1929.

Cornell University.—One-sixth approximately, except assistants which vary from $100 to $250 with a maximum of $750. Twelve received maximum and one additional visitor received $800.

North Carolina State College.—One-tenth of a year's salary for summer.

North Dakota Agricultural College.—One-eighth of salary for the 9-month college year preceding; summer session is six weeks.

Oklahoma Agricultural and Mechanical College.—Our teachers are on a 12-month basis; much criticism is caused from faculty of engineering school not teaching during summer school, but receiving regular pay. We hope to remedy this by introducing a separate summer session budget.

Oregon Agricultural College.—Regular staff, except for unusual reason, teach two-thirds load for two-thirds pay, which is equivalent to teaching a two-thirds for six weeks for one month's extra pay.

Pennsylvania State College.—For regular members of the college faculty the summer session salary is one-sixth of the annual salary up to a maximum of $500. Heads of large departments get $100 extra for administrative duties. Teachers from other institutions get corresponding salaries except in the case of unusually prominent men, who are paid whatever they can be gotten for.

South Dakota State College.—Salary is same—employed on 12-month basis.

Agricultural and Mechanical College of Texas.—Salary for six weeks (one term) of summer session is one-eighth of entire salary for regular session.

Virginia Agricultural and Mechanical College.—Differentiation as to faculty rank in both sessions.

State College of Washington.—Those receiving an annual salary of $1,900 in regular session are paid $300 for summer session. Those receiving $1,900 and less than $2,500 are paid $375. Those receiving $2,500 and more are paid $450.

West Virginia University.—One-sixth of annual salary for six weeks' summer session.

University of Wisconsin.—F[illegible] per cent of annual salary for the preceding year with two exceptions. No summer-session salary may exceed a maximum of $750; all assistants receive a [illegible]t salary of $180.

No relationship exists between summer-session salaries and the salaries of the regular session for those who teach in both sessions in University of Delaware, University of Florida, University of Hawaii, Purdue University, Louisiana State University, Massachusetts Agricultural College, University of Nebraska, Clemson Agricultural College, and the University of Tennessee.

Staff in Summer Sessions

Instruction in the summer session is offered by members of the regular college staffs, by visiting professors, and by qualified teachers who are sometimes being tried out for employment during the regular college terms. Thirty-four institutions reported their summer personnel in Table 5. From this table it is obvious that one-third of the instructors hold master's degrees, a fourth doctor's degrees, while 9.3 per cent have no degree.

TABLE 5.—*Degrees held by staff members of summer session for 1928 in 34 land-grant institutions*

Rank	Number in each rank	No degree	Number with—									
			Bachelor's degrees in—					Master's degree (all types)	Ph. D. or Sc. D.	M. D.	LL. B.	Others
			Agriculture	Engineering	Home economics	Education	Commerce					
1	2	3	4	5	6	7	8	9	10	11	12	13
Professors	1,008	19	71	25	6	10	3	295	473	21	11	74
Associate professors	473	12	18	16	5	6	7	197	144	20	1	47
Assistant professors	630	35	18	35	15	11	6	253	157	24	.....	76
Associates	37	2	.....	.....	.....	3	.....	9	16	.....	.....	7
Instructors	823	174	15	11	21	45	13	264	41	33	1	205
Lecturers	66	9	.....	.....	.....	2	1	18	9	5	.....	22
Assistants	172	30	2	1	3	11	13	57	1	5	.....	49
Fellows	8	.....	.....	.....	.....	1	.....	.....	.....	4	.....	3
Other	100	26	1	.....	.....	1	.....	18	15	3	1	35
Total	3,317	307	125	88	50	90	43	1,111	856	115	14	518
Per cent	100.0	9.3	3.8	2.6	1.5	2.7	1.3	33.5	25.8	3.5	.4	15.9

Head of Summer Session

Authority over the appointment of the head of the summer session is vested in the president in a large number of the land-grant colleges. There are some cases, however, where the selection is made by the board of trustees upon recommendation of the president. The following summary shows the methods of appointing the head of the summer session in the different institutions:

Alabama Polytechnic Institute.—Designated by the president of the institution.

University of Arkansas.—Dean of college of education is director.

University of California.—By the president of the university.

Colorado Agricultural College.—Appointed by the president.

University of Delaware.—By the president of the university. Under present arrangement the head of the teacher-training department is ex officio director of the summer session.

University of Florida.—President and board of control.

Georgia State College of Agriculture.—By board.

University of Hawaii.—By the president, confirmed by the board of regents.

University of Idaho.—By president.

University of Illinois.—By president of the university.

Purdue University.—In 1920, the president of the university, with the approval of the board of trustees authorized the organization of a summer session in which the courses offered should be of college grade. The head of the department of education was made dean of the summer session. In 1923, "director" was adopted instead of dean. The director is appointed by the board of trustees on recommendation of the president.

Iowa State College.—By the president of the college.

Kansas State Agricultural College.—Same as all other deans, by the president.

University of Kentucky.—Appointed by president.

Louisiana State University.—Ex officio, the dean of the teachers college is director of the summer session. The president, however, may change this management at will.

Massachusetts Agricultural College.—A regular duty of the director of short courses.

Massachusetts Institute of Technology.—Appointed by president.

Michigan State College.—Appointed by president.

University of Minnesota.—By board of regents on recommendation of president.

University of Nebraska.—Recommended by the chancellor and approved by the board of regents.

University of Nevada.—President designated in the contract of the dean of the school of education that the dean is responsible for the summer session. All arrangements and nominations are made by him, including the director, when the dean does not wish to take charge.

University of New Hampshire.—By the president of the university.

Rutgers University.—By president.

Cornell University.—Appointed by trustees on recommendation of the president.

North Carolina State College.—By trustees.

North Dakota Agricultural College.—By appointment to chairmanship of committee by president.

Oklahoma Agricultural and Mechanical College.—Appointed by the president with approval by the board of regents.

Oregon Agricultural College.—Appointed by president and board of regents.

Pennsylvania State College.—By the board of trustees by same process as that by which the several deans are appointed.

Clemson Agricultural College.—Appointed by the president.

South Dakota State College.—Virtue of position.

Agricultural and Mechanical College of Texas.—Designated by the president.

Agricultural College of Utah.—By the board of trustees on recommendation of the president.

University of Vermont.—By the president of the university.

Virginia Agricultural and Mechanical College.—Appointed by the president of the institution.

State College of Washington.—By president, confirmed by board of regents.

West Virginia University.—Appointed by the board of governors on recommendation of president.

University of Wisconsin.—Appointed by the regents upon recommendation by the president.

In cases where the head of the summer session is selected from the regular staff of the institutions, a variety of practices is found with regard to relieving him from his regular duties. He is not relieved of any regular duties in the University of Florida, University of Hawaii, University of Illinois, Purdue University, University of Kentucky, Louisiana State University, Massachusetts Institute of Technology, University of Nebraska, University of Nevada, University of New Hampshire, Rutgers University, Cornell University, North Carolina State College, Pennsylvania State College, Clemson

Agricultural College, Virginia Agricultural and Mechanical College, and the State College of Washington. The practices in the other institutions are as follows:

Alabama Polytechnic Institute.—All deans are employed for 12 months and receive a stipulated salary. The dean of the school of education is director of the summer session and receives no additional compensation.

University of Arkansas.—No teaching required, but director taught one class.

University of California.—One-third.

Colorado Agricultural College.—Teaches a full load of 15 hours; provided with assistance in correcting papers.

University of Delaware.—Relieved from all classroom teaching.

Georgia State College of Agriculture.—No teaching now; inspector of high schools.

University of Idaho.—Part of regular duties.

Iowa State College.—Summer-session work is counted as requiring one-third to one-half of his time.

Kansas State Agricultural College.—Left to him; he usually teaches one course.

Massachusetts Agricultural College.—A prescribed job for the director of short courses.

Michigan State College.—No teaching required during summer session.

University of Minnesota.—One-third of time to summer session in fall quarter. Two-thirds of time to summer session in winter and spring quarters. Full time to summer session in summer.

Oklahoma Agricultural and Mechanical College.—He determines his own schedule and usually finds plenty to do teaching two courses. Dean of the school of education and director of the summer school.

Oregon Agricultural College.—Adequately. Summer school duties combine with other administrative duties as dean and chairman of committees. No teaching during spring term, but six hours fall and winter.

South Dakota State College.—Carries one-third teaching load.

University of Tennessee.—Relieved of six hours teaching.

Agricultural and Mechanical College of Texas.—Sufficient to permit making all preliminary arrangements for summer session.

Agricultural College of Utah.—These duties are a part of his assignment.

West Virginia University.—Director of summer school is also director of admissions. He does not teach.

Universtiy of Wisconsin.—Serves entirely as administrative officer. Dean of men and director of summer school, he does no teaching.

By far the majority of the institutions are handicapped in the operation of their summer sessions by an inadequate instructional staff. An improvement in their work would result, providing more funds were supplied and increased compensation was possible for the teachers. The following is a summary of the reports of the colleges on this question:

Alabama Polytechnic Institute.—Since the summer session salaries are one-tenth of the annual salaries, we could use more full professors with more liberal appropriations. We could also be more free in bringing in distinguished teachers from other institutions.

University of Arkansas.—Have been able so far on meager salaries to hold our best faculty members. However, they should be better paid, and we need more money for able people from the outside.

University of Delaware.—By having a larger number of professors and associate professors on the summer school staff.

University of Florida.—Need many more. Need outside lecturers of national reputation.

University of Hawaii.—Increase in number.

Kansas State Agricultural College.—Could use more instructors if the finances would permit.

University of Kentucky.—Our teachers carry a heavy load. They teach 18 hours a week. We need additional funds to employ more outstanding teachers.

Massachusetts Agricultural College.—Larger enrollment with more generous appropriations secured thereby would enable us to secure outstanding teachers in their respective fields.

Massachusetts Institute of Technology.—Now same as winter and satisfactory.

Michigan State College.—Bring in outside instructors.

University of Minnesota.—Four-quarter operation of the university enabling certain members of staff to have their vacations at other times than during the summer months, thereby making it less difficult to secure the services of more of the best trained men and women of the faculty for the summer quarter.

University of Nebraska.—More liberal compensation in order to induce heads of departments and instructors of professional rank to stay on the job.

University of New Hampshire.—As the enrollment increases, additional increase will make possible more efficient instructors.

Rutgers University.—Better instructors with less teaching load.

Cornell University.—A larger staff is desirable because of the present burden on many teachers in directing graduate work. At present the policy is as far as possible to select teachers of professional rank; and this standard will, of course, be maintained. There is also a likelihood of an increase in salary.

Oklahoma Agricultural and Mechanical College.—We have no complaint here.

Oregon Agricultural College.—Number is adequate and quality best we can secure.

Pennsylvania State College.—More outstanding specialists from other institutions would help, especially if we should follow the suggestion of developing unique specialties.

South Dakota State College.—It is impossible to explain—our summer session is in an experimental stage.

University of Tennessee.—Additional instructors needed, with larger funds, better qualified instructors in different departments could be secured.

Agricultural and Mechanical College of Texas.—We retain the ablest instructors in the college during the summer session. A larger budget would permit us to bring to the summer session outside instructors which would not necessarily influence the quality of work, but might influence enrollment.

Agricultural College of Utah.—Let heads of departments give at least one course and use the best teachers of the institution.

University of Vermont.—Additional instructors in elementary education, engineering, history, secondary education, making possible smaller sections in some courses as well as a greater variety of offerings.

State College of Washington.—Employment of nationally known instructors.

University of Wisconsin.—Using fewer assistants and more instructors and persons of professional rank. Using more men in the field of education, if they could be procured.

Students

In order to attract students to the summer terms, 39 institutions issue a special summer session bulletin and 35 reserve a special section of the regular catalogue for description of summer work; 33 carry out a publicity program through the local and State newspapers; 31 offer special musical programs in summer in addition to special recreational opportunities; 29 hold special group conferences; 27 employ special lecturers but give no credit for student attendance; 24 provide local excursions to scenic and historic places of interest; and a few provide miscellaneous attractions. The normal expenditure for a student who attends the summer session is shown in Table 6.

TABLE 6.—*Student expenses in summer sessions*

Item	Maximum	Minimum	Average
1	2	3	4
Registration fee [1]	$11	$8	$11
Tuition (State resident)	26	13	24
Laboratory fee	9	2	5
Student activity fee	2	2	2
Other fees or dues	10	3	6
Room (7 weeks)	----------	15	----------
Board (7 weeks)	----------	44	----------

[1] A late registration fee is charged in 13 institutions.

General entrance requirements to the summer session are the same as the general entrance requirements to the institution at large in 30 institutions, as indicated in Table 7.

TABLE 7.—*Requirements for entrance to the summer session in terms of high-school units*

Subject	Number of units that may be presented—			
	For those seeking college credit		For those not seeking college credit	
	Prescribed	Elective	Prescribed	Elective
1	2	3	4	5
English	3	1.4	3	3.2
Foreign language	1.8	5	1	5.5
Mathematics	2	2	2.2	3
Science	1.2	4.8	1	6.5
Social science	1	4.4	1	6.5
Vocational subjects	4.5	4.8	----------	4.5
Miscellaneous	5.3	5.6	----------	5.3

In the following excerpts from the reports are presented the requirements in the different colleges:

University of Delaware.—Students who have passed the teachers' examinations under State department of education and those recommended by the

Sate department of education are admitted without reference to our formal admission requirements.

University of Florida.—If registered not for degree, but to qualify in accordance with State requirements for teachers, these unit prescriptions modified to meet the individual case. College credit may be granted to adults who do not meet details of entrance requirements.

Georgia State College of Agriculture.—Teachers may enter on their present State certificate but must satisfy entrance requirements if desiring a degree.

Massachusetts Agricultural College.—Any college or normal school undergraduates may register for credits; any college graduate for graduate credits if approved by the director of the graduate school, without examinations or presenting credentials, except those seeking graduate degree here.

University of Nevada.—Instruction is open to anyone of sufficient academic preparation to profit by it. Regular entrance requirements apply to candidates seeking diplomas.

Cornell University.—There are no examinations for admission to summer session. Each person must, however, satisfy the instructor in charge of every course he intends to take, unless it be elementary, that he is qualified to pursue the work.

An undergraduate student who is registered in a college at Cornell or elsewhere and who wishes to enter the summer session should secure from his dean or other competent authority a certificate of good standing. A blank form of such certificate may be had on application to the secretary of the summer session.

Undergraduate students whose names have been removed from the rolls of any college are not admitted to the summer session except upon the recommendation of the college concerned.

There are some special requirements to be met by applicants for admission to the summer session of the law school, and such persons should consult the separate announcement of that session.

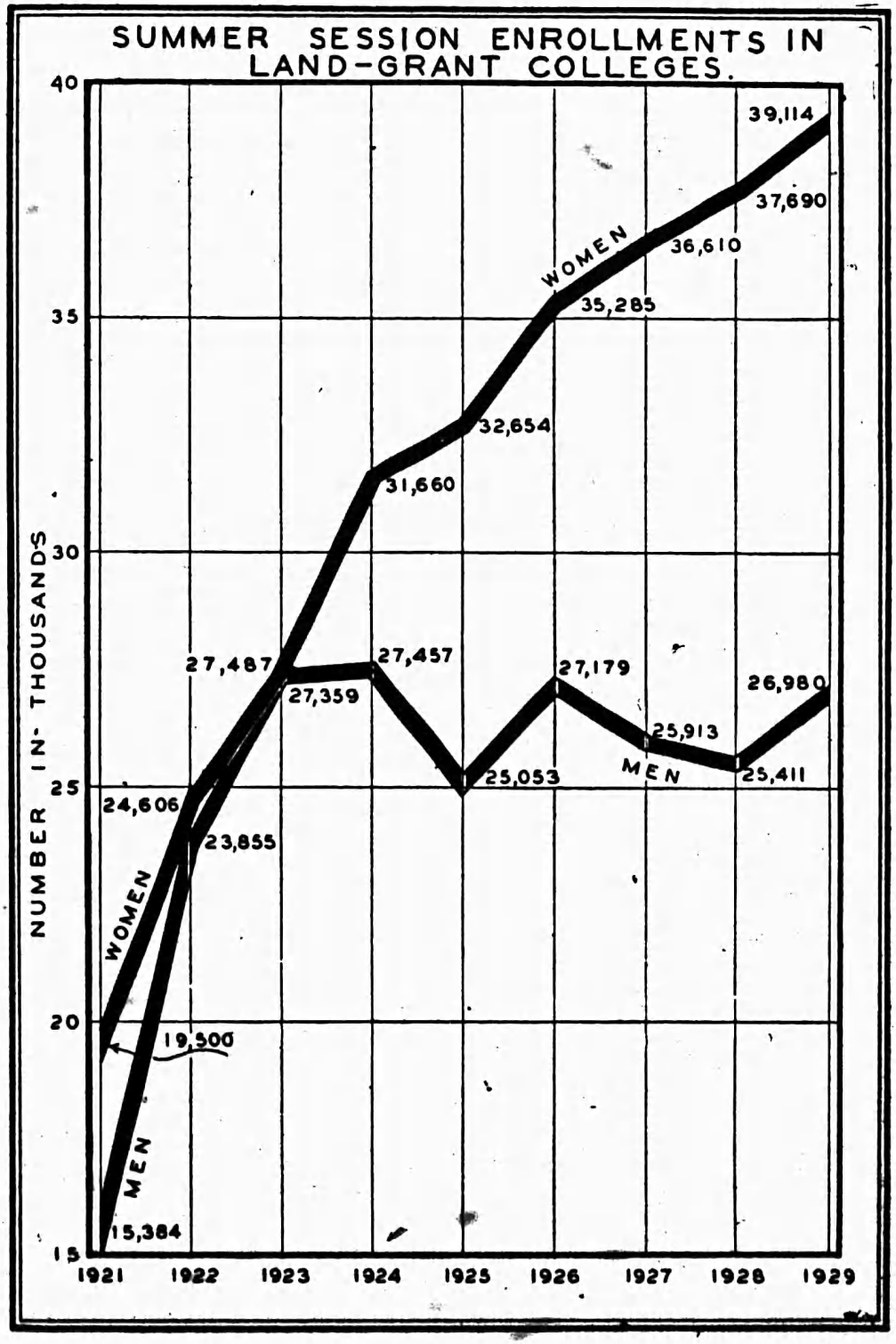
Admission to the classrooms during the summer session is restricted to students duly registered for the session. A student thus duly registered may occasionally visit any class; but if he wishes to attend regularly without credit he must secure special permission from the chairman of the summer session. Such permission will be granted only when the student can show a serious purpose in such attendance. If a student entering the summer session wishes his work to count toward a degree, there are certain regulations that he must comply with.

Oregon Agricultural College.—Only difference from regular requirements is that students not seeking credit, if of mature age and serious purpose, are admitted without question as to entrance units, if they can carry work.

Pennsylvania State College.—Preparatory training of high-school level is required, except in cases of teachers who have had considerable experience or mature persons not working toward any degree.

University of Vermont.—Regular entrance requirements enforced except for those working for higher certification or completion of admission requirements and those taking higher courses for cultural purposes only.

University of Wisconsin.—They are identical for students who matriculate as candidates for a degree here. Others may enter on a statement of status as teachers or students elsewhere. They are given a statement of work done and credit earned for transfer. Such credit may not be counted toward a degree here until after formal matriculation.


SUMMER SESSION ENROLLMENTS IN LAND-GRANT COLLEGES.
NUMBER IN THOUSANDS
40
35
30
25
20
15
1921
1922
1923
1924
1925
1926
1927
1928
1929
WOMEN
MEN
24,606
23,855
19,500
15,384
27,487
27,359
31,660
27,457
32,654
25,053
35,285
27,179
36,610
25,913
37,690
25,411
39,114
26,980

Summer session enrollments are shown graphically in the preceding chart. In 1921 there were 19,500 women and 15,384 men. Enrollments then increased rapidly until 1923 but since that date women students have increased to 39,114 in 1929, while enrollments of men have fallen off slightly to 26,980. Enrollments from 1921 to 1929 are presented in Table 8.

TABLE 8.—*Enrollment in summer session from 1921–1929*

Year	Men	Women	Total
1	2	3	4
1920	15,384	19,500	34,884
1921	23,855	24,606	48,461
1922	27,359	27,487	54,846
1923	27,457	31,660	59,117
1924	25,053	32,654	57,707
1925	27,179	35,285	62,464
1926	25,913	36,610	62,523
1927	25,411	37,690	63,101
1928	26,980	39,114	66,094
Total	224,591	284,606	509,197

Thirty-one institutions reported their enrollments according to years as indicated in Table 9.

TABLE 9.—*Enrollments in summer sessions according to years in 31 land-grant institutions*

Class	1926	1927
Freshmen	2,084	2,300
Sophomores	1,743	2,221
Juniors	2,479	3,047
Seniors	1,303	1,550
Graduates:		
First year	576	836
Second year	930	1,025
Third year	2	2
Fourth year	749	1,253
Total	28,937	[1] 31,405

[1] Of these, 8,105 were enrolled in the regular session of the institution for 1927–28.

Curricula and Credits

Courses and credits in summer sessions vary with the character of institutions, location, demand for training, and other features. Table 10 represents a brief survey of subject-matter fields and credits. This is followed by extracts from specific institutions which described the nature of their informational courses and methods of improvement of the academic standing of summer terms.

TABLE 10.—*Maximum credit by subject-matter fields offered by the 1928 summer sessions*

Field	Maximum credit obtainable		
	Degree		Nondegree
	Semester hours	Term hours	Number
1	2	3	4
Agriculture	3.7	8.1	
Engineering	24.6	69.1	5.0
Home economics	22.0	56.5	4.5
Teacher training	56.1	48.0	7.0
Arts and science	112	142.1	4.4
Military education	6		
Commerce and business	14.7	25.7	10.0
Law	12.6		8.0
Medicine	6		6.0
Veterinary medicine	14	10	
Other	31.6	11	9.3

According to subject-matter fields, courses that do not command credit toward degrees are offered in the following institutions:

Alabama Polytechnic Institute.—Stenography, 3 courses; typewriting, 3 courses; and penmanship, 2 courses. For demonstration purposes: A full program of senior high school courses. First three grades of elementary school studies.

Colorado Agricultural College.—Bookkeeping, beginning shorthand, advanced shorthand, typewriting, penmanship, methods in commercial teaching, and equitation (horseback riding).

University of Delaware.—Public-school music and supervision of play.

University of Illinois.—Athletic coaching.

Iowa State College.—Algebra, solid geometry, and English literature. Homemakers' courses in meal planning, costume designing, and home management. Industrial arts, including automechanics, mechanical drafting, and electrical wiring.

University of Nevada.—Bookkeeping for rural teachers and penmanship.

Rutgers University.—Elementary work in English, history and civics, mathematics, geography, physical education, music, art, and industrial arts.

Cornell University.—Physical education and dramatics.

North Carolina State College.—Cotton classing and textiles.

Oklahoma Agricultural and Mechanical College.—Training high-school courses—entrance credits; elementary demonstration school—grade work; cotton school—short courses of practical value; and home economics confefence short course.

Oregon Agricultural College.—Music; entrance deficiencies, English, civics, history, and geometry.

Pennsylvania State College.—Social dancing and industrial education conferences.

Clemson Agricultural College.—Music, drawing and writing, and playground activities.

South Dakota State College.—Art and music.

University of Tennessee.—Physical education, swimming, music, chorus, education, observation in demonstration school.

University of Vermont.—Public-school art, fine art, elementary-school methods, rural education, typewriting, expression, piano, public-school music, voice, violin, and physical education.

Virginia Agricultural and Mechanical College.—Mathematics for college entrance.

State College of Washington.—Plane geometry, literature and composition, general outline of American history.

West Virginia University.—Music and physical education.

University of Wisconsin.—Choral music, courses for workers in industry, junior Red Cross, library conference given by State library commission, and swimming.

Subject-matter fields (not courses) that are taught in the general session and have not yet been made a part of the program of the summer session are listed as follows: Architecture in 6 institutions, agriculture in 10, chemistry in 4, entomology in 5, engineering in 18, home economics in 4, military science in 19, mining and metallurgy in 5, veterinary medicine in 5, pharmacy in 7, Greek in 4, law in 3, forestry in 4, Scandinavian in 3, geology in 6, medicine in 4, animal husbandry in 2, archaeology in 1, arts and sciences in 9, education in 1, psychology in 1, apiculture in 1, biology in 1, botany in 1, science in 4, history in 2, economics in 3, modern languages in 3, physical training in 1, religious education in 2, biochemistry in 1, civil engineering in 3, immigration in 1, naval science and tactics in 1, oriental languages in 1, romance philology in 1, Sanskrit in 1, Semetic language in 2, mathematics in 2, Latin in 2, Spanish in 1, journalism in 1, commerce in 2, physics in 3, sugar technology in 1, zoology in 1, horticulture in 3, Italian in 2, dairy husbandry in 2, mineralogy in 1, music in 1, poultry in 1, ceramics in 1, bibliography in 1, and dentistry in 1.

From the standpoint of curricula it is reported that the academic standing of the summer session can be improved in certain land-grant colleges:

University of Arkansas.—More differentiated work for rural education workers and junior high school teachers.

University of California.—By securing always the best possible instructors.

Colorado Agricultural College.—A thoroughly organized course of study for rural and consolidated school teachers. No school in Colorado provides this.

University of Delaware.—By offering a wider range of academic college courses.

University of Florida.—Graduate work should be expanded and improved. Should enrich curricula by additional courses, should offer kindergarten curriculum, also manual training, commerce, and journalism.

Georgia State College of Agriculture.—Summer session shows hardest studying of year.

University of Hawaii.—Expansion.

University of Idaho.—A larger faculty and more courses would improve.

University of Kentucky.—Is in very good shape.

Massachusetts Agricultural College.—Present scope limited to existing curriculum which is not specialized.

University of Nebraska.—Extending hours of instructional contact.

University of New Hampshire.—Additional courses.

Rutgers University.—Better articulation of courses within each curriculum.

North Carolina State College.—By enlarging the offerings in graduate work. Getting more people interested in the engineering school and school of agriculture.

Oklahoma Agricultural and Mechanical College.—More engineering courses would probably create a good enrollment in engineering school during summer.

Pennsylvania State College.—No specific summer curricula—all apply on regular college curricula.

University of Tennessee.—Graduate school courses should be increased. College of law should offer courses; so should medicine, pharmacy, and dentistry.

University of Wisconsin.—Possibly by lengthening the session by two or three weeks, enabling us to give a half semester of work and credit.

From a standpoint of courses, the academic standing of the summer session can be improved in:

Alabama Polytechnic Institute.—Biggest restriction of summer session is finances; of a total expenditure of $26,428 in 1928, students paid $21,216. Course offerings could be expanded with larger appropriations. These appropriations would not need to be much larger as the summer session is practically self-supporting and additional courses would increase enrollments and therefore receipts. To make summer session practically self-supporting, small classes have to be eliminated.

University of Arkansas.—Need more courses for rural education workers and junior high-school teachers.

Colorado Agricultural College.—More informational courses.

University of Florida.—Need to remodel offerings in education entirely. Plan now under consideration to prevent duplication of subject-matter meterial, also to reconstruct on Chartres' principle.

University of Hawaii.—Wider variety.

Iowa State College.—With few exceptions the subjects offered are selected from those offered in other quarters. The descriptions of these courses are quoted from the regular college catalogue. New courses are introduced from time to time as the demand warrants.

Kansas State Agricultural College.—Wider selection of courses.

University of Kentucky.—Need of a larger offering in some fields. Five weeks' term is too short.

Massachusetts Agricultural College.—By offering work in a greater variety of fields.

Massachusetts Institute of Technology.—Offering more advanced courses if enough students apply.

University of Nebraska.—To offer more graduate work and field courses.

University of New Hampshire.—Higher salaried instructors who can offer desirable courses.

University of New Jersey.—Richer courses with more definite objectives.

Cornell University.—By the provision of more courses for graduate students.

North Carolina State College.—Standing of summer session is very good. Major portion of our courses are given by head professors. Very few instructors are used.

North Dakota Agricultural College.—Larger number of advanced offerings.

Oklahoma Agricultural and Mechanical College.—More courses will be offered when a separate budget creates the incentive.

Oregon Agricultural College.—We try to find the work most needed and best available instructors. If means of improvement were obvious, we should adopt them, not merely list them.

Pennsylvania State College.—On account of the large number of "just ordinary" summer schools, we might well offer more specialized courses not commonly available elsewhere, such as our Institute of French, English, Music, and Nature Camps.

University of Tennessee.—More and other courses of graduate standing needed; additional departments should offer courses.

Agricultural and Mechanical College of Texas.—A larger budget.

Agricultural College of Utah.—Limit the number of hours for which a student may register and by offering an increasing number of so-called double courses (double majors).

University of Vermont.—Additional courses in chemistry, physics, botany, mathematics, history, and special graduate courses.

Virginia Agricultural and Mechanical College.—By offering more courses.

State College of Washington.—Offering a wider range of courses.

West Virginia University.—Offer a larger number of courses acceptable for credit toward the master's degree.

University of Wisconsin.—We seem to be meeting the needs of clientele fairly well. Possibly more courses in education might be offered.

Improvements of Summer Sessions

Suggestions for improvement of summer sessions have been indicated in the previous chapters of this section. There are other facts and recommendations however which may well be summarized by institutions reporting. These furnish material for thoughtful consideration not only in the schools concerned but in the improvement of any summer session. From a standpoint of relations a few institutions indicated features for making their institutions more effective in summer work:

Alabama Polytechnic Institute.—There seems no valid reason for limiting the operation of a college or university to nine months in the year. Curricula should be worked out on a basis of 3 years or 38 months each as normal procedure rather than on a basis of 4 years of 36 weeks each. The organization of courses should have enough elasticity to allow students to enter college at least four times a year and complete full units of work. This is particularly important for the summer quarter. Normal school and college graduates who are teaching need opportunity to continue their study without losing time from teaching. Summer-session teachers should receive same salary for summer-session work as for winter work. They should be allowed to teach summer and winter, so as to earn a leave of absence for a year or a half year for travel or study.

Colorado Agricultural College.—Our school we regard as a school of specialized training in vocational education and in administration. It is becoming more and more a graduate school in these fields. It provides especially for advanced training in vocational agriculture, home economics, trades and industries, and in rural education. We believe it is important that general education should not be eliminated in this training, as the vocational teacher needs these contacts and the general teacher needs specialized contacts in order to be fully aware of the situation.

University of Florida.—We should have coeducation in winter in teachers college.

Georgia State College of Agriculture.—Our work is as closely related as can be through the administrative council.

Purdue University.—The summer session staff is selected from the members of the regular staff; the courses are administered in the same way as during the regular academic year. It is the plan to make the work equal in quality and quantity to that of the regular year, and we believe we are securing the results desired.

Iowa State College.—We study the situation carefully each year. Nearly all members of the summer session faculty belong to the regular staff. Practically all of the heads of departments and most of the regular instructing staff of professional rank are in residence during one of the summer terms. Work completed in the summer session receives proportionate college credit on the same basis as during the rest of the college year. Attendance upon five summer terms of six weeks each is considered as meeting the residence requirements of one year in determining eligibility to an advanced degree. Admission requirements are the same.

Kansas State Agricultural College.—Make possible an all-year school.

Massachusetts Agricultural College.—By incorporating the summer session as a fourth term of the regular session.

Massachusetts Institute of Technology.—Summer session is now adjusted to the regular session.

University of Nebraska.—Summer classes are too large. Insufficient funds to employ additional instructors.

University of New Hampshire.—Director of summer school should be a member of administrative committee of the regular faculty in order to be acquainted with the policies of the administration. A social center for the summer school would help build up the morale.

Rutgers University.—Employing regular staff in so far as possible.

Cornell University.—Though the summer session is separately administered, the correlation of its work with that of the regular year in all the colleges is close and cordial. The administrative board is so composed as to insure cooperation all around; and decisions affecting both courses and staff are reached only after consultation with colleges and departments concerned.

North Carolina State College.—The summer session is now a very intimate part of the year's work and there can be very little improvement between the summer school and regular term. We operate a small summer school which caters to teachers in the secondary field and to persons working toward a college degree. Approximately all the courses carry college credit and the summer school is just a continuation in a large measure of the regular work of the college year. The scholarship standards maintained during the summer school are exceedingly high, and we are catering to only mature, purposeful students who are interested in doing a serious job.

Oregon Agricultural College.—Only administrative considerations differentiate use of plant for study in summer from similar use in winter; that is, where climatic conditions as here are more favorable to study in summer even than in winter.

Pennsylvania State College.—Certain departments which do not now offer summer courses, and whose work does not now seem to be in demand in the summer, might develop an interest and round out the summer organizations. The desirability of putting the college on a 4-quarter plan of organization, in which the summer session would become a fourth quarter perfectly equal to and coordinated with the other terms, has been for some years and is now a live question. An important function of a summer session usually overlooked is its influence on the teachers of the regular college staff. The more mature students, the specialized courses, the more liberal and progressive points of view and practices, sooner or later produce changes for the better in the work of the regular college year.

University of Tennessee.—Every department giving courses in regular session should offer summer quarter courses.

University of Vermont.—Certain courses in the summer session should have the equivalent in hours and credits to the same courses in the regular session. However, there exists a very satisfactory articulation between the regular and summer session at the University of Vermont.

State College of Washington.—Articulation is good.

University of Wisconsin.—The summer session has proved that it is unnecessary to allow buildings, equipment, and faculty to be idle during the three months of the long summer vacation. Result will doubtless be a general extension of school work throughout the year.

Problems for further study are suggested by several institutions as follows :

Alabama Polytechnic Institute.—Making summer session a standard "quarter session." Requiring standard preparation of instructors. Paying standard salaries for summer session work. Making academic year 48 weeks instead of 36. Making each "quarter" an independent unit for convenience of students and professors.

Colorado Agricultural College.—To what extent is the summer session fulfilling a specific need in the land-grant college? To what extent does it draw from general education? In the large summer session are students enrolled mainly in liberal arts and general education or are they in the specific fields of the land-grant college? What is the best way of financing a small summer session? Is it desirable to broaden or narrow the training in general education? How is it possible to obtain enough work in a period of three or four years in order to confer the master's degree where summer sessions are continued only five or six weeks?

University of Florida.—Salaries. Teaching load. Exceptional men used for classes and for lecturers. Courses offered in summer session. Relation of credit to days and hours of instruction in summer session compared with regular session.

Georgia State College of Agriculture.—Combination of all phases of higher education in Georgia in summer session work through regular faculties of three institutions here under one head and administrative council offering training. Combination of New York Chautauqua idea of culture through lecturers, etc., with regular university atmosphere and courses.

University of Hawaii.—Special opportunities for mainland students interested in sociology, psychology, political science, botany, and zoology. Hawaii itself is a laboratory in all these fields.

University of Idaho.—For the past few years the work of the summer session has been growing in the direction of advanced undergraduate and graduate work.

Kansas State Agricultural College.—Opportunities for graduate work.

University of Kentucky.—Salaries of summer-session instructors should be on a par with salaries of regular year. Amount of credit offered for summer session toward degrees both in time and in credit hours is not enough in some summer sessions; many grant too much credit in semester hours for the time spent upon the work; in other words, the summer session should be made comparable in every way to the work done during the regular year.

An extended program for summer sessions. They are still too largely built up around a program for the professional education of teachers. The summer session should become a "fourth quarter" of the year's work and become an enlarged part of the university's program.

University of Minnesota.—Extent to which recreation is emphasized. Extent to which special projects in way of symposia, institutes, conferences, and fine-arts instruction are being emphasized.

University of Nebraska.—The need of placing summer-school instructors' pay on the same basis as the long session.

University of Nevada.—We are trying to aid rural teachers with little or no training. Students having had two years of normal-school work would better go where they can have a wider range of election than we could possibly afford.

University of New Hampshire.—Teacher training and graduate work.

Cornell University.—Perhaps the most significant development in recent years is the larger number of courses for graduates.

North Carolina State College.—Emphasis upon training science teachers, high-school principals, and industrial teachers. The high scholarship maintained in the summer session. Special services through short courses.

Oklahoma Agricultural and Mechanical College.—The importance of separate budget for summer session. Importance of adequate relaxation from teaching duties for regular faculty. Freedom of faculty from necessity of summer teaching. Relation between regular fall enrollments and summer session enrollments. Special scholarships in summer session. Exchange professorships in summer session.

Oregon Agricultural College.—Growth of postsession idea. Location of institutions in which postsession succeeds best. Specific courses offered in postsession, particularly in institutions just inaugurating the system.

Pennsylvania State College.—Specialized work of our institutes of French education; English education, and music education. Utilization of our natural advantages in a rare environment, such as our nature camps, excursions, to scenic and historical places (Gettysburg, etc.). Small ratio of instructors to students. Large proportion of visiting professors—about one-half.

University of Tennessee.—Clearer recognition of the importance of the summer quarter as compared to regular session.

State College of Washington.—Question of financial support. Length of summer session. Salaries for outside instructors.

West Virginia University.—Opportunity afforded by the summer session to serve a large number of high-school teachers, school principals, superintendents, and others who desire to do graduate work and have only summer vacation periods at their disposal.