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BUREAU OF EDUCATION

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PRELIMINARY SURVEY OF THE SCHOOLS OF THE DISTRICT OF COLUMBIA

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, October 16, 1920.

DEAR MR. SECRETARY: In October, 1919, at the request of the Board of Education in the District of Columbia the Bureau of Education made a preliminary survey of the schools of the District and reported to the board a plan for the reorganization of the administrative and teaching forces of the schools, including a schedule of salaries.

The committee appointed to make the investigation made no attempt to study the finances of the schools, the need for buildings, the courses of study, or schoolroom work. It confined itself wholly to questions of organization, administration, and salaries. The recommendations have in them, I believe, much of value to boards of education and superintendents of schools in other large cities. I am therefore transmitting, in the form of a letter to the president of the Board of Education of the District of Columbia, this report for publication as a bulletin of the Bureau of Education.

Respectfully submitted.

P. P. CLAXTON,
Commissioner.

Hon. JOHN BARTON PAYNE,
Secretary of the Interior,
Washington, D. C.

PRELIMINARY SURVEY OF THE SCHOOLS OF THE DISTRICT OF COLUMBIA.

LETTER OF THE COMMISSIONER TO DR. VAN SCHAICK.

OCTOBER 29, 1919.

DR. JOHN VAN SCHAICK,
President of the Board of Education
of the District of Columbia.

MY DEAR DR. VAN SCHAICK: In a letter of September 4 you requested, for the Board of Education of the District of Columbia, the assistance of the United States Bureau of Education in making a preliminary survey of the schools of the District, for the purpose of obtaining data for the use of the United States Reclassification Commission in its work of reclassifying the employees of the board of education and for the use of the board itself in its task of preparing plans for the reorganization of the administrative and teaching force of the schools.

In response to this request I detailed a committee of the bureau, consisting of Dr. Frank F. Bunker, Dr. Samuel P. Capen, Dr. Willard S. Small, and Dr. W. Carson Ryan, jr., who gave to this survey as much time as their other duties would permit, and made to me a report in the form of recommendations which I have carefully reviewed and revised, and which in its revised form I am transmitting herewith for such use as your board may care to make of it.

In making this survey the chairman of the board of education, the superintendent of schools, and representatives of the Teachers' Union were interviewed formally. Other persons connected with the school system were interviewed informally, and such records as were thought necessary were examined.

In the very brief time that could be devoted to this task it has been wholly impossible to collect and present all the facts and arguments which, with more time, might have been given in support of the recommendations made, but it is believed a more comprehensive survey will amply justify these recommendations. Such a survey would be necessary to enable this bureau to advise as to many of the im-

portant details of reorganization of the schools of the District and to make constructive suggestions for their general improvement.

In the tentative report of the committee submitted to me there are some very interesting recommendations looking toward the larger participation of the teachers of the schools in their management and in the making of the general policies of the school system. But after further consideration it is thought best to withhold all recommendations on this subject at this time. This is a matter of such importance, so far-reaching in its results, and so complex as to require comprehensive study from many different angles. Very little such study, however, has been given to it anywhere. It is my purpose, with the help of such expert assistance as can be had, to undertake such a study through this bureau, and, with your permission, to render you a report with recommendations later.

The brief report herewith submitted is in three parts. Part I contains recommendations for additions to the administrative, supervising, and teaching staffs, and changes in their organization. Part II contains recommendations in regard to classification and salaries. Part III contains suggestions for a more adequate basis for the payment of janitor service. It is fully understood that the adoption of these recommendations will increase quite considerably the cost of the schools of the District and necessitate much larger appropriations for their support; but it is believed that the results will fully justify all the increase in cost. It is quite certain that without some such generous scale of reorganization and support the schools of the District can never be brought to that high degree of excellence and efficiency which should characterize the schools of the capital city of the great democratic Republic which long ago accepted, in theory at least, the doctrine of the importance of the fullest and best possible education of all the people.

It is also quite certain that, with the present organization and scale of salaries, the standards and the work of the schools of the District will inevitably deteriorate.

In submitting these recommendations let me, for myself and the committee, express my appreciation of the assistance given by you and others connected with the school system, and to offer the further assistance of this bureau as it may be desired.

Yours, sincerely,

P. P. Claxton,
Commissioner.

REPORT OF THE SURVEY.

PART I.—ADMINISTRATIVE, SUPERVISING, AND TEACHING STAFFS.

1. *Assistant superintendents.*—For the management of a modern complex public-school system with an enrollment of 60,000 pupils, the superintendent needs much expert administrative assistance of such varying kinds as can hardly be found in any one person. Since the preeminent function of the schools is instruction and training, it is of the highest importance that the superintendent, however great his business ability, shall be relieved of the necessity of giving attention to the details of the business affairs of the school system, and that he shall be free to devote his time and energies to the larger problems of general policy and particularly to the problems of education. Since the value of the returns of the millions of dollars expended and of the time of the children spent in school depends in very large measure on the character and the effectiveness of the administration, it would be very unwise not to make this administration effective at any reasonable cost. It is, therefore, recommended that the number of assistant superintendents in the District be increased from two to six, and that one of these be charged with the management of all the business affairs of the school system. The other assistant superintendents should be selected with special reference to the needs of the following five chief divisions of the work of the superintendent's office:

(1) The management of the elementary schools and the normal school for white persons.

(2) The management of the elementary schools and the normal school for colored persons.

(3) The management of the high schools, vocational schools, extension schools, evening schools, and other special schools and activities for white persons.

(4) The management of the high schools, vocational schools, extension schools, evening schools, and other special schools and activities for colored persons.

(5) The management of all activities pertaining to the care of the health of children in school, including the heating, lighting, ven-

tilation, and cleanliness of school buildings, and other janitorial service, instruction in health, physical training, and attendance.

The direction of the collection, compilation, and interpretation of educational statistics should be assigned either to the assistant superintendent charged with the management of the business affairs of the school system or to the assistant superintendent charged with the management of activities pertaining to health and attendance.

Were it not for the fact that the school system of the District is practically a double one, and that it is found advisable to provide administrative and supervising officers in proportion to the population of the two races, a better and more economic policy in regard to this might be devised.

All assistant superintendents should be elected on the written recommendation of the superintendent of schools and should act under his direction and be responsible to him.

2. *Group principals for elementary schools.*—Unfortunately, there is in the District a very large number of small school buildings, 99 of 8 rooms or less, and 42 others of 12, 14, or 16 rooms. The present policy of providing for each of these small buildings a teaching principal, dividing her time and energies between the work of a regular grade teacher and the duties of principal of the building, is evidently very unsatisfactory, and it is not believed that it can ever be made satisfactory. To provide a managing principal for each of the small schools would be very costly. It is therefore recommended that the schools of the District be combined into approximately 50 groups, the number of schools in each group depending on their size and the proximity of the schools to each other, and that there be assigned to each group a principal who shall be relieved of all duties as a teacher in any school and who may, therefore, devote full time to the important duties of a managing principal. It may be found advisable to assign a group principal to each building having 16 or more rooms. To each of these groups of schools there should be assigned a competent clerk, who, under the direction of the group principal, should transact all business and attend to the compilation of such statistical facts as are required of these schools. Without such relief from clerical duties, it would be impossible for the group principal to perform effectively the important duties of the office.

It is further recommended that, when the policy of providing group principals is adopted, the office of District principal, of which there are now 13, be abolished.

As to salary, group principals should be classified in "Group C," defined later.

3. *Teachers of special subjects in elementary schools.*—Among the teachers of each of the groups of schools to be formed under recom-

mendation 2 there should be one teacher of special ability in each of the following subjects, which a large number of the regular grade teachers have little or no ability to teach: Drawing, music, manual training, domestic science, physical training. These should teach their special subjects in all the grades of all the schools of the group in which the regular grade teachers are unable to teach them satisfactorily, and should give such expert advice and help to other teachers as may be necessary to enable them to do their work in these special subjects more satisfactorily. It will be comparatively easy so to arrange the schedule of recitations in the several schools as to make it possible for grade teachers to be occupied with other classes when the special teachers have charge of the children of their grades. The providing of these expert teachers of special subjects need not, therefore, involve any additional expense to the school system. The slary of a special teacher should be the same as that of other teachers in her class.

4. *Directors and assistant directors of special subjects.*—There are at present in the school system a director and assistant director for each of the following subjects: Music, drawing, physical culture, domestic science, domestic art, kindergartens, and penmanship. Without a more careful and extensive investigation of their work and its relation to the work of the school as a whole, it is impossible to make any recommendation in regard to these except that they be continued, at least, until teachers of special subjects are provided for each of the groups of schools as recommended in paragraph 3.

5. *Substitute teachers.*—The report of the superintendent of schools for the year 1917–18 shows an average absence of 60 teachers a day because of sickness or other reasons. In March, 1918, the average was 80 teachers a day. The average for the year and for the month having the highest number of absences was much higher than for the year 1918–19, but this was due to the epidemic of influenza and other unusual causes. The average for 1917–18 was, however, not above what may be expected in any normal year. The law provides that each teacher in the schools of the District may have two days in each year to visit other schools and observe the methods of other teachers. It is very important for the efficiency of the schools that all teachers avail themselves of this opportunity for seeing the work of other schools and teachers and of gaining new ideas. Should all teachers do this it would add nearly 4,000 absences for the year, or an average of 20 or more absences a day. When teachers are absent classes and grades must be dismissed or the places of these teachers must be filled by substitute teachers. To fill satisfactorily a temporary vacancy caused by the absence of a teacher for one or more days requires unusual skill, both in teaching and discipline. Substitute teachers should therefore be selected from the strongest and best in the system.

The present policy of selecting substitutes is wholly unsatisfactory and is unjust both to the children and to the regular teachers. It is therefore recommended that a group of from 75 to 80 of the most capable and adaptable teachers in the entire school system be selected and held in reserve as substitute teachers, and that all substitutes be drawn from this group from day to day as needed. By arranging for teachers to take their two days allowed by law for visiting other schools at times when fewest teachers are absent for other reasons, practically all the time of the substitute teachers can be used in classroom teaching. When they are not needed as substitutes they can be assigned to help weak and inexperienced teachers by giving model lessons and otherwise.

The salaries of substitute teachers should be the same as salaries of other teachers of their class.

6. *Heads of high-school departments.*—It is recommended that the policy of providing heads of high-school departments for supervision of the important subjects in all the high schools be abolished. There are at present eight such heads of departments in the high schools for white persons and four in the high schools for colored persons.

It is believed that better results can be obtained if the teachers of each subject of each group of closely allied subjects in each school will organize themselves into a body for common counsel, electing for each year a chairman, who shall be the administrative head of the group, and that the necessary coordination of the work in any given subject or any given group of closely allied subjects in the several high schools in the city can be best obtained through a committee made up of the chairmen of the committees on this subject or group of subjects in the several schools. With the counsel and under the direction of the assistant superintendent for high schools, and with the cooperation of the principals of the high schools, these coordinating committees should outline courses of study and determine standards for subjects and groups of subjects which they represent.

The necessary correlation in the work of the high schools and such junior high schools as may be organized can be best obtained through frequent meetings of the coordinating committees from the high schools and similar committees from the junior high schools, acting with the counsel and under the direction of the assistant superintendent having charge of the high schools. A similar coordination of the work of the junior high schools and the elementary schools in respect to subjects and standards can be effected through similar meetings of the coordinating committees of the junior high schools and of similar committees from the elementary schools acting with

the counsel and under the direction of the assistant superintendent having charge of high schools and the assistant superintendent having charge of elementary schools and with the cooperation of group principals and special supervisors.

These committees should carry on their work in close cooperation with the members of the several schools. In all matters in which differences of opinion arise the judgment of the principal should prevail, except that an appeal may be made to the assistant superintendent or the assistant superintendents in charge, or, if necessary, to the superintendent of schools.

7. *Principals and assistant principals of high schools.*—It is recommended that new principals and assistant principals of high schools be elected by the board from nominations made by the superintendent. Principals of high schools should be the responsible heads of their respective schools in all matters and should be wholly under the directive authority of the assistant superintendent in charge of high schools and of the superintendent of schools. The policy recommended in regard to principals and assistant principals of high schools should apply to junior high schools, which should be under the direction of the superintendent in charge of high schools. For purposes of salary rating, principals and assistant principals of high schools and junior high schools should be grouped in class C and class D, described later.

One or more competent clerks, as needed, should be assigned to each high school and should work under the direction of the principal of the school, the assistant superintendent in charge of high schools, and the assistant superintendent in charge of the business management of the schools.

PART II.—RECOMMENDATIONS IN REGARD TO CLASSIFICATION AND SALARIES.

It is recommended that for purposes of salary rating all teachers, including nurses, librarians, and attendance officers, and all persons in directive positions, except the superintendent and the assistant superintendents, be classified in five groups: (1) A probationary group; (2) a group called Group A; (3) a group called Group B; (4) a group called Group C; (5) a group called Group D.

1. *Probationary group.*—To the probationary group should be assigned all teachers coming into the department without teaching experience. This group should include two subdivisions: (1) A group of intrants who have, in addition to a four-year high-school course or its equivalent, had a four-year college course or its equivalent and not less than one year of professional training. (2) A group of in-

trants who, in addition to a four-year high-school course, have had a three-year normal-school course or its equivalent. In this group should be placed college graduates who have had no professional training.

The probationary period for teachers in subdivision one should be two years; for teachers in subdivision two, four years.

It is recommended that the salary of teachers in subdivisions (1) be $1,500, and that the salary of teachers in subdivision (2) be $1,200, with a yearly increment of $100 until a maximum of $1,500 is reached.

All teachers in the probationary group should be elected annually upon the recommendation of the committee on personnel.

2. *Group A.*—Teachers in subdivision (1) of the probationary group should be advanced into group A by the personnel committee upon the recommendation of the principal and of the assistant superintendent in charge. Teachers in subdivision (2), before becoming eligible to group A, should have the recommendation of the principal and of the assistant superintendent in charge, and show evidence of having received credit for at least one year of college work above the sophomore class.

Teachers from outside the school system of the District of Columbia, who satisfy the personnel committee that the foregoing qualifications have been met, should be assigned to group A, and their status therein fixed upon the recommendation of the personnel committee, except that all such teachers new to the department should be on probation for one year.

All teachers in the probationary group not eligible for promotion to group A should be dropped or retained in the probationary group upon recommendation of the personnel committee.

It is recommended that the minimum salary for group A be $1,650, and that this salary be increased by yearly increments of $150 for four years until a maximum of $2,250 is reached.

At the end of the four-year period three options in regard to teachers of group A should be open to the board, upon recommendation of the personnel committee: (1) Dismissal; (2) retention at the maximum salary of the group; and (3) promotion to group B.

3. *Group B.*—It is recommended that upon the recommendation of their principal and assistant superintendents, teachers may be promoted to group B, who shall have satisfied the personnel committee—

(1) That in addition to a four-year high-school course, or its equivalent, they have completed a four-year college course, or its equivalent, and have had two years of professional training in a normal school, or in a school or college of education in a university, or the equivalent of such a course;

(2) That study has been continued and unusual success in teaching has been achieved.

It is recommended that the minimum salary of this group be fixed at $2,400, and that this be increased by yearly increments of $150 for six years until the maximum of $3,300 is reached.

It is further recommended that, at the expiration of the six-year period necessary to reach the maximum salary, teachers in this group may, upon the recommendation of the personnel committee, be elected on indefinite tenure at the maximum salary of the group.

4. *Condition of tenure.*—It is recommended that the tenure of the teachers in each of the foregoing groups be conditioned as follows:

That at the end of each school year principals of elementary schools and high schools, directors of special subjects, and assistant superintendents shall file with the personnel committee the names of those teachers under their supervision or direction who are doing unsatisfactory work, and that the names of the persons who are thus reported two years in succession shall be dropped from the list of teachers in the schools of the District.

5. *Group C.*—It is recommended that the minimum salary of persons in this group shall be $3,300, and that this be increased by yearly increments of $150 for six years until the maximum of $4,200 is reached, and that to this group there be assigned the group principals of elementary schools, the principals of atypical schools, vocational schools, and other special subjects; the directors and supervisors of special schools; principals of junior high schools; principals of high schools having an enrollment of less than 1,000 pupils; assistant principals in the larger high schools; and other officers having directive or supervisory duties in connection with the purely educational activities of the school system.

6. *Group D.*—It is recommended that the minimum salary of this group shall be $4,000, and that this be increased by an annual increment of $150 for six years until the maximum of $4,900 is reached, and that to this group there be assigned the principals of normal schools and the principals of high schools having an enrollment of 1,000 pupils or more.

7. *Classification of nurses, librarians, and attendance officers.*—It is recommended that graduate nurses be classified in group B; assistant nurses in group A; librarians in high schools and normal schools in group B; assistant librarians in group A; attendance officers in group B; and assistant attendance officers in group A.

The responsibilities of nurses, librarians, and attendance officers who rightly perform their duties are of equal importance with those of teachers in the schools.

8. *Salaries of superintendent and assistant superintendents.*—It is recommended that the salaries of assistant superintendents of schools be not less than $5,000 and not more than $7,500, and that the salary of the superintendent of schools be not less than $9,000.

PART III.—A SUGGESTION FOR A MORE ADEQUATE BASIS FOR PAYMENT FOR JANITOR SERVICES.

In so far as special requirements in regard to engineers will permit, it is recommended that the plan of determining the salaries of janitors used in the school department of Boston be adopted. According to this plan, compensation is allowed on five items: 1, Cleaning; 2, heating, ventilating, and superintendence; 3, washing of windows; 4, care of yards and sidewalks; 5, care of lawns.

In fixing compensation for cleaning, the cubic content of a building is computed in accordance with the rule of the National Association of School Accounting and Business Officials and indorsed by the American Institute of Architects. Compensation, based on this item, is reckoned at the rate of $0.004 for the first 10,000 cubic feet; $0.0038 for the second 10,000 cubic feet; $0.0036 for the third 10,000 cubic feet; and so on as per schedule up to the total cubic contents of the building.

In fixing compensation for the second item, "Heating, ventilation, and superintendence," the cubic content of the building is also used as a basis, except that buildings are classified into three groups, depending upon the type of heating system used, some requiring more attention and skill than others. For class A buildings the compensation runs $0.005 for the first 10,000 cubic feet, $0.0047 for the next 10,000 cubic feet, and so on with the item of "cleaning." The heating, ventilation, and superintendence of class B and class C buildings are compensated for at a lesser rate.

Compensation for "washing of windows," the third item, shall be on the basis of the total area of the sashes, and at the rate of $0.0055 per square foot for one washing on both sides. Additional washing per year when ordered by the board shall be at the same rate, which also applies to all windows, transoms, doors, and doors in permanent bookcases in the building.

The fourth item: "Care of yards and sidewalks" shall be on the basis of their total area and at the rate of $0.003 per square foot. So also with the item, "Care of lawns," except that the rate allowed is $0.0033 per square foot.

The annual salary of each janitor shall be arrived at by applying the rates of compensation for cleaning, heating, ventilation, and superintendence to the cubic content of the buildings, and by applying the rates of compensation for washing of windows and the care

of yards, sidewalks, and lawns to the several areas. The total of the amounts shall constitute the annual compensation for janitor service.

This schedule does not include compensation for evening schools, school centers, vacation schools, playgrounds, and lectures or concerts, for each of which additional compensation is allowed.

A schedule of salaries worked out in accordance with some such plan as this would be much fairer than the usual haphazard method of determining the amount; furthermore, such an analysis of the duties of janitors as the plan entails would make it easy for the board to determine the amount of help which each needs in order properly to care for his building.

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No. 31. Statistical survey of education, 1917–18. Advance sheets from the Biennial Survey of Education in the United States, 1916–1918. H. R. Bonner.
32. Monthly record of educational publications, October, 1920.
33. Educational directory, 1920–21.
34. Statistics of universities, colleges, and professional schools for 1917–18. Advance sheets from the Biennial Survey of Education in the United States, 1916–1918. H. R. Bonner.
35. Agriculture in secondary schools. A report of the Commission on the Reorganization of Secondary Education, appointed by the National Education Association.
36. Preliminary survey of the schools of the District of Columbia.
37. State higher educational institutions of South Dakota.
38. Monthly record of educational publications, November, 1920.
39. Facilities for foreign students in American colleges and universities. Samuel P. Capen.
40. The curriculum of the colleges of agriculture. Carl C. Woodward.
41. The Francis Scott Key School, Locust Point, Baltimore, Md. Charles A. Bennett.
42. Education for highway engineering and highway transport. F. L. Bishop and Walton C. John.
43. Survey of the schools of Winchester, Mass.
44. Salaries of principals of high schools.
45. Monthly record of educational publications, December, 1920.

(4) Give practice in planting, pruning, training, and spraying grapes.
(5) Study different types of smudge pots.
(6) Study different fruits for types of containers for packing.
(7) Give practice in fruit grading, packing, and storing.

3. Improving Home Grounds.
(1) Study excellent examples of landscape work in the community.
(2) Study landscape material adapted to the locality.
(3) Use lantern slides for good examples of materials and effects when community does not furnish examples.
(4) Study catalogues of landscape material.
(5) Give practice in propagating, planting, pruning, and care of ornamental bushes and trees.
(6) Give practice in managing hotbed and greenhouse.
(7) Plan individual home-ground planting.
(8) Make and execute design for ornamenting school grounds.

Home projects.—There are numerous valuable horticultural projects that can be carried on at home. Among them are: Vegetable gardening; growing tree fruits; growing small fruits, such as strawberries, raspberries, dewberries, currants, grapes; planning and planting of home grounds.

Use of reference material.—It is usually best to have the pupils buy books which include both vegetable gardening and fruit growing. The reference books and bulletins should be adequate for supplementary work. The bulletins from the local agricultural college and other agencies should be made use of to insure adaptation to local conditions. Catalogs of local nurseries will usually give valuable information on types and varieties of horticultural products and ornamentals adapted to the locality.

5. FARM ENGINEERING.

Aim.—The specific aim in the work of farm engineering is to prepare young people so to plan, locate, construct, and maintain farm buildings, fences, roads, and drainage (or irrigation) systems; and so to select, operate, and maintain farm machinery and mechanical equipment as to contribute most highly to the profit and pleasure of farming.

Content and methods.—A half-year course in rural engineering will meet the needs of most secondary schools, although a full year may be spent profitably upon the subject if the time is available and there is opportunity for a large amount of practical work. If but a half-year course is given it may be necessary to allow extra credit for projects. The course should cover in a general and fundamental way the following phases of the subject: (*a*) Farm machinery and

equipment and farm power, (*b*) farm structures, (*c*) farm sanitation, (*d*) agricultural surveying, (*e*) farm drainage, (*f*) irrigation, (*g*) roads. (See also following topics.)

Correlation.—Farm engineering may be taught as a special subject, or phases of the subject may be taught in an elementary manner in connection with other courses. It is recommended by the committee that farm engineering be taught as a separate subject in schools which give three or four years of agricultural instruction, have suitable equipment, and have a teacher with special training for the work. In case no special course is given, more attention should be given to simple phases of farm engineering in connection with other courses. Although farm engineering may be considered in a special course, there are phases of the subject which, if these subjects are to be made practical, are inseparable from other phases of agriculture. In such cases the more technical phases of the subject involving engineering problems should be reserved for the course in farm engineering or the work should be done by the two classes in cooperation.

Laboratory and field exercises.—In connection with this course the students should have practice at the school in as much of the following work as time and equipment will allow: (*a*) Setting up, use, and repair of farm motors and machinery, (*b*) concrete construction, (*c*) planning farm structures, (*d*) construction of minor farm buildings, (*e*) construction of fences, gates, and other farm equipment, (*f*) installation of water, sewerage, and lighting systems, (*g*) elementary surveying, (*h*) laying out drainage and irrigation systems, (*i*) construction and use of terrace level and road drag, (*j*) belt lapping, harness repair, making knots and splices, and such handicraft work as may fit the needs of the students and the community and has not been provided in earlier courses.

A survey of the community with regard to its sanitary conditions and needs, its roads, water supply, drainage, and irrigation needs will be of great benefit to the teacher and the class in connection with classroom work. It may also be made a basis for general community service along the lines most needed and in which the school is best able to serve.

Home projects.—Any of the lines of work suggested below may be either group projects carried on by the class or by a number of the students at the school or upon neighboring farms, or individual projects conducted upon the home farms:

Construction of farm buildings.
Laying out irrigation and drainage systems.
Road making and maintenance.

Equipment.—Schools owning a well-equipped farm have a distinct advantage in giving a course in rural engineering. There is a special

advantage where a school is improving its farm and equipment if the organization is such that the students may perform a large share of the work. On some school farms, which are highly successful from an educational point of view, the students, under competent supervision, erect the farm buildings, install all improvements, such as the water, sewage, heating, and lighting systems, set up and operate all new machinery and implements, and have the greater part of the care and repair of the equipment of the school as well as the school farm. Schools not having a farm should take advantage of the equipment and improvement needed at the school, on neighboring farms, and on the home farms of the students.

One of the most important features of equipment for rural engineering is a shop or workroom equipped for both woodworking and ironworking. Such a shop should have the tools and equipment essential to a well-managed farm. The farm equipment made, if it has not been made for a specific purpose at the school, should be such that the students may take it home and use it. As a rule, the making of models is not to be encouraged, when useful articles may be made. The home farms of the students and surrounding farms will furnish an abundance of equipment needing repair. Near-by implement dealers are often willing to furnish opportunity for study and practice in connection with farm machinery.

6. FARM MANAGEMENT.

Aim.—The specific aim of the work in farm management is to enable young people to obtain such a knowledge of sound principles and correct practices essential in the proper selection, organization, equipment, and operation of a farm as a business enterprise as will prepare them for financial success in farming.

Content and methods.—A half-year course in farm management will meet the needs of most secondary schools, although a full year may be spent profitably upon the subject if the time is available and there is opportunity for a large amount of practical work. The course should cover in a general and fundamental way the following phases of the subject: (*a*) Relation of farming as a business to other industries and to rural life, (*b*) opportunities in farming, (*c*) capital, credit, and land tenure in relation to agriculture, (*d*) types of farms and systems of farming, (*e*) planning and replanning the farm and farmstead, (*f*) farm equipment and improvements, (*g*) maintaining the fertility of the land, (*h*) cropping systems and crop management, (*i*) farm labor, (*j*) management of live stock, (*k*) farm records and accounts, (*l*) marketing farm products and (*m*) cooperation in agriculture.

Classroom instruction.—Although it will prove profitable to base the classroom instruction upon a textbook, the course should be

adapted to the special needs of the students and the community in which they live. Such adaptation and a general vitalization of classroom instruction may be had by: (*a*) Abundant use of reference material, (*b*) surveying local conditions, (*c*) use of illustrative material, (*d*) introduction of problems, (*e*) debates on live questions, and (*f*) connecting work of the classroom in a definite way with practical work.

Local surveys and field trips.—If the course in farm management is to be adapted to meet local needs, the instructor must know those needs definitely. He should have knowledge of the best of the local systems of farm management. To secure this knowledge it will be necessary for most teachers to make several definite but simple surveys of the local region. It is especially important to know conditions prevailing upon the home farms of the class members. In connection with the course in farm management, each of the students should later make an analysis of the home farm business, not only for the training that such a study gives in itself, but also to secure data to be used as a basis for further work in applying the principles of farm management to local conditions. Field trips for the purpose of making a first-hand study of farms and farming methods are valuable.

Use of illustrative material.—Illustrative material suitable to use in connection with farm management may be in the form of charts and maps for showing farm management and economic data in a graphic manner, and lantern slides and mounted pictures for showing the good and bad in farm management, as well as for showing farm plans and tabulated data.

Problems.—In connection with many of the lessons it will be profitable to give practice in working out arithmetical problems and problems which will involve reflective thinking as to methods of management and courses to pursue under given conditions.

Debates.—Some questions suggested will be debatable and will be of sufficient general importance and interest to call for a debate before the class. Such debates on well chosen subjects of local importance will do much to develop interest and promote investigation.

Practical work.—The work in farm records and accounts should involve a large amount of practice. Students who have had no bookkeeping will need practice in application of the elements of accounting to farm accounts. The analysis of the farm business, referred to above, may have given sufficient practice in making farm inventories; if not, inventory making should here be taught as essential to complete farm records and accounts. The keeping of records and accounts throughout a farming season may be considered a worthy project for a student in farm management. Blanks

for this can usually be obtained from the State College of Agriculture or the United States Department of Agriculture.

Wherever a student has opportunity to assume responsibility for the management of an extensive farm enterprise, such work should be credited as a farm-management project, if it is connected in a definite manner with the course given and meets the other requirements of a home project. In connection with problems of planning and replanning, practice should be given in making maps of farm plans. In studying how to choose a farm, practice should also be given in scoring. Practice should also be given in scoring and comparative judging of special features of farm management, such as proportion of live stock to field crops, crop-rotation systems, labor economies, etc.

Use of reference material.—It is desirable to use an elementary textbook and supplement it by more advanced references bearing on special phases of farm management and rural economics, and by bulletins and material from the agricultural press. State publications should be used to adapt the course to local needs. Special assignments should be made in adapting the instruction to the needs of individual students.

Equipment.—Inasmuch as the farms of the community will serve best for most of the laboratory work in farm management, comparatively little equipment is needed for teaching the subject. Such materials as are needed for classroom instruction and practical work may be grouped as follows: (*a*) Lantern slides,[2] charts, maps, and pictures, (*b*) a number of good books and a collection of bulletins pertaining to farm management, catalogued in such a manner that they will be readily available for reference use, (*c*) drawing material for making maps and plans, (*d*) books and blanks for practice in farm bookkeeping, (*e*) score cards and survey forms for study of farms.[3]

IV. HOME PROJECTS AND LOCAL EXTENSION WORK.

1. THE HOME PROJECT.

Agricultural resources.—Vocational agriculture requires the use of land and livestock. Some educators have held that secondary-school agriculture can not be made vocational unless the school operates a farm. Others have advocated that the school farm may well give way to the use of the home farm under the home-project plan. It is the opinion of this committee that all available resources should be used to give secondary-school agriculture greater educational value. In some sections and under some conditions school farms have been provided as the most practical solution of the problem. In other sections the home-project plan has established itself.

[2] It is assumed that the school has a stereopticon for general use.
[3] Consult your State college of agriculture.

In still other sections both plans are used. In all cases teachers should make abundant use of surrounding farms.

Essentials of a successful project.[4]—A home project has been described as including each of the following requisites: (1) There must be a plan of work covering a season or an extended period of time: (2) it must be a part of the instruction in agriculture of the school: (3) there must be a problem more or less new to the pupil; (4) the parents and pupil should agree with the teacher upon the plan; (5) some competent person must supervise the home work; (6) detailed records of time, method, cost, and income must be correctly kept on suitable farms; and (7) a written report based on the record must be submitted to the teacher.

Classification of projects.—If a project is participated in by several students as a class, or portion of a class, it would be considered a *group project*, e. g., building a chicken house, or spraying an orchard. If the essential parts of the project are the work of one pupil it would be called an *individual project*, e. g., growing a vegetable garden. Individual home projects may be classed according to the chief aim as follows: (*a*) Productive projects—in which the chief aim is to produce any agricultural product at a profit. (*b*) Trial projects—in which the chief aim is to test materials and methods in agricultural practice new to the student. (*c*) Improvement projects—in which the chief aim is to make improvement regardless of immediate financial returns. (*d*) Management projects—in which the chief aim is to apply efficiently the general principles of farm management.

Connecting project study with project work.—Inasmuch as the projects must be adapted to the needs and resources of the individual students there must be some plan for individual study. Individual outlines have been used successfully as an aid in planning the work, and as a guide in the study of the subject. Such outlines may be prepared by supervisors and teachers or by students under the direction of their leaders. Definite references will aid the student materially in his project study.

There has been considerable discussion as to whether the project study shall precede or follow the project work. In some cases the agricultural instruction has followed the practical experience gained in the project; and in other cases the project has followed the instruction of the school. There is educational advantage in basing discussion of more or less abstract principles on the concrete experience obtained in the practical work. There is also sometimes economic advantage in a study of practical problems before they are

[4] For fuller treatment see Federal Board for Vocational Education Bul. 21, Agric. Series No. 3, entitled "The Home Project as a Phase of Vocational Education," and U. S. Dept. of Agric. Bul. 346, "Home Projects in Secondary Courses in Agriculture."

worked out in projects. It is reasonable to assume that, as a rule, it is best to have the instruction and practical training run parallel and that every effort should be made to correlate principles and practice. A number of teachers have proved this assumption to be correct.

School credit for project work.—Credit should be given project work according to its educational value. Work of a technical nature involving new problems and the *acquiring of new skill continually throughout the project* may very well be given credit on the same basis as laboratory or field work. While the giving of school credit for practical work is a local administrative problem, the general rule above stated should hold. Rating of the project work should be given according to its merits. Work not reaching a certain grade should not be given credit.

Substitutes for home projects.—Resourceful teachers will take advantage of farms surrounding the school, not only for such class practicums as judging live stock and the pruning and spraying of trees, but also for more extensive individual projects. Work upon well-managed farms may be secured for students who do not live upon farms or who do not have opportunity for project work upon their home farms. A student in horticulture may secure work on a truck farm, a fruit farm, or in a greenhouse for a part of his time during the school year and during the summer months. Likewise a student in animal husbandry may secure work on a poultry farm, a dairy farm, or a general stock farm. When the farms are of a high standard and use modern methods and equipment, there is no doubt that such work will involve new experiences for the student who has no opportunity for such work at home. If the work is given supervision, if records and reports are required, and the work in other ways is connected definitely with the course the student is pursuing, it should have a decided educational value and should be credited as a substitute for a home project.

Use of the school farm.—School farms are most essential and have proven most successful where the majority of the students in agriculture are living at the school. The farms are used as a source of supply for school boarding houses, as a source of revenue, as a source of illustrative material for classroom and field instruction, as a means of demonstration to students and patrons, and as a means of training in practical farming. Although various means and methods have been worked out for the utilization of student labor on school farms, there is great need of connecting the practical work of the farm more closely with the instruction of the classroom and laboratory and thus giving it greater educational value. Some schools have found that it is profitable from an educational point of view to give the students greater responsibility with respect to their farm work and to allow

them to participate in the results of their labors. This idea is essentially an application of the project plan to use of the school farm The school farm projects may be grouped as follows: (*a*) Group projects, (*b*) individual projects.

Group projects.—There is excellent opportunity upon the school farm to develop group action and the cooperative spirit. Entire classes or groups of students who have similar interests and needs may be assigned projects in which they must work together. The following are examples of such projects which have been carried out successfully: (*a*) Erection of farm buildings, (*b*) installation of sewerage, lighting, and water systems, (*c*) planting and care of a model kitchen garden, a model orchard, or small fruit garden, and field plots for demonstration purposes, (*d*) care and management of a farm dairy or flock of poultry, or (*e*) renovating an old orchard.

There is also abundant opportunity for developing cooperation in connection with individual projects on the school farm. It is often more economical than would be separate action for students to combine their efforts in the preparation of the land, in the harvesting and marketing of crops and in other operations required to carry out their individual projects.

Individual projects.—The success of the home project plan has turned the attention of some agricultural schools toward the application of the plan to the work of the school farm. Individual students may be permitted to choose a project to carry out upon their own responsibility on the school farm. One student may have an acre devoted to corn or potatoes, another a half acre in garden truck, one student a flock of poultry, another one or more pigs. The students may be charged rent or interest on the land and equipment used and participate in either profit or loss on their projects. The general work of the farm may also be assigned to individual students. One student may be given charge of a team of horses and made responsible for their use and welfare, another given charge of the dairy barn and held responsible for the care of the cows and the milk and the records of feed consumed and milk produced. If such students are allowed to participate in profits or given some extra compensation it adds stimulus to better work.

One of the greatest problems in carrying out the project idea on the school farm arises from the fact that the students are not at the school throughout the year. It may be possible for students with animal projects, such as chickens or pigs, to take their animals home with them for the summer. In the case of such plant projects as field corn or potatoes it may be possible for the students to cooperate and employ one or more of their number to care for their crops during the summer. The problem varies with schools and different sections of the country and must be worked out according to local conditions.

2. LOCAL EXTENSION WORK.

With the coming of special teachers of agriculture into the rural high schools there has come a new conception of the function of such schools, a conception not bounded by narrow pedagogical dogmas. Through effective service it encompasses the whole community, the children in the school, the young people just out of school, the men and women on the farm, and the teachers and pupils in the neighboring elementary schools. The special teacher of vocational agriculture, usually from the State agricultural college, brings with him the agricultural extension ideas of that institution and much of the enthusiasm and spirit of public service of the extension workers.

Method of procedure.—While this enthusiasm is a very valuable asset, it is believed that before attempting extension work those responsible for conducting it should study the agriculture of the community to learn what is being done and what is worth while in each locality. He should know such things as the soil, the improvements, the transportation lines and the markets, the systems of farming followed, and the farmers themselves. Such information is fundamental to intelligent agricultural rural development.

The meaning of extension work.—The committee believes that it is proper for a public high school that is doing good work to extend itself to the people, but that it should not begin the process until it has something to extend. Not every high-school instructor in agriculture is qualified to do extension work. The instructor should first show in the teaching of his pupils that he is competent to extend his instruction to the patrons of the school. Extension efforts should be the result of work rather than the beginning of work. One is likely to make the mistake of beginning the extension work first, whereas the extension work should grow gradually as the school work in agriculture grows and be the natural expression among the people of the work that arises in the school itself.

Relationships.—All sorts of schemes are broached nowadays in the interests of better agriculture and country life. These need coordinating, but they can not be coordinated except on some basic principle. We have in agricultural extension work no more important problem than to try to determine in the next few years the groundwork on which may be based a correlation of labor that shall be both scientific and practically efficient with reference to the relationship of high-school extension in agriculture to other publicly supported agencies to Federal agencies, and the relationship of all to privately supported agencies. We must determine the way in which the community, the county, the State, and the Nation can cooperate in harmonizing and making effective as a great national movement the whole problem of agriculture and country life.

Classification of extension work.—It seems to be fairly well understood that work done either at school or away from school relating

to the training of pupils should be considered purely instructional in character. All such work as classroom instruction, laboratory exercises, school or home projects should be so considered.

Extension work, then, must be that which deals with those who are not in school. The committee finds that such activities on the part of the school group themselves under three heads, namely, direct, indirect, and incidental extension.

Direct extension would include well-planned activities. Such work should be done in close cooperation with the agricultural colleges and the United States Department of Agriculture, and may include such activities as (1) acting as organizer for the one-week short course for farmers, (2) offering personal counsel and advice on certain days to farmers of the community and assisting in the organizing of farmers' clubs, (3) assisting in organizing farmers' reading courses, (4) directing school agricultural exhibits locally and at the county fair, (5) meetings with farmers and farm visitation, (6) organizing and following up boys' and girls' clubs, (7) utilizing the local press in the discussion of local farm problems, and (8) utilizing the laboratory work of the pupils to promote improvement in the agricultural practices of the community by such work as testing seed corn, testing milk and cream, grafting, seed-purity testing.

Indirect extension would be the result of and grow out of the home project work with pupils. It is evident to the committee that many farmers would be influenced by the project demonstrations carried on at home in connection with classroom instruction.

Incidental extension.—It is reasonable to suppose that a trained agriculturist in any community would have propounded to him many questions in connection with the farmers' problems. These questions, of course, would be of a miscellaneous character and should be classed necessarily as incidental extension.

V. SCHOOL EXHIBITS.[1]

Purpose.—School fairs and exhibits are often held chiefly for the purpose of affording an opportunity for teachers and students to show parents and patrons what the school is doing. Although we may acknowledge that it is essential to arouse interest on the part of patrons and appreciate the value of exhibits in advertising the school, we should not lose sight of the value of such exhibits to the students themselves and to the young people of the community who are of school age.

Agricultural exhibits held in connection with home projects and other practical work of the school should have the following educational values: They should (1) arouse interest in practical agriculture and through it a general interest in the school; (2) establish

[1] See U. S. Dept. of Agr., States Relations Service Doc. No. 42, "Agricultural Exhibits and Contests."

ideals toward which the students may work; (3) give practice to the students through preparation and arrangement; (4) furnish suitable materials for study and practice in judging; and (5) have a beneficial socializing influence associated with school spirit since they furnish opportunity for cooperation.

Types of exhibits.—Although the agricultural exhibit may be made a part of a general school fair, there are many cases in which the agricultural work of the students is such as to merit a special agricultural fair or exhibit. Various forms of agricultural exhibits may be made a part of the school museum and used as permanent teaching equipment. We are considering at this time, however, a temporary exhibit of the work of the students. This exhibit may cover all phases of agriculture, or it may deal with one line of school work or one kind of project. The following are examples of the latter class of exhibits which should be suggestive: (1) A corn show; (2) a poultry show; (3) a colt show; (4) a pig show; (5) potato, vegetable, and fruit exhibits; (6) exhibits of farm mechanics and handicraft work. If the practical work of the school or the home project work follows one or two special lines, it will be better to hold special exhibits of such work rather than attempt general ones.

Organization and plans.—It should be borne in mind that if the school exhibit is to represent the real work of the school and related home activities, it must be planned ahead. This is especially important in the case of farm products. The student should understand when he is planning his project and buying his seed in the spring that he is to make an exhibit of his products in the fall. The contest idea may well involve the whole project as well as the products exhibited. The exhibition of products may be made a requirement of the complete project, and a record of the project may be considered a part of the exhibit.

Early in the fall is the best time for a general exhibit in most parts of the country. This means that arrangements should be made soon after school begins. If there is a live agricultural club, a good part of the responsibility and credit for the work should be turned over to its members. Committees of three members should be appointed for each of the main divisions of the fair, the chairmen of these committees forming an executive board. The teacher may work through these student committees as ex officio chairman. As a means of making it a community affair, an advisory committee of men in the community should be invited to work with the students. These men should be especially helpful in assisting in the securing of premiums. If a permanent advisory committee aids in the supervising of the home projects, it should serve well in connection with the exhibit. One of the most able students should be appointed by the club as secretary of the school fair.

In order that students may know definitely what will be expected and what are the possibilities in their work, it is well to plan the exhibits and contests and secure prizes early in the season. The classification and grouping of exhibits will depend upon the nature and scope of the exhibit.

The exhibits should include, in addition to the products and results of the home work of the student, an exhibition of the agricultural work done at the school. Much of the latter work may be in the nature of practical demonstrations in modern methods. For example, some students may demonstrate the use of the Babcock test

for butter fat; others may show how to apply a simple acidity test for soils, or how to test seed corn; while others are explaining charts which represent agricultural surveys of the school district.

Preparation should be made in advance, so that all will be in readiness the day of the exhibit. The day may very well open with a parade in which the students take parts which have some significance as to their agricultural work. In some cases the parade may take the form of an agricultural or harvest pageant. This may be followed by an agricultural program. Part of the afternoon may be used in agricultural contests, as suggested below.

Contests.—The whole exhibit may represent more or less the contest idea in the products of school and home work. The agricultural contests suggested as a feature of the afternoon program represent training toward skill. They may be classed as group or team contests and contests among individuals. Teamwork should be encouraged because of its value in developing the social idea. Individual contests may be conducted with a view to selecting the winners as members of teams to represent a class or the school. It will be necessary to have junior and senior classes in most of the contests, if there is any great difference in the age and training of the contestants.

The judging contests may be grouped according to the method used, i. e., those involving the use of the score card and those involving the comparative method. The scoring of farm products and animals is better for the junior classes and for individual contests, while the use of the comparative method of placing according to merit is adapted to students who have had practice with score cards.

The following contests may be suggestive of others that will fit local needs and conditions:

1. Judging live stock, horses, cattle, sheep, hogs, poultry, and pet stock.
2. Judging farm products, grains, fruits, potatoes, and other vegetables.
3. Rope tying, 10 to 20 knots and splices.
4. Corn stringing and husking.
5. Fruit packing and boxmaking.
6. Naming of farm and garden seeds.
7. Identification of weeds and weed seeds.
8. Identification of common woods.
9. Riding, driving, and hitching of horses.
10. Killing and dressing of poultry.
11. A plowing match.

Awarding of prizes.—An effort should be made early in the season to secure prizes for the fair, so that the premium list may be published early. If a propaganda is started early and the people see that the school fair represents work which means much in building up the community, it ought not to be difficult to secure premiums. Cash premiums which are out of proportion to the work exhibited should not be given. It will be better to give recognition to a larger number of students. As a rule, it is easier to secure premiums other than cash. For example, in a community interested in poultry it is usually not difficult to get patrons of the school to give pure-bred fowls and settings of eggs as prizes to students for poultry projects and exhibits. Pure-bred pigs make excellent prizes for students in such projects as corn production, as they furnish a start for a new line of work. Books on agriculture and items of equipment are suitable premiums. Whenever there is but little cash it will be advisable to spend it for ribbons and peanuts, rather than to lump it into one or two prizes. Larger amounts may be spent to good advantage as scholarships or payments on any college course in agriculture. Attendance at short courses given at the college and visits to fairs and other places of agricultural

interest have high educational value if properly planned and supervised, hence are valuable premiums for the projects and exhibits which represent considerable endeavor. Printed certificates may be used also as rewards, and should be given in connection with other premiums.

Rules for contests and standards for judging exhibits will depend upon local conditions. Such rules and standards should be made known to the contestants as early as possible. In most cases it will be best to have competent persons from outside the community to do the judging. The judging should be done as early in the day as possible, and the place won by the exhibit placed on the entry card for the benefit of those visiting the fair. The awarding of the prizes is suggested as the last number on the program as a means of keeping up interest to the last.

VI. USE OF REFERENCE MATERIAL.

1. FORM AND AMOUNT.

Books.—The number of books relating to agriculture is increasing very rapidly. There is need for the instructor in agriculture to use discrimination as to the material he places in the hands of his students. Although most of the books written for students of agriculture are intended primarily for the agricultural colleges, many of them are suitable for reference purposes in secondary schools. The teacher should make a careful selection of books for the school library considering them from the point of view of the student as well as the subject. It is better to have duplicate copies of a few usable books which are needed continually as references in connection with the course of study than to have the shelves of the library filled with complete sets, some volumes of which have no relation to the work of the students.

Bulletins.—Much excellent material for the use of schools is in bulletin form. Some of this material has not yet been organized into the general field covered by agricultural texts. The teacher will find bulletins very useful in making local applications of the general material of the textbook. Discrimination must be used, however, in the use of bulletins. Many of the experiment station bulletins of to-day are of a technical nature not suited to the use of secondary schools. The more general expository bulletins formerly published by the experiment stations are now, as a rule, published by the extension divisions of the agricultural colleges. So much of real value in teaching is now obtainable free of charge or at such a slight cost that there is little excuse for a school not having some kind of an agricultural library.

Periodicals.—Farm journals, like farm books, vary from the cheap general paper to the high-class paper covering a special field. There are one or two general farm papers which have a nation-wide circulation and a number of special live-stock and horticultural journals which should be received by schools teaching agriculture. The school should subscribe for the leading sectional and local farm papers to use in adapting the course of study to local conditions.

The better farm papers are indispensable in keeping both teacher and students abreast with agricultural progress. They are a fruitful source of good illustrations.

2. SOURCES.

The United States Department of Agriculture.—The Federal Department of Agriculture issues a great many publications useful to teachers of agriculture. The Farmers' Bulletins and Yearbooks, the most popular of its publications, may be obtained free through Members of Congress. The department supplies publications free to teachers as long as its supply lasts. From its Division of Agricultural Instruction may be obtained lists of the department publications prepared for the use of teachers. This division also maintains mailing lists of secondary schools teaching agriculture, to which its professional bulletins and other publications pertaining to agricultural instruction are sent.

The United States Department of the Interior: Bureau of Education.—The Federal Bureau of Education issues each year a number of bulletins relating to agricultural education and related subjects; it also issues A Monthly Record of Current Educational Publications.

Superintendent of Documents.—The Superintendent of Documents, Government Printing Office, Washington, D. C., issues price lists of public documents which he has for sale. These documents include those of the Department of Agriculture and the Bureau of Education. The following list gives the numbers of those lists which should be of interest to teachers of agriculture:

11. Foods and Diet.
16. Farmers' Bulletins and Yearbooks.
20. Lands.
31. Education.
38. Animal Industry.
40. Chemistry Bureau.
41. Insects.
42. Experiment Stations Office.
43. Forest Service.
44. Plant Life.
45. Public Roads Office.
46. Soils.
47. Crop Statistics.
48. Weather Bureau.

State agricultural colleges.—The State colleges of agriculture must be depended upon for most of the reference material and direct aid needed to adapt general courses of study and textbooks to local conditions. The publications of the extension divisions and the more popular expository circulars of the experiment stations will be found especially helpful to the students.

Other State institutions.—In some of the States the State universities, where they exist apart from the agricultural colleges, issue publications of interest to teachers of agriculture. Such material is also issued by State departments of education, boards of agriculture, horticulture, etc. Much of this material is in better form for use in secondary schools than experiment publications, yet it is often overlooked. The teacher of agriculture should make himself acquainted with all sources of aid and information

in his own State first of all, and then avail himself of the work of other States as far as possible.

Commercial institutions.—Many of the railroads, banks, and manufacturing concerns have departments of agricultural extension which issue publications and furnish illustrative material useful in agricultural instruction. The catalogues of the larger seed companies and nurseries are usually well illustrated, and may be used to advantage in a study of varieties. Likewise, catalogues of implements and farm machinery may be used in connection with farm mechanics. While discretion must be exercised in the use of advertising material, it may often be used to advantage.

Breeders' organizations.—Most of the associations which represent the different breeds of live stock publish circulars of value to the teaching of animal husbandry. They issue descriptive matter, charts, and score cards, which are of special value in a study of types and breeds. Lists of these associations, with the addresses of their secretaries, may be obtained from the Bureau of Animal Industry, United States Department of Agriculture.

8. EFFICIENCY IN USE.

As much of the material suggested may be obtained free of charge, the teacher should not only avail himself of it for the school but should also aim to arouse his students to collect such material as may have value in connection with their study and practice. Students may even be required to obtain such available bulletins as have a direct bearing upon their courses and projects. Lists of bulletins with instructions for obtaining them should be furnished early, so that no time will be lost in waiting for publications. For most reference reading students must depend upon the school library. Much of the best material is in the free publications, but in such a form that it is often overlooked. The teacher should use a card-index system,[a] so that students may find the available information on any topic which may be assigned. Bulletins should be in suitable boxes and arranged on shelves according to the card-index system in use. Covers should be provided for bulletins which are used extensively. If files are not kept of the farm papers and important articles indexed, clippings should be made of such articles as may have a bearing upon subjects covered by the course of study. These clippings may be placed in large envelopes or letter files and indexed under title of subject with the bulletins. In making students acquainted with sources of information and establishing efficient habits in the use of that information much will be accomplished in their training.

[a] See Federal Board for Vocational Education, Bul. 41, Agric. Series No. 8, entitled "Reference Material for Vocational Agricultural Instruction."