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Title- The Introduction of  
Agriculture into the High  
School.

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by

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Concerning references and authority for statements and conclusions, the Author respectfully begs to offer the results of several years of research; three years as a teacher of various subjects in secondary schools; one year as a teacher in an agricultural high school; two years of graduate study in the field of secondary agricultural education at the school of agriculture, St. Anthony Park, under the personal direction of Principal Mayne; work in the various departments of the college of agriculture for graduate credit; sufficient work in the college of education to meet the requirements of a Major subject; a careful study of the problems confronting the secondary schools, by means of personal interviews, letters, printed statements, bulletins, published articles, reports, and the herewith presented tabulations and reports from 325 questionnaires sent to State Superintendents, High School Superintendents and the Agricultural Instructors, and to colleges and normal schools devoting special effort to the teaching of agriculture. Any statements not specifically referred to a recognised authority are based upon personal knowledge and belief, and are submitted as being worthy of credence. Special acknowledgment is to be made to the American Association for the Advancement of Agricultural Teaching for suggestive reports and material dealing with State Laws affecting agricultural education, the number of schools offering agricultural educational work, and the training of teachers. The bulletins

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of the department of agriculture at Washington have been of great assistance, and many of the more progressive teachers and superintendents have taken sufficient interest in the present effort to give valuable suggestions and criticisms. Principal Mayne, of the school of agriculture, Superintendent Wheeler, of the Garden Club of Minneapolis, and Professor Quigley, of the college of education, have given their assistance and have suggested methods of presentation and are largely responsible for the concretion of otherwise rather vague ideas of the needs of agricultural education. For the personal inspiration of these men a special acknowledgement is made. Dean James, of the college of education, and Dean Woods, of the college of agriculture have given their sanction to the work, and have prescribed the work necessary to the completion of the requirements for the degree, of which this dissertation is an essential part.

An outline of the method of presentation is herewith given:

1. Are the agricultural courses to be offered as humanistic or as vocational subjects?
2. Can schools that are avowedly non-vocational give the very necessary atmosphere of utility if the latter idea is to be the predominant one?
3. Will the school change to meet the requirements of agriculture or will the latter take on the form and content of the present system and conform to its ideals and purposes?

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4. Can a proper correlation be established with the other subjects in the curriculum?

5. How shall the problems of teaching and supervision be solved?

6. To what extent can the school go out and make the courses of practical value to the community by working for and with the farmers?

7. Shall the schools continue to conform to the requirements of the institutions of higher learning, for which only a small percentage of the students are fitted, or shall those institutions be made to conform in their requirements to the conditions found in the schools?

8. What conformation to certain standards of presentation of courses shall be demanded of the schools?

9. What equipment shall be provided?

10. What is the actual condition of agricultural education in the secondary schools at the present time?

A. Laws governing such education.

B. Number and character of schools offering agricultural courses.

C. Equipment of schools in land.

D. Courses offered.

E. Quality of teaching and supervision.

F. Text-book agriculture as compared with practical demonstration work.

G. Amount and character of work among those not in the school as students.

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H. Attitude of the farmers toward the school work.

I. Attitude of the educational world.

J. Number and character of text-books.

K. Attempts being made to organize and systematize the knowledge and conditions of agricultural education.

L. Outlook for the future.

1. Are the agricultural courses to be offered as humanistic or as vocational subjects?

The interpretation to be placed upon the courses offered as constituting agriculture in the high schools is of the utmost importance in determining how the various problems connected with its introduction and conduction are to be met and solved. When we look over the entire curriculum, and see that every subject therein contained has been either humanitized or made a means for providing Formal Discipline, the proposition is at once apparent that there is grave danger in using the existing machinery for any purpose than that for which it has come to be so admirably adapted.

The entire scheme of education is based upon a foundation of instruction for the harmonious development of the individual, which is the aim of Formal Discipline. This point of view is upheld by a view of the situation as a pyramid, of which the higher education is the apex. But if the system is not devoted primarily to a support for this cultural apex, as exhibited by our higher education, we have then no valid excuse for continuing to endeavor to conform to the

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rigid and artificial requirements of the college and university. But these educational institutions do continue to dominate the field of learning, and the secondary schools do continue to endeavor to conform to their requirements, and we are thus brought face to face with the problem- that if agriculture is to be introduced into the secondary school it must be presented as a cultural force, or the entire organization of the school must be made to conform to the new ideal of education for vocational purpose. In order to do this we must begin to reconstruct the system from the very beginning, in the primary grades, through the grammar grades, into the high school. To do this we require that a whole new set of educators be trained for the new work, so that it may not be handicapped either by opposition or by incompetency, because of lack of comprehension or of training for the new method of presentation of old subjects. Also, we will need new equipment in the matter of buildings and arrangement of rooms and furniture, and much money will be wasted because of this change, which can be better used to establish schools or departments of a different type, to be given entirely over to the new idea of education for vocation, and which can well be used as a valuable adjunct to the old type, if, indeed, we are not able to arrive at the satisfactory situation where the old will be only an adjunct to the new. Also, in this specific case, we have the new type of school in very successful operation, providing agricultural training of a kind that is already proving ade-

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quate from the point of view of the boy who wants to become a practical farmer. Reference to the schools at St. Anthony Park, at Crookston and at Morris, in Minnesota, shows that a very satisfactory number of their graduates return to the farm and are proving successful as farm-managers, which is a business too long neglected, for the reason that our rich virgin soil has too readily provided a sustenance for the Homesteader, so that he has not found it necessary to study his soil from a scientific point of view, and his markets have thus often been unwisely and untimely chosen. It is an obvious fact that our present high school can not hope to compete with such a type from the purely vocational side, but it is also true that the strictly agricultural school can not do more than make farmers and farm-managers of its students. It can not prepare them for the teaching of even its own sciences, unless in a very rudimentary way, and it is clearly out of its field in trying to prepare the pupil for a professional or commercial career. The conditions of the average high schools are such that they can not provide the actual farm conditions, either by means of a farm owned and operated by the school, or by sufficiently close touch with agriculture in the vicinity to provide any real farm training other than that which can be obtained by mere observation of methods and results. There is also always present the need for such training as will prepare for the Professions, and the average pupil must have the preparation

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that will make it possible for him to choose his vocation or profession with at least a good general knowledge of the conditions of demand and supply in the various fields of endeavor with which it is possible for him to come in contact. This must be furnished by the schools, and when we look over the field of choice open to the average student, we are struck with the fact of the immensity of opportunity open to him, with which he has a right to at least become acquainted. Accepting the liberal point of view of agricultural education, it can readily be seen that the subjects capable of being offered are wide enough of application to make a very useful foundation of choice for the student, if they are given with the idea of making them applicable to a wide field of vocations. That our present school system is not now doing this to the degree deemed necessary is shown by the number of attempts to conduct experiments to broaden the experience of the growing child; by the flourishing and popular condition of private schools having a definite culture aim; by the attempts of colleges and universities to conduct Model Schools where the right sort of training is provided; and by the disinclination of parents of means and insight into the problem to send their children to the public schools, preferring private tutors to any other form of educational means. However, the introduction of many subjects into the high schools has helped to over-



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come these criticisms, and such studies as Chemistry, Physics, Biology, Botany, Geology, Physiology, Hygiene, Nature Study, Gymnastics, Athletics, Manual Training, Domestic Art and Science, Commercial Branches of Mathematics, Book-keeping, Stenography, Typewriting, Music, Art, Elocution, Debate, Literary Societies, etc., have been offered mainly with the hope of popularizing the courses sufficiently to keep the students in school, but have had the actual result of driving them away, when they find that the subjects are not being given the vocational trend which they supposed would be the case. But the sum total of many years presentation of these courses has given them a wider application than was formerly possible, and the pupils that complete the modern high school course of study have a much broader conception of the activities of life than was at all possible for the preceding generation. The greatest difficulty seems to lie in attempting to secure teachers of enthusiasm and training to conduct the courses for the too small salaries now being paid. While the technique of the work is usually well mastered, these instructors are often of the opinion that they give the public more than they receive in return, with a resulting gradual let-down in their individual efforts to make the most of the chance to give the students the very best they have to offer. With agriculture this is not yet quite true, as the teachers as a rule command higher salaries than any other high school teacher,

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and the subjects are new enough to have a greater interest for both teacher and pupil, and are broad enough of application to be valuable for any class of student. With this clearly in mind, it should be not only the duty but the privilege of the school management to profit from the situation and see to it that there is no let-down in the presentation of the agricultural subjects, but a gradual building up of the rest of the curriculum to this level, so that there will be at the end a better and more enthusiastic corps of teachers and a much more applicable range of subject matter. From the foregoing it is not a wrong deduction to say that the agricultural subjects, when introduced into the average high school should be given the humanistic or cultural application, rather than the vocational, which, in turn, should be confined to schools that have that purpose only and are equipped and managed from that point of view.

2. Can schools that are avowedly non-vocational give the very necessary atmosphere of utility, if the latter idea is to be predominant?

Having determined that we can not well vocationalize our present system of secondary schools, we are confronted with a new aspect of the problem. Provided that we establish the vocational schools of agriculture, conducted from the utilitarian point of view, and at the same time, of necessity, educate the public to the proper appreciation of the

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same, we will meet the demand for utility in every sort and condition of school life. Utility will be carried to the point that nothing that can not be shown to have real value from the vocational aspect will receive the support of the tax-paying public. There will be utility-madness, just the same as there has been a craze for higher education, and the regular schools will not be allowed to do less than the purely vocational type, nor will the ordinary high school care to compete with the vocational on this basis, preferring to appeal to that class of students who are on the lookout for a broad and fundamental type of educational experience as the basis for professional or what might be called non-productive live-activity, for which a more or less varied and appreciative training is essential. Having made this distinction, the cry for utility can be shown to have been met by the school of the liberal type, on the basis of the sort of training necessary for this sort of pupil. If the idea of education for vocation is generally accepted by the public, how can we show definitely that our cultural course in agriculture does meet the demand, despite the previous assertion that we are concerned chiefly with the cultural application of this educational material? If our assertion is correct, and an admittedly broad and liberal foundation is valuable upon which the pupil may build his choice of life-activities, we have a potent argument in our favor. Having replaced the original "Humanities" with

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more readily applicable material, we must adhere more closely to the cultural ideal than would perhaps be our natural inclination, because if we tend to infringe upon the vocational, we lay ourselves open to the charge of inefficiency and lack of fixity of purpose, besides having the personal and not readily admitted feeling that we have not wholly succeeded in our purpose of furnishing a fundamental basis of knowledge for the professionally inclined, upon which they may be able to build any sort of a structure of life-activity with materials not at the disposal of the merely vocationally trained. That country that adheres to the ideal of popular government must seek its leaders from the ranks of the voters, and from the leaders of the rising generations. While we are giving great attention to vocational training, let us not lose sight of the fact that any education that trains for life-activity is a form, and a very necessary form, or vocational education, and that the application of liberal subjects may be such as to give to our leaders in embryo that incentive to action and to self-preparation that will be a really vocational impulse, for the reason that they will have that broad horizon so essential for the development of the natural leader, and an accompanying mastery of principles that will make it possible for them to learn the technique of any sort and condition of vocational effort, in order to give them an insight into the problems that confront every individual for which

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they must interpret the laws and principles of government to fit and apply to every person who has a right to such interpretation. And on this basis we have a right to say to those who ask for vocational education, and for no other sort, that our liberal education is really meeting the demand by offering to those who have not the industrial aptitude that training that will give them the chance to develop the professional if they are capable of such development, and if they are not, then they are of the class of those who are not satisfied with industrial conditions, but are not capable of directive or executive effort, and will go into the class of which ordinary clerks are a good example, with mediocre ambition and ability, but able to make a fair living and fairly well satisfied with that. This class of individuals presents entirely distinct problems for the educational world to solve, and can not be properly dealt with in this connection. They need a very specialized type of education, that might be classed as vocational. But for those who are capable of professional work, or are of the class of natural leaders, it will be found that the base of the pyramid is broad enough and solid enough to act as a foundation upon which to build as lofty a structure as the opportunity and material at hand will allow. And since our professional men and political, religious and social leaders are selected with a careful weeding-out of undesirable or incapable material, we must of necessity have a large num-

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ber from which to choose, first, those who are to reach the very front rank and act as leaders and directors for their fellows; second, those who are only a little behind the actual leaders, and perhaps act as assistants to them, and see that their ideas are carried out; third, the rank and file of the professions and of those non-productive activities suggested, who are more or less dependent upon their leaders for suggestions and directions, and who need care-guidance as to the application of the principles that underlie their work; fourth, those who are mere hangers-on, and do the menial work which their more capable and efficient brethren find necessary to be done, but which are considered as beneath their positions and ability to perform. All these, and many more who never get even so far as the last mentioned class, must be furnished that education that is recognised as better than any other for the training of the child, and the individuals are then tested by one means or another to determine which are capable of performing the sort of work required in their chosen field. Those who are thus found to be inefficient are in an unfortunate position it is true, because they must prepare themselves for a different type of occupation at an age that is usually beyond that when their plasticity is such that the maximum of training is possible. But, in spite of this handicap, these individuals have shown the possession of a certain amount of ambition to achieve something more than the ordinary type, and while they have not an extraordinary ability, this can-

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and while they have not exhibited the requisite ability, this ambition is likely to result in a better choice of vocations, and probably in a better understanding of the principles underlying the same, so that while there may be a somewhat less mastery of the technique than in the case of those who chose their vocations at earlier and more plastic age, they will not be satisfied with the same sort of conditions that the strictly vocationally trained might tend to accept as inevitable accompaniments of their position. Thus the schools that have for their aim the liberal education of the youth, have a right to make use of agricultural sciences and liberalize them as much as may be necessary, without being unable to refute the statements that they are not furnishing utilitarian and applicable training for their pupils.

3. Will the school change to meet the requirements of agriculture, or will agriculture take on the form and content of the school and conform to its ideals and purposes?

Quite aside from the discussion of agriculture as a vocational or humanistic medium of education, we have the question of what form and content the courses will take on.

The pedagogic setting of the subjects must be clearly defined, and any attempt on the part of the school to change the method of presentation of its subjects will be the object of much interest and criticism. The teaching of agri-

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culture presupposes knowledge of the practical and the actual participation of the students in farm affairs. This, as a method of the vocational school, is greatly to be desired, but we must now look at the problem from the standpoint of the average high school, which tries to utilize the agricultural sciences and mould them to its purposes. The first essential in changing the school to meet the requirements of agriculture would be to provide the pupils with opportunity to participate in farm activities by working some of the farms in the vicinity. That this is not being done is shown by a glance at the replies to 375 questionnaires, which show the average size school farm to be only 9 acres, with a range of from none at all to 150 acres. That no sort of actual farm conditions can be shown on such farms is readily apparent and needs no comment, other than to say that the work being done on those farms is of an experimental nature, or the land is given over to school gardening, or to the raising of seed for distribution among the farmers. Very little livestock is kept, and it is usual to rely on hired labor rather than on student work, altho the students are usually required to take some part. Often, however, the pupils are taken from farm to farm, to make inventories, test seed and milk, and perhaps to work out a more nearly ideal arrangement of the farm buildings, or to make rotation plans. But this work is not sufficient to give them any actual knowledge of farm conditions. And



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there is no evidence that the high school is going to change its former methods to meet the demands of agricultural for the vocational training of its students. It is a certainty that the laboratory method of presentation of courses is not going to be changed for the field method, not only for the reason that the students do not readily take to the field work, but because the school program will not allow them to be away from the school for long periods, unless an entirely new method of arranging the program is devised. There has been found a certain attitude among parents and pupils which makes the thought of work in the field a sort of lowering of class distinction. A form of this is shown when a boy prefers to clerk in a store and wear a white collar, when it would be better for him to go out into the field and wear a soft shirt and heavy shoes. But there is very little objection to Manual Training on this score, nor to the pattering around on the school farm of 9 acres, for the reason that it is called by the names of "exercises" or "experiment", a much more dignified activity than work. Again, those intelligent parents and fortunate boys who are firm believers in vocational education, with the accompanying work, will be much better served by the strictly vocational school than by the high school, so there is not that excuse for trying to do the sort of work for which the high school is not fitted. This will permit of the teacher of agriculture in the ordinary school arranging the work in

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his department so that the children will not have to soil their hands and clothing to any great extent. The school garden movement shows that this sort of thing is to be met with as there are often complaints from parents that their children come home with dirty hands and clothes. This is one explanation of the fact that schools are offering the agriculture work in lecture form, with as little dirty laboratory work as possible, and are minimizing the field work, except in the case of the instructor, who is expected to travel around among the farmers and show them how to make their business a success, when too often the teacher has been hired on the basis of his scholastic training, and has not had enough practical farm experience to be able to understand the actual application of the theories which are supposed to work out all right but which very often do not. When the farmers come to find that the instructor is not so potent a factor in their success or failure as they had at first supposed, they will not require that he spend quite so much time outside the school-room and he will then have more time to conduct his courses. However, the schools have changed to meet the requirements of agriculture as much as they have dared, and have even gone to the trouble of giving extension courses and farmers' short courses, which have been found to be the best and most economical means of interesting the farmers and of keeping in touch with them. The chief trouble with the schools is that they

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have been able to change so little. But the result has been that the courses in agriculture are presented in such a way as to meet the requirements of a school that has been liberalized by years of endeavor to meet the demand for a cultural education.

4. Can a proper correlation be established with other subjects in the curriculum?

One of the most difficult phases of this problem is the securing of teachers of insight enough into the needs of such work to render them capable of coordinating their subjects with those of the agricultural department. While most of the high school teachers are in sympathy with the attempts of educators to introduce agriculture into the high school, they are without the knowledge of the many complex features of such an undertaking, and often utterly fail to realize their opportunity to cooperate with the teacher of agriculture in making their own subjects bear a direct relation to the work offered outside of their own department and especially with that of the agricultural courses. This may be due as much to the quality of the supervision as to any other one thing, for the reason that many of the superintendents have had very little farm training and even less technical work in agriculture, so that they are usually unable to direct the work of the department of agriculture so as to correlate it with that of the

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other departments to the extent most desirable or even necessary if the work is to have the value designed for it. Again, the teacher of the agriculture department may have the idea that his work is of more importance than that of any other, not realizing that the rest of the school courses may have a close touch with the needs of the student as do his highly technical subjects. When it is seen that the manual training and domestic science departments are furnishing a training in manual and mental dexterity, and are preparing the pupils for actual life by teaching them applications for well recognised principles, the agricultural instructor finds that he is merely one cog in the educational machinery, and the sooner he learns this the better for all concerned. Instead of antagonism, there must be Esprit de corps that will recognise that all are working to common ends and that all effort will be of more avail if it has an harmonious application and intelligent direction. Thus the language may as well make local application of the agriculture of their Roman Authors as to continue to present them in the old impractical way, with which the writer is only too well acquainted. But on the other hand, the agricultural instructor need not decry Latin merely on the ground that the Government Bulletin presents the application of his science in better form than does the *Agriкола*. When we come to the dividing line, on the one side of which is the demand for the agriculturalizing of all other subjects in the curriculum, while on

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the other is a need for relating agriculture to the courses already introduced, we are anxious to break down the line, and to occupy middle ground, on the basis that either of the two methods is going to require too radical change in one or the other with a corresponding on the part of the "victor" in the struggle that the other was forced to come to terms and was therefore not so strongly entrenched in the system as to render it as unassailable. Of course this will lead to dissension, and the teachers that are required to conform will feel a sort of resentment and an accompanying insecurity of position, because it will not be definitely known just when they will be considered as not coming up to the standard. That this feeling has actually been so pronounced as to be a recognised menace to real co-operation on the part of all teachers is known to the writer from actual experience, and the feeling has been expressed in one form or another in different educational meetings. But there is no need for this sort of misapprehension on the part of either the agriculturist or the other instructors, if a reasonable effort is made by all, and especially by the superintendent, to make the various departments of the high school correlate their work and strive harmoniously for the development of a uniform course of study that has for its aim the better relation of all subjects to the local or personal conditions of the students. The manual training course can as well have the students make seed-

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testing boxes as coat hangers and hammer handles as candle sticks. Saw horses, wheel-barrows, hog-feeding troughs, hay racks, hog crates, portable hog houses, chicken coops, feed boxes, stanchions, seed testers, fanning mills, wagon boxes, and corn graders are some of the farm implements that have been made in the manual training shop and the list might well be augmented considerably to the advantage of the school, the student, and the patron. Taking a more abstract view of the problem it might well be stated that the agricultural courses can best be correlated with the previously existing departments, by suggesting to them how they may turn the stress of their endeavor from more or less diversified fields, which are perhaps not readily applicable, to that interest most predominant in this country: that of agriculture and the allied sciences. This will not require new text-books, as we have been led to believe, so much as it will demand a less close reliance upon the actual content of the text, and more reliance upon ability to apply the suggestive outline of the same to the subject taught, which is the real purpose of a text. The usual failure to do this has led to an automatism in teaching, and a corresponding lessening of interest on the part of teacher and pupil. With the proposed adaptation of the book to local conditions, no matter what the subject may be, the teacher is stimulated to become better acquainted with local conditions; the pupils are led to take an interest in interpreting for the teacher the home activi-

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ties, and the subject takes on a new meaning. This is what we hope to achieve by a correlation of agriculture with the other subjects in the high school. We want no very clearly predominant department of agriculture, but we do want a very noticeable cooperative effort on the part of every teacher to relate each subject to the rest, and the whole with the local interests, so as to be able to cater to the requirements of children brought up in a certain type of community. Having achieved this, the school will be more nearly fitting its graduates for their life-activities, because they will be in close touch with local conditions, and will thus have a clearer knowledge of what sort of work they are fitted to do, as well as what demand there is for the sort of work they choose.

5. How shall the problems of teaching and supervision be solved?

The foregoing indicates somewhat how the teaching can be made more effective from every point of view, and the question now before us has more to do with the preparation of instructors and superintendents for the proper presentation of the courses, and for the necessary cooperation with the local interests. One of the first of the many facts that show plainly from the replies to our questionnaire, is the lack of pedagogical training on the part of the teacher of agriculture. The next is the too evident lack of training

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in agriculture on the part of the superintendent. We have in the first instance a specialization along the technical side with a corresponding lack of knowledge of methods of presentation, and second a rather emphasized theory of the methods of presentation with an accompanying lack of technical or practical knowledge. The first is at a loss as to how to properly present his material in the class room, and the other is not sure just what to demand in an outline of a subject for the reason that he is not sure that he is going to stress the proper points, or allow an even and logical presentation of the fundamental features. The instructor is obviously inclined to present the courses in the same manner in which he received them at college, not realizing the vast difference in teaching high school and college students. He will naturally adopt the lecture method, because that is the only method he knows, and his lack of knowledge of the principles of Pedagogics will lead him into many errors that can easily be corrected with a careful supervision. Here we have a feature that needs comment. Since the agriculturist is usually the highest salaried member of the teaching force, he is usually not so open to suggestion from the other members of the faculty nor will the superintendent feel quite so free to make his criticisms, because he is not so sure of his knowledge of the content of the courses. The great problem that confronts the teacher in agriculture, is not how to present



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the work in agriculture, or even to teach agriculture, but to teach boys and girls. This great problem of education is usually lost sight of by the average instructor, who has had but college training in agriculture, to the end that there is lacking that watchful guidance that is the right and need of every high school student. It is obvious that unless the instructor is watching the pupils with the eye that sees tendencies and estimates capacities, he is subverting a great educational opportunity to a desire to demonstrate his technical skill, and to try and develop on the part of the pupil an approximate readiness to respond with a similar aptitude, which is not the aim of this type of school. Agriculture, for liberal education, is just the same as other subjects in the curriculum, and the instructor should have nearly the same preparation as have the other teachers. However, we are forced to say that so long as the colleges keep up their present idea of preparing students for graduation with the degree of Bachelor of Science in Agriculture, just so long will we have poorly trained teachers and mistaken emphasis upon content of courses to the detriment of individual development of students in the high school. The sooner this condition is changed, the better for all concerned, because such a department of agriculture is failing of its purpose and can not expect to continue when the real state of affairs becomes well understood.

6. To what extent can the school go out and make the courses of value to the community by working for and with the farmers? This sort of school activity has come to be called Extension work, or Practical Demonstration work. Whatever the name is it is a sort of work that calls for a special type of instructor- one who is a practical farmer as well as a teacher. There is no one so quick as the farmer to denounce impracticability in others, even when he is himself liable to the same charge. And the school man who tries to teach the farmer methods and principles that will be to his advantage must answer the oft repeated question, "What do you know about farming"? When the farmer is persuaded to bring in his milk to be tested, and some of his cows are thus shown to be giving milk of such poor quality that they are mere "boarders", and not paying for their keep, he is first skeptical as to the correctness of the test, and next somewhat chagrined that the school man has shown him to be such a poor herd manager. He is likely to maintain that the cow in question is really a good cow, but that the teacher does not know just what determines a good cow in actual farming practice. As one farmer remarked "How can he tell whether the cow is any good until he sees her"? Farmers want practical proof before they are ready to accept scientific statements for what they are worth. But when you secure a man who can handle the "practical end of the work", you have a man who will soon go onto the farm for himself and leave the

school business for someone who is not a successful farmer. This happened just recently in one of the Putnam schools of Minnesota. Perhaps the most popular way of overcoming this difficulty is to allow the farmers to conduct their own experiments under the supervision of the instructor, and with the help of the students. This has been a very successful practice in several schools with which the writer is acquainted. There is also the plan of holding farmers' meetings, at which they discuss their problems, and usually some man of reputation is invited to conduct the meeting, answering questions and suggesting methods of improving the farm. These meetings are usually well attended, the average for the short course work of the high schools is 75. Often the farmers will adjourn to a neighboring farm to count the stalks of corn and thus estimate the probable yield, or to watch a demonstration of a sub-soil plow, or to judge the live-stock from the point of view of the breeder and of the buyer. Such work is stimulative and is usually very favorably received. It is when the teacher tries to tell the farmer how to do things that he feels he can do better than the teacher that the opposition is felt most strongly. "If the teacher will tell the kids how to do it, we will get along all right" said one old farmer. But fortunately the instructor is getting wise enough to not try to tell the farmers too much that they know already, but suggest new ideas and theories that have an appeal to the curiosity.

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The farmers' institutes give a good chance to present the latest and most advanced methods of management, and the farmers are generally more than glad of the chance to get together and discuss their problems. They are also keen to size up the agriculture man, and will listen to him quite kindly. They are also much interested in experimental work, and will usually give the teacher and students full liberty to try anything on their farm with which they are not wholly familiar, such as hemp, rape, alfalfa, canadian peas, soy beans, vetch, and flax. The element of curiosity is strong, and there is a feeling that something may be found to make their farm more productive and profitable. But all this, while very valuable, is not liable to fit in well with the sort of program arranged for the average high school. While some of the schools are allowing the instructor half time for work among the farmers, the school is in need of his entire services, as he is, or should be, one of the strongest members of the faculty, and he is much in need of a close personal touch with the students as possible. He has been hired by the school board to educate the boys and girls in the school, and it is essential that the community get value received. In view of the new movement to place a county instructor in agriculture in each county in the United States, the school man will be of more advantage to the school than to the farmer, unless he is more practical than has hitherto been the case. However, this work

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has been one of the most valuable features of the agricultural department thus far, and the farmers are appreciating it more and more every year.

7. Shall the schools continue to conform to the requirements of the institutions of higher learning, for which only a small percentage of the students are fitted, or shall those institutions be made to conform in their requirements to the conditions found in those schools?

There is considerable dignity connected with the preparation of boys and girls for the colleges and universities, on the ground that they are assisting these pupils to get a higher education. But this name is a misnomer, for the reason that we have no education any higher than vocational or specialized education, but we have a broader education. The college that presents opportunity for entrance into the professions is as narrow in its training as is the vocational school. The broadening effect of contact with many industries, vocations, professions, and interests is of an entirely different character from that of the so-called college world, which is as narrow as can be conceived. But in the high school, and later in the academic department of the high school college, a real broadening education may be presented, if the courses there given are related to life-activities to the extent that some sort of understanding of the underlying principles of human effort is obtained. All high

school and college courses should be given a Sociological and Economic conception, and the various departments ought to be so related that a student will be in close connection with the work being done in all phases of activity, no matter what the particular department in which he may be registered. That this is to be the aim of the college is presaged by a lecture by President Vincent before the Faculty and Graduate Students, in which a plan of coordinating the work of the academic college was suggested, and the idea seemed to be well received. Just what the aim of the present scholastic training actually is, can hardly be stated, because it is doubtful if there is any coordinated effort at the present time. Having graduated from the academic department of the average university, the young man or woman must prepare for vocational effort, for which they have had no specific training. We have even separated the college of education from its old position as a department, and it now has a vocational aim and purpose, well understood and well prepared for. But for the old "culture" of the high school and academic college, what shall we say? Is it of sufficient importance to allow us to continue an entire system for its benefit? Can it be honestly said to have anything to offer that the vocational school and college can not give? Is there the need for culture at the expense of vocational efficiency? Can not the two be correlated into the same system, and made to serve a dual purpose, that of pre-

paration for production of no matter what sort, combined with appreciation for all that is calculated to inspire and uplift the individual from a common-place and sordid existence to a plane of social efficiency that will render him capable of occupying a higher standard of existence than would otherwise be the case? It is the aim of every educator to bring about this most desirable condition, and the fact that the education for culture alone has developed the appreciation of the individual who has been so fortunate (or unfortunate) as to not be required to carry on the personal struggle for existence at the same time, to the point that he is not to be satisfied with "husks", is one that brings to our attention the need for accompanying vocational training to render the high school and college trained boy capable of economic production, at the same time that he is being trained to properly appreciate the better things of life, which his vocational training will make him better fitted to obtain. When is the college or university to make a satisfactory change in the purpose of its courses, to the end that our high schools can feel it their right and duty to urge the students to take up college work as the best means of making them socially and economically efficient? Just lately the colleges have been seriously considering making their academic department more nearly preparatory for the various professional courses, with the idea of broadening the horizon of the man or woman to the extent that the whole field of human endeavor will be brou-

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ght into closer and better harmony, and that the various activities of the college will bear a closer relation to each other, with the common aim and purpose of amplifying courses that have an economic or sociologic significance, or are clearly preparatory for the later professional work. That this is a reasonable educational effort no one is in a position to deny, and if our colleges really institute such a program, they will have a right to demand that the high schools conform to their entrance requirements. But unless they do this, the secondary schools are justified in presenting their work in such ways as are productive of best results, from their own point of view.

8. What conformation to certain standards of presentation of courses shall be demanded of these schools?

Where there is state aid to high schools offering courses in agriculture, as there is in many states, notably Alabama, California, Georgia, Kansas, Massachusetts, Michigan, Minnesota, Nebraska, North Carolina, Oklahoma, Texas, Virginia, and Wisconsin, a similarity or standardization of courses is conducive of more nearly accurate methods and of usually better results. When the instructor in each school is required to outline and present his own ideas of how the courses should be conducted, there will be a few of sufficiently high calibre to make them worth considering as a standard, but many will be weak, irrational, localised,



and poorly arranged. Not many school men are able to make out a satisfactory course of study in any subject, and especially in one that has not yet passed thru the process of experimentation. It is also well recognised that the unit which provides the funds has the right to supervise and provide for the utilization of the money, and in this instance the state has been the first to take definite action. Thus the state has the right and the power to supervise the work in agriculture in the high school, and to standardize the courses to whatever extent will render them efficient without any sacrifice of local applicability. But the supervision should be under the direction of one who knows with accuracy both the needs of the schools and the possibilities of the subject. He must also be prepared to know and understand the fundamental reasons why a course is or is not well designed for a certain school and for a type of student. The courses should be made to conform to the former surriculum as much as is possible without making it any the less efficient. It is usually inadvisable to cut and slash the course of study too much; a gradual introduction being more to be desired. Thus, the subjects constituting agriculture may be introduced in three successive stages, the first being one or two subjects, such as Elements of Agriculture by Prof. Warren, Profitable Stock Feeding by Prof. H.R. Smith. This should be presented in an elementary manner, as should all the courses. Then the second year it

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will be a good plan to agriculturalize the Chemistry, Physics, Manual Training, Domestic Science and similar courses to the extent before suggested. The third year will see Agricultural Botany, Crops and Soils, Horticulture and Agricultural Entomology, Live Stock and Dairying, Soil Physics, Live Stock Breeding and Improvement, Feeds and Feeding, Poultry, Farm Mechanics and Farm Management. These may not be offered in exactly the manner or order suggested here, altho this plan is in successful operation in Michigan, but it can serve as a basis for the courses to be offered, and will be as well adapted to the locality as possible. This work should be under inspection at all times by one who is thoroughly competent to judge of the needs of the school in question, and this inspector must have full authority to standardize any courses in the whole curriculum, with the collaboration of the regular State High School Inspector, who has charge of the whole system. The special inspector is necessary for the reason that the regular inspector will have had very little training for this special work, at least for some years to come.

9. What equipment shall be provided?

The matter of equipment should not present any unusual or difficult features, uness in the matter of land and livestock. This last is a different phase of the problem, and will receive separate consideration. Any school that has a

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chemical laboratory has found it a comparatively simple matter to provide all the laboratory equipment needed for a course or for courses in agriculture. Besides seed-testing boxes, milk testing machines, sample bottles of seeds, samples of the various farm products, charts of the Animal Husbandry and Agriculture departments, soil-testing apparatus, and some of the special chemical apparatus, the ordinary equipment of the school can be used, or the Manual Training department can make whatever is necessary, as has been done in many schools with which the writer is familiar. Unless in a strictly agricultural school, extensive equipment is not essential. Land and live-stock equipment for the ordinary high school is a proposition that needs careful study. From none at all to 150 acres is the actual amount of land now being used in the teaching of agriculture in the high school, with an average of 9 acres, but the majority of the farms are much smaller than this, more nearly 6 acres. This land is more valuable for garden purposes than the growing of farm crops, for the reason that actual conditions can more nearly be secured in gardening than in farming, which is very necessary in order to secure the support of the people for the work. But it is also profitable to grow samples of the various crops for demonstration purposes, as many students have no real knowledge of the growing conditions and are therefore incapable of understanding the statements in class work. It is also a

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good practice to grow some crops that are not readily indigenous to the locality, because the farmers will be interested in them, and will be thus more readily reached when any work is planned for their benefit. This land is best situated close to the school, so that little time is lost by the pupils in going to and from the class-room to the school farm. One Putnam school gave up an 80 acre farm to take a 14 acre piece near the school, thus saving the children about 1/2 mile of travel when they went out to work in their gardens. The matter of live-stock can be readily determined by using the farmers' stock for demonstration purposes, and by hiring whatever plowing and cultivation can not be done by the students. It is poor economy for the high school to invest money in live-stock, as the broad range of breed and type necessary to a proper demonstration is greater than the money available will secure. The farmers are usually glad to have their stock thus exhibited, and the range of type and breed in any good agricultural community is sufficient to show almost anything it is necessary for the pupils to know.

10. What is the actual condition of agricultural education in the secondary schools at the present time?

A. Laws governing such education.

Alabama- Congressional districts are to maintain agricultural schools and receive state aid of \$4,500 per annum.

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Arkansas- At least 1 year of agriculture must be taught in the high schools.

Arizona- No data.

California- 2 State schools established.

Colorado- State Board has jurisdiction over 2 schools.

Connecticut- None.

Delaware- No data.

District of Columbia- None.

Florida- None.

Georgia- Agriculture required to be taught in all schools, besides taxes on oil and fertilizer for benefit of the 11 District agricultural schools.

Idaho- Law provides for agricultural high schools in which agriculture, domestic science and manual training must be taught.

Illinois- None.

Indiana- None.

Iowa- Law provides for the establishment of departments for the training of teachers of agriculture and home economics in each of 40 high schools, and provides \$500 annually for each.

Kansas- \$25,000 for each of years 1912 and 1913, so that "Any high schools that now maintain a normal-training course, shall be entitled to the sum of \$250 per annum; provided that such schools shall also maintain courses in the elements of agriculture and domestic science. \*\*\* No

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school shall be eligible \*\*\* that shall not have at least 10 pupils enrolled in each industrial course each semester."

Kentucky- Law specifies that agriculture and home economics shall be taught in the public schools after the year 1914.

Louisiana- Law requires agriculture in all public schools. State appropriates \$1000 annually to each of 25 departments of agriculture in as many large country schools and high schools.

Maine- Any district having a high school may establish courses in agriculture, domestic science and manual training and receive state aid up to \$500.

Maryland- 1910, ch. 386, 121. "\*\* High schools of the first group shall \*\*\* provide for an agricultural course \*\*\*, High schools of the second group shall \*\*\* provide for an agricultural course.

Massachusetts- State aid to selected high schools that are conforming to certain specifications, to extent of \$10,000 and 1/2 maintenance cost of approved vocational agricultural district schools, also 2/3 salary of agricultural instructor in schools provided by towns.

Michigan- County schools to be purely vocational agricultural high schools, and receive state aid not to exceed \$4,000 per annum.

Minnesota- Selected schools that maintain departments of agriculture, manual training and domestic science receive \$2,500 per annum; similar schools that maintain either man-

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ual training or domestic science with agriculture receive \$1,000 per annum. Special vocational agricultural schools are supported by state appropriation.

Mississippi- No data.

Missouri- None.

Montana- No data.

Nebraska- Law requires the teaching of agriculture in the Normal Training Schools. Special agricultural schools are supported by state appropriation.

Nevada- None.

New Hampshire- Approved schools may conduct courses in agriculture.

New Jersey- None.

New Mexico- None.

New York- Education law 1910, Article 22, Paragraph 600:

"General industrial schools, trade schools, and schools of agriculture, mechanic arts and homemaking, may be established in cities. Paragraph 601- Such schools may be established in union free school districts. Paragraph 604- \*\*\* the commissioner of education \*\*\* shall apportion \*\*\* the sum of \$500 for each \*\*\* school of agriculture \*\*\* maintained therein for 38 weeks during the school year."

North Carolina- The law requires that the elements of agriculture be taught. The schools are county farm-life schools.

North Dakota- Establishment and maintenance of a department of agriculture, domestic economy and manual training in

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state high, graded and consolidated schools. \$2,500 aid to such schools. Establishment of county agricultural schools, of which the state pays half the expense.

Ohio- Agriculture to be taught in all common and rural high schools. Inspectors for such schools are provided.

Oklahoma- District agricultural schools, \$17,000 for 1912, \$19,000 for 1913 respectively. The law is as follows:

"An act to put into force section 7 of article 13 of the constitution, requiring the teaching of the elements of agriculture, horticulture, stock feeding and domestic science in the common schools \*\*\* and to provide for the establishment and maintenance of agricultural schools of secondary grade in each Supreme Court Judicial District."

Oregon- New law provides for division of county into supervisory districts of 20 to 50 schools each.

Pennsylvania- The law provides that township high schools shall teach agriculture in a manner that meets with the approval of the State Superintendent.

Rhode Island- None.

South Carolina- Agriculture is required to be taught in the free public schools.

South Dakota- None.

Tennessee- None.

Texas- Public high schools are authorized to teach agriculture, manual training and domestic economy. The schools are divided into three classes. \$50,000 is appropriated for state aid. Not more than \$2,000 to any one school



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during one year, and such appropriation shall not be made more than twice to the same school.

Utah- All high schools outside of cities of the first and second class and mining districts are required to offer a course in agriculture.

Vermont- None.

Virginia- 10 congressional district schools of agriculture with a yearly appropriation of \$2,500 have been established. There is no general law requiring the teaching of agriculture, altho it is encouraged.

Washington- None.

West Virginia- Elementary agriculture has been a required subject in the public schools since 1908.

Wisconsin- State aid for county agricultural schools is \$6,000, \$7,000, and \$8,000 depending on attendance. Bill #568 A. Laws of 1911, provides for state aid of \$250 for each department of manual training, domestic science and agriculture established in connection with any free high school.

Wyoming- None.

B. Number and character of schools offering agricultural courses.

Alabama- Congressional district type- 9 in number- aiming at the vocational, and conducted from the agricultural point of view. 37 ordinary high schools offering courses.

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Arizona- High schools at Mesa, optional course.

Arkansas- District schools, 4 in number, similar to those of Alabama. 14 high schools offer agricultural courses.

California- State agricultural schools, 2 in number, are of the purely vocational type. 7 agricultural high schools, more or less vocational have been established. 35 of the other secondary schools offer agricultural courses.

Colorado- 1 state school of agriculture, mechanic arts and household science. 11 high schools offer courses.

Connecticut- Course in Newton high school.

Delaware- None.

District of Columbia- None.

Florida- 14 schools offer agricultural courses.

Georgia- District type of vocational school, 11 in number. 9 high schools offer courses.

Idaho- Lewiston-Clarkson school of horticulture. 18 high schools offer courses.

Illinois- 32 high schools offer agricultural courses.

Indiana- School of agriculture of Purdue University. 62 of the secondary schools offer agricultural courses.

Iowa- 43 secondary schools offer agricultural courses.

Kansas- 96 schools receive state aid, 40 do not.

Kentucky- 5 secondary schools.

Maine- 8 schools receive state aid for conducting courses. 5 other secondary schools.

Maryland- 2 state agricultural high schools, 6 other high schools receive state aid, 2 others do not.

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Massachusetts- 1 privately endowed school of agriculture, 5 privately endowed specialized schools of forestry; landscape architecture; gardening and horticulture for women; school of forestry; school of agriculture; dairy school; 4 high schools receive state aid; 26 others offer courses.

Michigan- 2 state schools of agriculture; 38 other schools offer courses.

Minnesota- 3 state agricultural schools; 30 Putnam schools; 50 Lee-Benson schools; 55 other high schools offer courses.

Mississippi- 21 county agricultural high schools receive state aid; 12 other schools offer courses.

Missouri- 159 schools offer courses.

Montana- 5 schools offer courses.

Nebraska- 192 schools offer courses.

New Hampshire- 6 secondary schools offer courses.

New Jersey- 2 high schools offer courses.

New Mexico- 1 high school offers a course.

New York- 3 state schools of agriculture; 1 privately endowed high school; 17 high schools receive state aid; 25 other schools offer courses.

North Carolina- 4 agricultural high schools receive state aid; 20 other schools offer courses.

North Dakota- 1 state school of forestry; 19 schools offer courses, of which 3 are to receive state aid in 1912-13.

Ohio- 335 high schools offer courses.

Oklahoma- 6 state agricultural high schools; 19 other

schools

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schools offer courses.

Oregon- 6 schools offer courses.

Pennsylvania- 1 privately endowed school of horticulture for women; 2 state schools of agriculture and forestry; 85 other schools offer courses.

Rhode Island- None.

South Carolina- 6 schools offer courses.

South Dakota- 2 state high schools; 12 other schools offer courses.

Tennessee- 34 schools offer courses.

Texas- 34 schools receive state aid; 21 other schools offer courses.

Utah- 19 schools offer courses.

Vermont- 1 state agricultural high school; 19 other schools offer courses.

Virginia- 10 district high schools receive state aid; 42 other schools offer courses.

Washington- 19 schools offer courses.

West Virginia- 20 schools offer courses.

Wisconsin- 6 state agricultural schools of the county type; 15 other high schools receive state aid; 103 other schools offer courses.

Wyoming- In 1 school there is a course in agriculture.

C. Equipment of schools in land.

Of the schools reporting, 32% have no land in connection

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with the school; 8% have an average of 83 acres; 60% have an average of 9 acres; the average of all is 14.6 acres.

#### D. Courses offered.

The courses of the Boise high school are appended as being well adapted to the ordinary high school offering agricultural courses, while the outline of the Howard Lake high school is presented as well representing the work which is designed to include the two higher grades. The courses of the agricultural school at St. Anthony Park are typical of the vocational type of agricultural high school.

#### Quality of teaching and supervision.

Of the instructors reporting:

69% have degree of B.S.A.

12% have degree of B.A. or B.S.

12% have no degree, but 1 to 4 years college work.

04% have Normal training only.

03% have Master's degree.

32% have had training in Pedagogy.

13% have no practical farm training.

Of the Supervisors:

69% have no technical training in agriculture.

29% have no farm experience.

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F. Text-book agriculture as compared with practical demonstration work.

07 1/2 % of the instructors are not required to visit the farmers.

92 1/2 % of the instructors are required to visit farmers.

34% do not require students to visit farmers.

66% require students to visit farmers.

90% conduct laboratory tests for farmers.

44% conduct field tests for farmers.

G. Amount and character of work among those not in the school as students.

45% of the schools have farmers' short courses with an average attendance of 75.

19% of the schools have supplementary courses with an average attendance of 50.

09% of the schools have institutes conducted by college extension departments, with an average attendance of 95.

H. Attitude of the farmers toward the schools.

As reported:

05% of the schools report indifferent attitude.

09% " " " " opposition.

12% " " " " very favorable attitude.

19% " " " " fair.

19% " " " " good.

28% " " " " interested.

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I. Attitude of the educational world.

No definite report has been obtainable from the schools, but there has been great interest among school men in the working out of this problem of education. As it appears that the old order of things is not to be done away, any opposition that was apparent has decreased. Those of the educators who have studied the problem are very enthusiastic and are heartily in favor of the movement.

J. Number and character of text-books.

There seems to be a scarcity of texts that are applicable to the high school courses. Such as there are have been eagerly accepted as filling a long felt want. The Boise high school reports the adoption of the following texts: 8th, grade- Elementary agriculture. Text- Agriculture for Beginners, Burkett, Stephens and Hill.

High school, first year. Both semesters. Crops, soils, crop production, irrigation. Text- Soils, Fletcher.

Reference- Cereals and Forage Crops, Hunt.

Second year, both semesters. Animal Husbandry- Texts- Livestock Judging, Craig. Breeds and Types of Farm Animals, Plumb. Domestic Animals and Plants, Davenport.

Fourth year, first semester. Farm Mechanics. Text- Bulletins.

Second semester. Farm Management and Rural Economics.

Text- Bulletins.

There have been some attempts to produce texts of strictly

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high school grade, but much is yet to be done. Professor Mayne has a book in preparation that is designed especially for high school work.

K. Attempts being made to organize and systematize the knowledge of conditions of agricultural education.

The United States Department of Agriculture has a well organized department of agricultural education, which aims to keep abreast of the times, and this department publishes from time to time the results of its investigations. Series of reprints from the Annual Reports of the Office of Experiment Stations, brings the information up to date for each year. Special circulars, as for instance the Circular 97 (Revised) of the office of experiment stations, which summarizes the institutions in the United States giving instruction in agriculture, up to March 15th, 1912, deal with special phases of the work. The American Association for the Advancement of Agricultural Teaching holds meetings, appoints committees, prints reports, and suggests problems for the benefit of its members, who are the teachers of agriculture from all over the country. Several University Departments of Agricultural Education, notably Iowa State College of Agriculture and Mechanic Arts, University of Illinois, Michigan Agricultural College, University of Wisconsin, Cornell University, Pennsylvania State College, and the State Agricultural College of Colorado conduct



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investigations of secondary agriculture, chiefly in their own states. Besides these, some states have departments of Agricultural Education, notably New York and Massachusetts.

#### L. Outlook for the future.

There is a noticeable tendency to separate the two types of agricultural education into the purely liberal and the definitely vocational. That the regular high schools will continue to liberalize their courses is evident, and that the vocational instruction in agriculture must be provided by a special type of school is also perfectly clear.

The line of demarkation will become more pronounced as the work advances toward these two very opposite goals. There will be more purely vocational schools, and fewer of the liberal. There will be further culturalization of the agricultural, manual training and domestic science courses when the vocational schools begin to meet the demand for special instruction along these lines. There will be fewer high schools of the present type and more graded vocational schools. These schools will be vocational in purpose and in actuality, but will train for both the liberal and vocational types of higher schools, so that any pupil may have the benefit of this sort of instruction.

University of Minnesota  
Minneapolis, Minn.

Suggestive curriculum.

First year. -

First semester. -

English-----5 credits.

Elementary Algebra-2 credits.

Botany-----3 credits.

Physics-----5 credits.

Farm Crops-----5 credits.  
20 credits.

Second semester.

English-----5 credits.

Elementary Algebra-3 credits.

Botany-----2 credits.

Physics-----5 credits.

Farm Crops-----5 credits.  
20 credits.

Second year.

First semester.

English-----5 credits.

Algebra-----2 credits.

Geometry-----5 credits.

Agri. chemistry---3 credits.

Biology-----3 credits.

Shop Work-----2 credits.  
20 credits.

Second semester.

English-----5 credits.

Algebra-----3 credits.

Geometry-----5 credits.

Agri. Chemistry---2 credits.

Biology-----2 credits.

Shop Work-----3 credits.  
20 credits.

Third year.

First semester.

English-----5 credits.

Higher algebra----2 credits.

Breeds-----3 credits.

Horticulture-----5 credits.

Entomology-----2 credits.

Solid Geometry----3 credits.  
20 credits.

Second semester.

English-----5 credits.

Higher algebra----3 credits.

Breeds-----2 credits.

Horticulture-----5 credits.

Grain judging----2 credits.

Geometry & Trig.--3 credits.  
20 credits.

University of Minnesota  
Minneapolis, Minn.

Fourth year.

First semester.

English-----5-credits.

Industrial hist.

United States-----5 credits.

Farm Management----5 credits.

Dairying-----3 credits.

Feeds-----2 credits.  

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20 credits.

Second semester.

English-----5 credits.

Industrial Hist.

England-----5 credits.

Farm Management----5 credits.

Dairying & testing-2 credits.

Poultry-----3 credits.  

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20 credits.

This curriculum is designed for the high school that wants to present agricultural courses and at the same time conform to University requirements. The arrangement of courses is believed to be best suited to the kind of work aimed at, and can be adapted to any school under the name of Agricultural Course, similar to the Science course now so popular. <sup>m</sup>