

Shall Agriculture be Taught in the Secondary Schools of the United States?

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The thoughtful people of our country have become alarmed at the rapid increase of municipal wealth as compared with that of the rural districts upon which they depend for support. It is not alone the aggregation of great wealth and population of a few chief centres of trade, but the rapid transfer of National influence and political power from the home making and liberty loving democracy of our rural domains to the centres of wealth, where the few are dominant. A large proportion of the vast wealth created annually from the soil, ultimately enriches the city, instead of developing and improving the resources of the country.

The enormous sums paid by the farmers for transportation and to other public utilities, for instance, of all kinds, for clothing and for manufactures, all find their way into city coffers and finally the moiety of money left the farmer from a year of toil is taken to a city bank and deposited for safe keeping. It is not, however, the rapid transfer of wealth from the country to the city that causes this great alarm; it is the almost universal removal of the leaders of men and the captains of industry from the country to the city. This disorganizes and cripples the country, weakens its effective forces and lowers its civilization.

Realizing what must be the effect upon our national life if this is allowed to continue, patriotic men everywhere are attempting to provide a remedy. Just at present a remedy quite generally accepted is the giving of instruction in Agriculture in the Secondary schools. Let us weigh the reasons assigned for the addition of the study of Agriculture to the high school curriculum.

Ist. It is claimed that instruction in agriculture will promote and possibly create a love for the soil and the things it produces, and give to the pupil a tendency to the life on the farm. There may be a little in this, but not much. All studies in the secondary schools are largely elementary, and are expected only to prepare the student for wider investigations in the future and are scarcely carried far enough to create tendencies.

If they give direction, as a whole they point so many different ways, that one counterbalances the other. A love for the soil is not created or enhanced by the study of a book on agriculture, or any pedagogic lessons in soil manipulation. It is founded on an intelligent and successful farm life and the environments of an orderly and thrifty country home. The pupil at this stage is not thinking about tendencies any more than the nursing child thinks about growing. He is simply developing.

The factors which determine our ultimate choice of farm life are rarely scholastic tendencies, but matter of fact business relations or opportunities. It is doubtful whether the knowledge acquired in the high schools would be an influential factor in determining the choice of a rural life, once in a thousand instances.

We are liable to the same erroneous conclusions here that were entertained towards agricultural colleges, and were influential in establishing them, to-wit., that they would lead to the choice of a rural occupation and promote a higher life upon the farm.

Agricultural colleges have done a great work and will ultimately become more useful to the world, but if they have been influential in directing the sons and daughters of the farmers to the farm or have exerted their educational forces to increase the number of practical farmers, it is not generally known. Even a bird has never whispered it. They have been some more potent than the universities in transferring bright young men from the farms to other vocations.

The second reason offered is that such instruction will make better and more successful farmers. Such assertions arise from a complete misapprehension of what the science of agriculture is. It is entirely distinct from botany, chemistry and the sciences related to it. As a science it has to do with the organic conditions and manipulations of soils, how to find them with plant food and fertilizers; it deals with the propagation of plants and the best

methods of promoting their growth, with the selection, preservation and germination of seeds, with pomology, entomology, and animal husbandry and kindred subjects. A man may be well versed in all the sciences that relate to agriculture and be master of the things I have enumerated as belonging to agriculture and yet be a failure as a farmer. There is a business side to farming, and it is the most important part—how to plan the work and use the labor and teams to the greatest profit, how to economize in purchases and improve the farm to advantage, balancing the productive and non-productive equations.

The schools unfortunately do not teach how to turn out at four in the morning and drive business relentlessly, till the dark calls to rest. The most failures in farming are on the business side and not on the scientific side. In the past three years I have been in close touch with over ten thousand of the best Southern farmers, and know the causes of their success on the farm.

The notably superior and successful farmers are universally good business men, and generally graduates of the common schools. I do not recall a single graduate of an agricultural college or a university in the first rank.

The thoroughly trained business man, with tireless energy and habits of order and thrift, who has been raised on the farm, can upon return to it, acquire the sciences applicable to his profession much more readily than the college trained man, versed in science, can master the business side of agriculture.

Do not understand me as belittling the sciences or attempting to dwarf the advantages of college education. I am speaking only of the relative advantages of business training and habits, compared with scientific knowledge in promoting success upon the farm.

The average farmer does not keep any book account with his crops and does not know exactly where to place his losses or gains. In our co-operative demonstration work we require detailed crop accounts.

In the fall of 1905 one of our Texas co-operative farmers came to our Houston office greatly perplexed. He said to our Traveling Agent for his district: "I want you to go over my figures on my cotton crop. They show that I have cleared \$19.50 per acre, above all costs. This is impossible; there must be some mistake." When our agent had gone over the computation and assured him it was

correct, he seemed greatly excited, and said: "Well, I am an idiot. I knew that I had made some money, but did not know just what crop made it. For two years I have been offered a quarter section of prairie land adjoining my farm for \$15 per acre. Every acre of that land will produce a bale of cotton annually and I could pay for the farm out of the first crop and have money left. Why haven't I done it? Because I did not know how to figure. You have taught me and now I will buy. If you would not that farm will be sold before I get home," and he walked the floor in nervous anxiety till the train time. To-day he owns the farm and paid for it out of the profits on this season's crop.

The most gratifying feature of our Farmers' Co-operative Farm Demonstration Work is that wage-earners upon the farm have become scarce. Farm laborers are demanding a share of the crop and the share workers are quite generally buying farms and paying good prices.

This learning agriculture, which is a compound of the following ingredients—one-eighth science, three-eighths art and one-half business methods, out of a book—is like reading up on the hand saw and jack plane and hiring out for a carpenter.

A third reason is frequently given for teaching agriculture in the secondary schools, and this is that it will promote a wide diversification upon Southern farms and be the means of establishing profitable crop rotations, dairying and animal husbandry in general.

In cotton and rice the South has two of the most profitable crops in the world.

Our position is that it is better to go directly to the farmers and show them how to make maximum crops of these staples and still improve the fertility of their soil, than to attempt by an indirect process to influence them to diversify and go into lines of farming that will not pay half as well. I have hundreds of farmers who have cleared above all expenses over \$40.00 per acre on cotton this season, and under boll weevil conditions. It is a little difficult to persuade these men to change their methods and go into a line of farming that at best will pay them only \$5 to \$7 per acre net.

It may be inferred from the foregoing that I am opposed to the teaching of agriculture in the schools. I am not; but most emphatically favor it to the extent that it can be taught successfully.

I am opposed to faulty reasons for introducing it. There is one reason that I accept, and it is sufficient, and that is some knowledge of agriculture belongs to the equipment essential to a reasonably broad education, even a common education. Botany and chemistry are taught in the secondary schools, not because the average pupil expects to be a botanist or chemist, or even to use them very much in practical life, but because they deal with the things about us, and explain them. Not to know something of these branches is to be considered ignorant.

Just so the domain with which agriculture deals is all about us. More than half our population reside in the country. The material of which our homes are constructed, our food and our clothing are all of country origin and related to agriculture.

Not to know something about the history and management of soils, plants and domestic animals is dense and unpardonable ignorance. Agriculture ranks with algebra and geometry, with geography, history and the sciences as among the common things that ought to be known as far as they can be through the limited instruction given in the secondary schools; and in my opinion agriculture is the most practical and important of all the branches with which I have above grouped it.

Is it quite fair to the youth, who must live and climb by toil, to leave out of their equipment for life's work the knowledge of how to do things, especially how to manage that complicated machine known as a farm? As a part of mental discipline should not the ability to do things be trained and strengthened in connection with the capacity to think things, so that the things thought may have a material life, and is not such training of signal value?

The only question to be considered, then, is to what extent can it be practically or profitably taught in the secondary schools? Second, how can it be safely injected into an overcrowded curriculum without doing injury to the other important branches of learning? A common mistake will be in attempts to do too much.

A few weeks since the President of a school board in an important interior city called me in conference to discuss a course in agriculture for the high schools of his city. He outlined his tentative plans as follows: Give a full course of instruction in practical agriculture, horticulture and animal husbandry. For laboratory work he would purchase a farm of from 50 to 100

acres adjacent to the city, lay out the farming lands into plats and small fields for tillage; purchase a small herd of choice animals, representative of the different breeds, and have swine, sheep and poultry departments. Do you know anything about stock? I asked. He replied in the negative. Have you any live stock experts among your teachers? He answered "no." Then eliminate animal industry from your course. It would be a failure even if you had experts, for you could not keep them and handle them in a practical way, and hence all your teaching and demonstration would lead to error. Eliminate also general farming, because this is largely made up of economic practices, which lead to certain results. A town farm, and especially a farm owned by the public, can never be economic. It might be healthful because the public would laugh at it. A knowledge of how plants feed and grow, the effect of root and top pruning, what changes are brought about by deeper plowing and more frequent stirring of the soil, the amount of moisture it should contain and the effect of increase of temperature; the depth at which various seeds should be planted and cultivated to secure the best results of practical information about plants, their profitable productive and economic uses could be imparted. Soil exhaustion, the use of winter cover crops, the effect of crop rotation, the advantage of using manures and fertilizers could easily be brought into the lines of investigation.

The birds, the animal and the insect paste of the barn should be given attention. The common woods of the country and their economic uses, and the different methods of preserving them should have a place in the secondary studies. Closely allied to agriculture are some of the mechanic arts. Elementary training in the use of tools, and the construction of farm buildings is a strong factor in the successful farmer. If at such times as his farm work is not pressing he can make his improvements and construct buildings, it decreases expenses and improves efficiency. Much the larger part of our usable knowledge is acquired by indirection through the world's object lessons. If measured by their usefulness in life the most valuable half of our education is rarely touched in the school room for secondary education, to-wit., agriculture, horticulture, farm mechanics and sciences and business methods as applied to the farm. The answer is, these things can be acquired at home. No. Under present conditions they can not be, and certainly they

have not been and that is just what is troubling American farmers to-day. So history, mathematics and sciences might be taught at home. They are not, because at the majority of homes they are not understood. It is equally true that at most of farm homes the industrial and economic sciences necessary to the farmer are not understood.

Agriculture in most sections consists simply in a series of motions inherited from Adam. What has been stated in regard to the requirements for men, should be equally emphasized about those for women. No young woman is quite half educated who is not a post-graduate in household economy, especially in preparing the food needful for the farmer, in making and repairing the clothing, in the orderly arrangement of the household, in the laws of health and care of the sick, in the management of the domestic fowls and in the knowledge of the trees and plants required for useful or ornamental purposes. These ought to be acquired at home, but they are not and at most homes can not be in a high degree. Shall the young men and young women go out into life half educated and half equipped for duty?

The paramount question is, How can so many branches be thrust into the curriculum of the secondary schools? Can any that are now accepted and in place be eliminated? If the secondary schools are to remain the great training schools for elementary teachers and to prepare the large majority of men and women for the various vocations of life, then the curriculum should rather be strengthened than weakened in every division. There is no room in the schools of elementary equipment, and if there was, the pupils are scarcely prepared to acquire agriculture and the teachers are not equipped to impart the instruction.

If there is not time for agriculture in the secondary schools as at present organized, and no material reduction can be made in the time devoted to the present lines of study, what can be done? I suggest the following plan for consideration: Increase the period for holding the school one hour daily, and devote this hour and a half a day on Saturday to agriculture and kindred studies not now taught. At once I hear the objections that the teachers and pupils are taxed to their full capacity at present. Allow me to explain: There should be no books in this added work. All the knowledge should filter into the pupil by absorption, through object

and doing lessons in the open air; hence, they should be restful and invigorating. It is too common an American opinion that restful exercises consist in engaging in some physical folly that has no useful purpose. All such theories have their baneful effect on American character. Manly exercises without useful accomplishment is like the art of talking without meaning anything. All manly exercises should have a definite purpose and accomplish something useful to the world.

An hour devoted to agriculture in a field laboratory after a day in the school room would be restful as well as instructive. During the day these field lessons should be prepared by the instructors in agriculture, just as the apparatus is prepared and the problems assigned for the day to each student in a chemical laboratory. Some pupils would work with the soil to determine the relative value of deep and shallow tillage and the percentage of gain, by frequent and thorough cultivation; others would deal with moisture in the soil, and note the effect on plants from insufficient, sufficient and superabundant moisture, the effect of temperature in soils or of fertilizers upon the soils and how to apply them; the propagation of good seeds, their preservation and their value in the crop. There are almost endless problems along this line, all of which stand for millions of loss or gains to the farmers. How plants feed and how plants grow furnish many lessons; what effect root pruning has upon the top or top pruning upon the root; what causes them to sulk and pout, or turn pale and refuse to grow.

Others spend the hour among the flowering plants and shrubs, and learn what marvels of beauty can emanate from shrunken seeds; others are among the plants and trees that yield the luscious fruits, and still others are busy with the forest trees that furnish the useful woods. In cold or stormy weather the shops should be open with simple tools and lessons in their use. For the girls there should be an opportunity to acquire some knowledge of housekeeping and all the things that can be transferred to the home to elevate it and make life more enjoyable. There is nothing new in these suggestions. Hundreds have made the same before. Where we differ is that they end in these instructions with the lesson book and object lessons. These are not sufficient. Agriculture can not be acquired from a book nor from object lessons. These may be illustrative and helpful, but are insufficient. Instead of object

lessons where the teacher demonstrates and explains, there must be doing lessons where the pupil demonstrates by his own labor.

Instead of plats a few feet square, these plats should be small fields, each boy owning and working one just large enough to illustrate all the problems, but not so large but what he can work it easily and thoroughly. Let each pupil understand that whatever is produced upon his little farm belongs to him and he can sell it whenever it matures. Furnish the boys excellent seeds, such as their parents will desire for planting on the farm. Encourage the girls to transfer the choice plants to their homes to beautify them. In the rural towns I am in favor of increasing the school hours upon the above plans. Town leisure for boys and girls is doing more to undermine the youth of the land than any other single cause. In the rural districts it may not be practicable to increase the hours; if not, reduce the hours for other branches and substitute practical studies. Give the pupils an opportunity to absorb something useful instead of an absorption of the vicious that is now going on. I am a strong believer in education by absorption, but the environments must be adjusted, so that contact is had with the pure and the useful and the needful for uplifting. Our schools have not gone far enough in the villages and minor cities, where the environment for youth is worse than in the large cities. In the towns eight hours are taken for sleep, eight hours for schools and eight hours for environment instruction. What is this environment instruction? In the main it is the game, the streets, the saloons and the occasional daily paper—nothing practical, nothing useful. Good people have been trying to remedy this by establishing high-grade reading rooms and Young Men's Christian Associations. These are palliative, but not remedial. There is the same taint of viciousness about them, for they promote idleness, when the chief cause of wrong doing is idleness. An idle saint only differs from an idle sinner in a coat of paint and direction. He does not harm, but is full of the virus of nearly all wrong doing, idleness, and the time is liable to come when the direction will be mistaken or forgotten and the natural rottenness of leisure will have its sway. Abolish idleness, and we have struck at the root of vice. Every man should be employed. The idle should be treated as criminals. Every woman should have full occupation, and every child over six years old should have a little work in proportion to his strength, and all labor should be of

the useful kind and helpful to the family, or the community, or the world. I see about the towns boys 16 to 18 years old who know nothing of plants or tools and have never done a real day's work. It was not thus in the older times.

Secondary schools should immediately prepare to instruct in the common and useful things of life, with the intent to impart knowledge, inspire a love of industry and lessen the hours of idleness with the added object of making men with sinews of steel and of pure and masterful character.

In the country, some modification of our common school system in the South is imperatively necessary, owing to the two races. The township graded school must take the place of the present scattered and unsatisfactory district school. With this change it will be possible to establish a secondary high school in the country; and if farm boys are to be retained in the country and follow the life of farmers, their education should begin and terminate in the country, and they should never be subjected to the influences of town life. Country high schools will be an important factor in this great work.

On the farms we are not confronted with eight hours of idleness. The demonstration plats at the schools can be smaller, for country pupils may have their main demonstration plats at home, which should be regularly inspected by the teacher.

The lessons in domestic science should be such as are directly applicable to the farm; the better home should be the farm home; the better cooking should be the simple, homely but nourishing dishes of the farm. I recall an instance where an effort was made years since to establish a school of domestic economy in connection with an agricultural college. The lady in charge made a preliminary report, by items, showing that it would be necessary to expend twelve hundred dollars for kitchen equipments. The simple foods she expected to prepare to demonstrate her work could only be afforded by the rich, and if eaten regularly would kill a bear. Plain, sensible women who understand the requirements of rural homes, should be placed in charge of domestic economy instruction. Such a woman in every township could be of infinite help to the people. While she lectures to the pupils about foods and clothing and the laws of health, she could be means of infinite good to the farm homes by suggestion and direction.

It may be objected that this plan can not be put into execution for the reasons: First, the teachers qualified for such instruction can not be found. They never will be found till there is a definite demand made for them. The agricultural colleges are well equipped for such works. Our people would easily meet this emergency. Second, it is too expensive. If the district schools were all consolidated into a township school, a teacher for practical agriculture and farm mechanics, and one for household sciences could be added without increasing the present taxation. Third, the people do not want it. They would not listen to lessons in school house cooking and receipts for caring for a family.

They will give heed if anything is offered worthy of attention. The farmers of the South have in the main held to the farm methods of past centuries, without progress and with slight variation.

The Mexican boll weevil came and many of the best planters in the South predicted the speedy ruin of the cotton industry. Three years since, the United States Bureau of Plant Industry opened a campaign to make cotton despite the ravages of the weevil. The farmers gave heed and this year Texas has made the largest crop of cotton in her history with countless boll weevils present in nearly every county.

A single instance to illustrate. Last month the citizens of Smith County, Texas, invited me to address a meeting of farmers at Tyler, the county seat. At the close of the meeting a business session was called and a unanimous request was made for more work. They wanted 150 demonstration farms and one seed farm established in that county. When told that we had no funds for such intensive work, they subscribed the amount required in fifteen minutes, and the work was commenced the next day. It has now proceeded so far that without question two seed farms and 200 demonstration farms will be established within the next thirty days in Smith County. Already men who had offered their farms for sale have withdrawn them and propose to hold and improve them. They believe lands are more valuable among such people, and they are.

To review: It is my judgment that if agriculture should be added to the curriculum of the secondary schools in the text-book form only, it would be more injurious than beneficial.

2. That if taught by object lessons solely, the advantages would

be very slight.

3. That if taught by demonstration, each pupil being the demonstrator and working out the problems on a little farm under his exclusive control, rewarded by the success and the sale of the proceeds, it would be of great value.

4. An opportunity should be afforded for learning how to use tools, construct farm buildings and repair machinery.

5. Equal facilities should be afforded girls in the lines that will fit them to take charge of a household.

6. Every lesson taught in the school should be immediately applied to the farm and the home.

Upon the revival of letters, at the close of the dark ages, it was thought that education was for the few and should be limited mainly to the classics, mathematics and logic. It required centuries before modern languages and sciences were admitted upon an equality and schools made the rightful heritage of all.

Now the battle is for a recognition of industrial education in the people's schools.

The final reason I offer for its admission is that it is a national necessity. The great battles of the future will be industrial battles. England, Germany, France, Japan and the United States are putting forth every effort to gain industrial advantage.

At present the other nations excel us in industry; we are superior in inventive genius and machinery. When our machinery is combined with their superior industry, what then? Recently there was some discussion about the armies and navy of Japan. I have no fear of Japan equipped for war; but I do fear industrial Japan, where every child is a natural mechanic and farmer and delights in toil. Where every woman is personified skill and every man a past master of industry. To-day they are poor; in a generation they will be rich and dominate the trade of the Orient. If by any process of training, it matters not how costly, we could implant in the American youth a universal love of industry and a universal knowledge of agriculture and the mechanical arts, they would blend with our native genius, skill and ability to do masterful things, and Americans would become the industrial arbiters of the world.