Agriculture vs. Botany in the High School.

Note—A lady who was at one time a student at M. A. C. is now a teacher in a high school in Wisconsin. She is asked to speak at a meeting of their State Teachers Association on "The Value of Science and Nature-education," which follows a paper on "More Practical Agriculture in Our High Schools to the Pupils of Science and Botany." I sent her the following:

W. J. Beal.

Agriculture consists mainly of art, with a little help from some of the sciences, such as botany, entomology, animal physiology, chemistry, physics, civil engineering, bacteriology.

There are probably less than one hundred persons in the United States who are well able to teach agriculture in its broad sense, even with a good equipment. As now maintained in some of our colleges, more or less of agriculture is taught by tutors to twenty different duties.

Agriculture proper is so difficult, even for students in college, that most of the subjects are placed in the last two years of the four-year course, that it may follow some knowledge of botany, chemistry, physics, and entomology and other topics. Under agriculture proper, come these topics: soil, physics, farm crops, seeds of live stock and judging them, principles of stock breeding, stock feeding, making of butter and cheese, farm equipment, rural economy, and more or less of several other subjects, which do not look very suitable for kids of ten to fourteen in the district schools.

Many of the common schools in the smaller villages and rural districts have proper gardens as a part of the equipment. From this garden and the teaching, the teacher may interest his pupils in various branches of agriculture.

In some instances, pupils perform much of the work under the instruction of a male teacher, working two or three hours a week, but in nearly all of the schools, the chief use of a garden is to help out the table supply of the instructor. The instruction in agricultural subjects is mostly theoretical. The tendency is to confine the work largely to the school room and not to the garden. Through the efforts of farmers and gardeners of a few regions of the State of New York, money was appropriated legislatively by the State to Cornell University to enable the professor to introduce agriculture into the country schools. They began in 1860, with a good force from the University faculty spent four weeks or more during two or more years making the experiment.

They exhibited great enthusiasm, tact and ability. They have thoroughly gained the confidence of the subject of botany has to deal with every attempt to answer any question about plants. It has no superior as a study for training the mind in observation, judgment, and the power of arriving at correct conclusions. When well taught, it gives culture and strengthens the mind, as great an extent as any other subject which is pursued for the same length of time and reaching the same amount of application.

Seed Germination.

The seniors in plant physiology have been working industriously with improvised apparatus in three and a half weeks trying to improve methods for themselves the wonderful secrets of plant growth. At Ann Arbor, where a class is making the experiment, each student performs every experiment for himself. At M. A. C. the class has no large room for their exclusive use or even desks for each student, but only one corner of one room and three tables for the whole class of thirteen. Consequently, everything has to be combined in the same way. Each student is assigned an experiment which he performs and reports progress to the class from day to day. The experiment in progress until the experiment is completed. Then that is the end of the experiment, and the next student repeats the operation, carefully avoiding the mistakes that have been made in the previous experiment. All of the most important are repeated that the class may become more familiar with the details, and be in no danger of suspecting the operator of juggling in order to make it look well.

One of the latest experiments has been in different methods of seed germination. Five methods were tried.

In No. 1 the seeds were placed in an ordinary deep plate and covered with saturated "drying paper." This drying paper is kept in the laboratory to be used in drying and pressing plants for mounting specimens. It was very difficult to saturate and cannot be recommended on this account; moreover, it would be very difficult to obtain outside of a botanical laboratory.

No. 2 was quite similar only very thin paper was used, so that the seeds were placed between two layers. The paper had to be stirred with fresh water each day to keep it sufficiently moist.

In No. 3 the seeds were placed on a plate of moist pine sawdust, care being taken that no free water was in the sawdust. This cannot be recommended because clean pine sawdust is very difficult to obtain, and other kinds of sawdust are apt to contain a strong per cent. of tannin, which would destroy the tender seed.

No. 4 is the oldest method in use, having been introduced from Switzerland. A small circular disc of unglazed pottery, having on one side a number of pin holes, was placed in a deep plate of water, care being taken that the water did not come in contact with the seeds. The disc, being porous clay, soon became saturated with water, and maintained the seeds sufficiently for germination.

Over each of these plates another plate was laid to check the moisture and make conditions as uniform as possible.

No. 5 was quite essentially different and employs what is known as the Geneva tester. It consists of a rectangular basin about two inches deep, a number of wires long enough to reach across the basin, and a strip of cloth. The wires are crowded down between two strips of paper, making a fairly neat package. The ends of the cloth are allowed to hang down to the water in the bottom of the basin, and the wires are kept above the water. Different kinds of seeds are placed in the different openings and the wires crowded as closely together as possible. The whole mass is moistened by one coin of water daily and on the ends of the cloth. This method is now quite generally employed in agricultural stations and seed testing firms in the U. S.

After the experiments had been in progress for several days the class took a vote for first and second choice of the different methods as to which could be best recommended, and the result was as follows: No. 5, eighty for No. 2, and six for No. 3. Numbers 1 and 4, receiving no votes whatever.

Campus Notes

Prof. F. S. Kellogg and Mr. H. S. Reed went to Alma last Thursday night in order to attend the banquet given by the citizens of Alma to the seniors in the junior college in honor of their victory over Albion. Such delicious dishes as "Celery with Milk Sauerkraut," "Roast of Prime Beef, a la half ox Tongue, Tomato Sauce on side," "Roast of Prime Beets, a la half ox Tongue," "Roast of veal," etc, were served. After dinner and the speeches, an address was made. In a sumptuous manner, "Boiled Beef, Bear, centre rush," appear upon the menus card.

Thanksgiving Day passed quietly and pleasantly in the Women's Building. About thirty club members and guests sat down to dinner at 14:5. The tables, arranged in a hollow square, were decorated with potted plants kindly loaned by Mr. Gunson. The means card was as follows: Oyster soup; crotons; roast turkey; cranberry sauce; stuffing; creamed celery, milk and potatoes; baked beans; olives; plum pudding, hard sauce; celery; celery; water; salted nuts; coffee.

At six the professor and Mr. Reed attended the banquet given by the citizens of Alma to the seniors in the junior college in honor of their victory over Albion. Such delicious dishes as "Celery with Milk Sauerkraut," "Roast of Prime Beef, a la half ox Tongue, Tomato Sauce on side," "Roast of Prime Beets, a la half ox Tongue," "Roast of veal," etc, were served. After dinner and the speeches, an address was made. In a sumptuous manner, "Boiled Beef, Bear, centre rush," appear upon the menus card.

"The Students' League of Mt. Holyoke has passed a resolution to the effect that any student who willfully breaks the rules of the League, governor, and faculty of the college, will thereby forfeit her right to a room on the campus, the president and faculty to give final decision in all cases."
It required a great deal of work to extract the automobile, but it was not long until we had it brought between the rails, and as all was now ready, we were soon on our journey across Kansas. Joe Bates, asking him to make arrangements for entertaining the employees, and in the evening of the day on which we should arrive.

For various reasons the M. A. C. Record is assisted by the students. There are frequent meetings for the purpose, and sacrifices made. A penny for the paper. Such persons need have no doubts about the wisdom of the positing, for no stamp will be made for it. This way, however, to receive the Record regularly is to subscribe.

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Thurston's Economics and Industrial History.

Scott Parks & Co., Chicago, Ill.

This is a work adapted to the use of our public schools and is representative of the newest methods of studying society. Emphasis upon inductive methods of study, upon going of the "known" to the unknown" in the innovation of this book. Categories of suggestive and suggestive questions are presented by the author, the answers to which can be found by any observant youth in his own neighborhood. Questions, for instance, concerning the nature of neighborhood businesses, distribution of occupations among the people, the proportion of wealth-producing persons to non-wealth-producing persons and the requirements of the neighborhood for food, clothing and luxuries are among those asked. It is hoped by the author that the materials of economic science may thus be dealt with by first hand and their reality and naturalness better established in the mind of the student. Having accustomed students by these means to the right standpoint from which to regard society, in another portion of the book the author depicts our industrial history, and thus the student is guarded from shallowness in his judgments concerning economic phenomena.

A last portion of the book—and the smallest of the three—is the customary descriptive and explanatory political economy. Money and markets are here described and economic laws and beliefs are explained. Withal the book is a small book though beyond doubt more means are afforded to put the young student in touch with his social and industrial surroundings than by any other collection of similar size thus far made.

W. O. H.
Former Students and Graduates.

C. E. Parsons, '91, is employed as a missionary of the Sunday School Union. His work extends over several counties in Southern Michigan.

C. A. Dockstader, '81, of Three Oaks, is a teacher in the public schools. He is the son of Judge of St. Joseph county at the late election.

Laverne Seelye of Hadley, '90, in a few weeks, had left his hand badly mutilated in the snipping rolls of a cornhusker last Friday.

R. B. Buck, '95, stopped at the College a few hours last Tuesday on his way to Topeka, Kan. where he will engage in newspaper work.

H. E. Rupert, with '90, spent Thanksgiving with friends at the College. He has a good position as tool-maker with the Daisy Manufacturing Co. Plymouth, Mich.

Geo. B. Hammon, '73-'76, is one of the proprietors of the "Cloth & Bally," one of the most beautiful mountain summer resorts in Southern California. He is also a member of the Native Lumber Co. of San Jacinto in which city he resides.

W. A. Habke, '93, is a prominent lawyer of Alma, Mich. Prof. Kedzie found him up there the other day doing duty as chairman of the bar. He gave the Alma College football team a banquet on Nov. 30 in honor of their victory over Albion.

We quote the following from a letter dated Nov. 25. "Robert Sprague Mayo, ten pounds in weight, but valued at twelve thousands came to my place on Nov. 19—Mollie Carpenter Mayo '88, and N. S. Mayo '88." Dr. Mayo is employed as assistant superintendent of the State last week preparing for the Holland Military. He hopes to return and complete his work as secretary of the Intercollegiate Live Stock Association. He has a good position as a missionary of the Sunday School Union.

The Art Department of the Alma College. He has a good position as tool-maker with the Daisy Manufacturing Co. Plymouth, Mich.

L. E. Burton, '91, is spending a few days last week visiting friends in Lansing. He is Horticultural Editor in the office of the "Experiment Station," the Department of Agriculture, Washington, D. C. "C. B." and W. L. Williams, '89, started up a large sheep ranch in the northern part of the state.

John D. Nies, '98, stopped over Sunday morning at the College on his way to Holland, Mich., where he has a position as electrician for the Holland Municipal Lighting Plant. Mr. Nies has been doing post-graduate work at Cornell University for several months past and hopes to return and complete his work there in the near future.

Quite a large number of former students were present at the military show on Friday. There were so far too few students and graduates present that the students went away for Thanksgiving, but classes were small that day.

Messrs. J. H. Skinner, Geo. Severance, G. C. Humphrey, M. V. Shoemaker, and A. McVane, '88, all from Strasburg, are in Chicago representing M. A. C. at the Chicago stock show. They will take part in the stock judging contests, and the department has sent a carload of stock—three steers, three mutton sheep, two hogs, bacon hogs and eight fat hogs—to the show.

The Art Department of the Youth's Companion has recently received a large order from the College students illustrating three processes of engraving, wood engraving, line engraving and half tone engraving. There are four cards ready to hang upon the wall and each contains the block, or engraving, and a proof from the same. The material, which is finely prepared, is very good indeed, and serves admirably in explaining processes in graphic reproduction to the class in graphic arts.

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