

can do very little; on its scientific side, the public and high schools can and should do a great deal. Agriculture is not even a single science: it enters the field of nearly all the sciences as they are usually defined—botany, zoology, including entomology and physiology, chemistry, physics, geology, and meteorology. In view of these facts, it might reasonably be expected that the courses of studies in the schools of a country like Canada, whose most important industry is agriculture, would be well filled with science. Each province has its own school system, and while Manitoba appears to be attempting the most, not any of them, judging by their published regulations, pay all the attention to science which it deserves, for either its disciplinary or its so-called practical value.

The history of the several attempts to give agriculture a place in the public schools of this Province of Ontario has been recounted in these columns. They have all failed so far. One reason is that the teachers, as a rule, are not instructed in science. They did not get much of it in the public schools. It is true that physiology is on the public school course, but that is learned by set lessons from a text-book. Any reader of entrance examination papers will testify that this subject is learned in much the same manner as so much history. In the high schools at the present time a relatively small amount of science is required. For a second-class certificate not a lesson on animal life is required, nor any in botany that cannot be learned from the text-book and dead plants. A good deal of time is devoted to languages—Latin, French, etc. Fougère, an author prescribed for Normal School candidates in 1897, and a most earnest advocate of classical studies, argues that so limited a period as two or three years devoted to Latin, only accomplishing the lodgment of a mass of words and phrases in the memory, results in more harm than benefit. Latin and Greek have unquestionably very high value for culture, but the possession of that value is not made by those who stop with a "junior leaving" certificate. What is the use of learning French or German? Is it to be able to converse in it? If so, much time has been wasted. I never yet heard of anyone acquiring the ability to converse in either of these languages by what he learned for a second-class certificate. But to speak in them is not the reason these languages are studied in schools; their chief value, a high one, too, comes from the study of the masterpieces of literature which they contain. Those who conclude their reading in French and German, with the pages prescribed for the junior leaving examination, pay dearly for the culture they obtain from the study of the "moderns."

"A little learning is a dangerous thing;
Drink deep, or taste not the
Pierian spring."

If Pope's couplet contains any truth, it is when applied to the linguistic studies. Those who do not intend to proceed further along an academic course than a second-class teacher's certificate, should not be put upon the labor and misuse of time involved in memorizing foreign vocabularies. A considerable part of it might, with great profit, be given to the sciences that would qualify them to teach agriculture, and the rest of it to the study of our own literature, the richest and noblest of all the moderns.

It cannot be disputed that one reason why the attempts to teach agriculture in the public school have failed, is because the teachers have not themselves learned it. The proper place to instruct them is in the high schools; a revision and improvement of the curriculum would afford the time and opportunity. Another reason why the attempts have failed, is because they have been made by the catechetical or text-book method. This is a useless way to teach any science, and a pernicious way to teach one so complex and progressive as agriculture.

The public schools will truly serve agriculture when they train the pupils to observe, take an interest in, reason about, and form judgments upon phenomena that come within the range of their experience; when the teacher, instead of prescribing lessons from books, will systematically guide children in the direction of seeking the subjects of their observations and reasonings from among those that have a value and interest for the agriculturist, and when the teacher's aim is not to store the children's mind with other people's observations and opinions, to be reproduced on quires

of examination paper, but to develop the mental power and habit which come with knowledge gained by observation and experiment, and by comparison and relation of causes and effects of phenomena that appeal to the attentive senses, no matter in which field of science, so called, these phenomena lie. It is often easy to tell a child a thing which seems at the time difficult to lead him to discover. "As I write these suggestions," says Howe (Systematic Science Teaching, p. 167), "I fully realize the struggle it will cost you (the teacher) to keep silent about all the interesting things there are to be told, but that word 'told' lets out the whole mischief."

A hindrance to the adoption of this kind of teaching will be experienced in communities which have fallen into the habit of judging all school results by the written examination standard. With them, facts are everything—method nothing. Interest, increase of mental power, culture, cannot be tested by examination papers. It would take more skill, time and trouble to lead a child to discover by his own activities the life history of a tent caterpillar than to inform another of equal ability of the contents of 100 pages of a text-book on entomology. The latter could, on an ordinary examination paper, write ten times as much as the former, but when they come to utilize their knowledge the advantages of each kind of training would be exactly reversed.

The value of the education of conception can hardly be overrated. It "increases thought power almost infinitely. Uneducated persons deal with percepts, and their thinking is narrow and child-

ginning with the child. It admits that the public school cannot teach the trade of agriculture any more than it can teach law or engineering, but that it can interest the child in nature and in rural problems, and thereby fasten its sympathies to the country.

This wide-awake University has been doing more than merely preaching and publishing pamphlets on the subject of agricultural education. It maintains a corps of instructors, visiting farmers' meetings and teachers' institutes; it conducts a correspondence instruction department in connection with the farmers' reading circles, and in several other ways has attempted to discover experimentally the best means of teaching the people in agriculture. Director Roberts recently declared that: "We are now convinced that the greatest good which can be rendered to the agricultural communities is to awaken an interest in nature study on the part of teachers and children. . . . We therefore conceive that the real work to be done (by the University) is to instruct the teachers in the methods of imparting this instruction. . . . We believe that this movement directed towards the young of the rural communities is the most important which has developed in agriculture since the consummation of the experiment station idea."

The natural corollary to an educative and practical course of training along this "nature study" line, embracing, as it does, something of the elements of all the sciences, would be the establishment of farmers' night schools or reading circles, where, besides pursuing a regular course of reading and study in agricultural science, free and helpful discussion of the problems and difficulties each is meeting in his daily work would be encouraged.

To summarize: Persons who enter the high schools intending to become public school teachers, should be required to pursue a course of study which, while affording culture and discipline, will be suited to the work that they should do when they become teachers; a course comprising science—plenty of it—including geography and psychology; English, including reading, literature, history, and mathematics, especially the philosophy of arithmetic.

At the Model and Normal Schools their time will be fully enough occupied in learning how to teach properly the elements of the sciences they learned in the high schools. Then, in the public schools it is not a text-book on agriculture that is required, but a well-informed and cultured teacher, who has been trained how to make his pupils observers and reasoners, who is conscious of his opportunity and of his duty to enlarge their interest in and sympathy with all that pertains to life on the farm. Peculiar effects on different crops of the different artificial manures, the mysteries of nitrification, food ratios, and the points of merit of the

different rival breeds of stock, the chemical composition of the various crops, the bacteriology of the cheese vat, the life-history of wheat rust, and hundreds of other topics, are not suited to school children, but they will be of use and interest to the post-graduates, to farmers in their reading circles, who as children have been trained to observe and reason by teachers who realize that the method is more than the fact.

Central Experimental Farm Stock.

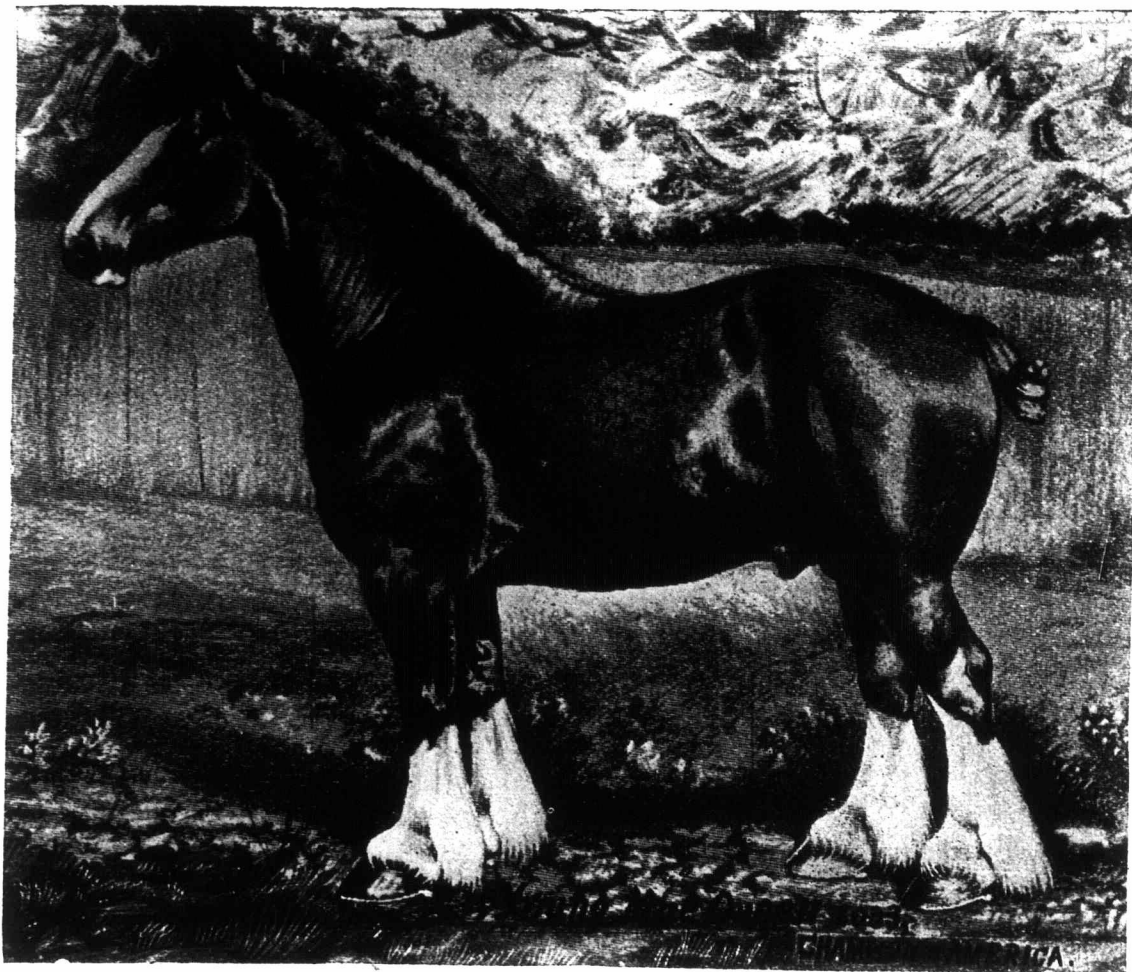
Prior to the serious reduction of the herd of cattle at the Central Experimental Farm recently, owing to a second discovery of tuberculosis there, the buttermaker at that institution was Mr. Joleand-Barral, who has since resigned to return to France. The number of cows was very much less, and it was not deemed necessary to keep so high a priced man as Mr. Barral. In the meantime another man is doing the work in the dairy department. We understand that plans have not yet been matured as to the future stock at the Farm.

They Know What They Are Writing About.

GENTLEMEN,—Enclosed please find amount for subscription to FARMER'S ADVOCATE for 1898. I am very much pleased with your journal for the good, practical, common sense it displays in treating farm topics, which evidently are based upon actual experience of the writers. I have shown it to one or two of my American friends, who like its appearance and general get-up, and may become subscribers.

G. SLADE.

Niagara Co., N. Y., U. S. A., Dec. 3, 1897.



THE SWEEPSTAKES CLYDESDALE STALLION OF AMERICA, YOUNG MACQUEEN, OWNED BY GRAHAM BROS., CLAREMONT, ONT. SEE PAGE 557.

like. Educated persons deal in concepts, and their thinking is broad and vigorous." In the quotation the word "educated" is not synonymous with "learned." One may possess much learning and still be uneducated, having "great knowledge, with little wit." The training of the conceptive power is highly useful to everyone; it is especially valuable to the farmer. Psychologists all agree that the natural sciences are pre-eminently useful in the development of this form of mental power.

The method of education for which we are contending is as necessary to the city child as to the one in the country. A difference may be made in practice; in rural schools classes of phenomena serving as a basis for this education should be preferred or selected, on account of having a practical bearing upon agriculture. In some of the more progressive schools in the neighboring Republic this kind of work in elementary science is reported to be undertaken in a systematic and effective manner. It appears in the limit tables under the heading, "Nature Study." Professor Bailey defines it as "Seeing the things which one looks at, and drawing proper conclusions from what one sees . . . not the study of a science, as botany or geology, but taking things at hand as they come, divorced from definitions and book-explanations, and aiming not so much at the acquirement of scientific knowledge as at the establishment of a living sympathy with everything that is." To further work along this line, Cornell University is publishing teacher's leaflets, or plans of lessons, to guide and stimulate the teachers of its State. It declares that it is trying to help the farmer, be-