FOUNDED 1866

eder does not care to sacrifice stance in his sheep in order to ording to the butchers, he has ing his lambs at an earlier age, at they would not be finished profitable as the heavier lamb. t met in the well-bred, smoothng from 900 to 1050 lbs. The nize this fact in all his operattle and put them on the market ing houses do not want the terms it), "dairy-bred-steer," e best prices for heavy cattle are old, tallowy, and do not eat as do the young animals. should familiarize themselves and plan, as far as possible, o use of placing on the market mand and for which a lower ccepted, particularly when the animal can be fed at greater

ice to the Farm.

from the days of Xenophon, to apply science to farming, has been accomplished. But by one of our leading agri-mer in 10,000 knows as much did," and the statement is enge, and when we know that writing articles on animal eaking at farmers' institutes re is, it would seem, ample er whether we have used the cience to agriculture, even in necessity fot its application when so much is heard of ulture. As a matter of fact, been hailed as new in theory material that has undergone ot the point most worthy of icle the emphasis is to be of the subject, not upon the

apply science to farming? nce in agriculture is not as sh us to suppose. Many of the hearts of the exponents ote learned articles about f the agricultural scribes of ticed farming as well. So, Cato and Varro, down to t been wanting leaders and is true that evolution in rch has brought to light sly understood; that this e for modification in farming e leading principles of field ndry were known centuries in very recent years that gun to receive its deserved apply science to farming armer, and that the farmer ty sympathy with the idea an institute organizer, not doubt there may be more or slow progress in applying e opinion of the writer one all others, namely, that ecent years all effort was dults when most of these emption. Even when we hing agricultural colleges, ight end of the proposition. farming without educating d their application, and if we must begin with the of your earnest readers heme:---

DECEMBER 30, 1915

privilege of helping in one of the most responsible works Then, too, this agriculture in the public in the world. schools is the surest means to check the much deplored drift to the cities. When the boy sees farming receive its proper recognition in his school, when he feels that it is not necessary to leave the farm to rise in the world, he will be less apt to join the ranks of those who move toward the bright lights. This "back to the land" cry is all right as far as it goes, but not many will come back, unless a too-prolonged diet of husks may send them back to see how chances are for the fatted calf. Let us try to hold the lads, yes, and lasses, too, who are now known only as public school pupils. Through them we can apply science to farming.

2. If agriculture is necessary in the public school, it is doubly necessary in the high school. Not only is it advisable that the child shall see agriculture receive Not only is the recognition on the curriculum that is its due, but there is another imperative demand for instruction in agricultural science in the high school. Most of the pupils receive high school training under town conditions; many of them indeed are town-bred as well. Most of our young teachers begin work in a rural school. Then we have this condition-the young high school graduate, so often a girl, after a training in a town environment, is turned loose in a rural district to teach the children of those whose profession is farming. This is unfair to both teacher and children. We are apt to make fun out of the unfamiliarity with rural life manifested by many of the young teachers, but the condi-tion is too serious to be treated thus. There should be definite course in agriculture for these high school pupils, and this should be supplemented by an out door laboratory course, such as simple experimental and demonstration plot work, and in addition kitchen garden practice may be made an integral part of household science. In this way only can we send the young teacher out to her responsible duties armed with the sympathy that comes from understanding.

3. For various reasons many of our country children never enter a high school, and many of those who enter do not finish Grade XI. Comparatively few of these will enter a Provincial College of Agriculture. To such, the establishment of special schools of agriculture provides a great boon. Easy of access and lenient in the matter of admission requirements, these schools offer a fine last chance for additional education. At these schools the course should be as practical as possible, featuring field husbandry, animal husbandry, farm mechanics and household science, with adequate attention to English, mathematics and fundamental science. The people of the country not only need these schools-they want them. In Alberta these schools are past the experimental stages, being now in the third year of operation. For the first year the enrollment for the three schools was 368 students; for the second year, despite well-known adverse conditions, the number advanced to 327; this year the registration will show further marked increase. In Alberta opponents of this school system are about as scarce as the proverbial hen's teeth

4. It is manifestly impossible for the writer to speak of advanced agricultural education without making a confession of the ideals of the institution over which he has the privilege to preside. Students who have attained a prescribed standing during the two-year course at a school of agriculture, or who have received similar standing elsewhere, are allowed to enter the Faculty of Agriculture at Edmonton for a further threeyear course leading to the B.S.A. degree in agriculture, the whole course being five years in the study of how to apply science to farming. With a full realization that this is the youngest member of a good family, and that the spurs are yet to win, we would like to submit a few thoughts for the sympathetic consideration of interested reade It has been the leading criticism of the agricultural college that it failed to reach the country at large, that its chief function was to prepare young men for official positions of different kinds. Even if this criticism were just, and we are not ready to grant this, we must recognize the fact that in doing the very work ascribed to it, the college, while doing a grand service to the country, was but marking an evolutionary period in its career in attempting to meet a demand, the supply for which has been until lately limited. However, we would like to submit that the time has arrived for a modification in the idea of service on the part of the college. Believing this, it is our ideal to send back to the land every student who has more than "two by six" of land to which he may look forward. This will leave a sufficiency of young men to become teachers of agriculture or to fill other official positions. Also we believe that the measure of the success of a college should lie in the quality of student graduated rather than in the number turned out. When we shall be instrumental in returning a graduate of the right sort to take his place in an agricultural community, we shall have done more for that community than if we sent there a dozen paid to offer expert advice. Critics in the past have been prone to harp upon isolated cases of failure to make good on the part of agricultural college graduates who return to the farm. It is to be feared that the wish was father to the thought. For one failure we can easily find many outstanding successes. Failures in the ranks of the so-called learned professions are by no means rare, but we rightfully ascribe these to individuality rather than to training. The right kind of a boy will succeed in a gricultural college or in a school of law. Howeven, we must keep the training up to the mark, and the training in an agricultural college should be essentially practical. To secure this, certain features must not be ne cted in the light of present day conditions.

THE FARMER'S ADVOCATE.

principles of pedagogy, of the science of imparting knowledge to others. This is essentially necessary if he is to become a teacher of agriculture. It is not wasted upon the boy who returns to private life, especially if he has children of his own some day to deal with. Then, too, he will make a better school trustee than some we have known in the past.

(b) The boy should have a practical training in veterinary science as part of his course in animal hus-bandry. Particularly should he learn by practice the nature and treatment of diseases in live stock. He should be able to handle many of the ailments among the animals on his own farm, or be able to help any farmer in an emergency by doing things rather than by giving second-hand information from his college notes.

(c) There should be intimate contact with the experimental work of the college. Most of this is carried on during the summer vacation, but each boy should co-operate with the station by carrying on certain practical experiments on his own land. Should this result in nothing astounding in the realm of research, it will have served perhaps a greater purpose in bringing the college into the home and home into the college. Community effort makes us wondrous kind, and good feeling radiates as truly as bad, pessimists to the contrary notwithstanding.

(d) Practice in surveying is another requisite. This should be given particularly in connection with instruction in drainage, irrigation and road making There is no reason why the farmer of the future should not be competent to handle these problems for himself when the necessity arises.

not put to shame. These men will look after the application of science to farming.

2081

This article will have failed in its purpose if it has not brought out the idea that true agricultural education will ensure the application of science to farming, and that true agricultural education must begin with the child and proceed in a logical order. At the outset it was stated, perhaps rather bluntly, that most adults are not susceptible to change. A few of us may have been fortunate in being able to maintain some ideals from boyhood days, when a moon shone on every telegraph pole, but for the most part we, who have opped the hill and are jogging down the sunset trail, have our habits of thought and action pretty well fixed. We enjoy farmers' institutes, short course schools, demonstration trains, seed fairs and such, because they brighten us up a bit and give us something to talk about, but we would hate to admit that the best service performed by these institutions is in the number of lads they interest and entice away in search of further agricultural instruction. Yes, it is hard to modify the practice of adults, but there is one way to reach many of them, and that is through their children. Many a farmer has gone against his own judgment to give his boy an opportunity to work out an idea perhaps learned at college. o after all, the hope of the country is in its children. Let us see that they get as much agricultural education as time and money will allow. When they are young, develop their interest in things agricultural, and as they grow older direct their attention to the many available ources of information, and when the boy thus trained grows to manhood he will not hang the agricultural

bulletin or periodical beside the kitchen window to use for shaving paper on Sunday morning. Let us foster all things that tend to interest the boy in the profession of farming-interesting books, school gardens, school fairs, private ownership of some good live stock that shall not be "Johnny's pig and Daddy's bacon," commonsense apportion-ment of his hours of labor and recreationand we shall reduce materially the abnormal exodus from coun-try to city. We are due for a wonderful advance in this young country of ours, when the cruel war is over. and we have time and inclination to devote ourselves to further advancement, if we see to it that we exercise our privilege of

blic schools. sh schools. agriculture. of agriculture.

essary in this day to offer place in the public school, y exists, and because of justification for the faith will suffice. Agricultural e public school, because gin all education. They in the lower grades and ast two grades, and they ike so long as our educarate with the importance Oh, yes, a girl teacher agriculture, but it is not cts taught that countsd in the pupil. Develop for the profession of his will not depart from it. then, do not talk as were trying to teach t. Her business is with er business much better ics can teach it to her. p the girl teacher when d you will have had the

a The boy should acquire some knowledge of the



Heather Moon.

First-prize yearling Clydesdale filly at the Provincial Winter Fair, Gue'ph, 1915. Exhibited by H. A. Mason, Scarboro, Out.

(e) Special emphasis should be placed upon animal riculture, University of Alberta, in "The Farmer's Adhusbandry instruction. Mixed farming means returns through live stock, and there is a wide opportunity for improvement in the knowledge of breeds and breeding and of feeds and feeding, not to speak of market requirements

(f) Courses in farm economics are largely in the process of making, but this much may be said-the boy should not leave college without commonsense ideas upon the questions of cost of production, co-operative production and co-operative marketing, and he should know some simple method of farm bookkeeping. Farming is now recognized as a business, and our boys must understand common business principles.

(g) Aside from the usual courses in good English there is room for a laboratory course, for want of a better term. The boy from the college, whether he goes back to the farm or not, whether he desires it or otherwise, must become a leader in agricultural discussion. He must early appear before the most critical audience in the world, and much depends upon the first impression he makes. He should then have practice in standing up and in intelligent and intelligible words, with simple and straightforward manner, saying what need be said on any agricultural topic, and in knowing when to sit down-the sense of this latter requirement is by no means universal among speakers. Then, too, the boy should have some course in good agricultural journalism so that he may well express himself in timely contributions to our agricultural publications, and thus add years to the lives of the editors.

When all is said as to what the college can do for the boy, we must still admit that, in a modified sense, what we said of agriculture in the public school holds good for agriculture in the college. "It is not the sum total of agricultural facts taught that counts, it is the bent of mind induced." If the college can turn out a true man, a practical man, a man with a desire for further knowledge and an appreciation of his place in the world, the college will turn out a product that the years shall

training our youth and see to it that we turn out earnest, practical men and women not in spite of, but because of education in agricultural matters-education in applying science to farming.-[E. A. Howes, Dean of the Faculty of Ag-

vocate and Home Journal," Winnipeg.]

Nature's Diary.

A. B. KLUGH, M.A.

During recent years botany has undergone an immense change. The older botany was what might be very appropriately termed a "dry subject," it was concerned largely with dried plants, the naming and classifying of them, and a study of the names of parts of plants. Many students found botany nothing but a ong list of names-a subject which aroused no interest or enthusiasm, and consequently left it as soon as possible. The modern botany is entirely different; it is concerned with the living plant, with its life processes, with its relations to other plants and to its environment. Thus the whole aspect of the study has changed—it is now a live subject. True enough, there are still names to be learned, but they are no longer presented in long lists, but introduced when the need for a name is felt. And this makes a world of difference, for once the need of a name is felt the remembering of that name is perfectly easy

This change in the aspect of botany is mainly due to the development of that branch of botany known as ecology. The word ecology is derived from the Greek "oikos-a home," and may be defined as the study of plants in relation to their environment. This branch of botany is so full of interest that everyone interested in outdoor life should have some knowledge of it. Further, it is an extremely practical study, and some of the results obtained by it have a far-reaching value.

Before we can consider plants in relation to their environment, we must first consider the environment carefully. The environment of a plant is made up of a complex of a great many factors. We may divide these into three main groups—air factors, soil factors and biotic (living) factors. The air factors are tempera-