THE FARMER'S ADVOCATE.

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Experiments in the Feeding of Swine. Read before the last meeting of the Dominion Swine Breeders' Association by C. A. Zavitz, B. S. A., Experimentalist, O. A. C., Guelph, Ont.]

I assure you it affords me no small amount of satisfaction to be present at this, the Dominion Swine Breeders' Association, not that I am specially pleased to appear before you in the capacity of a speaker, but that I may become better acquainted speaker, but that I may become better acquainted with the workings of this Association, and also that I may listen to the papers and discussions as pre-sented by its members. It would seem selfish on the part of any of us, whether member or not, if, on being asked to take a place in the proceedings of the annual meeting, we were unwilling to do all in our power to advance the interest of the Association such as this assembled, even though that part be small.

It is difficult to estimate the influence of the various agricultural associations upon the farming of Ontario at the preset day, but it is still more difficult to estimate the great influence which these combined forces are able to exert upon the future progress of agriculture in this fair province of ours. The time has been and is not far past when educa-tion along special lines of farming was obtained almost entirely from individual experience. Such is not the case to-day. The most successful farmers of the present time, those who get the most out of their land, their crops, their swine, their sheep, their cattle and their labor, are those who think and plan and work most industriously, most skilfully and most intelligently, and who take the fullest advantage of the experience of others.

I wish to call your attention for a short time to a system of co-operation which, I venture to say, is to become one of the greatest powers of influence which the agricultural world has yet beheld. I have reference to that of the Agricultural Experiment Stations. After a brief account of their rise, development and general work, a few of the summary results obtained from experiments conducted in the special line of swine breeding will be considered.

It is only about forty years since the establish-ment of the first Agricultural Experiment Station. It was located in Germany, near the city of Liepsic, upon a farm of sixteen acres, which belonged to the Liepsic Agricultural Society. The station was assisted at once by all the Saxon Agricultural Societies, under the leadership of Councillor Renning, their secretary, and was soon taken under the charge of the State. There were barns, a house, and some improved stock at the inauguration. Two or three rooms were fitted up a chemical laboratory, a small glass house was erected for experiments with vegetables, and in this way the first Agricultural Experiment Station in Europe was established Their growth on that continent, however, has been a rapid one since that. In 1857 there were eleven stations; in 1862 there were nineteen; in 1867 there was thirty; five years later there were sixty-two. and to-day there are upwards of one hundred stations to be found in the different countries of Europe. This system of co-operative work was not confined to Europe alone, but it has extended into various parts of Asia, Africa, Australia and America.

The first Agricultural Experiment Station on this side of the Atlantic was the one established in 1875 at Middleton, Conn., in the chemical laboratory of Weslyn University. In the following year the

people of the United States watch the doings of our stations with a close scrutiny, but at the same time we desire the same opportunity and privilege of gaining information from their experiments.

The following results relating to a few of the experiments in swine feeding, and which are of special interest and practical value, have been gleaned from bulletins of the stations, and from reports of the central office at Washington.

FEEDING FOR FAT AND FOR LEAN.

A considerable amount of experimenting has been done for the purpose of ascertaining the influence of different kinds of feed upon the carcassof the animal. Foods rich in nitrogenous substances, such as shorts, bran, peas, clover, etc., have been used against foods containing but little of the nitrogenous materials, such as corn. There are some variations in the results obtained, but the whole trend of the work seems to show that the carcass of a pig can be considerably influenced in many important parts by the character of the feed given. Prof. W.O. Atwater, of the Department of Agriculture at Washington, in a report of 1889 says: "By the feeding trials already conducted, especially with young animals, it has been demonstrated that different feeds it has been demonstrated that uniferent feeds modify the relative proportion of the different organs of the body, that the blood can be increased or diminished, the liver made larger or smaller, the muscular system increased or decreased in proportion to the rest of the body, even the bones can be made weaker or stronger. These marked differences in results are not produced either by over-feeding or underfeeding, but by difference in the chemical constituents of the ration. Here is a side of live stock management that is practically new to us, and its development must be of the highest interest." A nitrogenous ration shows a much greater difference when fed to young animals than The reports of the when used with older ones. Wisconsin Agricultural Experiment Station for the years 1887, 1888, 1889, 1890 and 1891 contain much valuable information regarding a series of carefully conducted experiments in feeding nitro genous and non-nitrogenous feeds to swine. The conclusions from these tests are given in the report of 1890 as follows, regarding the points in favor of feeding a nitrogenous ration, such as shorts, bran and corn

(1.) A far more rapid growth.

(2.) A much more economical gain for food consumed.

(3.) Much more blood in the body.

(4.) Larger livers.

(5.) A larger proportion of lean meat (muscle) to (6.) A larger proportion of ash to a given volume

of bone. (7.) Somewhat stronger bones in proportion to

weight of body. In the last report of the Wisconsin Station the esults of an experiment is given, in which it is shown that pigs which have received peas possessed about forty-seven per cent, more lean meat than those which had received corn.

INFLUENCE OF AGE AND WEIGHT OF ANIMALS UPON THE ECONOMICAL USE OF FEEDS.

The experiments upon this subject go to show be yond question that the amount of feed eaten to produce one pound of live weight increases with the age and weight of the animal, and as the animal approaches maturity greater is the amount of feed required. The experiments point out most empha-tically the fact that for producing cheap pork it is ssential to use young and growing animals, stop the fattening process at the proper time. Our own experiments, along with those of others, tend to show that pigs should be turned off when they reach the weight of from one hundred and sixty to one hundred and eighty pounds.

PASTURAGE.

AUGUST 1, 1893

A few experiments have given very favorable results as to rapidity and cheapness of growth from the pasture field. Alfalfa has proven to be a very cheap food. Clover has been found to be of much value. Rape has been but little tested as yet, but from our experiments with it this plant promises to be of much value as a food for swine. There is room for much valuable work of an experimental nature with different kinds of pasture

## Chatty Stock Letter from the States. (FROM OUR CHICAGO CORRESPONDENT).

Northwestern range cattle owners were in a hurry to get the shipping season open, and they sent in a whole lot of cattle that was too thin to kill and not of good enough quality to tempt feeders.

States farmers, as well as Canadians, have lately had the "hay fever," and liberal shipments of western dried grass have been made to the fodderfamine regions of Europe. It ought not to take long to supply the demand at the rate shipments are being made. It has been said that it would be a good thing for our people, instead of worrying about not being able to ship stock cattle, to send them all the hay they want and then prepare to send them a combination of hay and cattle in the shape of beeves. The export cattle trade has lately afforded the shippers little comfort, and losses have been large. There is no wonder exporters are engaging more space for hay than for cattle. The quality of the cattle now being marketed is rather indifferent. While cattle prices are low, they have been low before, and under really less When the low favorable conditions to owners. point was reached last year big fat export cattle and 1200-1b. dressed beef cattle were selling in about the same notch, \$3.75@4.00. Now the "spread" in values is more equitable. Canning cattle, \$1.00@2.30; butcher stock, \$2.20@2.75; green steers, \$3.00(a 3.50;, and good to choice corn-fed cattle, \$4.256 5.00. It denotes a healthier condition of trade to have a wide spread in values than to have no premium on really good stock. It is always demoralizing to have an article that cost 50 per cent. more than another to produce sell at the same price. Distillery feeders have been taking advantage of the situation, and have bought a good many 1000-lb. range steers at \$2.25@2.50 per 100 lbs. They are certainly not taking many chances at these prices. Texas cattle continue to come forward largely in excess of former years. They are selling fairly well, but the low grades have suffered The cause of the great break in low grades lately. is not far to seek. Cattle good enough to sell on the block can be converted into money in a short time, but money in canned beef is apt to be tied up for months, and buyers are not tying up money for months just now unless they can get great big interest. And the interest must be paid in advance by the owner of the cattle.

The late closeness in the money market tended to reduce the growing demand for stock cattle. That demand was coming from unusual quarters in the western country, and there is reason to believe that as soon as confidence is fully restored there will be a bigger demand than for years. Of course it's a big country and there are ots more

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Ontario Experiment Station was established at Guelph. The example was speedily followed elsewhere; in 1880 four were in operation, and there are at present sixty-five agricultural experiment stations in the United States, and six in the Dominion of Canada.

The sixty-five American stations now employ 481 trained men in the prosecution of experimental enquiry. The number of officers in the various lines of work is as follows: -Directors, seventy-one; chemists, one hundred and fourteen; agriculturists, forty-six; horticulturists, fifty; botanists, forty nine: entomologists, forty-five: veterinarians, twenty-four: meteorlogists, fourteen: biologists, four; and in other lines of work, one hundred and fifty-seven. The total appropriations to the experimental stations of the United States during 1891 was \$889,408.00. The number of annual reports published was fifty-one, and that of the bulletins two hundred and fifty-five. The mailing lists of the various stations aggregated about 350,000 names.

The great importance of the swine-growing interests of the United States, and the pressing need of more accurate information as to how to feed swine most economically and profitably led to a large amount of experimenting in swine feeding at the stations. No less than twenty-two of the stations have conducted experiments in swine feeding, and eleven of this number have made a specialty of this line of work. The number of tests made in feeding swine now number upwards of two hundred, and about two thousand animals of various ages and breedshave been used. No careful summary of the whole work has yet been made, but there is one at present being compiled at the central office of experiment stations at Washington. Is it not a wise policy on the part of the members of the Swine Breeders' Association of Ontario to keep a. close eye to the investigations going on among our American neighbors, who are spending annually about \$1,000,000 in agricultural investigations of rations kinds? We are perfectly willing that the those which we have obtained from peas and oats, rations,

### THE VALUE OF COOKING FEED FOR SWINE.

Upwards of twenty experiments have been conducted in the United States regarding the relative value of cooked and raw feed. In almost every instance the absolute gain in live weight, and the gain in weight per pound of feed consumed, was greater from the raw than from the cooked feed. In nearly all cases, however, the animals consumed a greater quantity of the raw than the cooked food, and this may partially explain the cause of the greater gain in the former case. Even where as much of the cooked as the raw feed was consumed the latter not unfrequently gave the best results. On the whole these results go to show that no advantage was gained by the cooking of the feed, and in fact there seems to be a disadvantage in feeding cooked food as against the raw material. Our own tests agree exactly with the results of these experiments. It should be noted that in most of the experiments the cooked feed was fed cold, thus making it a test of cooked feed and not warm feed.

#### GRINDING FEED.

A dozen or more experiments have been conducted to ascertain more fully the influence of feeding ground grain as against the unground, The results vary considerably among themselves, owing, no doubt, to the kinds of grain fed, the amount of feed consumed by the animal, and other causes. The results of the experiments carried on at the Ontario station, which lasted for two winters, gave results in favor of grinding when peasand barley were used. Several of the American stations have obtained results against grinding. Where corn is grown to a large extent and used as the principal

cattle scattered about than people realize, but there is a dearth of feeding cattle in many quarters.

The hog situation suffered considerably of late, and the best heavy hogs sold about \$2 below the high point of the year, at \$5.75. The best light, however, sold at a premium over heavy of about 40c., showing that farmers are holding backs their pigs to eat the comparatively cheap corn on hand.

Sheep men have been so anxious to realize lately that they have glutted the market very badly. Lately, however, there was some sign of improvement, and prices were as follows: Good to choice ment, and prices were as follows: Good to choice natives, \$4.50@5; mediums, \$3.50@4.25; poor to fair, \$2.50@3.60; Texas, \$2@4; grass Western, \$3.50@4: good to choice lambs, \$5@5.90; poor to medium, \$3.50(a 5.

### Economy in Feeding.

The farmer who gets the largest returns for very pound of hay and grain fed is the economical feeder. So says the National Stockman. We hear it and we read it, but how many of us bring the facts home to ourselves and our stock that a certain amount of feed is required to sustain life, and it is only the food consumed over and above this that gives returns in growth, milk, wool, etc. True economy demands that our stock have all the feed they can properly digest and assimilate. Rapid growth is always the cheapest: it also demands that nothing be wasted. Some do not value hay and grain grown on their farms and by their own labor the same as if they purchased with cash. This is wrong, for what a farmer produces on the farm constitutes his living and his bank account. Every bushel of grain and ton of hay fed must be counted at market price, and all it lacks of returning this is a direct loss and is wasted. To avoid this we must provide comfortable quarters, suitable racks factor of the feed, the results may be different from and boxes for feeding, and feed well-balanced

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