

Live Stock.

Experiments in Feeding.

Prof. Charles Dole, of Norwich University, at Northfield, Vt., communicates the following interesting experiments in feeding cows, to the *Vermont Chronicle*.

I have three cows, which I am feeding for the double purpose of getting milk, and at the same time fattening the animals for beef. They are all farrow, one of them has been so for two years. They belong to the common breed, and have been what would be called good milkers.

At the time I commenced feeding they certainly did not give milk enough to pay for the hay they ate. My object in experimenting was to find out, as near as possible, the most profitable feed. I began the experiment December 25th, and continued it for four weeks, with the following result:

The feed the first week was eight lbs. of "shorts," one half-bushel of sugar beets, and ten pounds of hay per day to each cow. I fed the shorts night and morning, four pounds at a time. The beets were given at noon. They were fed all the hay they would eat up clean, three times a day. Thus, the first week I fed the three cows two hundred and ten pounds of hay, one hundred and sixty-eight pounds of shorts and ten and a half bushels of beets. The hay was of a very poor quality. I estimate the cost as follows: One hundred and sixty-eight pounds of shorts at twenty-five dollars per ton, two dollars and ten cents; two hundred and ten pounds of hay at twelve dollars per ton, one dollar and twenty-six cents; ten and a half bushels of beets at fifteen cents per bushel, one dollar and fifty-seven cents. Total, four dollars and ninety-three cents. We got three hundred and seventy-nine pounds of milk, making sixteen and one-half pounds of butter, taking twenty-three pounds of milk to make one pound of butter. The butter was of the best quality, and at thirty cents per pound would bring four dollars and ninety-five cents. There was in addition the skim milk, and a steady gain of the cows in flesh.

In the second week the feed was the same as the first with this exception—instead of feeding 8 pounds of shorts I gave them 8 pounds of feed, composed one-half each of corn meal and shorts. This week we got 394 pounds of milk and 18½ pounds of butter, or one pound for a little over 21 pounds of milk. The cost of the feed this week, calling corn as I did, \$2 per hundred, was \$5.65. The butter was worth, at thirty cents per pound, \$5.55.

The third week the feed was the same as the first, with the exception of feeding bran instead of shorts. Amount of milk this week, 350 pounds. Both butter and milk same as first week.

Fourth week same as second, only using bran instead of shorts. Milk this week, 480 pounds; butter, 19 lbs. Cost of feed same as second week, \$5.56; butter worth \$5.70.

I have not tried corn meal alone as grain feed, but from former experience am convinced that it is not as valuable for milk as either bran alone or bran and corn meal mixed in equal parts.

I have no doubt, from the above results, and my observations since, that no better feed can be given cows than corn meal and bran mixed.

The cows have not only more than paid their keeping in milk, but have steadily gained in flesh, and are now fair beef. Had I only fed common hay, such as I had, they would not have paid their keeping.

Perhaps I should state that all the feed was scalded, and the cold water added, making a painful at a time for each cow. The butter made was very nice, far better than it would have been with only hay for fodder. I am satisfied that bran is fully equal to shorts in value, and to mix with corn it is better. With bran at \$25 per ton, and corn at \$40 I would use as much corn as bran, and feed them mixed.

I have said little about the roots fed, my object being to determine the best kind of grain or feed to buy. But so well satisfied am I with the result of feeding roots that I would not on any account be without them. Every farmer would find it to his advantage to raise from 75 to 100 bushels for every cow.

Experimental Pig Feeding.

Although it is a good many years since the enterprising Mr. J. B. Lawes, of Rothamsted, Herts, carried out his experiments in pig feeding, yet the results obtained were so important to farmers, and applying as they did with just as much force at the present day as they did when first published, some reference to them will not be uninteresting. Mr. Lawes published the result of his experiments in the *Journal of the Royal Agricultural Society*, and the article, a most elaborate one, attracted a good deal of notice among scientific agriculturists at the time. Mr.

Lawes took, as the basis of his experiments, equal weights of bran and lentils, bran and Indian corn. Particular care was observed in weighing the quantity of food meted out to each pig, all of which were weighed every fourteen days. The experiments were commenced with forty animals, all being about the same age (ten months). Mr. Lawes endeavored, as far as possible, to secure pigs possessing outwardly the same characteristics, so as to make the effects of the different foods become at once apparent. They were divided into a dozen pens, of three pigs each. The following is a list of the feeds allowed:—

Pen 1.—Bean and lentil mixture, an unlimited allowance.

Pen 2.—Two lbs. of Indian corn per pig per day, and an unlimited allowance of beans and lentils.

Pen 4.—Two lbs. of bran per pig per day, and an unlimited allowance of beans and lentils.

Pen 4.—Two lbs. of Indian corn, two lbs. of bran, and an unlimited allowance of beans and lentils.

Pen 5.—Indian corn alone, unlimited.

Pen 6.—Two lbs. of beans and lentils, and an unlimited allowance of Indian corn.

Pen 7.—Two lbs of bran per day, and an unlimited allowance of Indian corn.

Pen 8.—Two lbs. of beans and lentil mixed, two lbs. of bran, and an unlimited allowance of Indian corn.

Pen 9.—Two lbs. of bran and lentil mixed, and an unlimited allowance of bran.

Pen 10.—Two lbs. of Indian corn-meal, and an unlimited allowance of bran.

Pen 11.—Two lbs. of bean and lentil mixed, two lbs. of Indian corn, and an unlimited quantity of bran.

Pen 12.—Beans and lentils mixed, two lbs of Indian corn-meal and bran, each separately, and unlimited.

The pigs received their food the first thing in the morning, again at noon, and at five o'clock in the evening. The food which was limited as to allowance was mixed with a small quantity of that given *ad libitum* in the first two feeds of the day, the whole being, of course, mixed with water. At the outset, two of the pigs in one of the pens contracted some disease in their necks, which began to swell considerably. This was met by a remedy at once simple and effective. 20 lbs. of finely sifted coal-ashes, 4 lbs. of common salt, and 1 lb. of superphosphate of lime were mixed together, and placed in the troughs of the ailing porkers. The pigs, Mr. Lawes relates, ate the mixture with great avidity, and shortly after the swelling in the neck subsided, and entirely disappeared in about six weeks. Three sets of pigs, each divided into twelve pens of three pigs each, were set apart for three series of experiments, with the various qualities of food:—In one series barley meal was substituted for Indian corn, and in the third series a trial of dried Newfoundland codfish was made in connection with other foods. The fish was boiled, and some of the other food mixed with it. Mr. Lawes found among other results that Indian corn or barley meal, with a limited supply of bran, was very good food; the bran adding to the value of the manure. In cases where the pigs had access to three kinds of food, viz, the highly nitrogenous pulse mixture, the non-nitrogenous Indian meal, and bran, which is moderately nitrogenous; they gradually discontinued the proportion of their consumption of the first as they approached maturity, and throughout only consumed five per cent. of bran. The average consumption of corn per pig per week was 60 lbs., or about 9 lbs. per day, which produced from 10 to 12 lbs. of meat per week, or about 1½ lbs. per day. There was a very rapid decrease in the rate of consumption of food to a given weight of animal as it fattened. The nearer a fattening animal approached maturity, the greater was the proportion of fat in the gross increase obtained. Indian and corn and barley meal, Mr. Lawes said, contain less than 2 per cent. nitrogen, bran about 2½ per cent., beans and lentils about 4½ per cent., and dried codfish 6½ per cent. Mr. Lawes found that the larger the proportion of nitrogenous compounds in the food, the greater was the tendency to increase in frame and flesh; but that the maturing, or ripening of the animal, in fact its fattening depended very much more on the amount of certain digestible non-nitrogenous constituents in the food. It also appeared that some of the cheaper highly-nitrogenous foods would produce a given amount of gross increase more economically than the expensive ones (peas, beans, &c.) which are usually preferred by pork-feeders. "If the amount of gross produce of meat," says Mr. Lawes, "in return for a given amount of food, of a given money value, is alone to be taken into consideration, then, in addition to roots, wash, &c., it would be most advantageous to rely for fattening upon highly-nitrogenous foods, such as dried fish, or animal refuse, or leguminous seeds, beans, lentils, and the like; because not only would the weight be obtained at less cost than by the use of cereal grains, but the manure, the value of which must never be lost sight of in calculating the economy of the feeding process, would be much richer than if the latter were employed." It is to the interest of the farmer to use highly nitrogenous

leguminous seeds, and even refuse flesh, if at command, during the earlier and growing stages of his bacon hogs. But if a constant market is to be secured for pork, barley meal or other cereal grain must supersede everything else as fattening proceeds."

Since Mr. Lawes penned these lines a "constant market" has sprung up for pork, and as a matter of fact, the mode of feeding pigs has been greatly improved upon. We cannot say that we favor Mr. Lawes' opinion as to the desirability of giving animal flesh, thinking that such feeding tends to taint the meat of the animals; but on other points his views are of considerable value to pork-raisers.—*Eng. L. S. Journal*.

Hints to Stock-Raisers.

The *London Agricultural Gazette* urges discrimination upon stock-raisers in the following words: "In a yard of bullocks there is often one which, for some undiscoverable cause, is obnoxious to the rest. These persecute it, and cause it to lose instead of gaining day by day. Out with it, if quick preparation for the butcher is your object. There is no help for it; one cannot force toleration upon quadrupeds; their masters have not yet acquired the lesson. The same beast, boxed apart, will thrive at once—become a weekly increase, and not a weekly pull-back. Or some one or other of the cattle will not eat his cake, or his roots; it will probably be found that his teeth are out of order, and that cake broken finer, or roots cut smaller, are needed; but careless feeders only curse the stubbornness of the brute, go on as usual, and leave it to take its chance. This generally means wasting, if not death. Or some difficulty of digestion makes one bullock ill to please, and the feeder, like Mrs. Gamp with her patients, won't see that it is his business 'to be particular to a feature,' and continues treating alike, till serious disease has become established. With pigs such irregularities are frequent. One requires his food mixed thin, and will then drink it down freely, and thrive. Another eats best when the food is in lumps; and then fills itself quickly and lies down to fatten. A brainless feeder treats both the same, and half the profit is lost for lack of observation. A man with eyes parts the pair, and feeds each to his taste. It can never be too frequently repeated that the eye of the owner is needed, not merely daily but several times a day, if grazing is to pay. And respect for individual peculiarities—hard enough to get recognized among men, for men—is absolutely required if a lot of animals are to yield the maximum of profit or minimum of loss."

Feeding up for Winter.

There are two critical periods through which farm stock is called to pass, viz: when grass gets short and frost-bitten in the fall, and again when winter begins to let go her hold, and spring approaches. Digestion suffers after the first bites the grass, because it becomes unnutritious, and stock becoming more hungry as cold advances, they eat greedily of it. It ferments in the stomach, produces flatulence, a staring coat, and sensitiveness to cold. No animal can stand cold and wet, whose digestion is impaired. In such a condition the stomach and bowels become irritable, the blood rushing to them from the surface, producing chilliness, even though the weather be not cold. From the moment that this condition sets in, the animal begins to shrink from the absorption of such flesh as had been accumulated in summer and early fall. These form the principal reasons why approaching winter is a critical period. To avert these tendencies, farmers should provide a patch of blue grass, according to the amount of stock kept, and turn the stock on this for a portion of the day, when other grass begins to fail. This, holding its vitality well into winter, even in the North-west, provides against the sudden change, and consequent strain upon the digestion, otherwise sure to follow. Farmers would do well to place light rations of bright hay within the reach of stock, as early as the appearance of the first frosts. A small amount of this, they will find, will be eaten with avidity and evident relish, and much will be added to the ability of the animal to battle with the coming cold and exposure, by replacing the want of succulent grass, and preparing the digestive organs for the steady used dry fodder and hay during winter.

There is no period when grain can be given with greater profit than during November and December, because it is of the utmost importance to retain what of flesh and vigor has been laid up during the grazing season, by generous feeding and shelter, preparatory to entering the last half of winter. This is always the trying half for such beasts as are not housed and regularly fed during the entire season marked by the absence of good grass.

As stated, approaching spring is the trying period for all stock that has undergone exposure during winter. The appetite fails, because the stomach tires of the homely fare, damaged by exposure during the winter, for which some degree of relish had been maintained through exposure to a bracing, dry atmosphere. Farm stock, if it