

year, alfalfa, clover, rape and other forage crops should constitute an important adjunct to the grain ration, and at times the green fields may furnish even the major part of the ration, with marked advantage and profit.

Care of Brood Sows.

Writing in the Iowa Register, Professor Kennedy states from his observations during his recent trip abroad:

"In the estimation of the English breeder, the brood sow, during the gestation period, requires and must have certain feeding stuffs for best results, and to withhold these on account of a slight difference in price, is short-sighted economy, if not very disastrous. On those farms where skim milk was available the brood sows were fed bran, oats and skim milk, or bran, shorts and skim milk or bran, barley meal and skim milk. In addition, the sows were grazed on grass, or soiling crops during the summer months, and were fed on raw mangels, turnips, beets or steamed potatoes during the winter season. Where skim milk was not available, the rations were composed of cooked bran, shorts and middlings, or soaked bran, shorts and barley meal, with the same kinds of succulent food as previously mentioned. This method of feeding was continued up to within a week or so of farrowing time. At this time the amount of roots fed was decreased. This was done for the purpose of keeping the digestive organs in a loose condition. On many good farms from four to eight ounces of Epsom salts, in accordance with the size of the sow, was fed in the food to each sow about two days before farrowing. This was given for the purpose of cooling the system and preventing an early flow of milk, which so often is the cause of an inflamed udder, and, as a consequence, a vicious mother at farrowing time. That careful attention to all of the little details pays, was amply demonstrated on a large pig-feeding farm in Cheshire, where 180 sows reared on an average nine living pigs per sow. On some farms even higher averages were obtained, but the number of brood sows was much less.

"During the nursing period, which varies in length from five to seven weeks, the sows are very liberally fed. The feeding stuffs used are of the kind that are conducive to a liberal supply of milk. For this purpose, rations of equal parts bran, shorts and barley meal, scalded and fed in conjunction with skim milk, or two parts bran, two parts middlings, one part barley meal and one part corn meal, soaked or steamed and fed in conjunction with skim milk, or equal parts of bran, shorts and cooked potatoes, fed with or without skim milk, were in general use, and gave highly satisfactory results. Ground oats, in conjunction with the other feeding stuffs, were also used by some, but the price of oats usually prohibits the same. The brood sows were always fed three times per day, and in some instances four times per day. Whenever skim milk or buttermilk could be had they were used in the feeding of the sows during the nursing period. The young pigs are encouraged to eat at an early age, as at the end of three weeks some milk and finely ground oatmeal or shorts are supplied in low troughs where the little ones may partake of the same. In this manner they are taught to eat early, and thus can be weaned at an earlier age, a point which is of much importance to the man who rears two litters per year."

Ventilation of Stables.

As this is the season of the year that new barns and stables are being built, or old ones torn down and remodelled, a few words on ventilation may not be out of place, as this is a subject which is not given enough attention by some farmers.

As cattle and horses at the present time aid so much in replenishing the farmer's pocketbook, and as they are generally housed during winter in the same sort of stables, they at least should be given as sanitary and healthful stabling as possible, and this cannot be provided without good ventilation.

I do not profess to be an expert on this particular question, but from what I have read and observed, I will here enumerate a few of what I consider the best, and some of the cheapest systems of ventilation.

The system which I consider the best, although somewhat expensive, and more adapted to large stables than some others, is to have the stables so arranged that two rows of stalls face each other, fresh air being brought in from the outside by means of a galvanized iron pipe, situated some fifty or one hundred feet from the stable, and about twenty or twenty-five feet high, with a movable cowl or hood on top. From this pipe, and two or three feet underground, have tile to run up between the two rows of stalls, connections being made with every stall by means of smaller tile. This supplies good fresh air, which, coming in at heads of cattle, drives the foul air out through pipes at ceiling connected with ventilators on the roof of barn.

Another and much less expensive system, is to

have stalls arranged same as in the preceding plan, but instead of having the feed passage level with the rest of stable, have it raised a foot or more, and underneath it run large tile or pipe from outside the full length of passage, with smaller tile running to each stall, coming out at head of cattle, the outlet pipes being at the ceiling, and running to the ventilators at roof of barn.

Then, there is the U-shaped pipe system, which is recommended by those who have tried it. This is to have pipes starting just above the ground on outside of stone wall, and, passing underneath the wall, come out above floor on the inside, thus forming a U. The foul air goes out at ceiling with connection with ventilator at roof.

The cheapest, and last which I shall mention, is to have simply a series of three-inch tile, about five or six feet apart, all around the top of the barement wall, arranged so that one can shut off or close, according as much or little ventilation is required. This, although much the cheapest system, is open to the objection that it is somewhat difficult to keep the stables at an even temperature, although followed successfully by some prominent stockmen. S.

FARM.

A Perfect Soil.

Some years ago an extremely important experiment was completed by a French scientist, since dead, who had been endeavoring to ascertain as conclusively as possible what actually constituted a model or perfect soil. Crops were grown with great diligence under various conditions, and the result was the conclusion that the best soil for agricultural crops, and they were produced during the experiments, was one consisting of equal parts of sandy, chalky (lime), clayey and peaty matter, not by weight but by volume. It will be observed that the sand supplied the material which made the soil porous and mechanically adapted for its purpose; the peat provided the organic matter and the resulting humus, in addition to which it assists immensely in the retention of moisture at a time when moisture is most needed, and in the warming of the soil as it gradually undergoes decomposition; the clay furnishes the retentive and substantial matter which gives a soil compactness and consistence, and which helps to consolidate and to provide a firm seed-bed, apart from which it also furnishes essential constituents of plant life. Again, the chalk (limestone) soil would provide the lime, which has so many functions, more, perhaps, than any other constituent of the soil, and which would adapt it to the growth of crops other than those which are commonly found upon the average farm.—[H. A. S. Transactions.

Nature Study and Birds'-nesting.

Sir,—To-day as I was cultivating down a row in the cornfield, I was suddenly aroused by a wild commotion and shrieking of something on the ground just ahead of my horse. Stopping him, and going forward a few paces, I found a specimen of that handsome bird, the killdeer plover, floundering in a very paroxysm of demonstration. I immediately suspected the presence of a nest to be the occasion of her distress, as I knew of the habit which various birds have of trying to lead the intruder away from its locality, by feigning injury, and I therefore stopped to look about me. I should inadvertently tread upon it. It took a minute's careful scrutiny before I detected it, within two feet of where I stood—a mere depression in the earth, lined with pieces of straw. It contained four eggs. There they lay, a dirty white in color, heavily blotched with black, the color scheme effectually harmonizing with the ground to form a protective coloration. Quite evidently it was never meant that they should be discovered and admired by human eyes.

Knowing, even if the poor bird did not, that her treasures were now as safe as they ever had been, and that in a few minutes her anxiety could yield to her accustomed domestic bliss, I determined to indulge in the tyrannical pleasure of watching her actions for a little. As I strode up to the spot where her nest was secreted, she had been charging about me, with wings a-flutter and shrilly crying. Presently she ran from me a few yards, and, throwing herself on her side, with wings stretched limp, began to struggle in a helpless manner, as though wounded, at the same time uttering the most piteous screams. In a twinkling she was up, only to repeat her tactics again and again. As she finally saw me stoop to examine the eggs she ran somewhat farther away before dropping over, and I began to pursue her. As she led me away her hopelessness appeared to give way to a rising sense of success, until she was once content to run back and forth, with her eyes, however, riveted on my every motion.

Such an exhibition of mother-love and solicitude was impressive. Though I probably never in my life willfully took or injured any birds' eggs, I tried to imagine myself at that moment in the

perpetration of a deed so foul. I knew of one or two who would doubtless thank me heartily for so fine a prize to add to their "specimens." I wonder if such a one could as cheerfully obtain the coveted treasure from the presence of that frantic mother bird as he might from my hands. To me the monstrous nature of the act asserted itself in all its repugnance.

I know that a great many people have collected birds' eggs, and they truly make an interesting collection; but I have long felt that teachers and students of nature, particularly, should be taught to see a difference between collecting birds' eggs and such objects as insects, plants or rocks. Insects, with perhaps a few exceptions, live independently of either their mates or their offspring; therefore, their death, if humanely brought about, need cause no appreciable pain. There may be a few who could feel a slight sentimental pang at the violent termination of the life of an insect or plant, but it will be generally granted that there is no sound objection here, and the same may be said of a wide range of natural objects. On the other hand, a collection of birds' eggs represents the aggregate of the grief of a great number of parent birds, in their helpless surrender of what are their own exclusive belongings, in which are centered all their hopes. There may be few so capable of showing their anxiety, but there is no less surely planted in them all the same parental affection which actuated this plover.

In the case of a very few birds, like the cowbird or the English sparrow, the destruction of both birds and eggs may be justifiable, and in the interests of science a certain number must be sacrificed; but against the indiscriminate destructiveness of the great army of mere collectors I most vigorously protest. Let as many birds' eggs as are needed be found in public institutions, where they can be available for whosoever is sufficiently interested in them, and let teachers and parents discourage, instead of sanctioning, this base counterfeit of nature study, formerly branded as birds'-nesting.

Collecting is an excellent incentive and aid to nature study, but COLLECTING IS NOT NATURE STUDY. I trust that by my chance intrusion into the affairs of this bird I learned more of nature, though I did not touch an egg, than anyone possibly could by boldly disregarding her actions and hurriedly slinking away with his booty.

Is nature study to be regarded as a sort of juvenile edition of science, with knowledge and "specimens" as the manifest fruit of its effect upon the child? Is not rather its best educative influence this selfsame interest and sympathy begotten towards all things, which would repel the thought of doing anything without cause to mar the perfect order of nature? Oh, for teachers who can grasp the vital significance of this distinction! H. GROH.

Top-dressing Winter Wheat.

Having seen an article in the "Farmer's Advocate" some time ago, asking readers to give their experience with top-dressing wheat in winter, and as I now see the results, will give my experience for the benefit of my brother farmers. The field in question contains twelve acres; one half was top-dressed in the fall and the manure worked in the soil with disk and cultivator before sowing the wheat, with good results. The other half was top-dressed with manure direct from the stables every other day during the winter, carefully spread, and with fatal results—scarcely anything, except where the snowbanks were and where I did not put any manure; there is good wheat there. There are also a few lands in the field on which manure was spread upon heavy falls of snow, and which are easily distinguished, as there is really nothing on them, which shows that the wheat was practically smothered; so I have learned a lesson I will never need to learn again. The experiment has been carefully watched, by all passers-by, as it lies by the public highway where all can have a full view.

CONSTANT READER.

Haldimand Co., Ont.

The Statute Labor Law.

In your last issue I noticed an article on "Cutting Weeds on Roads." I claim that the amendment to the Ontario Municipal Act referred to is very unfair to farmers in some respects. Have we not already statute labor enough to do without cutting weeds on roads? But aside from that, look at the difference in the amount of roadwork different farmers have to do. For instance, one man owns two hundred acres, a mile long, and from one road to the other. He has two hundred rods of road to see to. The next man has a corner farm, and perhaps has not over a hundred acres, and in all probability has more road to look after than the larger farmer. I know of several fifty-acre farms with twice as much road to see to as some twice as large, and of one-hundred-acre farms with nearly two miles of the worst road in the country. Do you call that fair?

Elgin Co., Ont.

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