little to the fertility of farms as compared with stable manure which can be placed where wanted, and in such quantities as may be needed.

PREPARATION OF STABLE FOR WINTER USE.

If not already attended to the stable, at the earliest opportunity after threshing, should have the walls and ceilings swept to remove cobwebs and dust, The walls and ceilings should then be whitewashed, preferably with a spray pump, using a disinfectant in the wash to kill disease germs that may be present; the windows should be cleansed of dirt and dust, in order to allow as much sunshine into the stable as possible. Sunshine is a great destroyer of germs, and promotes health and thrift among the herd.

As a rule, the whitewashing of stable and cleaning of windows, etc., may be left until after threshing, especially in the case of basement barns, or where the cow stable is closely connected with the threshing barn. The dust from the threshing operations is a great nuisance during the time of and after threshing,—more particularly is this the case in "bank" barns, and in the concentrated or compact form of stable arrangement. One of the advantages of the "scattered" plan for stabling on the average farm is that the stock is away from the foul dust from the grain. This dust, bacteriologists tell us, is laden with "germs" which get into the milk and cause much trouble for the dairyman. Those dairy farms which grow corn, hay and roots, and purchase practically all their concentrates or meals, have a decided advantage over the ordinary "mixed" farmer, so far as keeping stables clean and free from dust is concerned.

In case rainwater is used from the roof of barn or stable for watering live stock, the roofs and eave-troughs should be cleaned of dust, chaff, and straw, and in addition it is a good plan to have the eave-water run through a gravel filter before going into the cistern. This will remove the dust, chaff, etc., and prevent the water becoming foul through decay of organic matter from the roof, in the cistern.

After light and cleanliness, the next thing to consider is ventilation and the allied problem of temperature. Until within recent years, Canadian farmers paid very little attention to the question of ventilation. When the so-called "bank" barns first came into vogue, the stables were undoubtedly kept too hot and close. We went from one extreme to another. Previous to the stone-wall-partly-underground-having-few-windows stable, the cattle had been housed in either very cold stables separate from, or in some part of the main barn, or were allowed to run around straw stacks or in open sheds. So far as health of animals is concerned, this plan had a decided advantage over the close, hot houses which followed the "bank-barn-stable" era of the latter part of the 19th century, when a cloud of steam came from these stables on opening doors in the early morning. The walls were usually damp, and the whole stable smelled like a "Black-Hole-of-Calcutta."

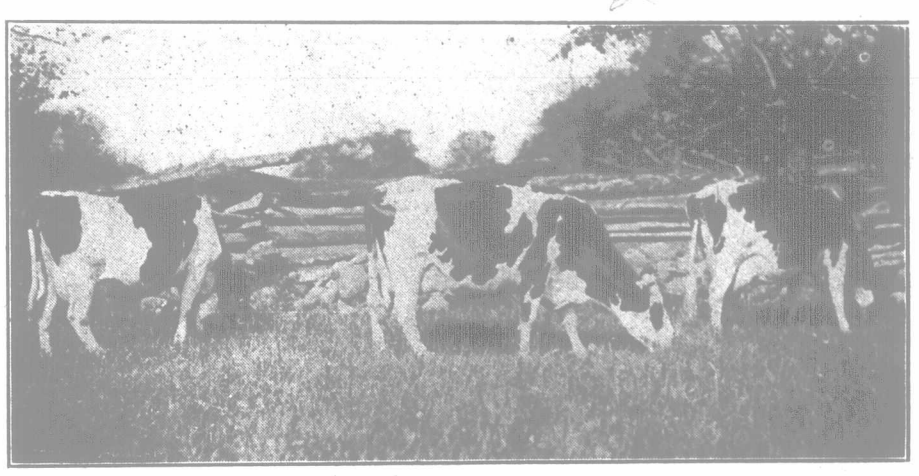
As in most cases the best results are likely to be got by a medium temperature and moderate amount of ventilation—something between the open-shed-straw-stack stable and the hot-house-under-barn construction. This type of stable is seen in the above-ground, single-story, separate-from-barn type, with a maximum amount of sunlight and fresh air, and with a complete system for removal of foul air. While this type may be rather more expensive to build than those now commonly found on dairy farms, it is altogether probable, that when first cost, health of animals, cleanliness and all other points essential for success with a dairy herd are considered, these may be in the long run, the cheapest form of stable for a dairy herd. We are aware that the latest ventilation theory assumes that all we need is to remove heat and moisture from the body, or have a circulation of air. This may be true, but needs further tests.

About the only rival of this type of cow-house, so far as we can see at present, is that of a large, covered-in shed, where the cows are watered and fed all roughage, and from which they are taken to be fed meal and milked—a small number of cows at a time. This plan involves rather extensive roofing, requires considerable bedding in order to keep the cows clean, and means dehorning of all cows. On the other hand, no expensive stable fittings are needed, there is little labor required to care for the cows, and the cows would receive sufficient exercise, fresh air and sunshine to keep them in a healthy condition if the covered-in shed were properly constructed. Where the main barn is faced or backed by two sheds, with a yard open to the south, east or west, the space between the barn and sheds might be roofed, and the open end filled in with glass and sliding doors—the former to provide light and the latter for cleaning-out purposes. We have not seen such a barn in Canada, but, it seems to be a type of cow-barn, worth considering. They are reported as giving satisfaction on United States dairy farms.

The watering of cows in winter is a problem on most farms. Shall we keep the cows in all winter and water in the stable; or shall we turn out daily to water, or shall we water outside in fine weather, and inside when cold and stormy? These are questions which every man must decide for himself on his own farm, and according to conditions. Generally speaking, we shall find the medium plan best where possible—that is, water inside when weather conditions are unfavorable, and outside when favorable. The chief objection the writer has to watering systems in the stable, is the fact that in most cases where such are installed, the cows are not, as a rule, allowed outside for fresh air and exercise, and in order that the stable may get a good airing. Any good housewife knows that a bed-room and bed-clothes need airing, if one would sleep comfortably. The cow's bed-room and her bedding also need airing for good health. Some men are much afraid that cows will get chilled if turned outside to drink in cold weather, and especially if the water be "icy cold." They say this results in a lessened milk flow. We grant there is something in this, but on the other hand, cows kept in the stable continuously, unless exceptionally well cared for and the herd changed frequently, are in danger of ill health.

On the average Ontario farm we should prefer to turn cows out daily to water, rather than keep them inside continuously throughout the winter, but as previously stated, we should prefer the medium plan of turning out in fine weather, and watering inside when weather conditions are bad for the cow.

O. A. C. H. H. DEAN.



Three Good Cows in Clover.

POULTRY.

Placing Poultry in the Rotation.

Edward Brown, an English authority on poultry, recently discussed in an article in a paper in the Home Land the possibilities with poultry colonies on the farm. Much of the advice given is applicable to conditions in this country, and we take the following from it:

The attention of farmers has often been directed to the importance of increasing the home supply of eggs and poultry, of selecting and retaining productive stock, and of increasing the quantity of such stock, and what follows deals with methods of utilizing land for poultry with the objects of:—

1. Facilitating systematic management of farm flocks.

2. Utilizing poultry to a greater extent for the improvement of the land in order that they may serve as a definite aid in the economy of cultivation.

3. Increasing the number of birds kept on the farm.

4. Affording the birds protection from destruction by foxes.

POULTRY ON PASTURE LAND.

Poultry are frequently provided with portable houses placed in grass fields, over which the birds have free range. Under this system, which may be described as distributive, the number of fowls is usually small when considered in relation to the number of birds per acre, which might be kept on the holding without detriment to other stock or to the usual system of cultivation. Even where grass land is reasonably stocked in this way it would be possible to increase the number of birds by utilizing arable land for the purpose. It is not the general practice to utilize arable land for poultry, owing to the belief that growing crops are injured by the birds. Poultry should not have access to land under crops until these are well established, when they will do little direct damage, and the crop will benefit by the distribution of manure and by the destruction of pests which provide the birds with natural sources of food. The distributive method may be applied to arable land with advantage in the case of fowls, but ducks, geese and turkeys should not be kept on land while the crops are growing.

This system of distributing the birds in scattered flocks has many advantages on large farms where grass land is abundant, but it does not provide for utilizing the manure to the full extent, and scattered flocks involve a good deal of labor if they are to be systematically managed. In cases where a large amount of land comes under the plough, the colony system is likely to afford a favorable method for the extension of poultry keeping.

THE COLONY SYSTEM.

Under the colony system a certain area of land is devoted to poultry, and is heavily stocked for a limited period, which should not usually exceed 12 months, but which may be varied in accordance with the general scheme of cropping.

It is necessary to point out, however, that the greater the number of poultry which are maintained upon any given area, the shorter must be the period during which it is occupied by them. Many serious outbreaks of disease can be traced directly to the use of the same land year after year. Where land is heavily stocked it should be systematically cultivated when the birds are removed, and poultry will then serve a most useful purpose in the rotation, and possess an added value as a definite means of enriching the soil. A hundred hens of the heavier breeds are calculated to produce four tons of moist manure in a year, and the value of this manure, if proper advantage is taken of it, may be fairly estimated at 26 cents per bird per annum.

One of the most notable instances of success as a result of adopting the colony system is to be found in the Little Compton district of the State of Rhode Island, in the United States of America, where it has been extensively adopted and continuously used for upwards of seventy years as an integral part of farm operations. The farming is mixed, arable and pasture land being general in the district. There is a considerable amount of stock feeding and grain growing. As a rule the farms vary from 60 to 120 acres in extent. The plan adopted is to set aside different fields for poultry each year, both for laying stock and for chickens, and thus to give poultry a regular place in the rotation of crops. Where other live stock occupy the same ground, 40 adult fowls per acre are kept for one year. If the land is given up wholly to poultry, as many as 100 per acre are maintained for the period named. Fields are divided by stone fences, and very little wire netting is used.

When fowls are kept on the colony system it is best to allow the birds to occupy the land for a year, the area being determined by the number to be maintained. Where an entire field can be devoted to this purpose the work is simplified; it will only be necessary to run netting 3 feet high by the side of the hedges. The larger the field or plot the less danger is there of the fowls evincing any desire to wander outside, and to stray on to cultivated sections of the farm.

If there are no hedges or natural fences, or if only a part of a field is to be used for the fowls, the whole of the area must be enclosed by wire netting, which should be five to six feet high, in accordance with the class of fowls kept. Wherever possible the ground should be selected so that when removal takes place the adjoining land can be used the following year, and one side of the netting may remain in place. Gates should be provided with a view to economizing the labor of feeding the birds and cleaning the houses.

The main point is that the same ground shall not be occupied by fowls again until three years have elapsed, as that period of time is required to exhaust the manure. Thus, in a field of twenty acres, five would be in use by the fowls annually.

In this system wheels are not required on the houses, and floors can be dispensed with. Upon arable land scratching sheds need not be used. The most useful form of house is one with a gabled roof, and an open front—that is, a front formed mainly of wire netting. Two square feet of floor space, with a height of 5 feet to the eaves, or rather more than ten cubic feet of air space, must be allowed for each fowl. Useful sizes are 9x6 feet, 9x8 feet, and 10x8 feet, which will accommodate 27, 36 and 40 fowls respectively. To facilitate removal it is an excellent plan for these houses to be built in sections, as they are somewhat heavy when erected. Otherwise a