The Farm.

How to Evade the Effects of Drought.

The past season's drought has been very injurious, not only in reducing our stock of winter food, but also by causing dry and bare pastures, much to the detriment of the stock grazing upon them. But in many districts the want of water was felt even more seriously than that of food. Numerous herds had to be driven many miles to reach water, while others were compelled to drink out of foul and stagnant pools. This lack of wholesome water was especially felt in some dairy districts, where there was not only a decline in the quantity, but also a much reduced quality of the milk, which, if continued, will seriously injure the rising fame of our dairy products.

Animals, especially milch cows, suffer more from the want of good drinking water than from a lack of wholesome food. Our farmers should, therefore, if alive to their interests, make strenuous efforts to have good water for their stock all the year round. If this cannot be accomplished by wells, never-failing springs, creeks, or other natural sources of water, cisterns to catch the rain water must be depended upon. These could be so constructed on the average farm that they could supply the stock with water, not only during the summer, but throughout the entire year.

The live stock on an average 100-acre farm would consist of about 5 horses, 10 cows, 1 bull, 18 young cattle, and 25 sheep and pigs, which would be about equal to 30 cows. The farm buildings necessary to house this stock, their fodder, and the implements, machinery, etc., used on the farm, would cover an area of about 8,200 square feet. The yearly rain-fall, including snow, on this surface, based upon the average rain-fall of the Dominion for the past ten years, which is 28.39 inches yearly, would amount to nearly 20,000 cubic feet. A large percentage of this amount will, however, drift from the roofs or be otherwise lost; but even allowing one-half the rain-fall to be lost, it will leave 10,000 cubic feet to be collected in a cistern. It has been found that fattening steers drink about 40 pounds of water daily during the winter months; but cows, especially in summer, would consume more than this amount. Allowing them 60 pounds daily, the entire stock would drink 657,000 pounds yearly, or about 10,000 cubic feet, an amount equal to that supplied by the rain.

As all the basement of the barn is not required for the housing of the cattle, the cistern in which the rain water is to be collected might, with advantage, be placed in the unoccupied portion of that part of the building. Let the bottom of the cistern be three feet above the level of the stable floor. This will allow the water to be let before the stock in their manger by simply opening a tap attached to the reservoir. Cover the cistern, leaving a trap door just large enough to admit a man, cement all its walls on the inside, keep it as much as possible buried in the earth, and specially collect the cool rains.

The advantages of such a cistern are:—1. That the stock is supplied with soft water, free from objectionable mineral constituents, such as carbonate of lime. 2. They can be watered, especially on stormy days in winter, in the stall. 3. There is a large saving of labor in the pumping of water. 4. The stock need never, if properly managed, suffer from the want of good drinking water. In such districts where the average rain-fall is below that of the Dominion, or on farms where more live stock is kept, in comparison to the area covered by buildings, than calculated upon as above, an additional supply of water will have to be obtained, either by collecting rain in conically shaped, cemented pits, or from wells, creeks, &c.

Influence of Soil and Season upon the Quality of Foods.

We are constantly receiving communications, especially during the winter months, about the making up of feeding rations for stock, the nutritive value of certain foods, how to feed them, etc., and we have recently been asked to give the analyses of the different foods commonly used by farmers, with instructions as to how the "nutritive ratio" is calculated.

Our readers will have observed that we have said very little about nutritive ratios, and we have not gone extensively into the analysis of feeding stuffs, which omissions are an indication that we have not placed much reliance on the scientific methods of stock feeding. We never fail to teach our readers science when we realize that such instruction could be profitably turned into practical use by them. We invariably stick to practical methods until we are convinced that science has fully demonstrated that a change is desirable. On the other hand, science has done a great deal for agriculture and dairying, and we have not failed to point out the progress in these directions. For half a century scientists have worked very hard at feeding rations, and have made less progress than in any other branch of farming.

We would say little or nothing about the subject, believing that good practical farmers are not yet behind the scientists in the most important particulars, were it not for the fact that agricultural professors, at Farmers' Institutes, have been ventilating the subject, and we believe that they go much too far in their appreciation of what has been accomplished. They seem to have implicit confidence in "nutritive ratios." If farmers could analyze their feeding stuffs, they might place greater confidence in scientific feeding; but our professors calculate on the basis of average chemical analyses of foods in Germany, where the subject has been more thoroughly investigated than in all other countries combined. This fact of itself is almost sufficient to condemn the scientific system of feeding; for the variations from the average analyses are very wide, and, besides, in Germany, where a high state of fertility is maintained, the foods are likely to be much richer than in Canada.

There are two main factors in considering the feeding value of a food or ration, viz.: (1) its chemical composition, and (2) its digestibility, and in this article we shall confine our remarks to the former. We are convinced that if the farmers would study the influences which affect the composition and digestibility of foods, they would make much greater headway in cattle feeding than by figuring on nutritive ratios, although, in skilful hands, the latter is also pretty useful. Farmers may be led into great blunders by following the rules of our professors too closely. The following embraces the leading conditions which influence the chemical composition of feeding stuffs:

The length of the growing season exercises considerable influence over the composition of the plant. In the earlier stages of its growth, it contains a higher percentage of protein (albuminoids, or flesh-forming constituents) and less crude fibre than when cut nearer maturity. These changes up to the commencement of blossoming are less rapid than during the blossom period and afterwards, which applies more specially to clovers, while grasses turn woody less suddenly and regularly.

At the same period of growth and calculated with the same percentage of water, the leaves of the plant often contain two or three times more protein than the stems, the reverse being the case with the woody fibre, so that any influence which promotes the growth of leaves produces a richer plant, and when many of the leaves are allowed to fall off by neglectful harvesting, or unfavorable weather during this period, the quality of the food will be correspondingly reduced.

A greater influence is exercised by the character of the soil, which also effects a relative difference in the weight of the ear, stem, and leaf. A light sandy soil usually produces a plant containing a less percentage of protein than a heavy clay, although the palatability may sometimes be greater. A wet, sour, and marshy soil produces a poor quality of food deficient in aroma.

The quantity and quality of the manure applied, also the climate and season, affect the quality of the food very materially. The effects of a fertilizer rich in ammonia and phosphoric acid are sometimes more powerful than the character of the soil. Ammonia fertilizers produce crops rich in protein. Equally powerful are the effects of the weather upon the quality as well as the quantity of the crop. A warm and sufficiently moist season often produces the same results as the richness of the soil or a liberal manuring in less favorable seasons.

The state of the weather during the harvesting of the crop influences the quality to a considerable extent. Under heavy and frequent rains, the food deteriorates greatly in quality and palatibility, aftermath and clover more than hay. Such food is much worse, and often even dangerous, if it gets muddy and covered with mold.

There are also many other minor influences affecting the quality of the food, the exact effects of which cannot be so accurately ascertained—such as a sunny or a shady location in the field or meadow, the lightness or heaviness of the crop, chiefly the whole system of cultivation, the variety (especially with root crops), the methods of harvesting, and preserving, etc.

Of course it is impossible to take all these conditions into practical account in calculating nutritive ratios; but the intelligent farmer can use these rules as a very valuable guide in his estimates, as he will be able to determine with tolerable accuracy how much he should vary from the average analyses. Even if we had feeding standards of our own, it is doubtful if many farmers could make much practical use of them, as there are yet many important points to be decided, especially in the digestibility of feeding stuffs.

In our next issue we shall explain the digestibility of foods, and give rules for calculating feeding rations, accompanied by tables giving the average and variable chemical compositions of the feeding stuffs used on the farm.