Cereals and Their By-products.

THE USE AND VALUE OF MILL FEEDS.

A leading Nova Scotia farmer points out that the average man buys the different kinds of mill feeds without knowing the grade he is buying, the value of each, or the kind of stock to which it should be fed. In this connection it may be said that numerous experiments have been made in Europe and America in order to ascertain the money value of various feeds according to the nutrients they contain, but the results have been so conflicting that Prof. Henry concludes, in his standard work, "Feeds and Feeding," that at present it is impossible to state the value of one feeding stuff in terms of another from calculations based upon the nutrients contained in each. The value to the farmer of these purchased feeding stuffs depends largely upon the sort of roughage and grain with which they are to be fed. Mill feeds are so subject to adulteration that several American experiment stations devote a great deal of attention to making and publishing analyses of the various brands. Some brief notes on the more common feeds are all that a newspaper article will allow.

WHEAT.—Wheat is a suitable feed for all kinds of live stock, if fed with judgment. Shrunken and damaged wheat can be fed to advantage, as it may be nearly or quite equal to the best grain for this purpose. For fattening stock, wheat is considered worth about ten per cent. less than corn. The by-products of wheat in common use are bran, shorts, middlings and low grade flour. Bran is recognized as one of the very best feeds for dairy cows and sheep, and for horses not at hard work. On account of its coarse and fibrous nature, it is admirably adapted for mixing with corn, peas and other highly concentrated feeds, but for the same reason it is not suited for feeding in large quantities to hard-worked horses or young pigs. The distinction between shorts and middlings is not always clearly marked, although the former is supposed to be re-ground bran, and the latter the finer particles of bran with some flour included. The poorer grades of shorts often contain the sweepings and dirt of the mill, and are not satisfactory for feeding. Middlings are especially useful for feeding pigs, along with skim milk or corn. The lowest grade of flour, frequently known as "red dog," usually contains the germs of the wheat, and on account of its high protein and fat content, is a valuable feed for cows, hard-worked horses and growing pigs. The better sorts of low-grade flour are similar in composition to the best grades, and cannot often be fed at a profit.

CORN.—Corn is the best of all the cereals for fattening stock. It is used very largely in the manufacture of starch, glucose, beer, spirits, etc., and, consequentiy, has a long list of by-products. In the processes of manufacture the starch is removed, and the remainder of the grain is sold under the name of gluten feed, which is well suited for dairy cows and fattening stock. Gluten meal is gluten feed without the hulls and germs of the corn, and is very rich in protein and fat. It is a capital feed for dairy cows, but on account of its concentrated nature, should be mixed with bran or oats. Corn germ is very rich in protein and oil; after the oil is pressed out the residue is known as corn oil meal or corn oil cake, also a valuable feed. Corn bran is relatively low in feeding value. There are numerous other "corn feeds" on the market, but they vary greatly in composition and value, and should be bought only under a guaranteed analysis.

OATS.—The feeding value of oats is well known. Oat hulls, oat dust and oat feed or shorts are the chief by-products of this grain. Oat hulls are of little value for feed, but are often mixed with corn meal, etc., and the mixture sold as ground oats. Oat dust consists chiefly of the minute hairs removed from the kernel in the preparation of oatmeal. It has a fair feeding value, especially if broken kernels are present, and there is not too much mill sweepings. Oat shorts or oat feed varies greatly in composition, although the better grades show a feeding value similar to that of oatmeal.

BARLEY.—Barley is a first-class feed for pigs and dairy cows. The by-products, brewers' grains and malt sprouts, are largely fed in some sections. Brewers' grains are simply barley from which the dextrin and sugar have been extracted. The wet grains are not desirable for general use, but the dried grains are easily kept, and are rich in protein and fat, ranking with bran and oil meal as a feed for dairy cows. Malt sprouts are a cheap and excellent feed for cows, but they are not greatly relished, and only two or three pounds a day can be fed.

PEAS.—Peas are very rich in protein, and are among the best feeds for growing animals, dairy cows and pigs. Pea meal is too concentrated to be fed alone. There are no by-products in general use.

OIL CAKE.—Oil cake or oil meal is a by-product of the manufacture of linseed oil. It is a very rich and healthful feed, particularly for fattening cattle and sheep. Its high protein content makes it valuable for feeding in moderate quantities to dairy cows, along with corn silage.

COTTON-SEED MEAL.—Cotton-seed meal is a by-product in making cotton-seed oil. It is richest of all the concentrates, but varies greatly in quality. It is not suitable for pigs or calves. Good cotton-seed meal, which is a bright lemon-yellow in color, and has a fresh, pleasant taste, may be profitably fed in reasonable quantity, if combined with other feeds. Not more than three or four pounds daily should be fed to dairy cows.

W. A. CLEMONS.

Lightning Protection.

Every year, lightning is the source of some very costly fires, particularly in the country districts, and with the constant danger in the summer of lightning-stroke always about one it is a good policy to carry extra insurance for a few months, or to protect the buildings by the use of lightning rods. In order properly to understand the steps to be taken to insure protection against lightning, it is necessary first to understand something about the danger we wish to guard against. The atmosphere during a time of electrical disturbance is under extreme tension. It is then in the same condition as is water damned up, which, if it suddenly break loose, becomes an element of destruction. If, however, we can drain that water off gradually, in small streams, it will cause no injury. It is precisely the same with the electrical energy in the atmosphere. If we can draw that off in small volume, we prevent the destruction liable to take place where there are accumulations in dangerous quantities.

There is such a gradual drawing off in the villages, towns and cities, and this explains the infrequency of destruction by lightning in these larger centers as compared with the destruction on the farms. When there are a large number of houses together, the electrical energy is dissipated over a wide area, and not enough of it usually is

A Midnight Lightning Flash.

brought together at one point to cause damage. The numerous trees, etc., in these large centers of population also serve as conductors to carry the fluid to the ground at many points and thus lessen its destructive power.

METAL CONDUCTORS.—There are artificial means of protection as well. Buildings may be protected by rods, but if the rods are not properly put on, they become a source of danger instead of a means of protection. If there are plenty of these conductors, properly constructed and properly put on, they will tend to prevent dangerous accumulations of electricity. The best kind of conductor in the form of rod is made of copper. Copper is much better than iron of the same weight. If we allow 100 as representing the conductivity of copper, iron would stand at 18.

POINTS, OR UPPER TERMINALS.—The more points there are extending upward from the conductor, the better. These should have points five or six feet high, and not more than forty feet apart. It is essential that these points be bright and sharp, as a bright point seems to have more attraction for lightning than a dull one. Aluminum is recommended as a material for points, because that material will not rust; it is always bright, and is a better conductor than iron. It is better to have these points in broom form than as a single point. For example, if using a copper conductor, one can have a flat block of copper at the upper end of the point extending upwards from the roof, and into this block can solder a number of aluminum points. The extension from the roof would then be exactly like a wire broom: the first part of the upward extension would be in the form of the handle, the copper block at the top would be the holder of the broom, and the two or three dozen small aluminum wires soldered into that block in a bunch would form the broom itself. This broom point will form a much better conductor than a single point. It is well, also, to have all these points connected with one another, so that if the lightning strikes at any point it will be diffused over a number of conductors instead of overcharging one.

GROUNDS, OR LOWER TERMINALS.—One of the most important points of all in providing for this sort of protection is in having a proper ground connection. It is an easy matter for a careless or dishonest agent to put the ground wire just a little below the surface. It is then out of sight, and he thinks out of mind as well. Wire buried just below the surface in dry ground, so far from being a means of protection, is a cause of danger, because the lightning, attracted by the points on the roof, is carried down the conductor, and if it is not then dissipated in damp ground, it is apt to fly off into the building. Protection can be secured by seeing that the ground wire is connected with earth which is always moist. The depth necessary will depend upon the character of the soil and the location of the building. It may not be necessary to go over three feet, or it may be necessary to go ten feet; what is imperative is that the ground wire shall be connected with soil that is never dry. To this end it is best to put the ground wire in during dry weather, because then you will see how far down it is necessary to go.

It is necessary to have something more than a single wire into the ground. One requires to take such measures as will provide for the distribution of the current at the bottom. This can be provided for by flattening out an old copper boiler in sheet form and soldering that to the ground wire; or you may take a number of strands of barb wire and connect these with the ground wire below the surface. But it is absolutely imperative to have this ground wire located in ground which is always moist. It is well to put charcoal about the ground wire, for this not only holds moisture, but attracts it.

INSULATORS.—In a steady flow of the electric fluid, in comparatively small volumes, as in the telegraph and telephone service, the insulator is effectual in confining the current to the wire. The lightning-stroke, however, is compared, not to a small, steady current, but to an avalanche which would make light of an inch or two of glass after breaking through several rods of insulating air. The argument used against insulators for lightning rods, therefore, is they are ineffectual. On this account the weight of authority is in favor of supporting rods by ordinary metal fastenings. These may be in the form of a tape fitting the shape of the rod, holding the rod close to the building, and screwed or nailed to the building on each side of the rod. Some fastenings are in the form of spikes, with an eye through which the rod passes.

To make a first-class lightning rod, take No. 11 galvanized iron wire, and twist about twelve strands together to form a sort of cable. The twisting can be done by first measuring off the wire, then doubling it up and attaching the loop end to the short crank of the grindstone and the other ends to a piece of board. One man can then hold the board while another turns the grindstone and twists the wire. By this means a good, serviceable cable or lightning rod can soon be made. The rods are then put in place on the building, having an upright point about ten feet high at intervals of twenty feet along the ridge of the building. On most farm buildings this may be accomplished by having one cable lead directly from the point above the roof over each end to the ground, but on long barns, one or more uprights may have to be connected by splicing with the main cable, leading to the ground. The upright points can be supported by light wooden poles, and the end of each upright can be sprangled out as advised above. The rod or cable can be fastened to the roof with staples or fastened to wooden blocks about three inches high, which are nailed to the roof. With so good a conductor it is hardly probable that a current would leave it and strike into a wooden roof or wall. The ground connection, of course, would require to be perfect. The cable might be inserted in a hole bored with a well auger, provided the hole reached down to moist earth. Two men can make and put up such a lightning-protection service on an ordinary barn in about a day and a half, and the cost of wire is a mere trifle, about two cents to the foot.

Not Ginseng.

A reader sends us a plant having a bulbous root, three wide, obscurely four-sided leaves, attached close to the stem, near the ground, and a red six-sided berry about as large as an average-sized gooseberry. The plant grew in the woods, and was submitted to us with the query, "Is this ginseng?" If one goes to the woods at this time of year, these plants, with their berries, may be found on every hand. They are not ginseng, but the trilliums, which in the spring are called "the big white or red Mayflowers." It is interesting to note the growth of these early flowers the season through.