

fact, oats are not absolutely essential in successful horse feeding, if the feeder will bear in mind the fact that he should take weight instead of bulk into consideration when making up rations for his horses. Oats do not weigh so much per bushel or per gallon as corn or barley, and this fact must be remembered when heavier grains are substituted for lighter ones, and the bulk of the ration must be reduced accordingly. While this is true, oats will always continue to be popular with the farmer for reasons already stated, but when the price of oats reaches two cents per pound it is doubtful whether we can get as good value from this grain as we could from some others, and it is time to cast about to see whether there is not something else which could take the place of at least part of the oats in the rations fed. Corn at two cents per pound furnishes much more feed than oats at two cents, and it has already been noted that barley, at the same price per pound, is cheaper than oats. Rye also furnishes more nutrients per hundred pounds and a great deal less fibre, and, frequently, damaged wheat can be obtained at very little more per ton than oats, in which case it makes a much cheaper ration.

Of the by-products from oats notice first oat hulls, which are very low in protein and very high in fibre. As a matter of fact, oat hulls are not as good feed as good oat chaff. On the other hand, oat middlings are fairly high in protein and low in fibre, and if they can be procured of a composition similar to that given in our table, oat middlings would be worth a high price per ton; but the trouble is that those who sell oat middlings are inclined to mix a good many of the comparatively worthless hulls with the middlings, reducing its value very materially. The other by-products, oat bran and oat dust, contain a moderate amount of protein and a high percentage of fibre, indicating the presence of considerable quantities of oat hulls. Oat by-products should not be purchased except from reliable dealers and under guarantee as to percentage of protein and fibre. If care is not exercised it is possible to buy too much worthless material in these products.

Wheat and Its Products.—Wheat, of course, is altogether too high in price to be considered as a feed for stock at present. Its actual feeding value is similar to that of corn, and usually a little higher than that of barley. Sometimes frozen wheat can be obtained which is just as valuable for feeding purposes as first class wheat, providing, of course, that the frost has not caught the wheat at too early a stage in its growth and that the grains have reached a fair degree of maturity.

Wheat bran, though widely known, is frequently underestimated as a feed for stock. It will be noticed that bran contains more protein than wheat or even any of the cereal grains. The main objection is its rather high percentage of fibre, which reduces its value materially. It is seldom that bran makes a satisfactory ration alone, giving best results when used in combination with other concentrates. When oats are two cents a pound and bran is not more than two cents a pound, it will usually be found profitable to use bran in place of part of the oats in the ration of a horse, and when bran is less per ton than oats it may well replace oats altogether in the ration of other farm animals. Bran shows to good advantage in the ration of the dairy cow, but it may be used in the ration of fattening animals, especially along with corn or barley, and it will usually be found that the combination will give better results than when bran is not used. Bran is not satisfactory for hogs unless it may be matured breeding stock, and even for this purpose middlings (shorts) are preferable.

It will be noticed that wheat middlings are higher in protein and lower in fibre than bran. As a rule middlings command from \$2 to \$3 per ton more than bran, a difference which is quite justifiable on the basis of their composition. A