

through thick and thin. Many syndicates have proven disastrous because of some dishonesty or lack of support on the part of certain of the members. Sometimes poor horses were bought at high prices but the price failed to deceive the public, and some man or men reaped a rich reward at the expense of the trustworthy individuals who were "nipped" in the transaction. Where the association starts out with the main consideration the improvement of the horse breeding industry of the community, and all are honest and upright in their dealings, and the right kind of horse is bought at a reasonable price there is no reason why the association should not receive the support of the horse breeders in the locality which warrants success. We are pleased indeed to hear of the success of this

association, and would like to see many more established along similar lines. The first thing is to decide on a breed, then get a few interested parties to take up the matter, purchase the horse, appoint the most capable man as manager, and see that the entire business is carried on as a paying business should be. It is well to avoid as partners in the deal men who are not mare owners themselves, and who are not directly interested in horse breeding. Such outsiders have ruined other like associations. The man not actually engaged in the business in which he becomes a partner is very often the man who needs most watching, and is the first to take advantage of the other partners when opportunity offers. The community breeding of horses should gain favor in this country.

8 pounds of this hay would contain according to analysis only a little over 3 pounds digestible nutrients. Thus it is plain that to get 7.06 lbs. of digestible nutrients something must be added. If we double the quantity of clover hay we have it. Thus with good average clover hay, according to investigators a 1000 or 1100-lb. horse could be kept from losing in flesh if fed sixteen or seventeen pounds of clover hay a day.

But perhaps it is desired to feed a few oats. Suppose we give the horse ten pounds of clover hay, then how many oats will be required to make up the ration? The ten pounds would contain .71 lbs. of digestible protein, 3.7 lbs. digestible carbohydrates, and .18 of digestible fat or 4.5 lbs. all told, leaving 2.5 lbs. to be made up. Five pounds of oats would make it up or about five quarts. Then you have it, five pounds of hay twice a day and a little over a half gallon of oats twice a day, or if desired the oats could be fed at noon, and a smaller feed of hay in the morning with the bigger feed at night. This is generally believed to be the best practice.

But it may be that the feeder would rather feed oat straw. How much oat straw will it require to produce 7.06 lbs. of digestible nutrients? We must get enough to supply .5 lbs. of digestible protein. According to analysis this would require 40 lbs. of oat straw, and this would contain all told a little over 16 lbs. of digestible nutrients, obviously too much straw. No account is taken however of the fact that hay containing more protein, a richer feed, and more palatable is more digestible for the horse. Forty pounds is too much straw to feed so it would be much better to cut this down to twenty pounds, or less, which would supply only about half enough protein but enough other nutrients and add 5 lbs. of oats daily which would make up the protein; or if it would be more desirable five or six pounds of clover hay would make up the deficiency. More could be given if desired.

What about timothy hay? It would require, according to analysis, 17 lbs. of timothy hay to give the necessary amount of protein. This would mean a little over 7 lbs. of digestible nutrients all told, or just enough to supply the demands of the 1,000-lb. horse not gaining or losing in flesh. It would be better, we believe, to give a few oats and in all cases a turnip or two each day, or a few carrots would aid in keeping the horse from going back.

Wheat straw alone is sometimes fed, but it is scarcely possible to maintain a horse on this feed unless something else is added in fairly liberal quantity. Horses have been known to starve to death on this feed, and it would require 65 lbs. of it daily to supply the necessary digestible protein for a 1,000-lb. horse. In conjunction with other feeds a little may be used to fill up but it is not good horse feed, being hard, full of fibre, and low in feeding value.

Corn is a fattening food, and is often given to horses being fitted for sale. Five pounds of it added to a clover, timothy or straw ration would add almost the total required amount of protein or about 4 lbs. digestible nutrients all told, so added to ten pounds of clover hay or ten or twelve pounds of timothy hay it should make a very good maintenance ration.

There are many other feeds which might be discussed, but this should give feeders a very good idea of what is required to maintain a 1,000-lb. horse. Remember that it is a 1,000-lb. horse that these figures have been made out for. If your horse is heavier simply add the proportion he is heavier and figure out the increased amount.

These figures are all based upon analyses made by noted experimenters, and, of course, the anti-

The Maintenance Ration for the Horse

The farm horse in winter is generally an idle horse, or if not entirely idle gets only about enough exercise to keep him physically fit. Unfortunately too often he gets less than this amount and stocks in the legs or stiffens up as a result of inaction. As a general thing work horses go into winter quarters a little down in flesh owing to the rush of fall work and the good feeder, who always desires to see his horses in good flesh, feeds them fairly well for a time, gradually slackening as their condition improves until he gets them on a maintenance ration or at least a ration which keeps them from going back in flesh even though they do exercise regularly or do a little work such as drawing up the summer's wood or taking a grist to the mill.

The horse at best is a restless animal and it requires a certain amount of food material to produce the energy dissipated through his pounding around the stall, pawing, rubbing, etc. Investigators who have endeavored to work out a true maintenance ration for a horse have met with difficulty on this account but the farmer wants to know what amount of feed will be required to maintain his horse and at the same time produce the energy to meet the requirements of the restless nature of the animal. Experienced feeders know that it takes more to keep one horse in good flesh than it does another. This is largely due to a difference in disposition, restlessness if you like.

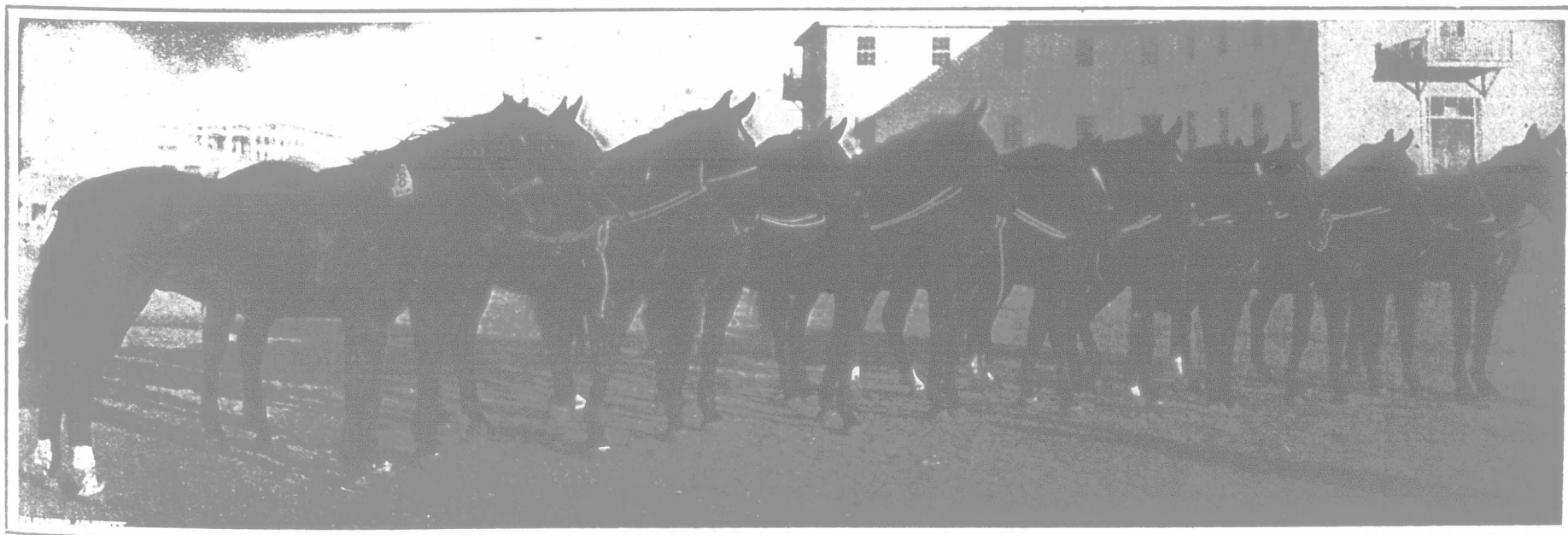
Investigators have found that it requires 7.06 lbs. of digestible nutrients to maintain the weight of a 1100-lb. horse when doing work. Of this amount 2.43 lbs. were required for the up-keep of the body, finally changed to heat and 4.63 lbs. needed to furnish the remainder of heat necessary to warm the body. Nutrients used to furnish the energy required for mastication and digestion are finally converted to heat to warm the body and so are not wasted and not counted in the ration. Of this Henry in his "Feeds and Feeding" says:—"Feeds such as poor hay, corn stover, and straw, which contain relatively little net energy, are lower in price than concentrates which supply much net energy. It is, therefore, usually most economical to formulate a ration for maintenance made up so far as possible of such roughages. So long as 2.43 lbs. of net nutrients are furnished for the up-keep of the body, the other digestible nutrients in the maintenance ration for the 1000-lb. horse may be used up in the work of digesting, masticating, and assimilating the feed. The net nutrients expended in external work and the nutrients used up in the work of digestion, mastication, and assimilation will then furnish sufficient heat to warm the body."

But there is a minimum protein requirement which must not be overlooked in formulating the maintenance ration for the horse. Experiments have shown this to be from 0.4 to 0.6 lbs. per thousand pounds live weight of the horse. Possibly it would be safe to say that on the average this minimum amount would be 0.5 lbs. per thousand pounds weight.

Then there is the nutritive ratio to be considered but this is not so important with horses as with dairy cows, for instance. A narrow nutritive ratio is not essential in a mature horse. Of course, the younger, growing animal requires a narrower ration than the mature horse. The point is to get enough protein but horses have been known to do hard work on a ration as wide as one to twenty-eight and not suffer. Horses have been tried at a ration giving a ratio of one to three and of one to ten, no appreciable difference being noticed, the little difference if any being in favor of the wider ratio. The nutritive ratio (digestible protein to digestible carbohydrates and fat) may vary widely without injury to the horse. This makes it possible to utilize the coarser horse feeds without danger of getting a ration which is too wide, that is provided the horse gets above the minimum amount of protein. It has been found that even with young horses doing hard work a ratio of one to seven is narrow enough to meet all requirements.

Now we have the amounts of digestible nutrients required, let us see if we can make up a ration from the every-day farm feeds which will fill the bill and feed the idle horse until such time as it becomes necessary to begin preparation for spring's work. On the average farm we find the common feeds hay, oats, straw and sometimes a little corn is used as horse feed, or as a conditioner a little bran or oil cake meal may be fed but these are outside the maintenance ration unless it be that a small feed of the former is given once daily to keep the digestive system in order. Good roots would accomplish this, however, and a turnip or two a day makes a great relish for the horse. Let us assume that the horse weighs 1000 lbs. and the reader can apply the rations to larger horses in larger amounts proportionately. A 1500-lb. horse would require approximately half as much again as the 1000-lb. individual and so on.

Let us take first red clover hay alone. How much, according to our own figures would it take per day to keep a 1000-lb. horse from gaining or losing in weight? We must get 7.06 lbs. of digestible nutrients and not less and 0.5 lbs. of digestible protein. In good average clover hay there would be enough protein in about 8 lbs. to supply the minimum quantity for maintenance and



Cavalry Remounts.

A selection from the draft of army horses presented by Saskatchewan to the British Government.