

hog, that does not masticate its food sufficiently. A great deal of the starch and fatty matters passes into the stomach without having been transformed by the saliva; when arrived in the stomach they do not find the necessary solvent, and, consequently do not undergo there any transformation; from the stomach they pass into the intestines, which do indeed secrete an alkaline fluid, but not in sufficient quantity to cause the needful transmutation of the food, if it has not been sufficiently masticated. And this unprepared part of the food either accumulates, as in a warehouse (*en dépôt*), in the great intestine, or is expelled in an undigested state and is wasted.

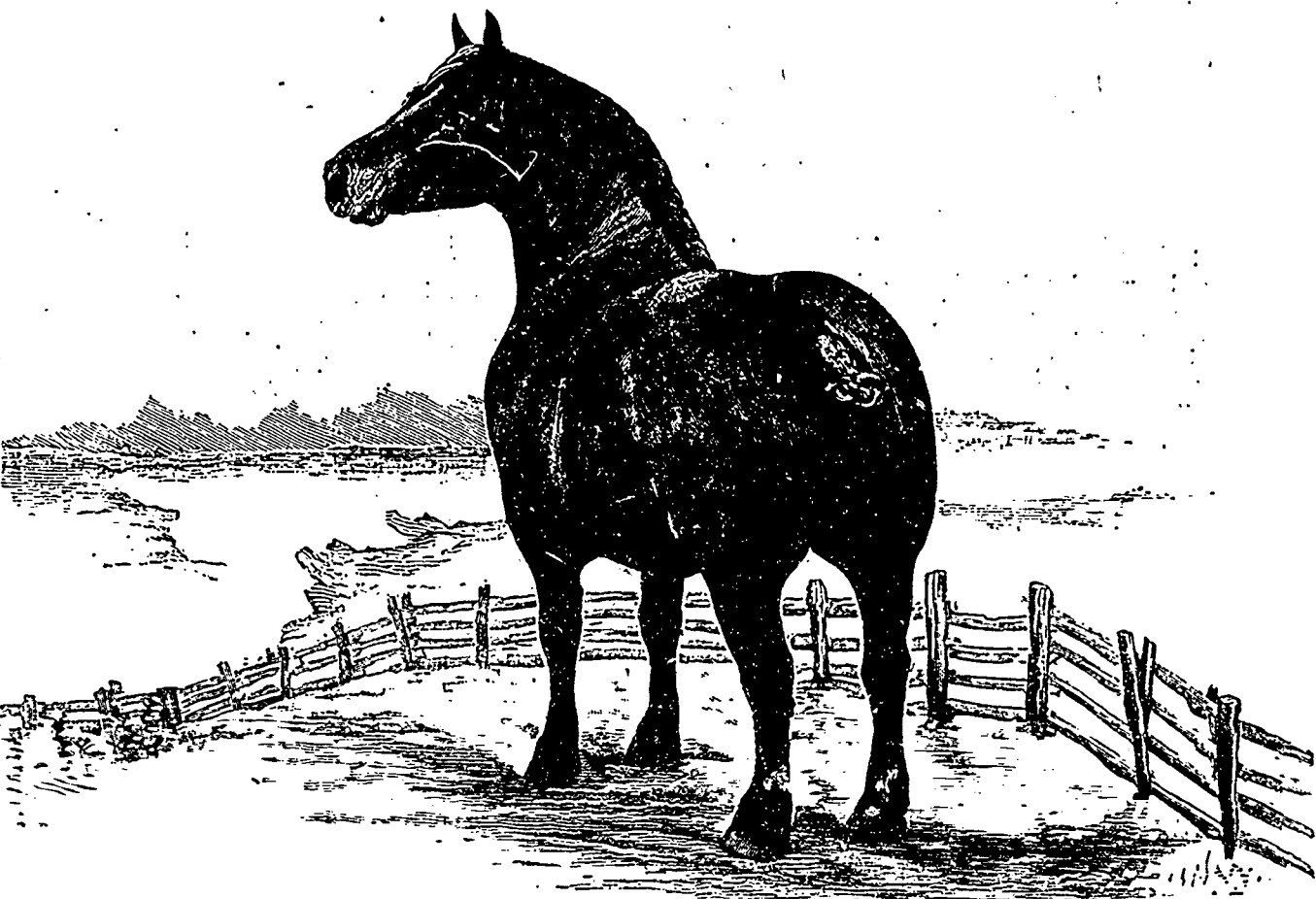
In the case of the ox, there is this difference. The food does not require so much mastication while the animal is eating. Observe this: *while the animal is eating.*

thence goes at once into the third stomach, where the conversion of the starch and sugar is completed, and at last into the fourth stomach.

The three first stomachs contain alkaline fluids, that is, fluids of like constituents with the saliva, and playing the same part in the process of digestion as it does.

**Rumination.**—Rumination never goes on unless the animal be at rest, and in good health. It ceases in moments of excitement, and at the slightest signs of sickness it is arrested.

**How to compel the animal to masticate.**—Greedy cattle never chew their food enough. In the horse, this defect can be remedied by mixing his oats with bran (1); in the ox, by mixing his grain with chaffed hay and straw, or by giving the coarse fodder first and the grain afterwards.



PERCHERON STALLION SANS-PAREIL 6822 (96663). Property of W. L. Ellwood, De Kalb, Ill.

The process is conducted this way as regards the ox: The ox has four stomachs, three of which are preparatory. The food is taken, masticated a little, and then swallowed in great lumps, which fall into the paunch or *rumen*.

The paunch is never empty, containing invariably about a hundred pounds of food.

The meal finished, the beast lies down and ruminates, i. e. gnaws; thus the food is regurgitated into the mouth from the paunch, in balls of about 3 to 4 ounces in weight, and is there remasticated perfectly, and once more swallowed.

One part of each ball (cud), after having been swallowed the second time, goes at once into the fourth stomach, where it is ready to be digested; the other part falls into the second,

**Digestion in the stomach.**—We must remember that the horse has only one stomach, and that a small one, only holding about 4 or 4½ gallons. Besides, it only acts as an organ of digestion to half of its extent, the left sac exercising no influence on the food.

What happens in the horse's stomach when the animal eats his usual meal: 8 lbs. of hay and 10 lbs. of oats?

This is what happens:

The 8 lbs. of hay, diluted with 32 lbs. of saliva, form a mass capable of filling the stomach three times; for, in order

(1) Or, as is invariably done in England, with chaff composed of 3 clover-hay and 1 straw.  
A. R. J. F.