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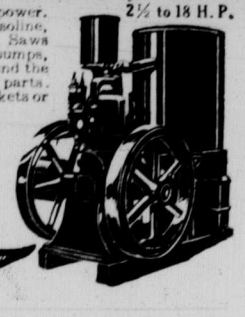

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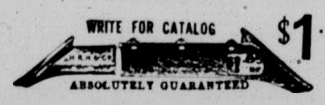

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got back so quick. There ye are, sir, lugging that child in your arms again! Ye'll spile him, sir!"

"Nonsense," returned Mr. Newkin. "He gets his feet wet when he walks; and wet feet are dangerous things. He might get the croup.

Joe breathed heavily, and his eyes rolled from the placid F. Barclay to the smiling Caroline. He bowed to the lady in a dazed way.

"Lord!" he gasped. "Ye're purty as a picter, ma'am!" Then, in a panic, he gripped Mrs Simpsey's arm. "I'd feel better for a cup of tea, Tish Ann!" he cried.

HAY MEASUREMENT

This year, with so much hay changing hands at the present time, many farmers will be no doubt interested to know of some method whereby the amount of hay in a stack can be fairly closely determined. The general way is by means of measurement, so many cubic feet being allowed as weighing a ton. Of course, the weight of any certain number of cubic feet will vary, depending upon the kind of hay put up, the length of time it has been stacked and the manner in which it has been put up, but a reasonably close estimate can be arrived at. Actually the best way would be to cut off a certain known length of the stack, load it on a wagon and weigh this amount. With the weight of this amount known the weight of the remainder of the stack can be very closely determined. However, this method cannot be resorted to on many farms so that a measurement method must be used. It is the general rule in calculating the weight of a stack to allow from 343 cubic feet, or a 7 foot cube of hay, to 512 cubic feet, or an 8 foot cube, to represent one ton, depending upon the length of time that the hay has been in the stack. The longer it has been put up the smaller will be the amount required to make a ton since it will gradually become packed closer together. To determine the weight of a stack, then, all that is required is to obtain its cubical contents. To do this, since most stacks are put up in a rectangular form, that is, built up square about four yards wide and as long as convenient to a height of say six or seven feet and then drawn in gradually and topped off to a peak, measurements can be made as follows: First of all determine the height of the stack to the eaves, i.e., where it was commenced to be drawn in, multiply this figure by the length and breadth and the result will be the cubical contents of the square bottom of the stack. Now for the top. This is triangular in form and its volume is obtained by multiplying half of the height of this section, taken from the eaves to the peak, by the width of the stack and then by the length. This result added to the other one obtained will give the volume of the whole stack. To get the weight take this total obtained and divide it by the number of cubic feet decided upon as representing one ton of the hay.

For example, suppose a farmer has a stack of hay 12 feet wide, 40 feet long, 7 feet high to the eaves and 4 feet from the eaves to the peak. The hay is red top, which was well tramped when put up and has been in the stack now three or four months. It would be safe to allow about 450 cubic feet to the ton and then consider that a conservative estimate had been made of the weight of the stack. With these figures the base of the stack will be 12 x 40 x 7, or 3,360 cubic feet in volume. The peak triangle will be 12 x 40 x 2 (2 being half the height of the triangle), or 960 cubic feet in volume. This added to 3,360 cubic feet will give a total volume of 4,320 cubic feet. The number of tons will be obtained by dividing 4,320 cubic feet by the 450 cubic feet decided upon as equalling one ton. Thus the final weight will be almost ten tons.

THE IMPORTANCE OF NITROGEN

In an excellent bulletin just recently received from the Dominion department of agriculture, written by A. T. Stuart, B.A., an interesting outline is given in popular language of some of the basic principles in agricultural chemistry. It is not possible here to give any elaborate resume of this work, but the following extract on the importance of nitrogen will give some idea of the interesting style in which the author treated the subject. After giving tables to show exactly the requirements of man and discussing the method of making these products, the work of plants is touched upon and the following conclusion is drawn:

"Nitrogen is absolutely necessary for the formation of protein, one of the principal parts of food. No plant can fully develop without nitrogen. It exists in the air as a gas, but before being absorbed by plants it must be fixed in the soil. No plant can breathe it in thru the leaves as it does carbon dioxide. However, the legumes (clover, alfalfa, etc.) seem to offer breeding places on their roots for special bacteria which are able to take the nitrogen from the air and supply it to the roots of their host. By the decay of the roots the soil is enriched in nitrogen.

The logic may thus be set forth:

A man's body contains 26 lbs. of protein.
Hence a man must eat protein:
Protein exists in plants and animals:
Animals eat plants:
Therefore, a plant must make protein:
But every 100 lbs. of protein contains 16 lbs. of nitrogen:
Therefore, a plant must eat nitrogen:
But all plants take in nitrogen thru the roots only:
Therefore, nitrogen must be fixed in the soil:
But nitrogen is a gas in the air and no plants can take it from the air directly,
But certain soil bacteria absorb this gas into their bodies and the roots of legumes offer places for them to live.
Therefore:—

Grow legumes to take the nitrogen from the air; to enrich the soil; to feed other crops; to make vegetable protein to sell as food for man; or to feed the animals; to make animal protein; to sell as food for man;

The Israelites could not make bricks without straw:
The farmer cannot make protein without nitrogen.

Thus we see that all human food originates in air and rain, except 5 odd pounds in every 100 pounds of food which comes from the soil. The supplies of air and, usually, rain are unlimited—that of the soil only may fail. Without any one ingredient, no matter if all else be present in abundance, no plant can mature.

The soil may be regarded as the table at which the plants feed, tho in addition to the food there provided they also eat a very small bit of the table. Man must prepare the table properly and carefully attend to the guests—his crops—and see that each gets enough to eat and drink and not too much nor too little. Further, he must look after their health and keep them clean and free from pests and parasites and weeds—the uninvited guests."

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