

Charley Chaplin's Comic Capers

Charley Finds Way to Beat Game

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SAVING THE FERTILITY

Valuable Manurial Constituents in All Farm Products.

It is Very Evident That the Dairy Farmer Gets Less Fertilizer Than the One Who Raises Grain—Don't Burn Straw.

By J. W. INCE, Professor of Agricultural Chemistry, North Dakota Agricultural College.
A writer in the Technical World Magazine recently wrote under the

title of "A Grain of Gold From a Ton of Dust" that, as he was making a trip through the ore-house of a Utah copper mine, the engineer with him stopped suddenly at a table, pointed to the lower right hand corner, and exclaimed: "See that tiny yellow streak? Wait!" He shut off the water and the streak became more visible. Then he ran his finger tip along it and held it up coated with very fine gold dust. "Just about a quarter's worth!" he laughed. "That's the average we get from every ton of ore that goes through here. It helps a little on the expense account of course, but not much. Still it means four thousand dollars (\$4,000.00) a day!" And that ore-house was extracting \$75,000 worth of copper and silver daily. The

gold was merely incidental, a by-product, but worth while.

There is scarcely a farm product placed on the market or kept on the farm that is not worth at least fifty cents a ton for the manurial constituents in it. Take the case of wheat. The grain has twenty-two cents worth of fertility in every bushel, or \$7.40 worth in a ton. The straw contains \$2.10 worth per ton. Suppose a farmer has 100 acres of wheat and raises 2,000 bushels of grain and 100 tons of straw. He sells the grain \$4.40 worth of fertility for which he receives no return. He has left in the straw \$210 worth of fertility from which he may or may not receive some return, depending upon his ability and foresightedness. In 1911 there were 72,000,000 bushels of wheat raised in North Dakota, for which the farmers received \$65,000,000. Accompanying this immense crop there were probably 3,650,000 tons of straw of unknown value. Sold in the grain there was \$16,000,000 worth of fertility; left in the straw was \$7,665,000 worth of fertility. In other words there was approximately half as much manurial value in the straw as in the grain. How many farmers thought that straw of enough value to return to the soil? How many realized the fact that there was enough potential fertility stored in that material to raise 26,000,000 bushels of wheat in subsequent years? How many appreciated the importance of saving every stem, small as it might be, for the maintenance of successful agriculture!

There are a number of chemical substances which are absolutely necessary for plant life; three of these are apt to be deficient in a soil. They are nitrogen, phosphorus, and potassium. If any one of these or any combination of them is absent from a soil they must be added before a crop can be raised. They must then be purchased in the form of fertilizers, nitrogen costing 15 cents a pound, phosphorus 12 cents, and potassium 4 cents. If in some cases these elements have to be purchased before a crop can be raised, then in other cases their presence in the soil means so much of the farmer's capital, and their presence in farm commodities means so much loss, if those commodities are sold from the farm, or so much possible available fertility in the products kept on the farm, if the farmer is willing to save them and return them to the soil.

For the sake of presenting this matter simply let us take ten substances produced on the farm. We will place them upon the same comparative basis of 10 pound quantities. We will secure the sum of the fertility constituents nitrogen, phosphorus and potassium in these 100 pounds and the money value of these substances. What is the result? In every pound of fat cattle there are contained 3.3 pounds of fertility, worth 46.5c; wheat grain, 2.79 pounds, worth 37.0c; corn grain, 2.28 pounds, worth 30.0c; potato tubers, 0.84 pounds, worth 3.6c; butter, 0.19 pound, worth 2.6c; cattle manure, 0.93 pound, worth 10.1c; wheat straw, 1.07 pounds, worth 11.3c; corn stalks, 1.68 pounds, worth 17.9c; potato stalks and leaves, 1.04 pounds, worth 12.0c; buttermilk, 0.69 pound, worth 9.0c.

It makes no difference whether the farmer practices diversified farming, crop rotation, or single cropping, he is selling fertility in every case. It cannot be helped, there is no method of abstracting the manurial constituents from a product before it is sold. It is very evident, however, that the dairy farmer sells less fertility than the grain farmer. It is also evident that the products left on the farm have a greater value in some cases than the products sold. It is possible to save every pound of fertility in these by-products and return them to the soil either through feeding to animals and applying manure, or composting, or scattering directly and discing the organic matter into the soil. It is not good business policy to apply the torch to straw piles, to allow fertility to leach out of manure, or to throw on the dump heap old bones and other refuse which accumulates around the farm. Every plant residue, every leaf of a tree, every chicken feather has fertility in it. Save them all, put them back into the soil somehow.

Do you know that bran has more

manurial value than wheat from which it is milled, that linseed oil-cake has more than the fax from which it is produced? Do you realize the canny sagaciousness with which the eastern farmers and those in England, Holland and Germany are purchasing these by-products. Here's the reason. It's the manurial value of those commodities that interests them as much as their feeding value. The fertility in bran is worth \$12.61 per ton, compared to \$7.40 for wheat; linseed meal is worth \$19.06, compared to \$15.59 for fax. Simple, isn't it? The bulk of the fertility sold in grains is concentrated in the by-products of these grains. By securing these by-products the North Dakota farmer can return almost all the fertility which has been sold from his farm. This is one method by which it is possible to maintain and ultimately increase the fertility of the soil.

Might it not be true that one cause, if not the great cause, of the decreasing yields of grains is due to the lack of organic matter in the soil? Such material will, as has been shown, not only furnish fertility from its own composition, but also make other fertility available, increase the water holding capacity of the soil, and aid in numerous and valuable ways. Humus is a wonderful substance in connection with soil fertility. Humus may be produced only from organic matter. Better work in the manure, roughage, and green clover. It will pay.

Remember the example of the wheat straw. Worth \$2.10 per ton. Helps considerably on the fertility account. Means millions of dollars annually to North Dakota. And straw is only one of the many farm products.

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Ans.—O. W. Dynes, head of poultry investigations.

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