

the home tinsmith-made galvanized pans as with the patent evaporator. The fundamental thing is cleanliness in all the work, and also to "syrup off" each evening. Saving labor by using horse power whenever possible in hauling the sap, hauling the buckets around while tapping, and going to and fro if the bush is at a distance. If no tank is at hand a barrel can be used satisfactorily on a sleigh or boat.

Get busy, brother farmer, and do not let the season of this rich, sweet and healthful product pass without "doing our bit" to help in increasing the supply of food for the Allies, and, further, there is no doubt whatever but we will be well paid for our work.

Middlesex Co., Ont.

E. T. C.

### Believes Wider Sleighs Practicable

EDITOR "THE FARMER'S ADVOCATE":

Having seen in your issue of Feb. 7th the suggestions offered by "Subscriber" with regard to "Wider Sleighs," we think the idea is a good one. The writer has never understood why the sleigh was made to "track" so much narrower than wheeled rigs. Not only are the suggestions true and worthy of the consideration which "Subscriber" mentions, but consider the advantage in expense if one were able to transfer their

summer vehicle into a winter one by simply taking off the wheels and substituting hub runners. A further advantage worthy of consideration is the elimination of the danger of the team "crowding." Anyone who has used a heavy draft team over country roads deep with snow will realize how it prevents a good team from doing efficient work once they begin to crowd. By all means let us have wider sleighs tracking similar to the width of wheeled vehicles.

P. Q.

R. J. & S.

### Threshing Gangs a Success.

EDITOR "THE FARMER'S ADVOCATE":

In reference to your article on gang threshing, would say it has been done in this corner of Lambton County, Ontario, for quite a number of years and is very satisfactory. The thresher takes a caboose for the men to sleep in and the farmer feeds them. The work was done last fall at four cents per bushel for oats and five cents for wheat. The advantages of this system are these: The farmer can work right up to the time the machine comes to the barn, and start to work as soon as it leaves. It is always at work at seven in the morning. And it will be a sorry day for us if we have to go back to the old way.

Lambton Co., Ont.

A LAMBTON FARMER.

## Food and Plant Food.

BY HENRY G. BELL.

It is a good thing to look facts in the "eye" at times. Why put all the attention on feeding and grooming the team and neglect the greasing of the axles? Why load the tank with "gas" and polish the machine till it shines, and at the same time neglect to oil the bearings? The world needs food; the Allies need food; the armies must have it.

Figures—bushels of them—incomprehensible computations attest the shortage, and give abundant justification for food-saving campaigns. Patriotic citizens are surely heeding the call to save—to deprive themselves of non-essentials—yes, and of some of the essentials to most enjoyable and most palatable food. Brave men, munitions, food and adequate means of transportation are the essentials to victory.

But, are we not studying the mountain top, and neglecting the ledges on which we must step in order to reach the height? Vimy Ridge was won because munitions in abundance were at hand to support the heroism of our gallant troops.

We are crying aloud to save, save, save! Papers are full of, and lecture platforms ring with exhortations to the farmers to grow more and more food—and it is well and proper that such is the expression of the hour.

Now, successful crop production—victorious agriculture depends upon the "main ribs" of good soil and crop management. None can be neglected, and largest and best crops be harvested. They are:

#### Best Crop Production

1. Well-chosen, high-quality seed.
2. Thorough soil tillage.
3. Sufficient soil drainage.
4. Maintenance of organic matter and humus in the soil.
5. Sufficient supply and control of soil moisture.
6. Control of plant diseases and insect pests.
7. Abundance and proper balance of available plant-food.

Other factors could be added, but these are some of the main controlling features.

In Ontario the probability is that we are overlooking the great importance of the last factor at this time.

We have been too prone to dismiss the subject by saying "my soil doesn't need added plant-food." We are fairly protesting that the civilized human family must have more food in 1918, and yet we forget that the more

food that we hope for, depends absolutely upon the supply of that on which the crop feeds—after conditions of plant life have been made suitable by soil preparation, and vigorous seed has been sown.

The soil is Nature's great store-house of plant-food, but Nature in her wisdom does not allow all of the important constituents of plant-food to rest entirely at the disposal of growing crops. In other words, some of the nitrogen, phosphoric acid, and potash is in the form in which the plant uses it, and some is locked up in insoluble or slowly soluble forms for the use of future crops. One of the main reasons for plowing, disking and harrowing is to hasten the letting loose of plant-food which is in the soils in slowly soluble form.

If you are going to buy a new gasoline engine for your farm, it is a fairly good thing to know something about the structure and running of gasoline engines. Similarly, in these days when such tremendous pressure is being brought to bear upon the farmer in order to induce him to grow maximum crops, it is well for him to know something about the food of the crops. There have been not a few occasions when such information would have saved many a loss on the farm, or would have made possible many a better yield of common food crops.

There are three important kinds of food used by the plant. Manure and complete fertilizers carry these three important foods. The first causes straw or stalk growth. It is called nitrogen or ammonia.

The second causes the ripening of grain and the plumping of the kernels. It is called phosphoric acid.

The third gives the plant power to resist disease, and greatly assists in the making of starch in the filling kernel. It is called potash.

Each one of these important foods is necessary if you are to get good crops. If nitrogen is short your grain will be short and poor. If phosphoric acid is lacking, your corn or other crops will not ripen as quickly or thoroughly as they should. If potash is deficient, the grain will be poor, the straw weak, and in all probability there will be much rust and smut in the crop.

Now, the big source of plant-food in Ontario is farm manure. There is surely little need of arguing the value of farm manure before such good farmers as those of this country, yet there are three points about manure that do not seem to be fully understood by some Canadian farmers even yet.

The first is that manure carries all three kinds of plant-food—nitrogen, the plant grower; phosphoric acid, the plant ripener; and potash, the plant strengthener and kernel filler. A ton of well-kept manure carries 10 to 15 lbs. of nitrogen or ammonia, 5 to 8 pounds of phosphoric acid, and 10 to 12 pounds of potash. Over half of this plant-food is in such form that it can easily be lost. In fact, over half the ammonia and potash is in the liquid manure. If manure heaps are left uncovered, over half of the valuable available plant-food is lost by leaching. In a year when all things, including plant-food, are costly, is it not good business to prevent this loss?

If the manure has been hauled out on the land, little plant-food will be lost if the humus or decaying plant matter in the soil has been kept up.

The second point is that manure is the home and food of great quantities of minute life, called bacteria. These bacteria cause the breaking down of the manure, and in so doing bring much of the slowly soluble plant material of the manure into such form that crops can use it. Bacteria grow most rapidly when the weather becomes warm; hence the manure in a soil becomes more valuable as plant-food as the season progresses.

The third important thing about manure is that it carries a relatively large amount of plant grower and plant strengthener, but a comparatively small amount of plant ripener. It is consequently a great plant-food for grass and roots, but does not contain enough plant ripener to bring best results on wheat, oats, barley and other grain crops. This shortage is easily made up by adding 40 to 50 pounds of acid phosphate to the ton of manure when spreading the manure. From a 20-year test, Ohio Experiment Station got a gain of 11½ bushels of corn to the acre, and of 5½ bushels of wheat per acre by supplementing manure (8 tons per acre) with 40 pounds of acid phosphate per ton, or 320 lbs. of acid phosphate per acre.

Many an Ontario farmer has not one-tenth enough manure to apply five or eight tons to the acre. His next recourse is fertilizers. Fertilizers are carriers of the very same kinds of plant-food as is found in manure. They are composed of bone, blood, treated rock carrying phosphoric acid, and various other materials carrying ammonia and potash, so treated as to render the plant-food readily available. They are to the growing crop what whole milk is to the young calf.

Until recently, Ontario farmers have used but little fertilizer. Some farmers from the old land know from experience what fertilizers—or artificials, as they are called in England and Scotland—can do in increasing crop yields.

Canada has suddenly come upon days when the service which fertilizers can render are of great interest for three important reasons:

First—Fertilizers rightly used, greatly increase crop yields.

Professor Zavitz reported last year as follows: "Complete fertilizer with potatoes gave an increase of 37.1 bushels per acre at a cost of 11.4 cents per bushel. Complete fertilizers with winter wheat gave an increase of 5.2 bushels per acre at a cost of 82 cents per bushel, when applied in the autumn, and 8.3 bushels per acre at a cost of 51 cents per bushel, when applied in spring."

Ohio Experiment Station reports a gain of 13.41 bushels of wheat per acre on fertilized land over unfertilized; Indiana, 8.03 bushels per acre gain in wheat from fertilization; and Missouri Agricultural Experiment Station, a gain from 4 to 10 bushels of wheat per acre from fertilization.

An increase of 5 bushels of wheat per acre in Ontario alone would mean a gain of over 4½ million bushels of food for our Allies. Such a gain is quite within the range of possibilities.

Second—Fertilizers improve the quality of the crop harvested. Actual test has shown an increase of over 40% in plump kernels of wheat that was well fertilized over that which was unfertilized.

Third—In these days when farm labor is at a premium, any reasonable device that will render farm labor more productive is of interest. The judicious use of fertilizers is just such a device.

Ohio Experiment Station found, some time ago, that it took approximately 12 hours of labor to produce an acre of wheat. Unfertilized wheat yielded approximately 11 bushels per acre while fertilized wheat yielded over 24 bushels per acre. From the unfertilized grain there was a return of a little over 1 bushel of wheat for each hour of labor expended. On the fertilized wheat there was a return of over 3 bushels per hour of labor expended, or, the labor was rendered twice as productive.

Ontario has by no means reached her limit of production. In fact, her farmers are but playing with the possibilities of Ontario soils. Good soil preparation, good seed and proper manuring and fertilization can greatly increase crop yields. More crops mean more live stock, and more live stock products. One of the big things necessary for largest yields of best quality crops in 1918 is plant-food. This is the year to use manure and fertilizers abundantly.

### Appreciates a Firm Stand.

EDITOR "THE FARMER'S ADVOCATE":

I would not be without "The Farmer's Advocate" and live on the farm. The Christmas Number alone was worth the price of a year's subscription. I like the stand "The Farmer's Advocate" takes on questions of legislation as it affects the farmer. If more of our politicians were to include a few of your planks in their platforms and stand by them, we would have less cause to grumble at our government.

Temiskaming Dist., Ont.

W. R. PETERS.



49½ Bushels Wheat per Acre.

This land had an application of 300 lbs. per acre of fertilizer, analysing 2% ammonia, 9% phosphoric acid, and 1% potash.