weather. A good shepherd does not have to be admonished with regard to dipping; he is aware of the advantages and the now almost absolute necessity of practicing these precautionary and remedial methods.

THE FARM.

A Farm Water System.

EDITOR "THE FARMER'S ADVOCATE":

I have seen several enquiries in your paper referring to water systems on the farm. I have recently installed an air-pressure system that supplies water to seventy-five head of cattle and horses, and the dwelling house. The engine, pump and tank are placed under the approach to the barn, which was made frost proof. I employed our local hardware men to do the plumbing and supply all pipe. I had the tank made in Chatham, Ont. It was made of rolled steel ¼ inch thick, 60 inches in diameter, and 12 feet long, with a capacity of 1,760 gallons. The water and air are forced into the tank by a double-geared, bulldozer pump with air pump attached, back-geared 6 to 1. The pump has a 3 by 5-inch cylinder, with a tight and loose pulley 2½ by 14 inches, with a capacity of 900 gallons per hour, and a working pressure of seventy-five pounds. The water is drawn through a 1½-inch suction pipe from an artesian well 92 feet from the pump with a raise of 8 feet, and is then forced into the tank direct. The air pump is 2½ by 5 inches, and forces the air into the tank with water which keeps it pure and sweet.

The air pressure in the tank is raised from 15 to 30 pounds, the water occupying two-thirds of the tank. The water is forced by the air through the stables and to the house, a distance of 350 feet, and is raised 25 feet to the bath-room and hot-water tank.

The pump is driven by a 2½ horse-power gasoline engine. This is more power than is needed, and I think a 1½ H.-P. engine would do the work just as well. This system gives the best of satisfaction, and I think is ahead of the elevated tank.

Kent Co., Ont. JOHN BUCHANAN.

Planning, Preparing and Planting for Profitable Potato Production.

There has been a great change in the quality and productiveness of the potato since its introduction into civilization by Sir Walter Raleigh during the latter part of the sixteenth century. From a small, watery, insipid, waxy, tuber has been evolved by selection and proper cultural methods the potato as it is known to-day. The value of the potato as a food is recognized everywhere. Its composition is such as to make it a suitable food for persons of all ages, in every walk of life, whether employed at heavy manual labor or working under mental strain. It has a place on every table in some form or other practically every day of the year. A dinner is hardly complete without the potato. While wheat is considered to furnish the staff of life, the potato is a very close second. Like wheat, it is a food for both man and beast, and lends itself to being prepared for use in a variety of ways. On every farm and on many town and city lots potatoes are grown for home use, but growing them on a commercial scale is left to those who are located on soil particularly well adapted to producing a large crop of clean, smooth, mealy tubers. Owing to soil and climatic conditions, it is much easier for potatoes to be profitably grown on some farms than on others. However, an effort should be made to grow the variety most suited to the locality, and prepare the soil so that the tubers will at least have a chance to reproduce to the best advantage. It costs no more to prepare the soil, cultivate, plant and spray a four-hundred bushel crop than it does a one-hundred-and-twenty-five bushel crop, and yet the average yield in Canada is below the latter figure, while the possible is considerably over the former. Few crops respond as readily to proper soil conditions and good cultural methods as does the potato. In order to insure large yields an abundance of available plant food must be applied to give the plants a start and force growth. This should be followed up by an effort to check the ravages of plant diseases. The potato crop is an important one to Canadian agriculture, and its propagation is worthy of more study than is given to it. The heavy loss sustained by growers in 1915 should not deter them from planting the usual acreage this year.

Varieties to Grow.

The grower is obliged to pay some attention to the quality and type of potato that he grows, as buyers and consumers are becoming more critical than they were a few years ago. In order to obtain the highest price, the desires of the consumer must be catered to. If the market demands a round potato, a variety of that shape is the kind to grow. Some markets give preference, to a variety of a certain shape and color, some to another. For instance, the Delaware variety is the highest-priced potato on the Toronto market, while in London the Dooley is asked for. A tuber weighing about eight ounces is the average size. Potatoes uniform in shape, possessing smooth skin, shallow eyes, freedom from disease, with clear-colored flesh of fine texture that is dry and mealy when cooked, are the kinds sought after. The cooking qualities are influenced somewhat by the conditions under which they are grown.

The number of named varieties are legion. There are altogether too many for the good of the potato-growing industry. It is difficult to secure in one district a quantity of potatoes uniform in shape, color and size, consequently the price offered by the dealer is less than he could pay if one variety with uniformity could be secured in quantity. Growers would do well to decide on the variety that gives best results in their district, and all grow that variety. Points that should be taken into consideration when arriving at a decision as to variety are its adaptability to the soil and climatic conditions, productiveness, quality, depth of eyes, length of time required for maturity, resistance to disease, and the market requirements, which include shape, size, color and cooking qualities. There are several varieties which might almost be considered standard. Among the early potatoes is the Early Ohio, which is rose colored, oblong in shape, with moderately shallow eyes. It is a good yielder and possesses good cooking qualities. The Early Eureka is in the same class, except that it is a white potato with a smoother surface and slightly deeper eyes than the Ohio. The Irish Cobbler is also a white potato with rather deep eyes. It is round, rather blocky tuber, and is a little later in maturing than the two previously mentioned. It is considered one of the most productive of the early or medium early varieties, and is a good cooker. The Carmans, Delaware and Green Mountain varieties are among the most popular of the late potatoes. They are white in color, somewhat round and flattened in shape, with a smooth surface and shallow eyes. They are heavy yielders and good cookers. The Rural New Yorker is also white in color, and usually grows a little larger than the other varieties mentioned, but has a tendency to be hollow. The Dooley is a favorite in Middlesex County. It is a white, fairly thick, oval potato with a medium number of shallow eyes. It has a smooth surface and is very productive. This variety grows a purple stalk bearing a purple flower. The Davies' Warrior is a white potato with a smooth surface, shallow eyes, short, oval and flattened in shape. It is one of the latest varieties grown and requires a long season to mature. In districts to which it is adapted it is productive, and a good cooker. The Empire State is an old favorite which is white in color, long and oval in shape with fairly shallow eyes. It is a good yielder and of excellent quality.

Improving the Quality and Yield of the Potato.

Naturally the soil on which potatoes are grown makes a considerable difference to the yield and quality, the lighter soil usually producing a dry, mealy potato. The average farmer has not been careful enough in the past in selecting seed, as too frequently the potatoes that were left in the bin after the table had been supplied through the winter were used to reproduce the next crop. The best way of increasing the yield and uniformity of the potato is by seed selection, and the growers who have practiced this have secured a marked increase, both in yield and uniformity of the crop. Possibly the best method is to select tubers of the desired size, true to variety and type, from hills that are the most productive. This must of necessity be done in the fall, but this spring a start can be made by planting only uniform tubers which weigh from five to eight ounces. By selecting from the bin each year the results would soon be noticed. This could be carried farther, and the most vigorous plants in the field marked during the growing season, and then these hills dug separately at harvest time and the most desirable tubers saved for seed. It has been claimed that by hill selection the yield may be doubled in three years. By this method the tubers of the main crop will gradually become more uniform in size and shape and the yield will be larger. An increase of thirty-eight bags to the acre has resulted from one year's selection. Some growers have taken the trouble to practice the tuber unit method, which is the selection of single tubers which are cut in from one to two-ounce sets, and the pieces planted consecutively in the row. The weak plants are eliminated and at digging time the product of each tuber that was planted is kept and saved for next year's planting. In this way the entire crop may soon become the product of one potato. True, this work takes considerable time but the results warrant the effort being taken.

Soils and Cultivation.

While it was previously stated that potatoes are grown on practically every farm under all kinds of soil conditions, they do best *on a deep,* warm loam well supplied with decayed or decaying vegetable matter. On cold, stiff, heavy clay potatoes have a tendency to be soggy and rough. The sandy soils are suitable for growing potatoes so long as the fertility lasts. Soils that give the best results cannot always be secured, but by proper working even the heaviest of soils can be put in condition so that they will produce a good crop of tubers. A large amount of moisture is required throughout the growing season to produce the maximum crop. If the supply is retarded for any length of time growth appears to be checked and the crop never fully recovers. While moisture is essential the crop will not do well on a cold soil where the water level remains near the surface. Under-drainage is necessary to carry off the surplus water.

Where potatoes are grown on a commercial scale a rotation of crops is planned, but on the average farm where only a small acreage is grown the potatos are usually planted in part of the root field. It has been found that clover is a good crop to precede potatoes, as it greatly improves the condition of the soil and adds fertility. When a crop of clover, or even a clover stubble, is plowed under and thoroughly worked it puts the land in excellent tilth and the decaying roots furnish organic matter and tend to keep the heavy soil from becoming too compact. In some districts the potato crop follows fall wheat with good results. After the wheat is harvested the land is thoroughly worked in order to destroy weeds which saves hoeing the following year. A grower must be careful about planting potatces on old sod, as there is danger from injury by the white grub. Where this pest is troublesome a short rotation of crops should be followed. If possible it is a good plan to manure the potato land in the fall and plow it under, as large quantities of fresh stable manure, while supplying the plant-food constituents also produce a condition in the soil which favors the growth of potato scab. This difficulty is largely overcome by fall or early winter applications. If it is absolutely necessary to apply the manure in the spring only that which is well rotted should be used. From twelve to fifteen tons of barnyard manure would be a fair application, although some growers apply as high as twenty-five tons. While a heavy coat of good manure tends to produce a large crop of potatoes, it is not well to rob the rest of the farm. Clover and barnyard manure with good drainage will put most soils in fairly good condition for growing potatoes. Both clover and manure are important fertilizers, adding nitrogen, phosphoric acid and postash to the soil besides increasing the supply of humus which makes the soil more retentive of moisture.

The potato is a fairly heavy feeder and it is estimated that a three-hundred-bushel crop of potatoes will remove from the soil about sixty pounds of nitrogen, thirty pounds of phosphoric acid, and one hundred and five pounds of potash. It is frequently found to be profitable to add commercial fertilizer to potato land, but it is necessary that every farmer experiment for himself in order to find out the fertilizer that is needed on his farm. Potatoes draw heavily on potash, but a commercial supply of this substance is out of the question this year. Although potash may be secured from wood ashes their use for the potato crop should be avoided owing to their alkali nature which is claimed to produce a scabby tuber. Sulphate of potash, if it could be secured, is preferred to muriate, as experiments have proven that it produces a better quality of potato. Complete fertilizers containing plant food constituents in the proportions the plant is supposed to require them are on the market and in many cases have given good results. These fertilizers may be applied in the rows by the fertilizer distributer attached to the potato planter, although some growers prefer to sow the fertilizer broadcast early in the spring so as to thoroughly cultivate it into the soil.

In preparing the soil previous to planting the grower must use his judgment. If his soil is very light he should avoid plowing down coarse manure in the spring as it has a tendency to keep the soil too open and porous, while for a heavy soil the coarse manure is advantageous. The land should be worked deeply as in loose soil the tubers are more likely to be smooth and even in shape than if the ground is firm and stiff. Where the soil has been plowed in the fall and manured it is necessary to plow it again in the spring and give frequent cultivation to keep the weeds in check and the ground in good tilth until the time for planting. If potatoes follow sod and the ground is not plowed until spring, as is sometimes the case, the grass may be allowed to grow up through the manure until the time of planting then the potatoes are dropped in every third furrow at the time of plowing and the ground thoroughly worked. While this method has given excellent results, on some soils it is not to be recommended, as the soil is not loosened sufficiently below the potatoes. It is preferable to plow the sod a few weeks before planting and thoroughly work it. If the land is lacking in humus the practice is frequently followed of sowing rye in the fall and allowing it to grow the following spring until potato planting time, when it is plowed down, and then worked. This treatment produces clean, smooth potatoes. No hard and fast rule can be laid down for preparing the soil. The main point to remember is that potatoes do best if the soil is thoroughly worked to a fair depth, depending on the subsoil, and put in good tilth before planting, although this is not so essential with a light soil as it is with heavy clay.

Potatoes for Seed.

Owing to the high price of potatoes this spring there will be a strong temptation for the grower to use small potatoes or cut the sets as small as possible and still have one eye. However, we believe it would pay to select good seed if possible. While the small potatoes may give a good crop this year, care would have to be taken not to plant the small ones the following year. Planting the small tubers two years in succession would have a detrimental effect on the crop, while selecting the medium-sized tuber year after year improves the crop. The seed for this spring should have been selected last fall at time of digging and stored in a cool, dark