and bicarbonate of soda, three times daily. The safe administration of liquids to swine is no easy matter. In order to administer a drench to a pig it is necessary to put a slip rope in the mouth enclosing the upper jaw above the tusks and hold the head up so that the mouth will be on a higher level than the throat. All who have ever tried this are aware that the patient will persist in squealing. When squealing, the valve (called the epiglotis) that closes the entrance to the larynx and the wind pipe is open, hence, if fluid be introduced into the mouth, a greater or less percentage will pass down the wind pipe and if sufficient pass to occlude the calibre of the bronchial tubes it will cause death by suffocation in a few minutes. If a smaller quantity pass it will set up mechanical bronchitis, which will probably cause death in a few days. Many pigs are killed in this way.

Probably the easiest and safest method to drench swine, is to put the fluid into a bottle, and attach to the neck of the bottle a piece of rubber hose, 5 or 6 inches in length. Elevate the patient's mouth as stated, insert the rubber hose between the molars at one side of the mouth, and then the patient will chew and suck on it, and swallow the fluid without danger. Some insert an old boot-leg into the mouth and pour the fluid into it, but the bottle and hose is more easily handled and avoids waste.

The Manurial Value of One Farm's Crop.

It is interesting to know the actual relation existing between live stock and the farm, particularly with regard to the fertilizing ingredients returned to the soil and the maintenance of fertility. A 100-acre homestead situated in a district where mixed farming is practiced must have some system of replenishing the depleted stores of nitrogen, phosphoric acid and potash, which are sure to be exhausted through the annual production of grain, hay, roots and corn. For the purpose of estimating the value of the crop as manure after it has passed through the various classes of stock, let us assume that the products of the farm are sold to the herds or flocks at a straight market price. It would not be difficult to show a profit after feeding cattle, sheep or swine with the farm crops charged at current prices. Another point in favor of feeding could be brought out by the argument that it is more economical to drive crops to market in the form of finished cattle, sheep and swine, or as dairy products than in the crude form of hay or grain. However, this article is not a brief for live-stock farming, it is intended only to show the value remaining after one season's production is fed to the farm animals on the place.

Data are necessary for this purpose particularly with regard to the output of the farm and the total amount to be fed. Since the crops vary so on different holdings, we must assume a certain production, and work from that premise. The following figures are close to the average production of the general run of fairly good Ontario farms. Forty tons of hay from 25 acres; 80 tons of silage corn from 8 acres; 1,200 bus. of roots from 2 acres; 1,000 bus. oats from 24 acres; 300 bus. of barley from 10 acres, and 150 bus. of wheat from 6 acres. We would not champion this division of the farm nor the proportion of the various crops grown. We have named the average yields on what would be considered a good class of farm in Ontario in an average season and upon these estimates we shall base our deductions.

This yield figured on the ton basis would be approximately as follows—hay, 40 tons; silage, 80 tons; roots, 36 tons; oats, 17 tons; barley, 7⅕ tons; wheat, 4½ tons. In the majority of cases hay is mixed, clover and timothy, so we have calculated it as 20 tons clover hay, and 20 tons timothy hay. Similarly we have divided the roots into turnips, (rutabagas) and mangels. From the grain crop there would be a certain quantity of straw, the amount of which would vary immensely on different farms and according to the season. We have calculated that 1¼ tons of oat straw per acre would be a fair average, likewise one ton of barley straw and 1¼ tons wheat straw.

In order that the reader may arrive at some conclusions regarding the fertilizing ingredients contained in farm crops we herewith include the following table selected from "Feeds and Feeding." Nitrogen, phosphoric acid and potash are the chief ingredients so necessary for the growth of crops, and about these the whole fertilizer question hinges. These three are the chief constituents considered in the table.

Fertilizing Ingredients in Farm Crops.

Product	Fertilizing Ingredients in 1,000 Pounds		
	Nitrogen	Phosphoric Acid	Potash
	Lbs.	Lbs.	Lbs.
Clover hay	20.5	3.9	16.3
Timothy hay	9.9	3.1	13.6
Turnips (rutabagas)	1.9	1.2	5.0
Mangels	2.2	0.4	2.2
Silage	3.4	1.6	4.4
Oats	19.8	8.1	5.6
Oat straw	5.8	2.1	15.0
Wheat	18.7	8.5	5.2
Wheat straw	5.	1.3	7.4
Barley	18.4	8.5	7.4
Barley straw	5.6	1.8	12.0

This information forms the basis for calculating the manurial value of the crop after being fed to live stock.

It is estimated by investigators that, on the average, 80 per cent. of the fertilizing elements contained in feeding stuffs will be voided by the animals. This, of course, is only an average as some classes of live stock will utilize and incorporate into the animal system a greater percentage than others. Regarding this, Prof. Henry in "Feeds and Feeding" says: "The mature horse at work is merely repairing his body tissues as they are broken down, therefore, no nitrogen or ash (contained in the phosphoric acid and potash) is stored in the body, but all the nitrogen and practically all of the ash is voided in the manure. A neglible amount of ash is excreted in the perspiration. With fattening animals, whose bodies are nearly or quite matured, but little of the fertilizing constitutents supplied in the feed are retained in the body, over 95 per cent. of both nitrogen and ash being voided by the fattening ox and sheep. With the pig, fattened while not yet matured and storing nitrogen in his lean-meat tissues, about 85 per cent. of the nitrogen of the feed is returned in the manure. As milk is rich in nitrogen and ash the cow in milk voids only about 75 per cent. of the nitrogen and 89 per cent. of the ash contained in her feed. The young calf growing rapidly in bone, muscle and body organs voids only 30.7 per cent. of the nitrogen and 45.7 per cent. of the ash in the feed, storing the balance in the body. Considering the proportion of young animals, and of those giving milk on the average farm, it has been estimated that from the feeds supplied farm stock about 80 per cent. of the nitrogen, phosphoric acid and potash is ordinarily recovered in the faeces and urine."

With this data we may now calculate the manurial value of the farm production after being fed. Taking 80 per cent. of the fertilizing ingredients of the farm crops as the percentage voided, we arrive at figures such as set forth in the accompanying table. It has been assumed that all the straw from the grain passed through the farm animals. This, of course, very seldom occurs, much of it being used for bedding purposes. Calculating on this basis the entire output, as estimated earlier in this article, we arrive at the following table.

Product	Amt.	Fertilizer Voided		
		Nitrogen	Phosphoric Acid	Potash
	Tons	Lbs.	Lbs.	Lbs.
Clover hay	20	656.	124.8	521.6
Timothy hay	20	316.	99.2	435.2
Silage	80	435.2	204.8	563.2
Mangels	18	63.3	11.5	63.3
Turnips	18	54.7	34.5	144.
Oats	17	538.5	220.3	152.3
Oat straw	30	278.4	100.8	720.
Wheat	4½	134.6	60.8	37.4
Wheat straw	7½	60.	15.6	88.8
Barley	7⅕	211.9	97.6	85.2
Barley straw	10	89.6	28.8	192.0
		2838.2	998.7	3003.0

It will thus be seen that after feeding the crop of the farm and deducting 80 per cent. from the fertilizing ingredients, allowing the other 20 per cent. to be utilized by the animals, we still have the remaining 2838.2 lbs. of nitrogen, 998.7 lbs. phosphoric acid and 3,003 lbs. potash voided as manure. There will, of course, be a certain amount of waste depending upon the care the manure receives, but as the major part of these feeds will likely be fed in winter, when the wastage is smallest, the greater part of it should be conserved. By spreading the manure daily on the land the minimum amount will be lost to the farm.

Before the war, when purchased in the form of chemicals or ordinary commercial fertilizers, nitrogen was costing approximately 20 cents a pound, while phosphoric acid and potash were each worth about 5 cents per pound. On this pre-war basis the nitrogen contained in the manure would be worth $567.64, the phosphoric acid would be valued at $49.93 and the potash at $150.15, making a total of $767.72.

From these figures a farmer can arrive at some idea as to the importance of feeding his farm crops on the place. It is not difficult at the present time to charge the animals the market price for the products of the farm, and still return a profit. Were it sold to the trade in the form of hay or grain this $767.72 would be given gratis to the purchaser. There are some soils with an inexhaustible supply of fertility, but they are rare and the figures stated show to what extent a man who sells hay and grain off the farm is depreciating the value of his homestead.

No mention is made of the effect produced by adding so much organic matter or humus to the soil. This would be worth hundreds of dollars annually on heavy clays or light, sandy land. Furthermore, manure teems with bacteria, which are very essential in the breaking up of plant food into available forms.

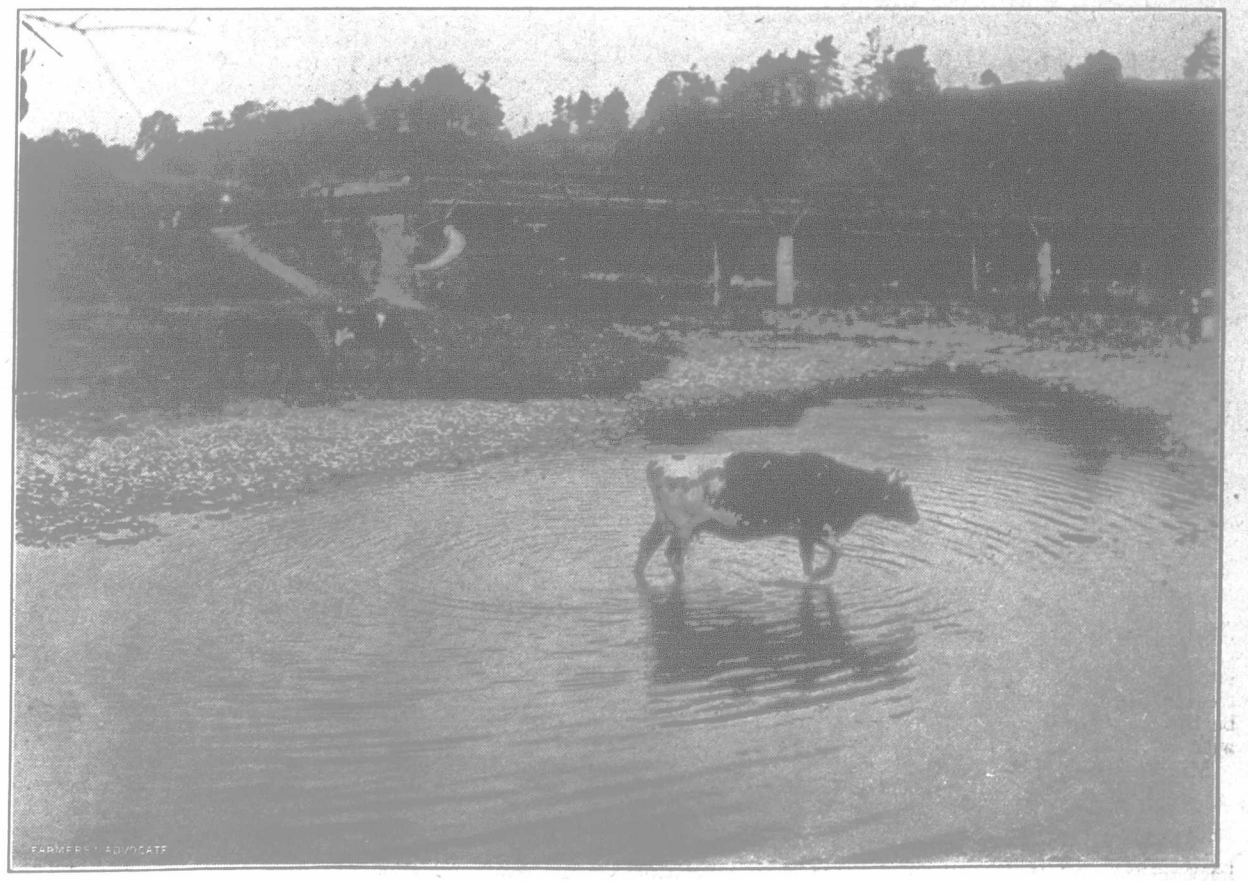
Profits from Skim-milk-fed Hogs.

Included in the last annual report of the Secretary for Agriculture for Nova Scotia is the outline of an experiment with feeding swine, conducted at the Agricultural College, Truro. These pigs were fed in the orthodox way, but showed very good profits indeed. Six pigs from a cross-bred sow were selected for the experiment. They were fed skim-milk and middlings from the 21st of August to the 22nd of January, 154 days. During the last two months some mixed grain raised on the farm was fed in addition to the middlings. They also ate a small amount of oil meal and some mangels. The total feed eaten in a hundred and fifty-four days is given in the following table:

Middlings, 1,100 lbs. at $1.40 per cwt.	$15.40
Mixed grain (ground), 510 lbs. at $1.75 per cwt. (Oats, barley, wheat, peas)	8.92
Rye (ground), 200 lbs. at $1.40 per cwt.	2.80
Oil meal, 75 lbs. at $2 per cwt.	1.50
Mangels, 20 bus. at 15 cents per bus.	3.00
Skim-milk, 10,200 lbs. at ¼ cent per lb.	25.50
Cost of feed	$57.12
Cost of pigs at six weeks old at $3 each	18.00
Total cost	$75.12

The total live weight of the pigs on January 22 was 1,320 lbs., or an average of 220 lbs. each. The poorest pig in the lot was killed, and it dressed out over 75 per cent of its live weight. Taking 76 per cent. as a fair average it was found that the 1,320 lbs. of live weight would give 1,003 lbs. of dressed pork. At the conclusion of this experiment pork was worth 12 cents per lb. at Truro, N. S., which would make the 1,003 lbs. worth $120.36. Subtracting the total cost of $75.12 from $120.36, a net profit of $45.24 remained. No account of labor was taken, neither were the pigs credited with the manure made. The cost of butchering deducted from the price received for the pork would amount to about $1.00 per pig, and would reduce the profit to about $40.00.

This feeding experiment shows the possibility of



On a Hot Day in August.