with sufficient velocity to wash out both earth and tiles, while the discharge from the house to the tank, as shown, will not have any injurious effect on the latter. It will not freeze in winter, even when the frost penetrates the ground for several feet everywhere except where the tiles are laid; and, as may be expected, splendid results may be obtained in vegetables or flowers if the tiles are laid under a garden.

VARIATION IN SIZE.

It sometimes happens that, for lack of space, or some other reason, it is undesirable to have the first compartment as shallow as the second compartment must necessarily be (between two and a half and three feet), and in that event the tank may be constructed as shown in Figure 5, the depth of the first compartment not exceeding five or five and a half feet. In such a construction, the overflow would be extended to within eighteen inches of the bottom.

If desired, the screen on the overflow may be made as shown in Figure 6, instead of wire, and, in such construction, one-inch boards, twelve inches wide, and long enough to extend from the top of the plank to the bottom, would be used. These, with the tank partition, would form a space 11 x 12 inches, in which the overflow would hang.

The three wooden sides of the box or screen would be closely perforated with three-quarter-inch holes extending from a point near the floor up to a distance, say, of 18 inches, and such an arrangement will be found very satisfactory.

In setting the valve, the upper or unlocking float is placed on the under side of the lever, to which it is connected and set at the proper height to release the valve when the water rises to a depth of 17 to 24 inches, as desired.

POINTS TO REMEMBER.

A few of the principal points which should be kept in mind in constructing such a system are: Have the tank covered with a few inches of earth, to prevent the escape of gases, except through the soil-pipe stack. See that the valve discharges at least once before the tank is covered in. See that no trap is placed on the main soil pipe to prevent the free passage of air across the tank and up to the roof, and that the necessary space for the air is left in the top of the center partition, and, finally, take care that no disinfectants or chemicals of any kind are allowed to enter the tank, if the life of the bacteria upon which the system depends for its success is to be preserved.

FUNDAMENTAL PRINCIPLES.

It is a matter of common knowledge that living earth—or top soil—is a powerful purifying agent, but comparatively few are aware that the presence in it of countless numbers of bacteria, or microbes, is alone responsible for the chemical changes brought about in waste matter placed beneath its surface, and that these bacteria, not only through their action remove and destroy the dangerous properties of such waste matter, but actually convert them into plant food, which, being taken up by the vegetation, is again consumed for the sustenance of life. Pasteur divides these microbes into two classes, viz., Anerobes, or those which live apart from air, or derive their oxygen from decaying compounds; and Aerobes, or those which require plenty of fresh air for their development, and both classes are considered necessary for the complete reduction of waste matter.

It will be seen, therefore, that if sewage is placed too deep in the earth, as, for instance, in a cesspool, where, owing to the absence of air, the necessary aerobic bacteria cannot exist, it may pass down deeper, in a putrid state, and, finding its way to the water supply, not infrequently results in an outbreak of typhoid fever or some intestinal disease.

The two classes of microbes referred to have properties somewhat differing from each other, but the net result of their work under proper conditions is the breaking down of the solid matter in the sewage, the disintegrating of its constituents, and the conversion of the whole into liquids and gasses, in which form it leaves the septic tank, the former to be distributed under the surface of the earth, where, by reason of its contact with free oxygen, bacterial life is most active, there to be still further reduced, and finally converted into nitrates which are readily taken up by the vegetation on the surface, and the latter passing up high into the air, as previously described.

In the description of the septic tank, I have quoted literally from a paper by M. J. Quinn, late Provincial Mechanical Superintendent, read before the Convention of Executive Health Officers at Sarnia some years ago. WM. H. DAY.

When a Dutch cow brings $90 on the Toronto market and the bulk of the receipts of milkers and springers realize $50 to $65, it looks like a fairly good thing raising well-bred cows for the milk trade.

THE DAIRY.

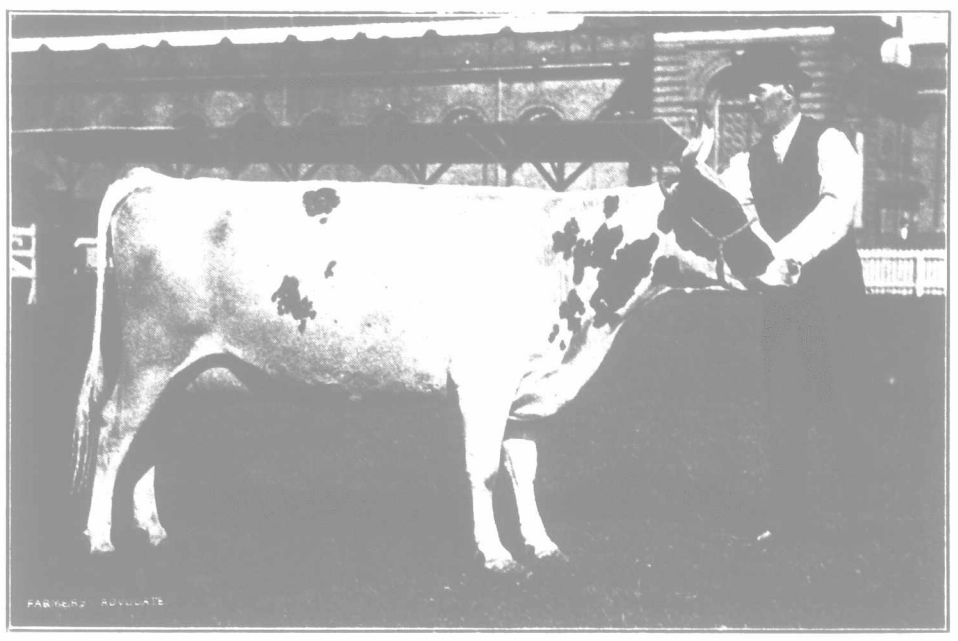
Dairy Test at Woodstock Fair.

One of the features of the Woodstock (Ont.) Fair which attracted a great deal of attention among dairymen of Oxford County was the competition for the awards in the dairy test.

This test was put on for the first time at the fair last year, and its effect on the exhibit of dairy cattle this year was most remarkable. The dairy barn has a capacity of stabling 100 head, but this was much too small, and at least 50 animals had to be kept outside. Breeders pronounced the exhibit one of the best ever seen in Western Ontario, and they thought the credit of this splendid exhibit was largely due to the dairy test as the main attraction.

Thirteen cows were entered in the competition, and the test extended over a period of 24 hours. The awards were made according to the following scale of points: 25 points for each pound of fat, 3 points for each pound of solids not fat; 1 point for every ten days in milk after the first 30 days, limit, 10 points. The first prize in the pure-bred class, value $40, went to the Holstein cow, Olive Schuling Posch, owned by Rettie Bros, Norwich, with a score of 76.397 points. The second prize was taken by an Ayrshire cow, White Pearl of Popple Hill, owned by Isaac Edwards, Beachville, with a score of 56.246 points. The third prize went to a Holstein, De Kol Flora Posch, owned by McGee Bros., Beachville, with a score of 53.806 points.

In the class for grade cows, the first prize, value $25, went to a Holstein-Jersey grade, owned by T. H. Dent, Woodstock, with a score of 62.932 points. Second prize was won by a Holstein-Shorthorn grade, owned by A. J. Davis, Woodstock, with a score of 57.734 points. The third prize also went to a Holstein grade, owned by Mr. Davis, with a score of 56.670 points.



Southwick —25327—.

Ayrshire cow, four years old. First in dry class, Toronto, 1910. Exhibited by Hector Gordon, Howick, Que.

The officers and directors of the Fair Board are so favorably impressed with the result of the test that they contemplate increasing the number and value of the prizes for next year, and also making a separate class for heifers.

JOS. BURGESS.

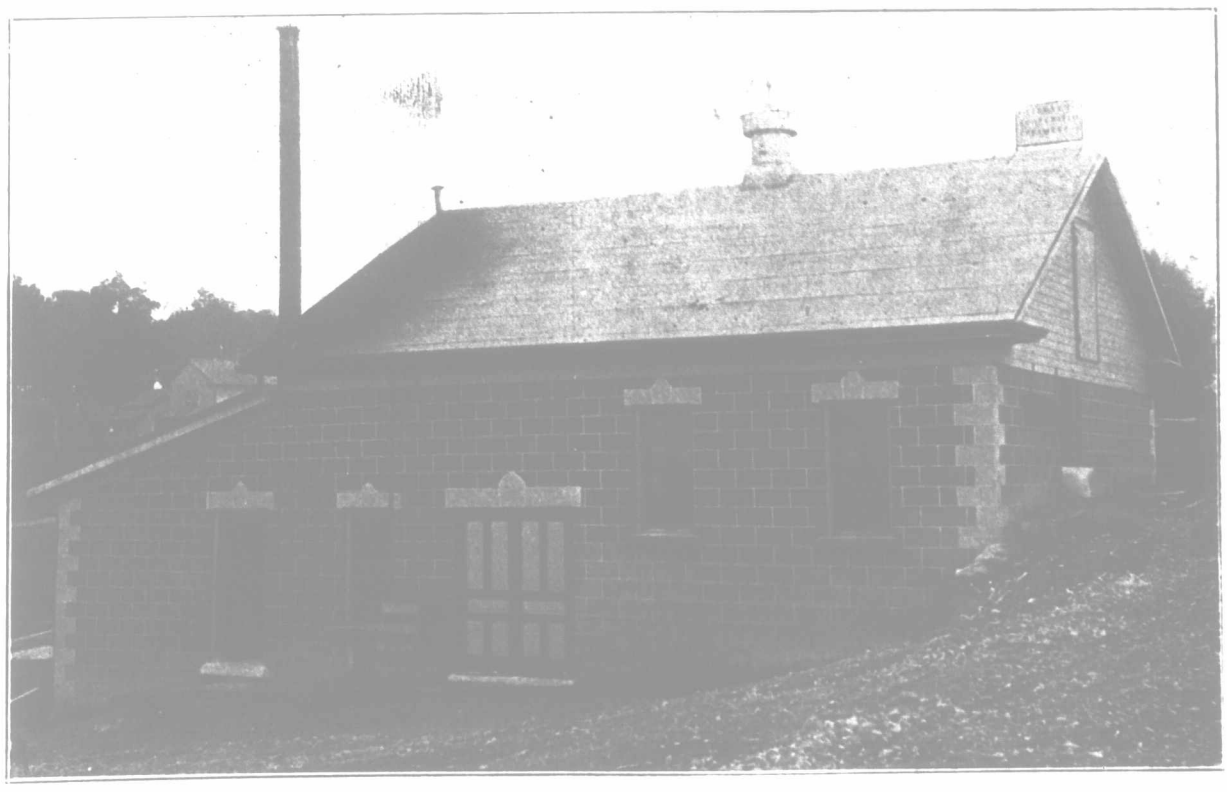
A $4,000 Creamery.

A neat, new, joint-stock creamery, built on the gravity system, began operations last year, on July 19th, at New Dundee, Ont. It belongs to the Farmers' Co-operative Creamery Co., and cost, we understand, nearly $4,000. Built of cement, with a plaster coating neatly blocked off, it presents a very attractive appearance, as our illustration shows. There used to be a small creamery here, run by a storekeeper, but the facilities were inadequate, and, the people of the locality realizing the need of such an industry on a larger scale, met to discuss the question, when it was decided to form a co-operative company, if sufficient capital could be secured. The canvass proving successful, a charter was applied for. Since the present creamery was built, the make has been increasing by bounds. In May, 1908, it was 8,975 pounds; in May, 1909, 14,062 pounds, and in May, 1910, 18,052 pounds, or more than double what it was two years ago. The June make this year ran up to 25,401 pounds, July being 23,593, while it was expected that August would amount to over 25,000 pounds. The test of the cream, by the way, shows great variation as among the supply of various patrons, running, in July from 12 per cent. up to 47 per cent. fat.

The cost of the creamery was $2,000 for the building, including ice-chamber and cold storage, and $1,950 for equipment, including all machinery, vats, etc., also piping of water from spring and cement water reservoirs.

The refrigerated chamber, built according to specifications supplied by Dairy Commissioner J. A. Ruddick, has its walls constructed of 10-inch mill shavings, five thicknesses of matched inch boarding, and two thicknesses of building paper. The temperature during July ranged from a minimum of 41 degrees to a maximum of 47 degrees.

There is a first-class spring-water supply, and a spruce tank in the attic for buttermilk, which is taken by four farmers at $3.00 per ton of butter. The charge for making, including the gathering of the cream, is 3½ cents per pound of butter, the balance over and above the actual cost of manufacture going back to the patrons.



A Creamery Built on the Gravity Plan.

Completed in 1909, by the Farmers' Co-operative Creamery Co., Limited, New Dundee, Ontario.