THE DAIRY.

The Petrolia Creamery.

One of the most substantial, convenient and well-equipped creameries in Western Ontario is that built in the town of Petrolia in 1902 by J. E. Armstrong, M. P., and William English, under the firm name of the Lambton Creamery Co. The Company has since been incorporated, others becoming associated with them in the business, among whom are G. M. Carey and N. McPhail, the present manager and maker.

The creamery was established as a milk-gathering one, and in addition to the central plant, two skimming stations were built, one at Osborne, about nine miles to the west and north, and one at Wanstead, about the same distance north-east. By this arrangement an area of about twenty miles by fifteen was covered.

Hand separators have since been extensively introduced, and the Company have established several cream-gathering routes in territory not within reach of the skimming stations. On these cream is gathered each alternate day during the summer, but at the date of our visit (Nov. 6), all but one driver were collecting twice a week. The collected and factory-separated cream are made up separately, and the price obtained per pound for butter from each is the same. The patrons haul their milk and cream, and the butter is manufactured for three cents a pound. Some butter and cream are disposed of locally, as well as all the buttermilk, but nearly the entire output is sold for export. During the last two seasons the butter has, at the request of the buyers, been packed in Danish kiels, which fact is the best possible evidence of its quality, for inferior goods are not wanted in that package. Everything about the premises evidences the skillful, cleanly, painstaking maker, and we understand the district creamery instructor, Mr. Fred Dean, reports that whenever visited things are found shipshape. The result is a good product, top prices, and, we believe, satisfied patrons and expanding business.

Each patron's milk is tested with the Composite Babcock Test; the pounds of butter-fat delivered by each are calculated, and the aggregate returns for butter, cream and buttermilk divided pro rata according to the pounds of fat delivered by the respective patrons, who are paid monthly by check.

Following are the prices the patrons were paid each month for the ten months of this year: January, 22 cents per pound, butter-fat; February, 26 cents; March, 24 cents; April, 24 cents; May, 18 cents; June, 18¼ cents; July, 20 cents; August, 22¼ cents; September, 22½ cents; October, 22½ cents.

The builders of this creamery have spared no expense either in building or equipment. In fact, if one were disposed to offer criticism, it would be that they have built on a more extensive scale than the present patronage warrants. The owners admit that up to the present the venture has not paid more than a low rate of interest on the investment, but they are confident that dairying interests have a bright future in Lambton, as no part of Western Ontario is better adapted to this branch of agriculture.

BUILDING AND EQUIPMENT.

The building is a brick veneer erected upon a cement-concrete foundation, and floored throughout with cement. It is 101 feet long by 40 feet wide, with an annex 12 ft. by 28 ft., on the west side, which contains the refrigerator plant. The general layout is indicated by the accompanying half-tone, and details of the construction will appear from the subjoined description, which we print in full, partly to convey an idea of the exact construction of this factory, but more particularly to serve as a working model for those who may be wishing to draw up specifications, but are not just clear how to go about it.

In the front, or north end of the building, a small office and a testing room are located on the west side, the east part being used as a receiving room. Here the milk is delivered, weighed, and each patron's amount marked down. On a separate book is figured 85 per cent. of the weight of his whole milk; this represents the amount of skim milk he is to receive.

The milk is run from the platform into the receiving vat, then through a 6000-pound-per-hour Reid's pasteurizer at a temperature of not less than 165 degrees F., thence into the cooling vat, in which the temperature is lowered to 140 degrees. On a second floor, 42 inches lower, at the back of the same apartment, are two Alpha separators, capacity 3,000 pounds per hour each. On this floor, also, is located a 16-horse-power engine which supplies all the power used in the factory, steam being supplied by boilers located in a separate building some distance in the rear of the creamery building. A small skim-milk pump elevates the skim milk to a vat in the second story, from which it is weighed out to the patrons. This, by the way, is the only pumping done in the factory, all the whole milk and cream being conducted through open pipes by gravitation, rendering all parts of these pipes accessible and easily cleaned.

The cream runs from separators to vats in the next room, the floor of which is 25 inches lower. Here are two double cream vats, with a combined capacity of 4,800 pounds, and a small, well-insulated tank for holding iced water. Each pair of vats is in a bath of water cooled in summer with brine pipes from the refrigerating plant. Some ice is also used at night to hold the temperature down till the plant starts next day. At this season, however, the water is cool enough without ice or brine being used. The cream in the vats is cooled to 70 degrees F. and a culture added which is made from pasteurized skim milk.

When ready to churn it is run into the churn in the next apartment, the floor of which is 62 inches lower than the preceding one. The cream is churned at 48 to 50 degrees F., in a Success combined churn and worker. Not once this summer has the churning temperature been so high as 52. Salting is done at the rate of one-half ounce per pound for export, and three-quarters ounce for domestic consumption. Enough color is used in winter to impart a June tint.

When made, the butter is packed in kiels and put into storage rooms immediately back of the churning and making rooms. This storage department has been divided into three rooms, so that different temperatures might, if necessary, be maintained in each. The insulation as at first constructed was found not to be sufficient, and one of the apartments has been fitted up with an extra lining of 1 inch hard maple, and between this and the original wall one inch of mineral wool. It is now possible to control the temperature of this room satisfactorily. Next year the adjoining room will be similarly fitted up. The cold storage plant in the annex is of the direct expansion type, manufactured in Carbondale, Pa., known as the Carbondale system of refrigeration.

The cost of this creamery was as follows:

Land	$ 500 00
Buildings	4,500 00
Machinery	3,000 00
Cold storage	4,000 00
Two skimming stations	5,000 00
	$17,000 00

While the cost of plant and equipment is pretty steep, the capacity is large and the facilities excellent, lightening the work and making possible a fine product. It must always be remembered, too, that first cost which saves in running expenses is economical in the end. The cold-storage plant cost in wages and material $260.00 for season of less than six months. This does not include extra fuel used, which would amount to a considerable sum. It would therefore be seen that this would be impracticable except where large quantities are handled. And the same result could, perhaps, be as well accomplished in a smaller plant by an ice-chamber system such as we described in connection with the Harrietsville cheese factory, especially so where butter is held only for short periods. Besides making creamery butter, the Company handles large quantities of dairy butter and eggs, for which the cold storage is used.

SPECIFICATIONS FOR THE PETROLIA CREAMERY.

Below is a copy of the specifications followed. In them are references to numerous blue prints, for which we have not space, but the form may be of some service as a guide:

Excavation.—Excavate one foot larger than size, and net depth shown on plan; also for footings as shown, and after concrete is dry lay outside tile and cover 4 inches with coarse gravel (to be furnished), then fill to grade line with clay; also fill inside of rooms to height for concrete floor with wet clay, and well ram.

Concrete.—Build all walls to height as per plan of concrete, eight to one, of clean gravel and Portland cement; all floors of concrete to be four inches thick, lower three inches, eight to one, and top inch, two to one, to be laid with a gradual fall to A for drainage; steps of concrete to be two to one, as above.

Brickwork.—Veneer with white brick all outside walls and rear walls of main building, brick to be carried up to top of fire wall (see detail). Brickwork of engine house, nine-inch walls, struck both sides, blind bond; all windows and doors to have nine-inch arches (two tier rowlocks); engine-house walls to be eight feet high.

Plaster.—Plaster all walls on ground floor from floor to ceiling (of wood), two coats, hard finish, excepting cold-storage rooms (which will be of wood). Care must be taken of concrete floors, which must be kept clean after plastering is done.

Carpenter Work.—All studding to be two by four, excepting partitions marked "B," which must be two by six. Double plates and sills. Plates of outside walls to be two by ten.

Floor joist in office and testing room to be two by ten, bridged once in length. Roof joist in rear building to be two by twelve. All two-feet centers to be bridged as above.

Rafters of main building to be two by four in two length, spliced on four-by-six purlins, supported and braced on six-by-six posts above iron columns. Collar beams two by four, twice tied to rafters. Ceiling joist of rear building to be two by four as per detail. Ceiling joist in churn room, two by six.

Line all outside walls and rear wall of main part; deck and pitched roof also inside of cold-storage rooms, with matched hemlock sheathing (see detail of cold storage).

Cover all ceilings in both buildings, also wall and partitions of cold storage, with ⅞ narrow matched pine, to be beaded.

Lay white pine floor in office and testing room, and finish with casing, band mould and base; all other openings plain casings.

All doors and windows to be sizes marked on plan.

Erect stairs where marked, of wood, of two-inch dressed plank, with rails complete. Also put rail of pine from stair at testing across to main stair.

Loft over main part to have 1¼ maple or pine floor, and matched partition around stair well with door; also two windows in rear wall same as front elevation; no other finish in loft.

Cornice on main part of fourteen-inch plantia, seven-inch facia and five-inch bed mould.

Main roof to be covered with B. C. red cedar shingles, hip and ridge poles to complete.

Cover all fire walls with galvanized iron, as per detail.

Roof of rear building to be three-ply ready roofing, flashed, coated and sanded in first-class manner.

Erect hoods of wood over windows of cold storage, so that sun cannot strike glass flashed to brickwork; also on windows of churn and cream rooms.

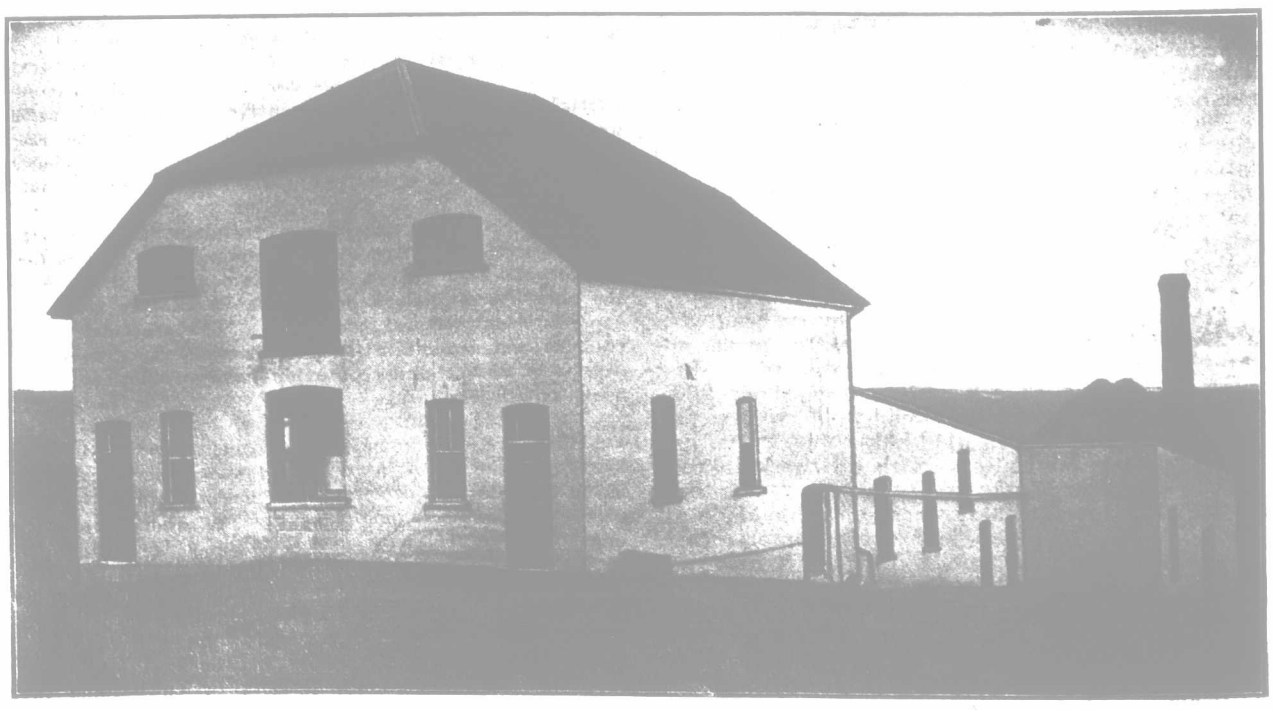
Paint all exposed woodwork three coats of zinc paint, of colors to suit, excepting loft over main part.

Lay four-inch agricultural tile around outside of building. Highest part to be at bottom of footings. Also six-inch glazed tile where shown, connected with inlets marked A in plans, to be trapped. See plans of drains.

The intention of these specifications and plans (two sheets) are for a complete building. The proprietors reserve the right of furnishing the brick, sand and gravel.

The work all to be completed by the.....

Signature.....



The Petrolia Creamery.