

THE DAIRY.

Plans and Specifications for a Community Dairy Plant.

For some time "The Farmer's Advocate" has urged the adoption of the co-operative idea in the handling of the milk produced in each locality. This can be best worked out, we believe, if producers own their own distributing plants, provided these are equipped to prepare the milk for whatever market offers the greatest opportunities, whether it be whole milk, cream, butter or cheese. There is no need here to dilate upon the present milk situation, as evidence of the need for such action on the part of milk producers. An experimental or test plant of this nature has been in successful operation for some years by the Dairy and Cold Storage Branch of the Dominion Department of Agriculture, and the result of diverting the milk supply to the most favorable market have been most marked at Finch, where this station was located. The Finch station was built after the style of a combined cheese factory and creamery, and was constructed also so as to provide convenience and sanitation combined with economy.

Largely because the present milk situation seems to strongly warrant the establishment of many more such stations, for reasons already mentioned, we are reproducing herewith the essential parts of the actual specifications for such a plant. Some details have been omitted, but these can be easily secured by anyone sufficiently interested to write to the Dairy and Cold Storage Branch, Department of Agriculture, Ottawa, for a copy of Bulletin 41, Dairy and Cold Storage Series, or for blue prints on a working scale which will be supplied for all the illustrations used in the Bulletin. The specifications follow:

CAPACITY AND EQUIPMENT.

Capacity.—This plan is suitable for the manufacture of both cheese and butter at the same time, but it is designed more particularly for the manufacture of cheese in summer and butter in winter. Its capacity is 26,000 pounds of milk for cheese-making and about 1,000 pounds of butter per day. The Government Dairy Station, Finch, Ont., is built from this plan with hollow cement blocks.

Equipment.—To operate this factory efficiently a 20-horse-power boiler and a 10-horse-power engine should be installed. A round galvanized iron tank 5 feet by 5 feet should be placed above the boiler room for cold water. A round galvanized iron tank 30 inches in diameter by 40 inches deep may be placed under the stairway for hot water with the outlet high enough to

discharge into pails sitting in the wash sink. A steel whey tank 12 by 8 by 4 feet 6 inches deep is placed over the boiler room immediately over the supports mentioned in specifications. In the bottom of this tank near the end next wall, place two 2-inch outlets to fit 2-inch steam pipe. A tin vat for skim-milk 6 by 3 by 2 feet 9 inches deep is placed alongside of the whey tank. Connections are made from the whey tank to an automatic skim-milk weigher in the store-room, also to one in the boiler-room. The skim-milk vat is also connected to the weigher in the boiler-room. The cheese-making room is planned for four 6,500-pound vats and cheese presses for 34 cheese. The curing-room, if fitted four shelves high, will hold 480 cheese. The ice chamber will hold about 90 tons of ice. In the creamery there is room for a milk-receiving vat, two cream ripeners, two separators and a churn.

FOUNDATIONS.

Outside Walls.—Erect a concrete wall 18 inches wide at the base and 9 inches wide at the top with a depth of 3 feet below and 1 foot above the ground level. The slant to be on the outside of the wall except at the septic tank where the slant must be on the inside so as to leave the wall for the septic tank perpendicular. Adjoining the septic tank the foundation shall be 7 feet 6 inches below and 1 foot above the ground level.

Roof over Front Driveway.—Erect a foundation 28 feet long, 3 feet below and 2 feet above the ground level, 15 inches wide at the base and 8 inches wide at the top. Slant on outside of wall. At each end of this foundation erect retaining walls 15 feet long, 12 inches thick at base and 8 inches wide at top, 18 inches below the ground level and 2 feet above the ground level at main wall—sloping to 1 foot above the ground level at the end. From each side of the milk-weighing platform erect retaining walls 10 feet long, same thickness, depth and height as outside retaining walls.

Partitions.—Under all partitions shown on plan, except that between the ice chamber and curing-room, erect foundation walls 9 inches thick, 18 inches below and 12 inches above the ground level. For partition between the ice-chamber and curing-room make the foundations 14 inches wide, 18 inches below and 12 inches above the ground level.

Post to Support Ceiling of Ice Chamber.—In the centre of the ice chamber erect a pier 18 inches square, 2 feet below and even with the ground level.

Posts to Support Whey Tank.—In the engine room erect 4 concrete piers 18 inches square, 3 feet below and 1 foot above the ground level.

Smokestack.—Erect a concrete foundation 4 feet square, 4 feet below and 1 foot above the ground level.

Boiler and Engine.—Erect concrete foundations for boiler and engine as shown on plan. Top of boiler

foundation to be 6 inches above floor level and top of engine bed to be 12 inches above floor level. Place anchor bolts in engine bed as directed and finish outside smoothly with cement. Anchor bolts to be furnished by owner.

Septic Tank.—From the corner of the bath-room, build a concrete wall 8 inches thick, 7 feet 6 inches below and 6 inches above the ground level to extend 6 feet out from the corner, then straight across and join the corner of the refrigerator wall. Across the middle of this tank, between the refrigerator and bath-room, erect a concrete wall 6 inches wide and same height as outside wall. Then in the centre of each tank erect 6-inch walls same height so as to make four compartments. All the drainage to septic tank to be connected with No. 1 compartment. Make outlets from one compartment to the other, 1 inch lower than drainage from the factory gutters; between compartments Nos. 1 and 2, 2 and 3, and 3 and 4, make a 3-inch steam pipe connection with elbows on each end. The intake end of each outlet to extend down into the tank 2 feet, so that the water is drawn from about the middle of each compartment. Directly over these connections, close to the cover, make openings 3 inches in diameter for ventilation. Connect the fourth compartment to the main drain with a 3-inch pipe; on the end of this pipe in the tank, screw an elbow and a piece of pipe 2 feet long.

Floor in Tank.—Make a concrete floor in the septic tank, 4 inches of concrete and 1-inch finish, same as on factory floors; all the walls and partitions in the tank to be made smooth and free from holes.

Cover on Tank.—Make a cover over the tank, 4 inches concrete and 1-inch finish, same as floors. Cover to be reinforced with ¾-inch iron. In the cover of each compartment, make a manhole 18 by 8 inches with bevelled sides and fitted with a 2-inch plank cover. In the cover over No. 1 compartment, place a vent 4 inches in diameter and in No. 4 compartment place a vent 2 inches in diameter.

FLOORS.

Provide and lay over the floor area, except in the ice chamber and refrigerator, to a depth of 8 inches with gravel, broken stone or clinkers, well rammed or rolled and afterwards moistened to prevent absorption of water in the concrete when laid; on this lay 4 inches of the concrete mixture and 1 inch of the finishing mixture, surface of floor to be trowelled perfectly level and left smooth and even. Curing-room floor to be graded 2 inches from the outside walls to the gutter at the partition between the curing-room and cheese-making room. All the other floors to be graded to the gutters 1 inch to 6 feet.

Ice Chamber Floor.—Excavate the area of the ice chamber to a depth of 16 inches below the top of foundation. On the inside of the three outside walls lay a concrete block 4 inches thick and 12 inches wide to support studding for insulation. Inside of this concrete block, grade the ground with a slope of 2 inches to the end wall; lay a 3-inch field tile along the end wall and seven rows of the same sized tile across the room and connected with the row along the end wall. All the tile must be sunk level with the ground and connected with a 4-inch glazed tile, leading through the foundation wall to the drainage system of the factory. Provide a trap in the glazed tile outside of building.

On top of the field tile lay 8 inches of coal cinders or coarse gravel. Lay over the gravel, rough lumber and cover with 10 inches of planer-mill shavings and cover with 1-inch rough lumber. On top of lumber lay 2-by-4-inch scantling at 24-inch centres.

Refrigerator Floor.—Excavate area of refrigerator to a depth of 15 inches below the top of the foundation and lay gravel and concrete the same as in curing-room floor. On top of concrete lay one course of 3-inch impregnated cork board. Finish on top of cork with 1 inch of Portland cement, same as other floors.

Milk Weighing Platform Floor.—Fill in space between outside and inside walls with earth or stones or gravel, rammed solid, lay 4 inches of concrete and finish with 1 inch cement same as in other floors. Grade 1 inch to gutter, as directed. This floor to be 2 feet 10 inches from main floor.

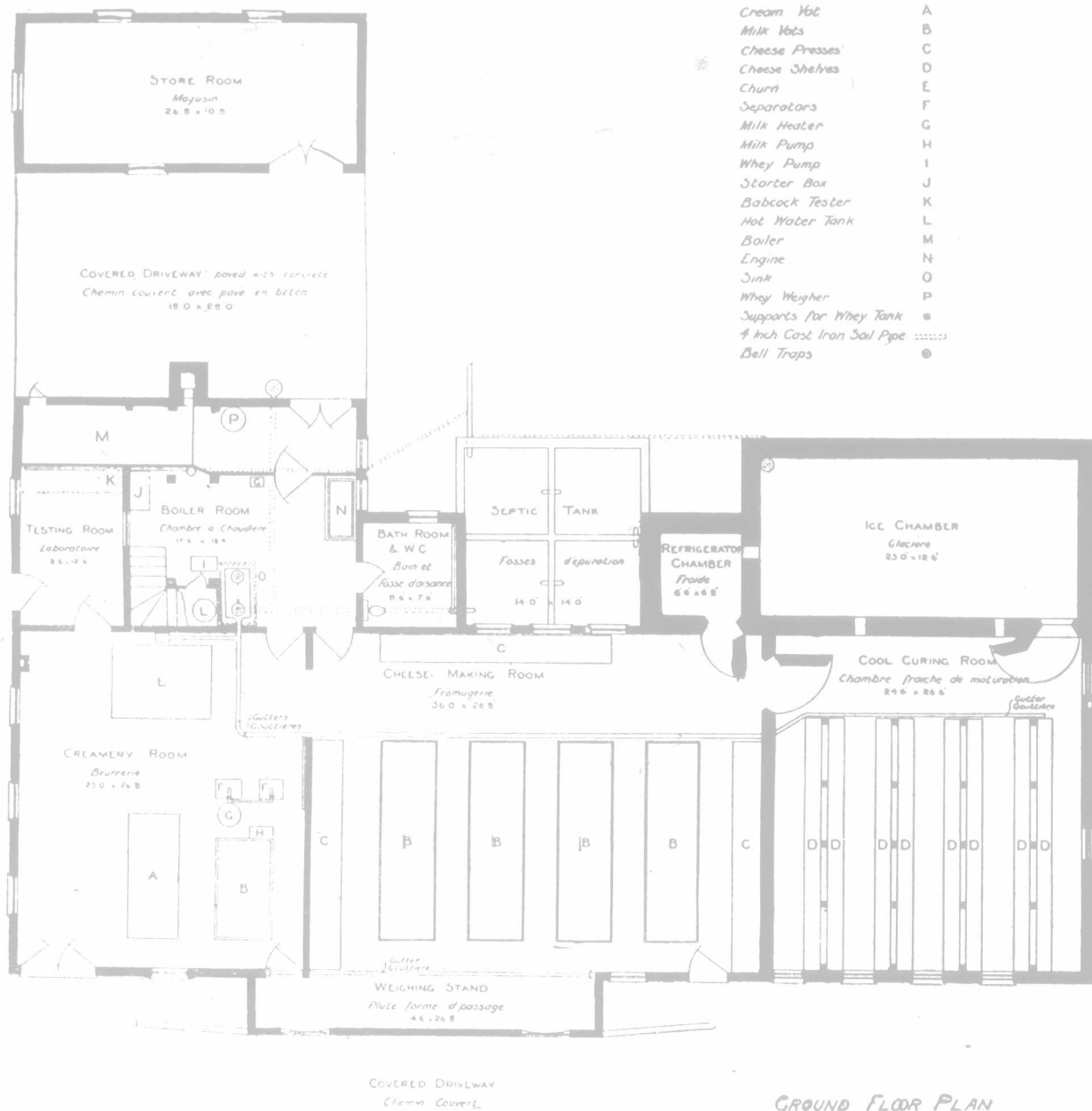
Driveway Between Store-room and Boiler-room.—Lay a concrete floor same as floors of building 20 feet wide from the right-hand side of boiler-room, grade the surface of the floor 3 inches to "Bell" trap.

Gutters.—In the boiler-room make a basin under the sink 3 feet by 18 inches and 7 inches deep. From this basin make a gutter as shown on plan 5 inches wide to partition at curing-room. Under this partition and extending into the curing-room, 2 feet make a gutter 2 inches wide, 2 inches deep at the main gutter and 1 inch deep at the end. Main gutter to be 7 inches deep at the basin and 3 inches deep at the curing-room partition.

In the creamery make a gutter at boiler-room partition as shown on plan, 4 inches wide, 5 inches deep at the main drain and 4 inches deep at the end. At the end make a basin 12 by 10 inches, 4 inches deep. In the testing-room, make a gutter 2 inches wide and 2 inches deep to bell trap at the corner of boiler brick work.

On the weighing stand platform, make a gutter 2 inches from the edge of the platform, 2 inches deep at one end and 3 inches deep at the other and connected with a 1½-inch pipe to outside of platform.

Traps and Soil Pipe.—In the basin in the boiler-room, place two bell trap cess-pools half an inch below bottom of basin. Connect No. 1 with the septic tank. Connect No. 2 with main drain running from the septic tank to catch basin. In the bath-room place a bell trap 2 inches below the floor level and a water closet



The Ground Floor Plan of a Combination Dairy Factory Where Milk Destined for Any Purpose Can be Cared for to the Advantage of the Producer.