

When the demand becomes sufficiently extensive for commercial success, it will produce the necessary plant food in soluble form from apatite rock, phosphates from the so called *marl* deposits existing in the province, from the bones and animal substances that now go to waste, from ammoniacal gas, liquor sewage, sea weed, and such like, that are mines of wealth to the farmer as well as manufacturer, when the occasion calls forth some of the resources of Chemistry.

We continue our description of the Swedish Dairy Factory system, which was commenced in the January number of the Journal:

The object of the company is to purchase milk at different places situated within the provinces surrounding the Lake "Mälaren," for the making of butter, cheese, and other dairy products, partly on the spots where the milk is delivered from the surrounding farms, and partly at the central dairy at Stockholm. The branch factories are to be established partly near railway stations in daily communication with the central factory, and partly at places from which a daily communication with the capital cannot be reckoned on all the year round, and which latter, on that account, must be so arranged as to be able to carry on a more independent existence.

All these dairy-factories are under one and the same direction, consisting of five shareholders annually elected at the general meeting of the company; the chairman and the managing director must reside in Stockholm or its neighbourhood.

The salary of the chairman amounts to 1,000 Sw. dollars (55*l.*); that of the managing director to 5,000 Sw. dollars (275*l.*); and that of the three other directors to 500 Sw. dollars (27*l.* 10*s.*) each.

The Lord of directors authorizes the purchase of the milk and the manner of employing the same, as also the sale of the manufactured produce. The board appoints and dismisses the assistants and clerks.

The managing director has to effect the purchase of the milk and the selling of the produce, both, however, in conformity with a plan previously drawn up by the board of directors. He alone engages and dismisses workmen and women, both at the central and the branch dairies.

The board of directors meets once a month at least, the chairman exercises a general supervision in the intervals. To other members of the board is committed the superintendence of certain districts according to a division agreed upon between themselves.

Branch dairies at places, which are in daily communication with the capital all the year round, are established by the

board of directors whenever and wheresoever they find it advisable.

The establishment of branch dairies in districts which are deprived of daily communication with the capital requires more direct co-operation between the company and the neighbouring dairy farmers; but such dairies are always established as soon as sufficient means, by subscription for shares, have been obtained at the place, and a guarantee has been given for the delivery of the requisite quantity of milk. The annual profits of the company, after all the expenses and disbursements, as well as salaries, have been paid, and 20 per cent. of the value of the plant has been deducted, are to be disposed of in the following manner:

(a) Six per cent. interest is to be paid to the shareholders on their presenting the coupons of interest.

(b) Of the remainder, one-tenth is to be set apart as a reserve fund, which, in the event of a bad season or other circumstance causing the balance to be so small as not to cover the interest at the rate of six per cent. on the shares, may be employed in supplying the deficiency.

(c) What thereafter remains is to be divided between the directors, the shareholders and the purveyors of the milk in such a manner that the directors receive one-fourth, and the shareholders and milk-purveyors the remaining three-fourths.

(d) The amount falling to the share of the directors is divided in such a manner that the managing director receives one-half, the chairman one-fourth, and the other directors the remaining fourth, to be divided in equal shares among them.

(e) The division of the balance between the shareholders and the purveyors of the milk is made so that those purveyors who have furnished the factories during the whole of the previous year with milk to an amount of not less than 5,000 "kannor" (2,900 gallons), shall, for each 2,500 "kannor" (1,450 gallons) delivered at any dairy of the company, partake in the division equal to one share.

The milk from the different farms that have entered into contracts with the company for the delivery of the produce, is conveyed every morning and evening, immediately after the milking, to the nearest of the sixty stations at present fixed by the company for receiving the milk. It is there poured into tin vessels holding about 14 "kannor" (8 gallons), 20 by 13 inches each, which are placed in water, cooled so as to be from 36 to 40 degrees Fahrenheit, and are left there until the cream has risen.

The skimmed cream is conveyed by railway or steamer (during the winter also on roads) to the central factory, where it is made into butter in five churns worked by a steam engine of 4 horse-

power, by which 5000 pounds of butter can be churned per day.

At some of the branch factories, where at least 500 gallons of milk per day may be obtained, the company intend to try the production of Cheddar cheese, but at present that description of cheese is not made.

The butter is exported; the skim-milk cheese prepared in the Dutch manner, finds a good market at home. With regard to the quality of the butter, the most flattering testimony has lately been received from London factors.

The capital of the company is fixed at 55,000*l.*, but as soon as 8,000*l.* were subscribed—which was done in two days—the company commenced its operations.

The calculation on which the company was formed is abridged as follows:

RECEIPTS.

Supposing that 3 million "kannor" milk (= 1,700,000 gallons) are furnished per year, and that 5½ "kannor" of milk (= 30 gallons) are requisite for the production of 1 pound of butter 545,000 pounds of butter will be obtained, and sold at a price of 85 öre per pound (= 11.3 pence per Swedish pound) which will yield \$463,250

From 3 million "kannor" milk, after deducting the cream and the evaporation, 2½ million "kannor" of skim-milk are obtained. Of this milk, about 2000 "kannor" per day, making 600,000, "kannor" per year are sold in the capital at an average price of 15 öre per "kanna" (= 3.6 pence per gallon), after deducting the commission, which makes 90,000

Of the remaining 1,900,000 "kannor" of skim-milk, calculating that 2½ "kannor" of milk are requisite for the production of 1 pound of cheese, 760,000 pounds of cheese are obtained, making at 22 öre per pound (= 3*d.* per pound) 167,000

Of the cream employed in the making of the butter, viz.: 500,000 "kannor," 250,000 "kannor" are left after the churning, making, at 8 öre per "kanna" (about 1*d.* per gallon), at which price this buttermilk is sold in the capital 20,000

Of the milk employed in curdling, 85 per cent. is left in the form of whey; consequently of the above stated 1,900,000 "kannor" of skimmed milk 1,600,000 "kannor" of whey would be obtained. Whey is here generally used as food for swine, considered worth 2 öre per "kanna" (= ½*d.* per gallon), which in this case would be equal to a sum of \$32,000; but in this calculation we have only considered it as equal to the amount that may be required for fuel at the branch factories, and for the covering of unforeseen expenses.

Total receipts (40,713*l.* 15*s.*) \$740,250

EXPENSES.

For the purchase of 3 million "kannor" milk, the price of which is at present 19 öre per "kanna" (= 4½*d.* per gallon) \$570,000

Annatto, salt, spices for the cheese, rennet, barrels, etc. 12,500

Ice for cooling the milk; average price ½ öre per "kanna" milk (= 1-16*d.* per gallon) 3,750

Wood and coal employed at the central factory 1,000

Salary of the directors at the central factory 7,500

clerks in the office 10,000

" 10 mechanics and man-servants 6,000

" 5 traveling controllers 5,000

" 20 dairymaids at the central factory 7,000