

according as the one or the other predominates the butter was firm or soft; the oils might possibly increase the quantity, but would the quality be good? He would suggest as an experiment of physiological interest, an attempt to feed a cow with a mash in which suet as a solid fat should be introduced. By proper measures, best known to dairy-farmers, a cow might be made to eat this perhaps, and it would be interesting to know the results on the quantity and quality of butter.

**CHEESE.**—Mr. Way remarked that the curdling of milk was due as before explained to acids; which combined with the soda of the soluble curd. In general the production of acid in the milk was brought about by the use of rennet, which was a ferment produced by the lining membrane of the stomach of a calf to the air. The use of rennet presupposed of course the destruction of the milk sugar, and therefore the whey was sour. In Germany and Switzerland, and particularly in Holland, the acetic and muriatic acids were used to curdle milk for cheese. Mr. Way exhibited a diagram of the composition of cheese, which would show that although we believed cheese to be dry, it still retained a large quantity of water.

COMPOSITION OF CHEESE, (JOHNSTON.)

	Skin Milk cheese	Doubl. Gloucester	Cheddar.	North Wilts.	North Wilts. 2 specimens.	Dunlop.
Water.....	43.82	35.81	36.04	35.58	44.80	38.46
Casein.....	45.04	37.96	28.98	25.00	28.16	25.87
Butter.....	5.98	21.97	30.40	30.11	23.04	31.86
Saline matt.	5.18	4.25	4.58	6.29	3.99	8.81
	100.02	99.99	100.00	99.98	99.99	100.00

The relative richness of cheeses was due to the quantity of butter in them. The rich cheeses were those which it was most difficult to keep. The thorough salting and perfect washing of the curd also rendered cheese liable to change, although, as in the case of butter, every precaution in this direction was unfortunately opposed to the production of cheese of good flavour; those cheeses that keep best, as the Dutch and Suffolk cheeses, being far less agreeable to eat.

Mr. Way wished to make one or two observations upon the effect of dairy cultivation on the land. Obviously by exporting butter and cheese from a farm, we export the same elements as in ordinary wheat, beef, and mutton farming. In addition, however, to the carbonaceous and nitrogenous elements so exported, a quantity of mineral matter, chiefly phosphate of lime, is removed by the cheese and in the bones of the calves.

In old pastures this was never replaced, until the practice of manuring with bones came into use. Bones, as exhibited in the diagram, contain 50 per cent. of phosphate of lime.

The organic part was composed of oil and gelatin, the latter of which was a nitrogenous substance, as shewn in the diagram below.

Now it had been found that 1000 lbs. of milk contain phosphoric acid equal to about 3 lbs. of phosphate of lime. Mr. Curwen found that in a mixed dairy of long and short-horns on an average of four years 3700 quarts of milk were annually produced by each cow. Upon this calculation about 27 lbs. of phosphate of lime would annually be carried off, and that without taking into account the bones of the calves removed. To replace the phosphate of lime  $\frac{3}{4}$  cwt. of bones must annually be added for each cow that was kept. By a further calculation Mr Way showed that if the use of bones were to replace the nitrogen carried off in the milk about 15 times the quantity would be requisite that was needed for the replacement of the phosphate of lime.

**PLANTING MANGELS AND TURNIPS FOR SEED.**

Prepare the land deeply let it be clean and well manured; plant the roots as soon as possible in rows three feet apart, and two feet, plant from plant. Mangels and turnips may be planted in the same field, but a second variety of turnips should not be sown within half a mile of each other.

**CARROTS.**—The preparation of the land for, and the cultivation of the carrot is precisely similar to that described for parsnips; but the carrot may be sown a fortnight later than the parsnip, whether the seed be prepared or unprepared, and carrots delight in deep, sandy soils. The most approved varieties for field culture are the long orange, Altringham, purple, white, and red Belgian. The white varieties grow the largest; but the red ones are the most nutritious. As Spring food for horses, they are excellent: they fatten cattle amazingly, and they communicate no disagreeable flavour to the milk or butter of cows, and pigs thrive rapidly on them.

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