nave been fair, and the uninstructed farmer looks upon the business as profitable. But we got a bulletin recently from the Ontario Department of Agriculture which shows that for every ton of hay the farmer hauls off his farm, he is taking away 25 lbs. of introgen, 18 lbs. of potash, and 10 lbs. of phosphoric acid, and that these materials are worth in current market values for fertilizing purposes just \$5.50, so that the imaginary profits entirely vanish, and the farmer is seen to be impoverishing himself by robbing the soil of its most valuable supplies of plant food.

We learn, too, from the same circular, that at present prices of wheat and barley, grain farming is almost as unprofitable as hay farming since the nitrogenous and mineral constituents that are taken off the farm when these are sold are worth about 40% of what the farmer receives for his crop. It strikes a country pupil forcibly, as a cheerful contrast to all this, to be shown that the farmer who is wise enough to concentrate his energies on the production of fat cattle or milk for the cheese factory, loses in soil fertility only about 10% of his receipts. But he is struck even more forcibly with the fact that the tarmer who sells neither hay nor grain, nor fat cattle, nor milk but cream and cream only, (as some are now doing where creameries are located), this prudent farmer loses in soil fertility only a trivial one-tenth of 1% of his receipts for sales. For as butter contains neither potash nor phosphorus and only a very small fraction of nitrogenous matter, the butter farmer's soil is never exhausted. The cow now appears in the interesting light of a most wonderful apparatus for converting carbonic acid and The water into gilt edge butter. plants on which she lives absorb carbonic acid from the inexhaustible reservoir of the air and the cow manu-

factures it into butter globules ready for the churn.

From various sources we learn that plants require large quantities of nitrogenous matter and that soils are usually deficient in this valuable ingredient which also is exceedingly expensive to procure in it chief commercial forms of guano and nitrate of soda. But science has lately shown us that leguminous plants have the property of absorbing free nitrogen from the air and fixing it in their tissues. So now we may grow clover to gather nitrogen for us, and ploughing this clover down we have a fine supply for whatever crop we wish to grow thereafter.

In dealing with the varied conditions of plant life many useful illustrations may be drawn from the methods of scientific agriculture. Among the matters to be taken up are the advantages of drainage and of subsoiling, and the recent discoveries that flat culture is better than ridged for root-crops and for corn, and also that the evil effects of drought may largely be averted in cultivated crops and in orchards by frequent shallow culture, since by this means the top layer of soil, being kept loose and open, acts like a mulch in conserving moisture.

When we are treating of the effect of light on plants we might go on to show that in certain cases it is an economic advantage to have light excluded, either by developing and fostering an artificial habit of the plant itself as in the cabbage, or by other methods as in the celery. Most interesting of all is the fact that to get the highest percentage of sugar in the beet the tops of the roots must be kept covered with soil. The processes of pollination and fertilisation are matters of intense practical inter-The cucumber and the strawest. berry plant we all know, furnish fine