turf for the cornfield, which they find as pleasant and as profitable.

The good results brought about by this Society are visible in the improvements which we see around us on the farms of the district over which its influence extends; and their products are brought before you this day in forms which evidence more fully the good that has been accomplished. Let it then go on and prosper in its good work, let it be widely known that the Society expects every member to do his duty, and let every member, and every one connected with this Society, rejoice that he has it in his power to do something for the common good. And having done our part, let us seek the Divine blessing on our labors, let us remember that, in material as in spiritual things, while Paul may plant and Apollos may water, it is God that giveth the increase.

What is the annual course of operations on a farm? In spring time the farmer ploughs his land, drops his seed, covers it up, and forthwith the young crop arises; day by day it increases in stature, and in autumn it realizes his just hopes by a golden harvest. Here is a mystery that may well arrest our attention. The seed grain, with its germ of life, has grown up into a living being, and it yields seed after its kind. Let us see how its growth is accomplished.

The first statement I wish to make is that plants are living beings like ourselves. I might illustrate this by pointing, as the physiologists of olden times did, to some remarkable instances of irritability and movements exhibited by certain plants, such as the moving plant of India, the sensitive plant, and many others. But I do not found my statement that plants are living beings upon the evidence afforded by such exceptional examples as these. We have far more satisfactory evidence in the minute structure of these plants, which, in its essential character, closely resembles that of animal bodies.

[Here the minute structure and cellular development of plants, and the chemical changes that take place in their tissues, were explained.]

Now, what are the sources of the plant's food which enable it to perform the phenomena of growth? which enable it to increase in size, and furnish food for man and beast. We find that all the elements of which the plant is composed are found in the inorganic world. It therefore creates nothing. When we partially burn a plant (or a piece of wood) we drive off water and other volatile matter and leave a black mass of charcoal, or *carbon;* if this carbon is burned in the air it disappears, leaving the ash behind, which does not volatilise. This is mineral inorganic matter, which, along with water, has been derived entirely from the soil; the carbon is derived from the atmosphere which the plant breathes.

[Here absorption and the mode of feeding in the plant were explained, and the stomata were described by which it takes in the carbonic acid of the atmosphere from the carbon of which its tissues are in great part built up.]

We see then that plants are endowed with life, and exercise all the functions belonging to organized beings. Like animals they feed and breathe, and in our cultivation of them we must see that their wants are ministered to. But all plants are not alike in their choice of conditions of growth: some grow in the sea; some grow in hot water; some grow in cold fresh water; some grow on snow; some grow in wet soil; some grow in dry ground; some grow in arid sands; some grow on decaying matter; some grow on other plants, as parasites. All this teaches us that we must imitate the conditions necessary for the plant we cultivate. The atmosphere, which forms one source of the food of plants, is, to a great extent, beyond man's control, but not so the soil. It is in many respects capable of improvement.

[Here the chemical characters of soils were referred to in detail, and also their mechanical conditions.]

One of the most frequent difficulties with which the farmer has to deal is a superabundance of moisture. There are various ways of remedying this, but a few general principles are applicable to all.

In regard to ordinary drainage there are many points that can only be considered fully on the spot. Much discussion has taken place as to the direction, and especially the depth, of drains. It seems to be well established that on light soils drains act more effectively the deeper they are placed; but it is necessarily very different on clays where the water cannot percolate. In such soils, while the actual depth must depend upon the depth of available soil, and other circumstances, it must never be carried too far, otherwise the clay will resist the passage of the water, and thus the drains will remain useless.

It is also a question of frequent discussion in England: what is the proper distance apart for drains? And here it is necessary to take into account the differences in regard to capillary attraction of soils, or that power by which they are enabled to suck up water from below.

[Here the effects of different modes of drainage were explained by diagrams.]

In a comparatively short time draining has completely changed the aspect of extensive tracts of country in Britain, converting the cold morass into fertile fields and greatly increasing the annual produce, even on soil which was before bearing crops sufficient to satisfy the most exacting expectations. One reason, I believe, why so little has been done in the way of draining in this country is that drain-tiles are expensive, and not readily attainable. The same objection existed in Britain not very many yaars ago; but the demand for the article soon led to its increased production, and now our farmers in most parts of Scotland and England have no difficulty in obtaining drainage materials. There is no good reason why the same thing should not result here. There are ample deposits of clay in many parts of Canada well adapted for brick and tile-work. There are deposits in the immediate neighborhood of Kingston which may no doubt be worked to advantage, and which, in the nature of things, cannot possibly lie idle after a permanent demand for drain tiles is established.

By growing in rich soil and supplying all the conditions necessary for luxuriant growth, many plants which in their wild state are unfit for any useful purpose, have been rendered subservient to the wants of man.

[Here the origin of many of our cultivated crops, such as wheat, turnips, cabbage, &c., was explained.]

When we think of such improvements in the common plants we rear, it affords much encouragement to those who would direct their efforts in this direction, with a view to the raising of new varieties. And here I would observe that much remains to be done in this way in Canada. We Scotchmen, and Englishmen and Irishmen, are prone to imitate the British institutions and British practices. Many of these have been introduced and have proved of great value, but some have been found unsuitable to the conditions of Canada.

In the choice of varieties for the leading crops in the kinds of wheat, and of barley, and of oats, and of turnips, the Canadian farmer has hitherto depended chiefly upon varieties obtained from Britain. But the climatal conditions of Britain are so different from those of Canada, that it is impossible to believe that the varieties best adapted to the former are likely to be the most useful to the latter.

The raising of new varieties better suited to the climate than those now in existance, is surely a matter of no small importance to Canadian agriculture, and I earnestly trust that it may receive the attention which it so well deserves. It is a slow process, however, and the farmer who undertakes it, must

"Learn to labor and to wait."

But I may naturally put the question, Have you already ascertained with any degree of accuracy that old varieties of wheat and of barley, of oats and of potatoes, of turnips and of other forage and