

scientific botanist, who has, perhaps, had to work at some of the least known or rare species with scanty and imperfect dried material. In this botanical garden and arboretum there is a remarkable diversity of habitat, from open water and an area of sphagnous bog to sandy upland with all the intervening varieties of soil—rock, shady ravine, heavy clay, light loam, sand, etc.—and I feel confident that a large proportion of our Canadian wild plants can be grown and examined at leisure. It will be noticed that the two posts of entomologist and botanist have been united. I consider this was a very wise arrangement, at any rate until the work in connection with these two posts increases so much as to make the appointment of two officers necessary. One of the most important things the entomologist will have to attend to will be the injuries to plants from insects. It sometimes happens, however, that it is difficult to tell at first the source of an injury to vegetation. The attacks of some of the low forms of vegetable life and of insects being, in their effects very similar, so much so that instances sometimes occur when even careful observers, unless specially informed, may make mistakes. Again, sometimes injuries due to other causes altogether are attributed to either insects or fungi. During the past summer, there was great consternation in the county of Prince Edward on account of a serious failure in the pea crop, the complaint being that no seeds were formed. In this county peas are largely cultivated, on some farms to the exclusion of all other crops, and the seed produced is of such high quality that the best dealers in the United States and in England find it advantageous to procure their seed from this district. Many suggestions were made to account for this failure which was of such importance to a large proportion of the community, and insects and parasitic fungi were at once accused. It seems probable, however, that the excessive drought which prevailed during the whole summer was the sole cause. It is true that mycelium of fungus was found upon the roots in some instances, but this was always where the plant had been killed and was dead at the collar, the fungus only accompanying the decay of the roots and their tubers. These tubers on the roots of the leguminosae are very interesting. Through the kindness of Prof. W. G. Farlow, of Harvard University, I have had my attention drawn to an excellent article by A. Tschirch, entitled "A Contribution to the Knowledge of the Root Tubers of the Leguminosae." It is published in the Transactions of the German Botanical Society of 2nd February, 1887. This, for the first time, explains the use of these bodies, the nature of which had for many years been misunderstood. It would appear that all leguminosae bear some kind of tubers on their roots. These vary in shape in the different genera; but they all have the same use, namely, to act as reservoirs where, during the time of active growth, nitrogenous materials are stored up until required to supply the large amount necessary to fill the seeds. These latter then draw off from the tubers the nitrogenous materials, leaving them empty. Now, on the plants in Prince Edward county which I had an opportunity of examining on several farms, through the courtesy of J. M. Platt, Esq., M.P., of Picton, the plants presented the characters of having (i.) a living stem above, (ii.) a vigorous tuber-bearing root, upon which, however, some of the tubers were in a state of decay, and (iii.) a short piece of dead stem at the surface of the ground effectually separating these two portions. I feel now pretty well assured that this state of affairs was brought about much in the following manner: Just about the time the pea-plants were coming into flower, a period of drought set in which caused the stems to fade and lie over at a time when there was not sufficient foliage to protect them; in this way their bases were exposed to the direct heat of the sun as well as that from the hot, parched, earth, and they were thus injured to such an extent that they could no longer act as channels for the interchange of materials from the root to the stem and *vice versa*. If this be the correct view, the exceptional drought of last year must be assigned as the cause for this shortage, and not any attack which is likely to give trouble in the future. One noticeable feature about the plants examined was the abundance and large size of the root tubers, and this might have been anticipated had their nature at the time been understood. It points to the fact, however, that although this year the crop in Prince Edward county is small it is from an exceptional cause, and there is every reason to believe that with an ordinary season this district, so justly celebrated, will still show that it is without an equal in Ontario as a pea-producing county.

There are other injuries the nature of which is apt not to be understood. Amongst these I would specially mention the "club root" in the cabbage, which is produced by a