

suggestive and helpful in what I might term the manner or style of a speaker, a new way of putting things, and that is probably the way in which I may be of some little assistance to you, for most of what I shall say may be but putting the old truths in a new light.

At this point it is well to remember that, willing as we are to render assistance, we cannot undertake to run a man's farm for him, much less do it satisfactorily. I frequently have letters from correspondents somewhat as follows: "Dear Sir,—How much manure or fertilizer shall I put upon half an acre of land in order to get fifteen more bushels of oats to the acre?" We could not give a definite and exact answer to such a question. Every man, having acquired the first principles, must depend upon his own intelligence and industry, and, to a certain extent, upon experimental work, to make his own farming a success. This is true of all occupations or professions. A man is qualified and equipped by the school, or office, or university; but you know perfectly well that the man's future success depends upon his industry, his skill, his intelligence. And it is just the same in fruit growing and farming. It will really depend upon the man more than upon the farm. I have noticed time and again, going through Ontario and throughout our Eastern Provinces, farms side by side, the one in excellent condition—the buildings well constructed and in excellent repair, everything having a prosperous appearance; whereas the farm adjoining would be in an entirely different condition—the fields full of weeds, and broken-down buildings, etc. So that with all the assistance Government can furnish, success depends very largely upon personal effort.

It is extremely difficult for anyone coming to a new place to know what subjects to speak upon so that the greatest good may result. I have been accosting everybody I have met in connection with this Association to find out what would be best for me to consider to-night so that I might say something which, when you came to sift it and think over it, after I had finished you would find something left behind to take home with you. I did not come all this way to make a speech, but that both you and I might be better equipped for our work in the future. The point is that we have a mission. We must be in earnest about our work; we want our hearers to be in earnest. If you are really in earnest I fully believe that you will have success and prosperity, and that you will build up your country.

In the course of my address I shall probably repeat what you may have heard in other words, a few foundation truths, and draw some illustrations, possibly from my own observation in other parts of the country. I trust this may lead to a discussion, because, really, it is far better in such a meeting as this that we should have a lively discussion, than that I should make a formal address. I have been of the opinion that it is a mistake in our agricultural conventions to draw any hard and fast line between the platform and the audience, and I was very glad when the President invited you all in here (inside the railing in the Court room), so that we could have this little informal talk. Let us first go over a few first principles. You may possibly say you know all about them. Well, I don't know if it will do any of us any harm if we hear them again. The remarks will, of course, be in relation to orcharding, fruit growing, the relation of the soil and of the atmosphere to the production of fruit.

In the first place, what is a plant? It is a living thing, because it can increase in size, and can reproduce itself. The next proposition is if it can do that, if it is a living thing, it must feed. Now you must remember that neither plants nor animals create anything. The sum total of matter is the same to-day as yesterday, and will be the same to-morrow; but there is always going on in Nature a certain conversion of material: the mineral into vegetable; the vegetable into animal. Plants are living things. In order to be able to increase and reproduce their kind they must take in food. They themselves do not, can not, create anything. There is nothing new in this statement, but there is a great deal to us as practical men in the realization of that fact. If this had been thoroughly realized in the past we should not see, as we do in this country, this one-sided system of farming, this everlasting, continuous cropping, without return of plant food to the soil—a practice which has resulted in many districts in impoverished, exhausted lands.

The next step is to enquire, where do they take their food from? Of course, by plants I refer to trees as well as to all farm crops, and to the weeds that grow in the fields, for they are all under the same law in respect to feeding. Where do they obtain their food? From two sources—the atmosphere and the soil. It may astonish you to learn that 60 per cent. at least, speaking approximately or in round numbers, of the food taken in by plants comes from the atmosphere; this is a free gift from Nature. In this atmosphere we breathe there is a gas known as carbonic acid gas. Although in comparatively small proportion (four parts in 10,000 of air), there is always an abundant supply for plants, and this they can appropriate and as-

similate under the tissues of the leaf to build up the plant. The food also which the soil (four, five or six parts) furnishes by natural processes. Let us take a piece of apple. A piece of apple has lost in weight what was in a piece of apple. The weight gone was water.

It had been a piece of apple. In this treatment. Then, we have ascertained that the vegetable matter is dry and which weighs a little more than the plate; it chars, and the material is left. The oil, which is taken from the carbonic material, which I have been taken from the water, a certain amount. We said the plant. From the air they take roots in the form of

If we put a lump of sugar or salt, to the

Plant food, to the there is a great agricultural

We must recall if that food is not so much of the plants. The building up of the tissue

I will now show that phosphoric acid material. Now in Europe. For many years, in Europe, it is converted by sulphuric acid. It would be sufficient if first fermented with putting it on the land. The response from composition and for that reason it first treated with sulphuric acid would have

The chemical element these few it is only one or four of them. As we need not concern ourselves taken by the plant from the plant in such small As a matter of fact it them, namely: nitrogen. Consider the advisability

These are called replenishing them, continuing the fertility of our fields.