

One word as to planting. I strongly advise my readers to plant their trees when small, as they leave the nursery, if possible.

A young tree has every chance in its favour; it accommodates itself to the soil, to the position it is placed in, and suffers less from removal.

Shortly, I will give my readers instruction how to plant. At present, it is enough to say—plant, and by planting,

particularly with water containing a little sulphuric acid, which kills the germ of this disease. The excrements should be carried off to a distance. After a few days, the chickens that are still alive could be brought together again with perfect safety, because this disease is so rapidly fatal that in a short time all the diseased animals would be dead.

If the cultivation of the infectious organism in chicken broth is repeated many times over, passing from one cultivation to the next by sowing an infinitely small quantity, such as may be gathered on the point of a needle, the virulence of the germ is not weakened by the process. This is analogous to the ease with which it multiplies in the bodies of the *Gallinaceæ*. This virulence is so great, that the inoculation of a minute fraction of a drop will cause death in two or three days, and most generally in less than twenty-four hours.

Having established these preliminaries, I now come to the most important portion of this communication.

By operating certain changes in the process of cultivation, the virulence of the infectious germ may be much lessened. This is the vital part of the subject. I beg the Academy's permission to withhold a description of the processes by means of which I determine this diminution of virulence. My object is to insure independence in my studies.

The diminution of virulence is seen in cultivations by a slower development of the infectious organism, but, in reality, the two varieties of virus are identical. In the first or very infectious state, the inoculated germ may kill twenty times in twenty. In the milder state, it may twenty times in twenty give rise to illness, but not to death. These facts have an importance which is easily understood, as they allow us to form an opinion, in this particular disease, of the problem of its recidivation or non-recidivation. If we take forty chickens, and inoculate twenty of them with the very virulent virus, these twenty will die. If we inoculate the other twenty with attenuated virus, these will all be ill, but they will not die. We let the twenty chickens be entirely cured, and then if we inoculate them with the very infectious virus they will not die. The conclusion from this is evident. The disease is its own preventive. It has the character of virulent disease, which do not recidivate.

Let us not be astonished at the singularity of this result. All things are not here as new as they appear at first. In one important particular, however, there is a novelty which will be pointed out.

Before the time of Jenner, who himself practised this method, as I have already mentioned, there was a practice of inoculating variola to pre-

serve from variola. In our day, sheep are inoculated with murrain to preserve them from murrain, and cattle are inoculated with peripneumonia to preserve from this fearful disease. Chicken cholera shows us an immunity of the same kind. It is an interesting fact, but it does not show any theoretical novelty.

There is, however, an important novelty in the preceding observations, a novelty which gives food for reflection on the nature of virus. It consists in this, that we have here a disease whose virulent cause is a microscopic parasite, which may be cultivated outside of the animal economy. The virus of variola, the virus of vaccine, those of glanders, syphilis, the plague, &c., are unknown in their nature.

This new virus is a living organism, and the disease to which it gives rise has one thing in common with virulent diseases, properly so-called, a quality heretofore unknown in virulent diseases, caused by microscopic parasites: it is that it does not recidivate.

The existence of this disease is a connecting link between virulent diseases caused by a living virus, and other diseases, in the virus of which life has never been recognized.

I would not have it believed that the facts present the constancy



Fig. 4.—White poplar.

embellish your dwellings. Let the poor hide the nakedness of their houses by the luxurious verdure of our shrubs, and let the rich add to the beauty of their abodes by surrounding them with the most magnificent specimens of our forest trees.

I am indebted to M. Auguste Dupuis, nurseryman of St. Roch des Aulnaies, for much information as to the relative hardiness of certain species. When a tree has borne without injury the rigour of the climate in which he lives, there is no doubt as to its resisting the winters of the western part of our province.

J. C. CHAPUIS.

On virulent diseases, and especially on the disease commonly called Chicken Cholera.

By M. Pasteur.

Evidently, the excrements of the diseased chickens have most to do with the contagion. Nothing would be easier than to prevent the spread of the disease by isolating the chickens for only a few days; by washing the poultry yard with plenty of water, and par-