

the modification of which it, at present, admits. Some 14 or 15 years have elapsed since this intractable disease was, by some ill-fated importation brought to our flourishing crops, and from one or more as yet unascertained focuses, swept over this and the sister-isle, dealing uneasiness and sorrow to every abode, from the princely hall to the hutch of the beggar. Speculations innumerable have spent their influence in complicating the matter, and in disheartening many a noble aspirant in the cause; but soon, we hope, we shall be able so to simplify (by accumulation of facts and well authorised inferences) its presumed abstrusities as to render its leading features encouragingly familiar to all. System is essential to the success of the least complex of investigations, and remindful thereof, must the twin sisters Theory and Practice co-operate, otherwise the inductions of the one will be nullified by the more tangible evidence of the other, and all their essays end in irrespondence and confusion; and, with the latter views at heart, we have been actuated, through a series of years, to an attentive study of the potato disease, and have well satisfied ourselves (as botanists have before) that it consists of a fungus, and for the following reasons:—

1st. There exists, without exception, on every diseased leaf, a parasitic fungus, visible as a light mould, to the unaided eye, and forming a beautiful microscopic object.

2nd. The same fungus is discoverable in the diseased tubers, and in the soil contiguous to the pot on which the latter rotted.

3rd. A like fungus has, we believe, never yet been demonstrated on the healthy haulm, or burs.

4th. This fungus, when carefully removed from the diseased leaf, and transferred to the substance of the healthy tuber, will (in from eight to ten days) *ceteris paribus*, originate a specific disease therein at the point of inoculation.

5th. With this fungus in your hand you may infect the haulm of a flourishing crop at pleasure.

6th. All remedies, of any practical value in checking the disease, are reconcilable with its fungoid origin.

7th. All the so-called vagaries of the disease, resulting in its attacking one and not another, or one part in preference to another of the same bed, now spreading slowly and again suddenly, or even leaving your crop comparatively unharmed, are readily explained by the laws which regulate fungoid development, and referable to active or passive migration of the seeds of a fungus (botanical spores) being interfered with by local peculiarities of site; or to their germination being checked or permanently arrested by atmospheric or telluric agencies of varied operation. To popularize a fungus, what is it? A vegetable of the humblest structure, "a miniature mushroom," that in every

instance springs from a parent fungus, often leading an independent existence and obtaining a considerable magnitude, as the meadow mushroom, puff-ball, &c., &c.; but, so disposed to play the parasite, that nearly "every earthly thing" is infested with its fungus; a few—to wit, the human teeth, tongue, throat, and respiratory organs, the "wounds of living men," the helpless caterpillar—may have all organic structure transformed to an exuberant fungus; the wheat, barley, and other cereal crops may be annihilated by their respective funguses; and the mellowing of fruits, their last chemico-vital process, is one preparatory to their decay by the fungus. A fungus differs from all other vegetable structures, in having nearly the whole of its substance composed of reproductive matter, and in effecting its generation by means of minute variously-shaped and tinted bodies, called spores, and which differ from seeds in possessing the capacity of germination from any part of their circumference to which favorable co-existence of heat, air, and moisture, may be presented; whereas a seed can only germinate from one constant point.

We will now pass in brief review the several plans that have been proposed, and had their value tested, for the prevention of the potato disease, viz., the following:—

The method of Mr. Hardy.

do. the C. of Hornsey.

do. The Russian Professor.

do. Mr. Short.

Own methods.

Mr. Hardy's plan is pretty well known in the south of England, and has for its object the destruction of a presumed (but by him undemonstrated) fungus. The tubers are planted in the usual way, or what is best, in ridges, and as soon as the disease appears in the leaves, the haulm is turned down and so retained. Mr. Hardy believed that by so placing the stems you would favour their ablation from the fungus by the rains, and that the parasite, falling on the ground, would, from lack of its wanted ground to play upon, ignominiously perish. The spores alone are washed off by the rains, not the fungus bodily. Potatoes cultivated on the Hardy principle become affected in their stem equally soon as the most neglected; but the tubers suffer, as a rule, numerically less, and, occasionally, considerably less than those uninterfered with. The average proportion of diseased to sound, which we have repeatedly observed, was one of the former to seven of the latter.

The C. of Hornsey aspirant turns the haulm right and left, and places a little soil over the roots, believing that he does, thereby, exclude the rains, and so preserve the tubers from infection; the true explanation of the preserving influence of his plan is found in the fact of the majority of the spores (when put in motion by their own or extraneous force) having in conse-