

A DESTRUCTIVE PLANT PARASITE.<sup>1</sup>

A DISEASE of vine-leaves, characterised by the presence of brown or blackish blotches, which frequently spread over the entire surface of the leaf, has been known in European and American vine-growing districts under various provincial names for some years. This disease, known in France as *brunissure*, was investigated by Viala and Sauvageau, who concluded that it was due to the presence of a parasitic organism to which the name *Plasmodiophora vitis* was given. Prof. Debray's researches show that brunissure is far more generally distributed than was hitherto suspected, having been detected by this observer in plants belonging to forty-two natural orders. In like manner, the leaf is not the part most frequently attacked, as supposed by Viala, but root, branch, flower, and in fact every portion of a plant is liable to attack. Owing to the absence of spore-formation, zoospores, nuclei, and slender pseudopodia, coupled with the fact that, although a parasite, there is no trace of malformation of the host, Debray considers that the organism under consideration cannot be included in the Plasmodiophoræ, nor in any other recognised family, and proposes for its reception a new family, Pseudocommideæ, and a new genus, *Pseudocommis*, allied to Vampyrellæ and Myxomycetæ. The supposed organism when in plant cells is difficult to distinguish from the protoplasm of the cell, and more especially the nucleus; it is, however, more refringent, and usually remains intact after the protoplasm has been destroyed by the use of eau de Javelle. Iodine-green and methylene-blue give a green and blue stain respectively; the most certain reaction, however, is said to be chlor-iodide of zinc, which gives a yellow or brown colouration to the plasmodia. The organism is met with under various forms in the cells of the host, never occurring in the intercellular spaces; the plasmodium may be intimately mixed with, and almost indistinguishable from the protoplasm of the cell, or distinct from the cell-contents and densely vacuolate, or finally, in assuming a spherical form, perfectly homogeneous, or with a few spherical vacuoles. Under certain conditions the plasmodium travels from the interior of the cells of the leaf or other part of the plant to the surface, where it appears as a slimy or gummy secretion, and by this means passes on to other parts of the plant which are attacked. Sometimes the external plasmodium becomes hardened into wax-like masses or cysts, which are considered to represent a resting-stage. The appearance and spread of the disease is much influenced by meteorological conditions, a sudden chill favouring its development. No preventive based on experiment is given, but it is suggested that badly diseased parts should be removed, and the external migration of the parasite checked by a dusting of powdered lime.

If Debray's observations prove to be correct, we have in *Pseudocommis* the most universally diffused and destructive of plant parasites hitherto known.

## SCIENCE IN THE MAGAZINES.

EVERY individual, as Prof. Milnes Marshall used to say, climbs up his own genealogical tree. Embryology shows how human lineaments are developed from a widely typical animal form, and evidences of the same relationship can be obtained from the study of the infant after birth. In the *Fortnightly*, Prof. Sully pleads for such study. "Ours is a scientific age," remarks he, "and science has cast its inquisitive eye on the infant. We want to know what happens in the first all-decisive two or three years of human life, by what steps exactly the wee amorphous thing takes shape and bulk, both physically and mentally. And we can now speak of the beginning of a careful and methodical investigation of child nature by men trained in scientific observation. This line of inquiry, started by physicians, as the German Sigismund, in connection with their special professional aims, has been carried on by a number of fathers and others having access to the infant, among whom it may be enough to name Darwin and Preyer." The biologist is able to use the physical development of a child to show man's kinship to the lower animal world, and the development of an infant's mind indicates to the psychologist how the mental history of the race has been evolved. It does not need a very acute observer to see the intellectual and moral resemblances between the lowest existing races of mankind and

<sup>1</sup> "La Brunissure chez les végétaux," *Revue de Viticulture*, 5 Rue Gay-Lussac.

children. Several anthropologists have studied this phase of child-life, and have found it full of interest. The difficulty is to get systematic and scientific observations of children. Prof. Sully shows that the work is worth doing, and indicates some of the lines of study to be followed; all that is needed is methodical and trustworthy registration of the successive stages in the child's development.

A second article in the *Fortnightly* is a reply by Prof. Karl Pearson to an article in the September number of the *Review*, where Dr. St. George Mivart attempted to describe the limits of scientific knowledge and inquiry, and to show that many teachers of science were dogmatic, or "denominational," as he called it. Two other articles in which some of our readers may find interest are "Brahminism and the Foundations of Belief," by Vamadeo Shastri, and "Vegetarianism," by Mr. T. P. Smith.

An article on Pasteur, contributed by Profs. Patrick Geddes and J. A. Thomson to the *Contemporary*, is a readable and fairly full statement of his personal life and scientific work. The authors thus sum up Pasteur's legacy to the world: "There is the impulse which he gave, after the successful organisation of his own Institute, to the establishment in other countries of similar laboratories of preventive medicine, and, one may also say, of experimental evolution. There is his educative work at Strassburg and Lille, at the École Normale and the Sorbonne, and, above all, in the smaller yet world-wide circle of his immediate disciples. To general biology his chief contribution has been the demonstration of the part which bacteria play, not only in pathological and physiological processes, but in the wider drama of evolution. To the chemist he has given a new theory of fermentation; to the physician, many a suggestive lesson in the etiology of diseases; and a series of bold experiments in preventive and curative inoculation, of which Roux's treatment of diphtheria, and Prof. Fraser's new remedy for snake-bites, are examples at present before the public; to the surgeon, a stable foundation, as Lister acknowledged, for antiseptic treatment; to the hygienist, a multitude of practical suggestions concerning water-supply and drainage, disinfection and burial. On brewer, distiller, and wine-maker he has forced the microscope and its results; and he has shown both agriculturist and stock-breeder how some, at least, of their many more than ten plagues may be either averted or alleviated." In the same *Review* Mr. Herbert Spencer traces the development of the judge and lawyer, and points out the relations between the priestly and judicial functions. There is also a forcible and philosophical reply by Father Tyrrell to Miss Cobbe's utterances in the October number. We content ourselves with giving two of the thirteen points upon which Father Tyrrell bases his position; they are: (1) as animals vary in sensibility, our duties concerning them vary also; (2) in the abstract, vivisection is not only permissible but laudable in certain conditions. Whether these conditions are or can be realised is a matter of opinion. He concludes: "Whatever one may think of the old-fashioned psychology on which this system rests, no one can deny that it is at least coherent and in keeping with the common sense of the best part of mankind, and that it offers a full and firm basis for a humane and reasonable treatment of animals, without entailing any of those hopeless problems which Miss Cobbe has to encounter in the application of her system."

A fine portrait of the late Prof. von Helmholtz, taken on the day of his last appearance in the lecture room, by C. Riborg Mann, appears in *Scribner*, accompanied by a brief summary of his leading contributions to science. The circumstances under which the photograph was taken are thus stated by the author: "At the close of his lecture on Saturday, July 7, 1894, Prof. von Helmholtz, at my earnest request, remained a few minutes in the class room and allowed me to photograph him. He stands as he was accustomed to appear before his students, the formulas as he had just written them remaining on the blackboard as a suitable background. By a strange working of fate, that was the last day on which he lectured, excepting one, when he gave some matter supplementary to this occasion; and this is his last photograph." A paper entitled "The Logic of Mental Telegraphy," contributed by Prof. Joseph Jastrow to the same magazine, should be taken to heart by a gullible public. Nothing is said about the attempted experimental tests of thought-transference, which may be worth investigation, but it is shown that coincidences will account for the possibilities of mental telegraphy believed in by the popular mind.

A few reminiscences of Huxley's habits and work at the