

first part concludes with certain considerations as to the influence of radiations on the equilibrium of living substances.

In the second division of the work the author proceeds to render more precise the language prepared in the first part of his study. He reviews the more important types of infection, and particularly considers intracellular parasitism and symbiosis; then he passes on to the phagocytic studies of M. Metchnikoff, and uses a language different from the vitalistic expressions of the great Russian *savant*. Next comes the considerations of the comportment of the living organism towards injections of dead colloids, thus leading up to the study of infection proper, *i.e.* disease due to living micro-organisms. The above abstracts will suffice to show the aim of the author's book, and chiefly he desires to use "*the language of equilibrium*," language borrowed from physical chemistry. He holds the law of Le Châtelier valid for the modification which an organism undergoes when it triumphs over infection. "The modification produced in a system of bodies in a state of equilibrium by a variation of one of the factors in the equilibrium is of such a nature that it tends to oppose itself to the variation that determines it." His position is even more clearly defined on p. 184, where he says that he wishes to show that if the immunities that result from the resistance of organisms to infection resemble the phenomena of physical chemistry, the resemblance is exclusively on the physical side. He finds that questions on immunity and serotherapy are discussed in the language of chemistry, even by those investigators who do not accept the theories of Ehrlich—therefore the very words used are filled with unjustifiable hypotheses, and give an inflexible interpretation to phenomena. For example, the partisans of the chemical theory of serums admit the existence of two definite and complementary substances, "cytase" and "fixative," the former thermolabile, the latter thermostable, and these thermic relations, according to M. le Dantec, suggest that these substances—even if chemically definite bodies—act in virtue of their *physical* character rather than in accordance with their *chemical* structure.

The phenomena of bacteriolysis receive at the hands of Ehrlich a purely chemical interpretation; M. le Dantec deliberately states that the chief fault in Ehrlich's theory is that the serum-producing animal must have an immediate and profound knowledge of chemistry. This can scarcely be seriously meant.

Nowhere does he give a complete account of the views on immunity and toxins held by Ehrlich, nor is this to be looked upon as a fault, inasmuch as those of Ehrlich's opinions that he does consider he regards as entirely untenable. Still, this omission (if such it be) shows that the book will be of little use to a student really needing an introduction to general pathology, however interesting and instructive the work may be to the thoroughly equipped investigator; and to the latter the learned author doubtless addresses himself. First and foremost he is a biologist, and, moreover, is imbued with the belief that

pathology is capable of throwing a flood of light on biological questions.

Many pages of the work remind us of the author's well known papers in the Annals of the Pasteur Institute, and these pages will be read by many with reminiscent pleasure.

Nowhere is the author more interesting and lucid than in his discussion of Mendelian or discontinuous heredity; his quotations are apt and instructive; his own remarks carry with them the imprint of careful study and original thought. In this connection he replaces the "*representative particles*" of Darwin and Weismann by the Pasteurian word "*microbe*"—meaning thereby *particles productive of diatheses*—and claims that by so doing he loses nothing in the narration of the facts, while gaining the advantage of placing the diatheses (characters of Mendelian heredity) apart from the characters of heredity properly so-called.

The book is well worth careful reading, and the author is to be congratulated on a work which will challenge the attention of the more advanced students of pathology.

WM. ST. C. SYMMERS.

OUR BOOK SHELF.

Die optischen Instrumente. By Dr. Moritz von Rohr. Pp. v+130. (Leipzig: B. G. Teubner, 1906.)

THE aim of this little book, one of a series dealing popularly with various subjects of scientific or general interest, is to give a simple account of the development and modern theory of optical instruments, and to make clear to readers possessing no special technical knowledge the main features of their optical construction. The treatment is largely based on the work of Abbe; and in the introductory chapters, which deal with the general principles governing the formation of optical images and the consequences dependent on the characteristics of the eye, special attention is given to the question of aperture and the limits of the image-forming pencils, and to the manner in which the perspective of a picture may be modified in the image. In the application of these considerations to the photographic lens, the microscope, and the telescope, there is some novelty and interest. In other respects a clear and concise account is given of the main properties and aberrations of the different instruments, whether for objective or subjective use, with some brief historical notes. The section on the photographic lens is followed by useful particulars as to enlarging and projection apparatus; the description of the microscope includes a short explanation of Abbe's theory of microscopic vision, of the relation of "numerical aperture" to resolving power, and of the sine law, and even admits of reference to the possibilities of photomicrography with ultra-violet light. To the description of the ordinary forms of telescope are added some notes on the prism binocular as constructed by the Zeiss firm. The diagrams and illustrations are noticeably well drawn and clearly printed.

Second Year Chemistry, a Handbook for Laboratory and Class Work. By Prof. Edward Hart. Pp. vi+165. (Easton, Pa.: The Chemical Publishing Co., 1905.) Price 1.25 dollars.

THE plan of this book is to begin, after a few theoretical generalities, with some careful quantitative determinations. Thereupon follow qualitative analysis, chemical arithmetic, and, finally, more quanti-