lels in the history of science." It describes Brunswick's own work on the development of criticism in children and J. Piaget's parallels between theorizing in children and in the early history of physics. The stages of egocentrism, functionalism, and overgeneralization are recognizable in some of the stories of historical events which follow: Robert H. Lowie speaks of ethnocentrism as a stage in the development of ethnography; J. B. Stallo's critique of classical physics, explained here by Stillman Drake, can be understood as a fight against overgeneralization; and Newton's *Hypotheses Non Fingo*, to which E. W. Strong here devotes a penetrating study, could be linked to the search for the *genus proximum*, according to Egon Brunswick.

E. O. Essig gives a sympathetic picture of an almost unknown hero of science, Charles Fuller Baker, whose insect collection of about a quarter of a million specimens was saved by the Smithsonian Institution.

In the "Essays in biology," the *Festschrift* honoring Evans on his 60th birthday (1942), Frederick O. Koenig dealt with Sadi Carnot's thermodynamic theorems; he extends this study here to a detailed history of the second law of thermodynamics. Victor F. Lenzen presents a somewhat dry account of Max Planck's philosophy of science. Leonardo Olschki shows the wide influence that radiated from Marco Polo's description of the world. The last essay, on the first determination of stellar parallax, recreates the dramatic events of 1837–39 and the part played by Wilhelm Struve; the author is his great-grandson, Otto Struve.

This is a book for those adventurous spirits who love to make excursions beyond their fields of specialization.

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Plant Pathology. An advanced treatise. vol. 2, *The Pathogen*. J. G. Horsfall and A. E. Dimond, Eds. Academic Press, New York, 1960. xiv + 715 pp. Illus. $22.

In the second volume of their trilogy on plant pathology, the editors and their collaborating authors maintain the high standards established in volume 1. The theme of the present volume is the pathogen, in contrast to that of the earlier volume, which was centered around the diseased plant. In an interesting introductory paragraph, careful, even forceful, distinction is drawn between parasites and pathogens and, necessarily, between the resulting phenomena of parasitism and pathogenism. Many readers will be surprised to learn that these terms are not synonymous. The authors also emphasize that, in their opinion, diseases are *caused*, not *incited*, although the latter term has become increasingly popular in recent years. Pathogens are of many kinds, including not only the fungi and bacteria (which are usually thought of) but such diverse agents as nematodes, mites, insects, viruses, and many inanimate entities (for example, chemical deficiencies or excesses, and even various phases of unfavorable weather).

In the single chapter devoted to parasitism, George L. McNew thoroughly reviews the subject, presenting his material under such topics as the nature, origin, evolution, and physiology of parasitism. His discussion of the law of host-parasite balance in pathogens is particularly effective. In contrast, the remaining 13 chapters, each written by a highly qualified specialist, are devoted to pathogenicity or the ability of the parasite to produce disease. Three general phases of the subject, reproduction of the pathogen, the nature of pathogenicity, and the mechanisms of inhibiting the pathogen, are considered.

F. C. Bawden reviews the multiplication of viruses, broadening his presentation by including such topics as the differences between viruses and organisms, and analogies with bacteriophages. Lilian Hawker discusses the reproduction of bacteria, actinomycetes, and fungi. The insects and arachnids are left to the entomologists. Spore germination and the various factors affecting the phenomenon are discussed by V. W. Cochrane.

The broad field of the nature of pathogenicity or the ability of the organism to cause disease is presented in six chapters. Major topics considered are the mechanical and chemical ability to break host barriers; interactions of pathogen, soil, soil microorganisms, and host; the genetics of pathogens; and toxins. The problem of finding mechanisms to inhibit pathogens is met by a careful review of the current knowledge of virus inactivation and of the physiology and chemistry of fungicides.

The nematodes come into their own with the concluding chapter which, although headed nematocides, covers a broader field and is, in effect, a brief but thorough account of plant diseases caused by nematodes.

As in the previous volume the indexes are extensive and adequate.

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Infectious Diseases of Animals. vol. 1 and vol. 2, *Diseases Due to Bacteria*. A. W. Stableforth and I. A. Galloway, Eds. Academic Press, New York; Butterworths, London, 1959. 396 pp.; 414 pp. Illus. $18 each; 2 vols., $33.

The first two volumes of a proposed encyclopedic record of the infectious diseases of animals have now been published. The subject matter in these two volumes is limited to the diseases caused by bacteria; diseases caused by rickettsia, viruses, and protozoa are to be covered in later volumes of the series. The editors have assembled an imposing group of British authorities, and each member of the group has written in a field of his special interest. In spite of the plethora of authors, the two volumes have exceptional continuity and uniformity.

The first volume contains chapters on actinomycosis and actinobacillosis, anthrax, brucellosis, clostridial diseases, coliform diseases, corynebacterial diseases, fungal diseases, glanders and melioidosis, Johne's disease, leptospirosis, and listeriosis. The second volume covers necrobacillosis, pasteurellosis, the pleuropneumonia group of diseases, swine erysipelas, tuberculosis, and vibrosis. The chapters are arranged alphabetically, a valuable point for the student.

Each causative agent is described in thorough detail, and in most instances the epidemiological and clinical features are adequately covered. The gross lesions are usually listed and described in some detail under "pathology," but rarely are microscopic lesions described. A few photomicrographs are used, but most of these are not of good quality. The other illustrations, particularly the charts, tables, and line drawings, although used sparingly, are informative and of good quality. The type is easily readable, and the paper is excellent.

The authors obviously made good use of the literature, particularly that