Professor Küster, now of Bonn, prepared this compact little book of about 200 pages as a result of his long experience in training students at the Botanical Institute of Halle. It is neither a text-book nor a laboratory manual of the ordinary kind, including a definite course of study, but a reference compendium of technique including "the most important culture methods for all groups of microorganisms." The conception is an excellent one and Professor Küster has carried it out well.

The book is about equally divided between a general and a special part. The general part includes sections on water and glass, on liquid and solid media, sterilization, types of cultures, isolation and pure cultivation, inoculation, atmospheric conditions, temperature, light, evaporation, transpiration and cultivation in agitated or flowing media, detection and effects of waste products, operation of poisons, microbiochemical analysis and auxanography and the preservation of cultures. The special part includes sections dealing, respectively, with protozoa in general, with flagellata, with myxomycetes, with algæ, with fungi and with bacteria.

Two things are particularly notable about this book, its scholarly tone and the breadth of the field covered. Although the treatment is necessarily very condensed and no attempt is made to discuss with any fullness the philosophical problems involved, yet such fundamental questions as the effect of water upon glass, the physical and chemical characters of culture media and the study of waste products are discussed in a spirit which should prove enlightening to the American student who is too often superficially trained to use a few arbitrary methods without knowing or caring for underlying reasons. The other special virtue of the book is the attention to groups other than the commonly studied pathogenic forms. Special media are described, for example, for the cultivation of fat-splitting bacteria, the acetic acid bacteria, butyric acid bacteria, the nitrifying and denitrifying bacteria, the sulphur bacteria and the purple bacteria. Nine pages are devoted to the Protozoa, fifteen to the Algæ and thirty-nine to the Fungi. In general, citations of the literature dealing with technical procedures are full and valuable although American and English methods are neglected. It is strange to find no reference to the Hesse and Hiss and North media or to the extensive work done on standard methods of water examination. For German work, however, the book seems very comprehensive and as a reference source for dealing with any of the more unfamiliar groups of microbes it should prove invaluable in any laboratory.

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Catalogue of the Collection of Birds' Eggs in the British Museum. Vol. V., Carinatæ (Passeriformes completed). By W. R. Ogilvie-Grant. 1912. Pp. xxiii + 547; Pls. XXII.

With the issue of the present volume the British Museum has brought to a successful conclusion the publication of another series of their splendid catalogues, which, while in most cases professing only to be records of their own collections, become in effect world records of the subjects covered. Ornithology has been especially favored with these reviews, the "Catalogue of Birds" (27 volumes, 1875–1895), the "Hand-list of the Genera and Species of Birds" (5 volumes, 1899–1909), and the "Catalogue of Birds' Eggs" (5 volumes, 1901–1912) being absolutely indispensable sources of reference to all working ornithologists who would make pretense to more than local studies. The first British Museum publication on birds' eggs was a small work by G. R. Grey, issued in 1852, but this was merely an enumeration of the eggs of British birds, and has long been obsolete. The national collection of eggs continued to grow, both by donation and purchase, and by 1900 had long passed the 50,000 mark, making it in many respects the foremost collection in the world. In preparing the exposition of this wealth of material the trustees of the museum were fortunate in securing the services of Mr. E. W. Oates, who is well known as the author of several of the bird volumes of the "Fauna of British India," and as the editor of the second

edition of Hume's "Nests and Eggs of Indian Birds." Mr. Oates prepared and published the first four volumes of the "Catalogue of Birds' Eggs," and had considerable manuscript for the final volume, when his death in 1911 brought the work to a close for a time. After considerable unavoidable delay Mr. Ogilvie-Grant has finally completed the undertaking with the present volume, which covers nineteen families of passerine birds, beginning with the white-eyes (*Zosteropidæ*) and ending with the crow-shrikes (*Striperidæ*). It treats of 1,117 species and over 19,000 specimens.

The nomenclature and systematic arrangement—as in previous volumes—follows that of Sharpe's "Hand-list," and in all cases reference is made to that work and to the "Catalogue of Birds," where the species was known when the latter work was published. There is also reference to the other more important works, especially those having figures of eggs. The descriptions appear to be carefully drawn with average measurements as well as mention of unusual or peculiar sizes and markings. The plates are beautifully executed and as the species treated are all of small size it has been possible to include something over four hundred figures. Altogether this is a highly successful completion of a notable undertaking.

F. H. KNOWLTON

Abhandlungen und Vorträge zur Geschichte der Naturwissenschaften. Vol. II. By Professor Dr. EDMUND O. VON LIPPMANN. Published by Veit and Co., Leipzig. 1913. Large 8vo. 491 pp.

Those scientific readers who enjoyed Professor Lippmann's "Essays and Addresses on the History of the Natural Sciences," which appeared in 1906, will welcome the appearance of this second companion volume.

Since the time of Kopp, whose monumental "Geschichte der Chemie" was printed just 70 years ago, no one in Germany has delved so deeply as Lippmann in the abstruse field of ancient chemical science, and certainly no one has better understood how to arouse an interest in matters which might seem to the general reader to lack importance.

The 32 papers in Vol. I. of the "Abhandlungen" dealt with such themes as the scientific and chemical knowledge contained in the works of Pliny, Dioscorides, Albiruni and Shakespeare; alchemistic poetry; the history of freezing mixtures, gunpowder, glass and the thermometer; biographical essays upon Marggraf, Achard, Mitscherlich, Leonardo da Vinci, Francis Bacon, Descartes and Robert Mayer; an account of two unpublished letters of Liebig; an address concerning Goethe's "Theory of Colors"; and other papers too numerous to mention.

In the new collection of "Abhandlungen und Vorträge," which has just been published, we note the same range and variety of subjects as were treated in the first volume. There are in all 36 additional papers in which we find discussed such topics as the chemical and scientific knowledge of the ancient Egyptians and Greeks and of the middle ages, as shown by the Ebers Papyrus, by the works of Plato and Aristotle and by the thirteenth-century "Régime du Corps" of Aldebrandino di Siena; the history of the water bath, the specific gravity spindle and the autoclave; the history of lead-soldering and of distillation and of the uses of petroleum as a fuel and of sugar as a preservative; the derivation and history of the terms "caput mortuum," alcohol, gas and potash; biographical papers upon Jean Ray, upon Alexander von Humboldt as the precursor of the theory of isomerism, and upon Liebig's relationship to Robert Mayer and the theory of conservation of energy; critical interpretations of obscure passages in Aristotle's Meteorology and in Goethe's Faust; and many other papers equally interesting and important. The pages of the book, as of the previous volume, are enlivened with anecdotes and curious bits of folklore, and it is difficult to recall another work of the kind which combines equally so much instruction and entertainment.

In these two volumes of the "Abhandlungen und Vorträge" additional surprises and pleasures are in store for those who have come to marvel at the many-sidedness of Professor