Book Reviews

The diffraction of X-rays and electrons by free molecules. M. H. Pirenne. Cambridge, Engl.: at the Univ. Press; New York: Macmillan, 1946. Pp. xii + 160. (Illustrated.) $3.00.

The diffraction of electrons by free molecules has been used so extensively in recent years in the study of interatomic distances that it is both useful and refreshing to have a reminder of other aspects. This volume contains an excellent presentation of the physics of the diffraction of X-rays by free molecules. Although it is based entirely on previously published material, it is useful to have this material brought together in one handy volume. Included is a treatment of coherent and incoherent scattering by a free electron, by an atom, by free molecules, and by gases and liquids where the intermolecular effects are not negligible, as well as the effect of thermal motions and the Faurier method of analyzing diffraction data. The mathematical development tends to be somewhat cursory; too often the function under discussion is stated without its derivation being shown. On the other hand, the physical interpretation of the functions is very thorough, and the comparison with experimental data is especially good in the careful statement of the limitations on interpretation imposed by the assumptions inherent in the theory.

The treatment of electron diffraction is not parallel with that of X-rays. Of the 13 chapters, 10 deal exclusively with X-rays. The theoretical treatment for electrons is very brief, and there is no counterpart to Chapter XII, on the experimental technique of X-ray diffraction, and to Chapter XIII, which lists the molecules studied by X-ray diffraction.

No prospective author of a work describing the technique and analyzing the reliability of the results of electron diffraction need be discouraged by the present book.

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Qualitative analysis by spot tests: inorganic and organic application. (3rd Engl. ed., rev.) Fritz Feigl. (Translated by Ralph E. Oesper.) New York-Amsterdam: Elsevier Publishing Co., 1946. Pp. xvi + 574. (Illustrated.) $8.00.

This third English edition of Dr. Feigl's well-known book on spot tests is the result of a revision of the previous issue which has been expanded to include "the newer spot reactions, together with details of the pertinent procedure and applications." The two previous English editions were translated by Dr. Janet W. Matthews. A change of translators became unavoidable because of the difficulties of communication between Brazil and England, and because of the decision to have the printing done in the United States. A large part of the translation by Matthews is, however, retained in the text.

New features of the third edition are the sections on "Working Methods and Special Aids in Spot Test Analysis," "Tests for Free Elements," and "Bibliography on the Application of Spot Reactions for Special Scientific or Technical Purposes." The first is taken from the author's *Laboratory manual of spot tests*, published by the Academic Press, Inc., New York City. The general usefulness of this section must be granted, but the aid of a standard text on microtechnique will be desirable whenever the performance of involved separations should become necessary. The Bibliography contains references to 21 books and 134 articles published in journals. As far as is feasible—and this holds for the whole book—references to *Chemical Abstracts* replace the former references to *Chemisches Zentralblatt.*

A listing of the principal sections may serve to indicate the directions in which the text has expanded: Working Methods and Special Aids (8–40); Tests for Metals (41–190); Tests for Acid Radicals (191–271); Tests for Free Elements (272–281); Systematic Analysis of Mixtures (282–308); Qualitative Organic Analysis (309–424); Application in Tests of Purity, Examination of Technical Materials, and Studies of Minerals (425–488); Bibliography on Applications (489–495); Tabular Summary of the Limits of Identification (496–509); Author Index (511–518); and Subject Index (519–574). In the section on organic analysis, 10 pages are devoted to the detection of elements, 73 to the detection of characteristic groups, and 32 to a description of the identification of specific compounds.

The author has tried to present the entire literature on spot tests in order to give the reader a rapid survey of the whole field, but it is interesting to observe that the stimulating articles of B. L. Clarke and Hermance as well as those of H. Yagoda completely failed to deflect the author from his traditional course. The text has been expanding ever since publication of the first German edition in 1931, but its general trend has remained unchanged.

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Faune de l'Empire française. Paris: Museum d'Histoire Naturelle, 1943–. Vol. 1 + .

French zoologists must accept from their colleagues in other countries not merely congratulations but profound admiration and gratitude that throughout the difficult conditions of war and of their country's occupation they have been able to continue the well-known *Faune française* and to launch a parallel series dealing with the possessions, colonies, and protectorates that form their worldwide, in larger part tropical empire.

The rich collections which have been received from overseas for more than a century and which have accumulated in the Museum d'Histoire Naturelle de Paris, serve as a basis for the enormous research contemplated and well begun in the preparation of this series. The entrepreneurs estimate that in less favorable cases more than half of the fauna of these diverse regions is already known; and in many others, almost the total.

The series was initiated in 1943 by a volume on the Orthoptèroïdes of North Africa, by Lucien Chopard, the one man in the world most capable of writing it. It established a general design for the work and a truly high plane of scientific competence. The plan is that of a complete manual, with introductory pages on morphology and biology. The taxonomic portion includes keys to all groups down to species, and under each of the latter the synonymy, an adequate description, the