

Book Reviews

The diffraction of X-rays and electrons by free molecules.

M. H. Pirene. 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 Orthoptéroïdes 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

distribution (accompanied by precise records) the ethology and the subspecies (if any) are dealt with. Illustrations delineating differentiating characters are numerous, and there are complete illustrations of the principal types, so that from these alone one may gain some idea of the variations of habitus within the fauna.

The last volume to appear, just issued, is Part I of the "Coléoptères carabiques de la région malgache," by René Jeannel. It follows two volumes in the *Faune de France* by the same author, dealing with the same group, in which a long-awaited new classification of these beetles has been presented, based in large measure on research concerning the structure of the male genitalia, which was previously disregarded. In the opinion of the reviewer this represents not merely a revolution but a strong advance in our knowledge of the interrelationships of these beetles (although his judgment would question the necessity of assigning family rank to so many subdivisions). It is a matter of moment to entomologists to see this new classification extended in detail to the Caraboidea (in which term Cicindelidae and Paussidae as well as Carabidae are included) of the Malagasy Subregion. Dr. Jeannel accepts the theories of continental drift of Köppen and Wegener, and his introductory pages on the origin of the Malagasy faunas, as well as his account of the climate, vegetation, and biogeographical divisions, will be of wide interest.

Intermediate between the first and latest volumes to appear have been one on the Bovidae of French Equatorial Africa (from the Congo to the Sudan and Rio de Oro), by Paul Rode; one on the Scarabaeid beetles of Indo-China, by Renaud Paulian (which, along with his treatment of the Scarabaeidae in the *Faune de France*, is no less worthy of note than the volumes on carabid beetles); one on the birds of Reunion, by Jacques Berlioz; and one on the longicorn beetles of North Africa, by Andre Villiers.

The early appearance is promised of a volume completing the Caraboidea of Madagascar, of one by E. Fletiaux on the Coleoptera of the French Antilles, one by A. Villiers on the reduviid Hemiptera of tropical Africa, and of one dealing with the polychaete annelids of New Caledonia, by P. Fauvel. The 23 volumes in preparation form an exciting list: 12 on insects; 2 each on arachnids, molluscs, and fish; and 1 each on mammals, birds, lizards, ctenophores, and corals. Such a series of manuals of tropical faunas has been previously attempted only in the fauna of British India, but that, of course, deals with only a single area.

The Editorial Committee consists of R. Jeannel, J. Millot, Th. Monod, L. Berland, and L. Chopard, both of the latter being secretaries.

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Scientific Book Register

- ADKINS, HOMER. (Ed.-in-Chief.) *Organic syntheses: an annual publication of satisfactory methods for the preparation of organic chemicals*. (Vol. 26.) New York: John Wiley; London: Chapman & Hall, 1946. Pp. iv + 124. (Illustrated.)
- ASDELL, S. A. *Patterns of mammalian reproduction*. Ithaca, N. Y.: Comstock Publishing Co., 1946. Pp. x + 437. (Illustrated.) \$5.00.
- BARLOW, NORA. (Ed.) *Charles Darwin and the voyage of the Beagle*. New York: Philosophical Library, 1946. Pp. 279. (Illustrated.) \$3.75.
- COLIN, EDWARD C. *Elements of genetics: Mendel's laws of heredity with special application to man*. (2nd ed.) Philadelphia-Toronto: Blakiston, 1946. Pp. xiii + 402. (Illustrated.) \$3.50.
- COSSLETT, V. E. *Introduction to electron optics: the production, propagation and focusing of electron beams*. Oxford, Engl.: Clarendon Press, 1946. Pp. x + 272. (Illustrated.) \$6.50.
- CRAIG, SIR JOHN. *Newton at the mint*. Cambridge, Engl.: at the Univ. Press; New York: Macmillan, 1946. Pp. 128. (Illustrated.) \$2.50.
- DAWES, BEN. *The Trematoda: with special reference to British and other European forms*. Cambridge, Engl.: at the Univ. Press; New York: Macmillan, 1946. Pp. xvi + 644. (Illustrated.) \$10.50.
- FERNELIUS, W. CONARD. (Ed.-in-Chief.) *Inorganic syntheses*. (Vol. II.) New York-London: McGraw-Hill, 1946. Pp. xii + 293. (Illustrated.) \$4.00.
- HILL, D. W. *Science: its effect on industry, politics, war, education, religion and leadership*. Brooklyn, N. Y.: Chemical Publishing Co., 1946. Pp. v + 114. \$2.75.
- HOOTON, EARNEST ALBERT. *Up from the ape*. (Rev. ed.) New York: Macmillan, 1946. Pp. xxi + 788. (Illustrated.) \$5.00.
- HULL, CALLIE. (Compiler.) *Industrial research laboratories of the United States including consulting research laboratories*. (8th ed.) Washington, D. C.: National Research Council, National Academy of Sciences, 1946. Pp. 415.
- JOST, WILHELM. *Explosion and combustion processes in gases*. New York-London: McGraw-Hill, 1946. Pp. xv + 621. (Illustrated.) \$7.50.
- KLUCKHOHN, CLYDE, and LEIGHTON, DOROTHEA. *The Navaho*. Cambridge, Mass.: Harvard Univ. Press; London: Geoffrey Cumberlege, Oxford Univ. Press, 1946. Pp. viii + 258. (Illustrated.) \$4.50.
- LEMON, HARVEY BRACE. *From Galileo to the nuclear age: an introduction to physics*. (Rev. ed.) Chicago, Ill.: Univ. Press, 1946. Pp. xviii + 451. (Illustrated.) \$3.75, text edition; \$5.00, trade edition.
- MARCHIONNA, FREDERICK. *Butalastic polymers: their preparation and applications. A treatise on synthetic rubbers*. New York: Reinhold, 1946. Pp. vii + 642. (Illustrated.) \$8.50.
- NEWBOULT, H. O. *Analytical method in dynamics*. Oxford, Engl.: Clarendon Press, 1946. Pp. 81. (Illustrated.) \$2.50.
- PLEDGE, H. T. *Science since 1500: a short history of mathematics, physics, chemistry, biology*. New York: Philosophical Library, 1946. Pp. 357. \$5.00.
- TALBERT, THOMAS J. *General horticulture*. Philadelphia: Lea & Febiger, 1946. Pp. 452. (Illustrated.) \$4.00.