which lists the abbreviations used and the proprietary sex hormone preparations and synonyms. A two-page glossary gives the standard units of hormones and how they are determined, as well as the meaning of a few endocrine terms. For the most part the book seems to be quite well indexed, but there are some exceptions. For example, the reference to gonad-pituitary relationship indicates only a brief general statement on results of castration, whereas the other treatment of this subject in the book is not listed.

The reviewer's greatest criticism of the book is the absence of a unified handling of the balances between the hypophysis and gonads by which the physiology of reproduction is explained. Perhaps it can be said that a separate discussion of this subject does not of necessity fall within the scope of a book with the title *Biological actions of sex hormones.* However, an organized and critical presentation of this material, of which a sufficient quantity is available, is sorely needed in the literature. Certainly, it is of as fundamental importance as the strictly pharmacological actions of the various hormones. Presumably because of the conventional treatment of material in the book, the nearest approach to an analysis of hypophyseal-gonad relationship comes in the chapter on the biological action of progesterone.

In such a thorough treatment of the sex hormones it also might have been pointed out that testosterone, which is so universally thought to be the androgen produced by the testis, has been identified only in the bull's testis, and that in the sow's ovary, the only one that has been adequately analyzed for estrogen, the liquor folliculi contains primarily estradiol, whereas estrone is present in the rest of the ovary.

The value of the book would have been enhanced if some of the recent literature, which now permits a more complete interpretation of the whole endocrine balance, could have been included, but apparently this material was unavailable to the author because of the war. However, the book will be of great value to anyone who wants to know the background of experimental sex endocrinology.

CARROLL A. PFEIFFER
*Department of Anatomy, Yale University*

***The chemistry of the carbon compounds.*** **Vol. III: *The aromatic compounds.* (3rd English ed.) Victor von Richter. (Edited by Richard Anschütz.) New York: Elsevier Publishing Co., 1946. Pp. xviii + 794. $15.00.**

This volume, a translation of Volume II, Part 2, of the 12th German edition, covers the chemistry of aromatic compounds with the exception of the aromatic free radicals, which will be treated with other free radicals in Volume IV.

This edition serves as a useful, though not comprehensive, reference work to the literature on aromatics. The references cited are predominantly from German publications, but others have been included. Theoretical discussion is short and is elucidated in conjunction with a specific compound or class of compounds. Since the original German edition was published in 1935, some of the newer theoretical concepts are not included. Appreciable space is devoted to theoretical considerations of benzene and aromatic character.

The arrangement of the book is systematic, and compounds are found without difficulty. A good index of compounds is also provided.

The mononuclear aromatics, benzene and derivatives, comprise Part 1 of Volume III. Treatment of the alkylbenzenes is followed by sections on halogen derivatives, on nitrogen derivatives, etc., and on benzene derivatives with unsaturated side chains and halogen, nitrogen, etc. derivatives thereof.

In Part 2 are found the multinuclear compounds, which include di- and polyphenyl as well as condensed ring structures, with the discussion of the di- and polyphenyl compounds and their derivatives preceding that of the condensed ring structures. The latter are classified according to the hydrocarbon nucleus of the compound.

More than one name is frequently given for a single compound. After the statement of the name, the physical properties are tabulated. Methods of preparation are discussed, and some of the reactions which the compound undergoes are also frequently included.

Although it is incomplete and limited to work reported largely before 1935, this book provides a very helpful reference to aromatics and one which can be used readily.

GUSTAV EGLOFF
*Universal Oil Products Company, Chicago*

***Organic reagents for organic analysis.*** **Staff of Hopkin and Williams Research Laboratory. Brooklyn, N. Y.: Chemical Publishing Co., 1946. Pp. 175. $3.75.**

As one might readily deduce from the title, this book is a distinct departure from the usual work dealing with the identification of organic compounds in that it is concerned primarily with neither the properties of the materals under analysis nor the methods of their investigation, but with the reagents for the preparation of confirmatory derivatives. It is divided into three main sections. The first section is a critical discussion of the various reagents which have been proposed from time to time, subdivided according to the functional groups for which each is specific. A further segregation distinguishes in each case those of most general utility from those which have proven less satisfactory. The former classification is enlarged upon in the second section, in which each of these reagents is given individual attention, complete with general directions for use. Literature references are abundantly provided, at least one being given for every compound mentioned in either this or the preceding section. The third section is devoted to the conventional tables of melting points; these promise to prove extraordinarily useful, as they are far more extensive than any heretofore available. In the 54 pages which this division embraces are to be found the characteristic derivatives not only of the usual compounds but of many types commonly accorded no more than casual mention, if not ignored entirely. Barbituric acids, sul-

fonic acids, and sulfonamides may be quoted as examples. There is also a brief table of reagents giving the functional groups for which each is of value; the purpose of this is not clear, and its utility is doubtful. The general index appears adequate.

Flaws in this manual are neither abundant nor serious. Perhaps too much weight is accorded to aniline and its homologues as reagents for acids and too little to the benzyl pseudoureas, in view of the extravagance of sample demanded by the former. Several highly convenient reagents, such as piperazine for acids, saccharin for alcohols and alkyl halides, and triphenylchlormethane, the only satisfactory reagent for several of the glycols, are not even mentioned. The tables of Section 3 would be improved by the inclusion of the melting or boiling point of the parent compound. There are further omissions of comparable dimensions, but by and large the work has been very competently done and constitutes a valuable contribution to the field, fully deserving the place it will undoubtedly find alongside Mullikan, Huntress, and other standard texts on the subject.

REMSEN TEN EYCK SCHENCK
*J. T. Baker Chemical Company, Phillipsburg, New Jersey*

***The South African fossil ape men: the Australopithecinae.*** **Robert Broom and G. W. H. Schepers. (Mem. No. 2.) Pretoria, South Africa: Transvaal Museum, 1946. Pp. 271. (Illustrated.)**

This long-awaited volume, delayed through the war years, ranks in importance with Dr. Weidenreich's recent monograph upon the skull of Sinanthropus. It concerns those mysterious beings of the human twilight, the apes almost men or the men almost apes who inhabited the caves of the Transvaal during the remote antiquity of humanity. The book includes a restudy of *Australopithecus africanus* and a detailed examination of the later adult finds of *Plesianthropus transvaalensis* and *Paranthropus robustus*. One of Broom's chapters deals with the affinities of the Australopithecines. Dr. Schepers, in a separate section, has made an exhaustive study of the endocranial casts and their significance.

In all this assemblage of strikingly new data, none is more fraught with interest than the discovery at Sterkfontein, the site of the Plesianthropus discovery, of a fauna which suggests an upper Pliocene horizon. If this correlation proves acceptable, the Australopithecus site, which is obviously older than the Sterkfontein deposits, must be assigned to the middle or lower Pliocene. The establishing of greater antiquity for Australopithecus removes one of the main difficulties involved in regarding it as lying near the human line of ascent. Every treatment of this subject in the anthropological textbooks will have to be revised in the light of these lowered dates.

Dr. Broom arrives at the conclusion that the South African man-apes were slightly built primates who walked and ran on their hind feet, hunted in groups, and probably possessed at least some mild tool-using proclivities. The hands he does not regard as having been used for progression, insisting that they are far too human in character. Moreover, he is inclined to agree with Dart that the mammalian and crustacean remains found in the Taungs deposits represent portions of the man-apes' dietary, and again would demand some slight instrumental activities.

Broom maintains, on the basis of the adult Plesianthropus and Paranthropus discoveries, that although the cranial capacity lies within what we are accustomed to term the "anthropoid range," this does not necessarily divorce these forms from human tendencies. A Paranthropus brain capacity of some 650 cc. in a creature weighing probably around 100 pounds is a far more striking phenomenon than the same brain size would be in a 500-pound gorilla.

Broom differs from Gregory in his belief that the Hominidae have arisen from a pre-Dryopithecid and very early terrestrial stock perhaps allied to Propliopithecus of the lower Oligocene. He regards the apparent resemblances between the later anthropoids and man as the product of parallel evolution. To explore the evidence upon which these views are based cannot be encompassed in a casual paragraph.

Dr. Broom, like all true scientists, is humble in the presentation of his beliefs and in his recognition of our inadequate accumulations of data. Yet, in propounding the view indicated above, he expresses doubts as to our orthodox interpretations of the human phylogeny. Interestingly enough, similar doubts have recently been expressed by others. Whatever our eventual interpretations of human prehistory may be, these intensive reexaminations and self-questionings shake us out of accustomed routine and force us to think along new lines. Dr. Broom belongs to that high company of pioneers whose discoveries leave an indelible impress upon the science of their time and often remold its dogmas.

In closing, this reviewer would like to point out that Dr. Broom has carried on a Titan's labor with very little in the way of financial assistance or support. The systematic exploitation of the cave deposits dotting the Harts Valley and other areas of South Africa promise results as spectacular as those obtained in Java or at Choukoutien. It is not to the credit of modern research foundations that the dynamite of the commercial lime worker and the singlehanded devotion of Dr. Broom are all that have rescued these few broken fragments from undoubtedly rich deposits known for some years, now, to science. Only their careful investigation on a large scale will reveal whether our small terrestrial human ancestors scampered on the plains of Africa during the Miocene.

South Africa has escaped the dread devastation of war. Where else can the student of human paleontology direct his attention during the next decade or so and expect greater reward for his labors? Dr. Broom has been on the ground and has seen the vision. It shines in the pages of his book.

LOREN C. EISELEY
*Oberlin College, Oberlin, Ohio*