four factors have shared in the selection of students: (1) chance; (2) the opinion of the Deans who were particularly acquainted with the young men; (3) the health records . . . ; (4) a certain minimal standard of excellence in pre-college academic ratings'' (p. 110). In one case, ''nine names not approved by the Deans were eliminated''; in another, ''twenty-one additional names were selected by chance'' (p. 112).

Now all this was plainly a practical and intelligent way in which to proceed with the necessary selections, but the point is that it bears no reference whatsoever to the normal. It seems plain that such a method must choose, and did choose, a typical cross-section of the usual Harvard undergraduate population (the study was conducted at Harvard), neither the extraordinary geniuses nor the unusually incapable, neither the most remarkable physical specimens nor the most ailing—in short, the average. Then why not call them so?

There was a single basic criterion of selection which seems to have underlain the four specific criteria: ''On the whole it was preferred to select participants from the point of view of 'successful living' (rather) than from arbitrary, rigid standards which would limit the study to a particular group of individuals'' (p. 110). Thus, the basic criterion was clearly of the adaptation-to-environment kind; and again, where is there any reference here to the normal? In an abnormal environment those who adapt successfully must naturally do so through the operation of their congruent abnormalities, whereas the question of the normality or abnormality of any given environment *vis-à-vis* human beings can be decided only *after* the problem of human normality itself has been settled. Such procedures as those here mentioned can, and do, accomplish no more than to beg the essential question.

In this writer's view the nature of the human paradic is as it is, irrespective of the divergences from that functioning design of any particular selection of subjects at Harvard or elsewhere; nor can the matter of their divergence or their approximation in respect of the normal be determined by an *ad hoc* investigation of the subjects themselves. The question of the normal is plainly one of the efficient functioning inherent in the design, and ''efficient functioning'' must itself be defined by reference to the *design,* not by reference to its possibly compulsory distortion—''successful living'' —at the behest of any undetermined environment. Until this distinction is clearly grasped there can be no possibility of investigating the somewhat important question of the human norm.

It is to be hoped that nothing here said will imply the writer's disapproval of the Grant Study. The importance of the results already attained is apparent in its published report; and the value of a project concerned with the careful investigation of the average or usual member of our society rather than of the exaggeratedly abnormal member is undeniable in this writer's opinion. His only criticism is directed against the gratuitous intrusion of the term, normal, and his own alleged agreement with the actual misuse of that term—a misuse that seems especially unwarranted since the project needs no justification beyond its asserted purpose as presented excellently in the title of its report, *What people are.* That is quite important enough an undertaking to stand by itself, without any unrelated prejudgment as to whether people, as they are, are normal or not.

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Book Reviews

Biological actions of sex hormones. **Harold Burrows. Cambridge, Engl.: at the Univ. Press, 1945. Pp. x + 514. $8.50.**

This book is an excellent compendium of the literature on the sex hormones up to and including 1941. It is arranged in the conventional manner, listing the characteristics of each hormone, its effects on the endocrine glands, and finally its effect on all organs and tissues upon which observations have been made. The book is divided into six parts: four chapters on gonadotrophins, one general chapter on gonadal hormones, five on androgens, ten on estrogens, two on progestins, and finally a single chapter on the sex hormones of the adrenal cortex. The subject of estrogens is probably the most completely covered and includes a chapter on factors in the causation of cancer.

The book is primarily a descriptive account of numerous experiments, with many of the results listed in tabular form. There seem to be relatively few errors in handling the data in the references, and none that the reviewer detected would invalidate any conclusions. There is a minimum of selection, interpretation, and correlation. However, it is an excellently organized book and reads easily and smoothly. One feels that it fulfills the author's wish that it be a tribute to John Hunter (1728–1793), who, he says, is ''the first and greatest'' of ''the pioneers of sex hormone physiology.''

In spite of the author's statement that ''much work done in foreign lands has been given inadequate consideration,'' the literature reviewed (up to 1941) is surprisingly complete. There are approximately 2,000 titles in the list of references. The book has an appendix

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.

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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.

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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-