previously used. The woody species were not as effective as the grasses as sand binders.

The dunes (wooded and grass-covered), sand flats, and salt marshes are described. A list of the vascular species observed is included. The highlights of the report are the 50 illustrations, each 4 by 6 inches; the geographical and historical account is adequate, and there is a fairly complete bibliography pertaining to the vegetation of the area.

As a preliminary survey of the vegetation and as a report on sand-stabilization practices, the book is excellent. The title, however, is misleading in that the listing of 273 species, when there is a possibility that 400 species occur in the area, gives an inadequate picture of the vascular vegetation. The records at the University of North Carolina indicate a flora of at least 850 species. The author indicates (page 87) that "there are many phases of Plant Geography, and Ecology which remain to be unravelled by detailed studies of this interesting area" from a plant-community standpoint.

The figures, history, and geography should make this book of interest to tourists visiting the Cape Hatteras National Seashore Project, but as a scientific presentation, this is a preliminary study only.

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Progress in the Chemistry of Organic Natural Products. vol. 16. L. Zechmeister, Ed. Springer, Vienna, Austria, 1958. 226 pp. Illus. $9.50.

In the past this useful series of reviews has been noted for the wide variety of fields it has covered. Almost every conceivable technique or approach capable of yielding information regarding the structure of natural products, how they are made in nature, and their probable function has been touched upon in some way. Since each volume is a collection of relatively short reviews, there is little space for developing the subjects in such a way that anyone who is not a specialist in the particular field and even in the particular techniques used can always fully appreciate them. Perhaps this is inevitable, and the reader should at least be thankful that most of the more recent literature is given in the bibliography, which will serve as a starting point for a more penetrating study. Two of the reviews in particular in volume 16 appear to fall in this category—namely, the third and the fifth.

The first review, 25 pages in length and written in German by Von Karl Freudenberg and Klaus Weinges, covers a class of naturally occurring phenolic substances—the catechuic acids, hydroxyflavanes, and hydroxyflavenes—usually treated as part of a wider field of plant dyes and intermediates. As a class they merit treatment in this way.

The second review (62 pages), by Karel Wiesner and Zdenek Valenta, on the chemistry of the aconite-garrya alkaloids, is an exceptionally timely and interesting one, because much light has been thrown on this complicated group of natural products in recent years by the newer experimental methods such as infrared and x-ray analysis. For relatively small molecules of diterpenoid nature they are amazingly complicated. As the authors point out, a solid basis for the more recent structural conclusions was made mostly by W. A. Jacobs and his collaborators, working along classical lines of organic chemistry. It is only to be expected that the more recent work, with the greatly improved tools for interpreting chemical transformations, would make possible a more enlightened choice of key members of such a large group, but it would still be patterned after the original truly pioneering work. Some of the structures proposed will form the basis for deriving still more complicated structures in this field, while others already seem to be of doubtful validity on the basis of present information.

The third review, ably written by E. E. von Tamelen, suffers from the fact that it attempts to cover too large a field in too short a space. In 24 pages the structures of 24 different types of antibiotics are treated. Even though all are produced by the actinomycetes group of microorganisms, they range widely in structure from highly unsaturated straight-chain fatty acids to complex cyclic polypeptides containing ten amino acids and a heterocyclic nucleus. Since much space is occupied by the accepted structural formulas little is left for discussion of the unique structural features particularly characteristic of these compounds. To be sure, many of them are mentioned but, in my opinion, not with sufficient discussion for such a truly fascinating field. Does the fact that we now have so many new and different structures to consider mean that we are content to know but little of each one? Unlike the fields covered in the first two reviews, all of the substances considered have been isolated very recently.

The fourth chapter, by James Bonner, covers a field, "Protein synthesis in plants," which is developing so rapidly at the present time that workers not in the field will surely welcome this short review (29 pages) as a means of trying to keep informed. Protein synthesis is certainly one of the most important areas of biochemical research today. This is true in spite of the fact that we are still sadly lacking in knowledge of the detailed structure of proteins and know only the rougher outlines with regard to the structure of the nucleic acids. Since the interdependence of the two classes is now well established, an understanding of both on a molecular level must be achieved.

The final chapter, by Hans Kuhn, deals with the "Electron gas theory of the color of natural and artificial dyes: problems and principles." The first third of the review deals with experimental facts concerning color and structure. This will be of interest to organic chemists working in the field of natural products, but it is doubtful that many will have the background or even the inclination to become sufficiently well versed in quantum mechanics to properly understand the whole treatise. Even though an ultimate and complete understanding of the structure of an organic compound does require an understanding of the structure of each atom, it is seldom practical to try to treat all of such a mass of information in one short article.

Volume 16 of *Progress in the Chemistry of Organic Natural Products* is a worth-while addition to any chemical library.

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Manual of Insect Morphology. E. Melville DuPorte. Reinhold, New York; Chapman and Hall, London, 1959. xi + 224 pp. Illus. $5.

The appearance of a manual of insect morphology written by Melville DuPorte, an authority in the field, is an event of the first importance. The arrangement of the book is original and practical, from the viewpoint of the teacher. The idea of beginning each section with general considerations (which in the strict meaning of the term *morphology* is the morphological part of the book, the rest being straight anatomy)

is a good one. In starting with the abdomen of the insect, which is the easiest part to demonstrate and explain to the beginning student, and in taking up the more difficult and complicated parts—the thorax and the head—later, DuPorte gives evidence of long experience as a teacher.

In the introduction DuPorte emphasizes that he is especially interested in the evolution of insects. Even though he does start with generalized forms and moves on to more complex ones, this important phase of the subject seems to be played down.

Undoubtedly DuPorte covers these points completely in his lectures and in the laboratory. Apparently, in his cautious conservatism, he considers such material to be out of place in a laboratory manual for undergraduates. I hope that sometime in the future he will expand this phase of his work, thus providing in his published work the stimulus which a scholar such as he is capable of giving.

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Anatomy of the Human Body. R. D. Lockhart, G. F. Hamilton, F. W. Fyfe. Lippincott, Philadelphia, Pa., 1959. ix + 695 pp. Illus. $13.50.

The drastic reduction which has been made in the amount of time allotted to the teaching of gross anatomy in the curricula of many medical schools in this country has probably been a factor in encouraging both authors and publishers to bring out textbooks for such courses which, though considerably more comprehensive than those designed for nonmedical students, are still somewhat briefer than the traditional *Gray, Morris,* or *Cunningham.*

This volume by Lockhart, Hamilton, and Fyfe represents the most recent of these attempts to "lighten the burden of the student of anatomy," as these authors define their objective in the first sentence of their preface. It contains 697 pages, as compared with the 1500 to 1700 pages of the larger textbooks of gross anatomy. The reduction in the amount of text, however, cannot be gauged accurately by this comparison, because the use of a somewhat smaller type and of two 3-inch columns per page effects a considerable saving in space. As a result, a full page in this volume contains about one-third more words than an average page in one of the larger textbooks of anatomy. Since, however, there are more than 125 full-page illustrations in addition to at least twice that number of part-page illustrations of one-half page or more, it is obvious that the authors have achieved a very great reduction in the amount of text material. The illustrations (approximately 950 in number and most of them in color) are, in general, excellent, and their quantity and scope are such that the volume would serve most students quite satisfactorily both as an atlas and as a text.

The section on the nervous system deserves special comment, because of the unique way in which the text and the related illustrations are combined. Many of the illustrations are printed on the same page as that part of the text which pertains to them; indeed, the pertinent text is, in some instances, arranged in irregular columns which conform to the available space between adjacent illustrations. The names of key structures in the text are set in bold-faced type and are connected directly by lines to those parts of the illustration in which the structures are pictured. Thus, verbal description and pictorial representation are brought together in a manner which should be very helpful to the reader.

I am quite aware that it takes rather less wit to pick a few flaws in someone else's work than it does to create something half so meritorious. I hope, however, that at least the first two of the following three minor criticisms will be considered constructive ones, as I intend them to be.

On pages 142 and 143, the authors present a series of outline drawings showing, among other features, the position, age at first appearance, and age at fusion of various secondary centers of ossification. The ages given for some of these—those for the centers of the hand, for example—are not correct. Adequate data on the age at which these skeletal changes occur are now available from a number of radiographic studies of normal living children in Europe and in this country. The authors may wish to consult these data when they prepare the next edition of their book. The relative skeletal precocity of girls as compared with boys would seem, also, to deserve some mention in this connection.

On page 183, in the description of the *rectus abdominis,* the authors define the *linea semilunaris* as delimiting the lateral, convex margin of that muscle. Spieghel originally applied the term *linea semilunaris* to the line of approximately half-moon shape which marks the border between the muscle fibers and the aponeurosis of the *tranversus abdominis* muscle. The *linea semilunaris,* as thus defined, is for the most part situated lateral to the lateral border of the *rectus abdominis* muscle. This is, admittedly, a minor point and one which would not be worth mentioning if one were not commenting on a book in which such a generally high degree of terminological accuracy has been achieved.

One of the authors' expressed intentions in writing this book was to eliminate "such obvious statements as 'the skin covers the body' " and "to modify the rigid formula for relations known to produce such answers as 'the mouth is situated on the face and its anterior aspect externally communicates with the atmosphere.' " They have succeeded admirably in fulfilling this intention, but, in at least one instance, they seem to have slipped. On page 342, in discussing the nerves to the bladder, we find this little gem: "disturbance of micturition (evacuation of the bladder) is of great practical importance." It is reassuring, in these troubled days, to encounter at least one statement upon which there would be unquestioned international agreement—even among anatomists!

The present volume gives evidence of much sound scholarship, a great amount of labor, and considerable ingenuity in devising methods of increasing the effectiveness of illustrations as teaching aids. The book's obvious merits will commend it to medical students, to teachers, and to all others who have occasion to use it.

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Applications of Finite Groups. J. S. Lomont. Academic Press, New York, 1959. xi + 346 pp. Illus. $11.

It has been a matter of pride with most physicists to announce that they do not use group theory to obtain their results. Actually, what they do is to replace an organized, logical, and general method by rudimentary "common-sense" methods.

The avoidance of group theory has led to many misleading statements in our textbooks. For example, in most books on quantum mechanics the author starts from the commutation relation for p_i and q_i and derives the commutation relations for orbital angular momentum.