

States. The first, culminating in late Archaic time at the beginning of the first millennium B.C., was marked by increasingly efficient adaptation to the forest conditions peculiar to the area. In the second, spanning the period from 1000 B.C. almost to A.D. 1000, "we find reared upon this economic foundation an era of regional differentiation and stylistic change." The third trend was towards closer relationships with Mesoamerica—"progressive drawing together with the Nuclear American civilization" (pages vii-viii). This seems a reasonable way to characterize what happened in the area.

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Elementary Practical Organic Chemistry. Part 1, *Small Scale Preparations*; part 2, *Qualitative Organic Analysis*; part 3, *Quantitative Organic Analysis*. Arthur I. Vogel. Longmans, Green, New York, 1958. xxviii + 890 pp. Illus. \$9.75.

This new edition of *Vogel* differs from the 1948 edition chiefly in three respects: (i) the material dealing with the reactions and characterization of organic compounds and the tables of physical constants of the various classes of compounds and of their derivatives have been removed from the portion of the text dealing with preparative methods and added to the section on qualitative organic analysis, which now occupies 296 pages; (ii) an entirely new section (196 pages) has been added, on the quantitative estimation of nitrogen, halogen, and sulfur, of the common functional groups, and of a few specific compounds; (iii) there is a marked decrease in the number of compounds for which preparative procedures are given.

In Part 1, "Small Scale Preparations," the number of preparations given (approximately 150) is about 35 percent of the number in the 1948 edition. This reduction results not only from the addition of the new section on quantitative analysis but also from the fact that there are now fewer pages in part 1 and that the page-size has been reduced, the amount of text being about 75 percent of that in the 1948 edition. However, 150 is still a much larger number of preparations than one finds in most texts published in the United States. Moreover, there is a broader coverage of the theory of physical methods and experimental techniques.

Numerous changes have been made in the procedures given for preparing certain compounds, and new types of reactions, such as reductions with lithium

aluminum hydride and sodium borohydride, have been added. On the other hand, the elimination of such a large number of preparations has necessarily meant a loss of useful types, and not everyone will be satisfied with the choice of those retained.

The author emphasizes the change to smaller-sized runs; the amounts used appear to be from one-fourth to one-tenth of those used in procedures given in the 1948 edition. However, the quantities of starting materials, which vary from a few grams to 25 grams and usually amount to around 15 grams, are comparable to the quantities usually used in laboratory courses in the United States. More sizes and types of glassware are used in the procedures given than are usually supplied for average-sized classes in the United States.

The organization of part 2, on qualitative analysis, is not the best possible. The familiar system developed at the University of Illinois is used, but the two chapters titled "Reactions of organic compounds" and "Class reactions" cover much the same material. Similar or identical procedures may be found in the two chapters, some tests are given in one chapter and some in the other, and directions for preparing derivatives are found in both, along with qualitative tests for functional groups. The inclusion of separate discussions for aliphatic functional groups and aromatic functional groups leads to much duplication and to many unnecessary cross references.

Part 3 describes, for the most part, standard procedures for the determination of functional groups. In fact, all three parts (which, incidentally, may be purchased separately) are very similar to texts published in the United States that cover the same areas.

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Dangerous Marine Animals. Bruce W. Halstead. Cornell Maritime Press, Cambridge, Md., 1959. vi + 146 pp. Illus. \$4.

Although this volume contains a remarkable amount of information about the kinds of marine animals that are dangerous to man (dangerous when touched or eaten or when overtly aggressive), we are assured that this book is the nonspecialist's version of a more exhaustive book still in preparation.

With the growing use of diving equipment, doctors especially will find this a valuable reference book, for the author (a physician) has taken pains to discuss the medical aspects of all sorts of ma-

rine accidents, ranging from jellyfish stings and poisoning from shellfish to sea-snake bites. An amazing variety of animals are in some way dangerous to man, but so little is known of many of them, or even of the nature of the injuries they cause, that many of the recommended treatments are empirical guesses. If one is bitten by a sea snake, it is essential that the snake be brought along to the hospital to make sure it is harmless. Much evidently remains to be learned, especially about the nature of fishes that are poisonous to eat, before the resources of the "silent world" can fulfill the expectations of some hopeful people. In the meantime, a book such as this is an essential beginning.

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The Perpetual Forest. W. B. Collins. Lippincott, Philadelphia, 1959. \$4.50.

W. B. Collins, who is deputy chief conservator of forests in Ghana, has managed to capture on paper much of the drama of life, death, and renewal in the African tropical forest. Any naturalist who has spent years of his life in the equatorial forest has felt the silent force, the rich complexity and ecological integration, of this most interesting of our terrestrial communities. Without saying so, Collins conveys by an array of facts the impression that the forest itself is a living, pulsating organism.

The author describes the conditions for the existence of a rain forest; he starts with the organisms in the soil, then discusses the succession from the relatively simple pioneer stage of the mangrove swamp to the complex, varied, climax forest. Today this self-sufficient world is being assaulted by man, and the destruction of the closed forest may be accomplished within the century. Collins describes the step-by-step process by which this occurs—the destruction of the forest cover and, finally, of the land, much as it occurred in North America. But water and wind act with cataclysmic force in the tropics.

The original shifting cultivation of the native garden was not destructive because these cultivated areas, abandoned after two years, were regenerated in another ten. But, as population increases, the rest periods become too short and new forest openings are burned out constantly. Once cleared of forest, the ground, laid bare to the searing sun, ceases to function as it did before it was denuded. First, the breakdown of humus is accelerated, then soil organisms are killed. Wind erosion follows. Rains may come, but there is no organic material