Book Reviews

The History of the British Flora. A factual basis for phytogeography. H. Godwin. Cambridge University Press, London, 1956. 384 pp. Illus. + plates. $16.50.

The flora of the British Isles has long been studied, and there have been many interpretations of its origin, development, and present distribution. The book under consideration represents the most recent and, by all counts, the most comprehensive attempt to interpret this interesting flora on a strictly factual, empirical basis. It is the outcome of more than 30 years' study of Quaternary history by the author, who is a fellow of Clarke College, Cambridge, and university reader in Quaternary research. Indeed, every botanist is familiar, at least in a general way, with the writings of Godwin, especially on peat and its included pollen.

Here, for the first time, all available references to the occurrence of flowering plants in the British Isles through the Quaternary to the Recent have been brought together and critically evaluated. There are discussions of the collection and identification of plant remains (which include, of course, many things other than pollen), of the subdivision of the Quaternary and the various means of dating these divisions, and finally of the sites of collection. The body of the book, some 220 pages, comprises the detailed presentation of the actual plant record. This is, necessarily, not something for light reading. But throughout this section are interspersed general discussions of the fossil remains of particular families, genera and species, and these are not only interesting reading, but they often have general application beyond the scope of the British flora.

The most fascinating part of the work is the concluding sections analyzing the pattern of change in the flora and the general conclusions which may be drawn from the record. The arrival and spread of species is documented and correlated with climatic and geologic changes. In great detail are described the progression from a flora which contained many arctic-alpine species (in the time of the ice), the rapid invasion across the then dry North Sea of a large proportion of the present flora which contained many thermophiles, the development of the sea barrier and the effects of early man. Clearing the existing vegetation (thus opening habitats to migrules), introducing fire, and deliberately cultivating plants are among the effects of prehistoric husbandry which are clearly recorded by the fossils. Interesting comparisons between Ireland and Great Britain also are made.

I found *The History of the British Flora* most interesting and am sure that it will be one of the important and often-used references on my shelves.

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Color Atlas of Oral Pathology. Histology and embryology, developmental disturbances, diseases of the teeth and supporting structures, diseases of the oral mucosa and jaws, neoplasms. U.S. Naval Dental School, National Naval Medical Center. Lippincott, Philadelphia, 1956. 188 pp. Illus. $12.

In the foreword and preface R. W. Malone, B. W. Hogan, and Robert A. Colby state that the atlas was prepared primarily for use in the officer training programs of the Naval Dental Corps and for general practitioners. As is stated by Colby in the preface, the book is strictly an atlas, and all pictures are in color except the x-ray copies. The text is printed on excellent paper, and the photographs are beautifully reproduced. The photomicrographs, clinical photographs or x-ray copies, and the legends are always on the same page.

The book has five divisions, namely: histology and embryology; developmental disturbances; diseases of the teeth and supporting structures; diseases of the oral mucosa and jaws; and neoplasms. The first section, on histology and embryology (15 pages), covers the histology of the skin, mucous membranes, jaw structures, tongue and bone. It has some excellent photographs and figures of developing human embryos. The second section (32 pages) deals with disturbances such as cleft lip and palate, various hypertrophies and atrophies, cysts, tori, Fordyce's disease, and various disturbances in tooth and bone development.

Although on page 42 there is the statement (as there is in nearly all textbooks on the subject) that an excessive amount of fluorine in the drinking water is the most frequent systemic factor in enamel hypocalcification, this has never been conclusively demonstrated.

The concept of hypocalcification most likely arose from the microscopic appearance of ground sections of fluorosed teeth. The affected areas alter the transmission of light. Also, fluorosis is the only enamel defect for which the specific etiological factor has been determined, but the relative frequency of occurrence in comparison with other types of defects is not known, and the effect of fluoride on the calcium content of enamel has not been clearly established.

The third section (36 pages) describes such lesions as tooth abrasions and erosions, stains, root fractures and resorptions, cementicles, dental caries, diseases of the pulp and periapical structures, various types of stomatitis and gingivitis, periodontal diseases and hyperplasias. On page 78, in commenting on periodontitis, appears the statement: "At first the inflammation may be aseptic, but calculus (which is always found in a peridontal pocket) irritates the crevicular epithelium, causing minute ulcerations that provide an avenue for the invasion of microorganisms and the absorption of toxic material." The reader should be cautioned not to interpret this as meaning that the early lesion of periodontitis may be sterile. No bacteriologist would conclude that any mouth is sterile, whether or not there is clinical evidence of inflammation. It is common knowledge among dentists that gingival tissues appear much healthier after a prophylaxis, owing to removal of microorganisms, calculus, debris, and so forth. Sections of periodontal tissues contain microorganisms and always demonstrate either acute or chronic inflammation. Inflammation is known to occur only after tissue injury. Microorganisms found in the mouth are known to be capable of inciting inflammation and are found at the site of the inflammatory process. In addition, calculus is known to contain myriads of microorganisms. It must be emphasized that overwhelming evidence indicates gingival and periodontal lesions are infected.

The fourth section (43 pages) considers lesions that result from soft tissue injury, chemical and thermal burns, radiation effects, drug idiosyncrasies, keratotic lesions, retention cysts, sialolithiasis, herpetic lesions, tuberculosis, syphilis, histoplasmosis, actinomycosis, lipoid storage diseases, vitamin deficiencies, and lesions resulting from hormone imbalances.

The fifth section (31 pages) is an excellent presentation of practically all oral neoplasms. The remaining 20-page section is a bibliography.

Except for the somewhat controversial aforementioned points, the atlas is excellent. It will be particularly helpful to general practitioners of dentistry and medicine, whereby at a glance in most cases, a clinical photograph, a photomicrograph, an x-ray, and a brief description of a lesion may be obtained. It will also prove valuable and is highly recommended to graduate students and residents in oral and general pathology as well as to the practicing general pathologist who may not see many oral pathological lesions.

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Proceedings of the International Conference on the Peaceful Uses of Atomic Energy. vol. 8, *Production Technology of the Materials Used for Nuclear Energy*. United Nations, New York. 1956. 627 pp. Illus. $10.

This large volume is the eighth in the series of 16 books that record the great unveiling of classified material that took place at Geneva in 1955. It contains 95 papers in four major sections: treatment of uranium and thorium ores; production of metallic uranium and thorium; analytical methods in raw material production; production technology of special materials. The last section is devoted to heavy water, graphite, zirconium, and beryllium.

Developments in the basic sciences underlying nuclear power production have been published quite freely, but information on technologic processes has been severely restricted. Hence, this book is of great interest for its content of technical material alone. In addition, however, one is naturally curious about the relative contributions of different nations to this massive international declassification. Curiosity centers particularly upon a comparison of the information furnished by the United States and the U.S.S.R. I satisfied my wonder by compiling a few numbers that are offered without intent to draw conclusions. In the category of technology, the United States contributed 18 papers for a total of 195 pages, while the U.S.S.R. delivered four papers totaling 16 pages. Pursuing the counting in all four sections of the book a bit further, one may be somewhat astonished to find 12 papers from Yugoslavia and 15 from Argentina but only three from the United Kingdom and one from Germany. As might be expected, countries that do not yet have a full nuclear energy program have concentrated their efforts on work that can be performed with small quantities of material.

A second intriguing question bears on the value of secrecy as a means of achieving a lead over other nations. Given the same goals under conditions of isolation, will scientific workers reach similar solutions? Judging from the few examples in this book where comparison is possible, the answer seems to be affirmative. Thus, the methods of producing beryllium in this country and in the U.S.S.R. are strikingly similar. The same is true of the manufacture of metallic uranium. In this case, all four nations reporting use a bomb reduction of uranium fluoride with an alkaline earth metal, although three employ calcium, while the United States prefers magnesium. On the other hand, the greatest diversity appears in the field of analytic chemistry where security restrictions have been very mild.

The quality of most of the papers is excellent, and many contain a wealth of detail. This is true of those describing manufacturing methods as well as those on analysis. As a result, this book will repay careful study by all who are concerned with the production technology of the basic constituents of nuclear reactors. It is to be hoped that the 1955 Geneva conference is the first of many similar international meetings.

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Principles of Embryology. C. H. Waddington. Macmillan, New York, 1956. 510 pp. Illus. $7.50.

C. H. Waddington's new book is intended as a textbook for advanced university students (alas, he does not expect them to be able to read German): a review of recent work on the analytic or causal aspects of developmental science. All embryologists will, it is safe to say, derive both pleasure and stimulation from its perusal: pleasure because of the easy mastery with which experimental results from dozens of different laboratories on several continents have been woven into a coherent exposition, and stimulation because, of course, nobody will agree completely with the choice of material or with every interpretation offered. The figures and diagrams are particularly well chosen insofar as they are selected from the literature, and the original ones are very neat and illuminating. One may cite numerous examples of particularly felicitous exposition which confer on sometimes difficult subjects a deceptive air of simplicity and clarity.

The book is subdivided into two major parts. The first, called "The facts of development," has chapters reviewing the experimental analysis of successive stages of life-history and separate chapters on the major animal groups that have been objects of experimentation. The section ends with chapters on growth and regeneration. It is perhaps a reflection of the state of the analysis that the chapters dealing with early phases of development appear much more successful than those on organ development and regeneration. The second part of the book is concerned with "Fundamental mechanisms of development," particularly genetic and biochemical mechanisms. It is very good to see the data of developmental genetics given equal prominence with those of experimental morphology between the two covers of a single book; this proximity, however, seems to demonstrate how far apart these two disciplines—which should by rights be one discipline—are in *Fragestellung* and emphasis, even when they use the same or similar methods. Perhaps in his next book Waddington will be able to remedy this.

In a textbook of this comprehensive scope it can scarcely be expected that every aspect of the material has been treated with equal breadth and felicity or that a strict account of priority in experimentation has been rendered. The author absolves himself from the latter obligation so neatly in his preface that it would be hard for even the most obsessive critic to object. A sense of the history of a discipline is not perhaps essential to analytic attack: Waddington writes as a practical mechanist, physiographer and topologist, and morphogeneticist. It would be ungrateful to ask for more. However, I confess to being somewhat baffled by some of the definitions in the introductory chapter—unconvinced, for example, of the reality of the distinction between "field of competence" and "individuation field." Indeed, the later chapters on the embryonic axis and "individuation" are so reasonable and readable that we strongly suspect the author to have been guilty of writing his first chapter before, rather than after, the last: a warning to all of us.

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World Sea Fisheries. Robert Morgan. Pitman, New York, 1956. 307 pp. Illus. $6.95.

Why do some oceanic islands import a large portion of the fish their inhabitants consume? What is the influence of a coastline on the development of local fishing industries? These are the types of problems that this book tries to analyze.