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.

M. KOLODNEY
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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.

DOROTHEA RUDNICK
Yale University

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.

Commercial fish harvest, like the exploitation of any natural resource, is influenced by many factors, and economic and geographic ones are often more important than the biological potential of the region in question. This is one of the main tenets of the book, and the author stresses it throughout.

There are three sections; the first deals with the physical environment, briefly tells about marine productivity, and surveys the potentials of fish harvest the world over. A chapter on the economically important types of sea fishes is also included here.

The second section treats fishing gear and techniques of fish distribution and storage. Fishing ports and communities are classified, leading into the third section, which is an analysis of world fisheries by regions. Stated criteria of comparison are the stages of technical development, total and per capita production of fish, imports and exports, to name the most essential ones. Despite his stating of these criteria, the author deals essentially with continents or parts of continents as units of discussion. Asia, Africa, Europe, North America, Central and South America, and Australasia are the chapter headings. A short chapter on whaling and one on the changing aspects of fisheries terminate the book.

It is not easy reading, because a wealth of information has been compressed into relatively few pages, and, in spite of a somewhat textbook like style and organization, the reader is often left with abstracting some general principles from the individual chapters.

In certain places one might have liked to see more stress on the historical development of fisheries, and the final chapter especially would have benefited by considerable expansion with a more discoursive summing up than has been given on the relative role of fresh-water and marine fisheries in the food economics of the future.

As a survey of world fisheries, the book is up to date to 1953 and it does fulfill its publisher's claim—that of being comprehensive. Thus it supplements earlier books of this kind, such as Tressler and Lemon's *Marine Products of Commerce,* still outstanding, however, because of its detailed treatment of fisheries technology and information on all kinds of marine products apart from fish.

JOHN E. BARDACH
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Jurassic Geology of the World. William J. Arkell. Hafner, New York, 1956. xv + 806 pp. Illus. $16.50.

William Arkell has been studying the Jurassic and ammonities for a number of years. This impressive work is "the first attempt at a synthesis of one system on the basis of marine faunas in all parts of the world."

The book is divided into eight parts: introduction; western and southern Europe; Africa and Arabia; southern Asia; Australia; north-eastern Asia; America and the Antarctic; and a general survey and conclusions.

Arkell considers the ammonites the best guide fossils of the Jurassic because of their short vertical range, wide horizontal distribution and, in part, their ease of recognition, whereas the pelecypods and gastropods often do not have the first two of these requirements. In nonammonite beds other fossils must be used and, in fresh-water deposits, ostracods look promising. Because of the great extent of Jurassic in western and southern Europe and because of the long-continued study of the system here, this is by far the most detailed part of the book.

Arkell gives his conclusions to his world study of the Jurassic in part VIII. During Jurassic times, the Pacific, the North Atlantic, and Arctic oceans were open, and the Indian Ocean had a barrier from Madagascar to Ceylon and India. The South Atlantic Ocean is not bordered by any known Jurassic. In other words, except for the South Atlantic, all the primordial oceans were open and much as they are today. Arkell rejects the 1911 marine realms or theories of Uhlig and devises for the Jurassic the following: (i) the Lias realm as a universal realm with world-wide distribution; (ii) the Pacific realm starting in the Toarcean, retreating in the Middle Bathonian; (iii) the Boreal realm spreading south from the Lower Callovian, retreating during the Upper Oxfordian, and again readvancing in the Lower Kimeridgian; and (iv) the Tethyan realm, which fluctuated in width throughout the system.

There is some speculation on the Jurassic climate, but except for the emphasis on the lack of known Jurassic icecaps, it adds little to the picture. The most active mobile belt during the Jurassic was around the Pacific, and the Tethys was the east-west mobile belt. Arkell rejects the complicated terminology of Kay for troughs and geosynclines, a step with which I agree. Arkell considers Stille's studies on diastrophism in the light of his (Arkell's) work on the Jurassic and in general finds that his own work supports the ideas of Stille. In connection with diastrophism, he states: "So far as our knowledge goes at present, it does not point to any master plan of universal, periodic, or synchronized orogenic and epeirogenic movements. The events were episodic, not periodic. There was no 'pulse of the earth.'" This last table, No. 28, gives four orogenies and six phases as named diastrophic episodes. A biblography of 116 pages is arranged by regions.

This book ushers in a new approach to world geology as applied to marine faunas. (Similar work was done for Lower Cretaceous floras in 1911.) It represents an immense amount of detailed work. I know of no one who could have done a better piece of work on the Jurassic. This is an important contribution and sets up a very high standard of investigation for others to follow.

The publishers and the printers are also to be complimented—the work is excellent, the maps are readable and clean; the plates are fine-screen; and the type is clear.

E. WILLARD BERRY
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Miscellaneous Publications

(Inquiries concerning these publications should be addressed, not to Science, *but to the publisher or agency sponsoring the publication.)*

Observations on the Taxonomy, Biology and Ecology of the Engraulid and Clupeid Fishes in the Gulf of Nicoya, Costa Rica. Bull., vol. 1, No. 5. Clifford L. Peterson. 144 pp. *Studies of the Sexual Development and Spawning of Yellowfin Tuna (Neothunnus Macropterus) and Skip-Jack (Katsuwonus Pelamis) in Three Areas of the Eastern Pacific Ocean, by Examination of Gonads.* Bull., vol. 1, No. 6. Milner B. Schaeffer and Craig J. Orange. 69 pp. Inter-American Tropical Tuna Commission, La Jolla, Calif., 1956.

Radiation Field of an Oscillating Dipole–I. Notas de Física, vol. II, No. 11. Erasmo M. Ferreira. 20 pp. *Elastic Scattering of oc-Particles.* Notas de Física, vol. III, No. 1. S. W. MacDowell and J. J. Giambiagi. 4 pp. *Polarization of Spin One Particles by Nuclear Scattering.* Notas de Física, vol. III, No. 2. S. W. MacDowell and J. Tiomno. 14 pp. Centro Brasileiro de Pesquisas Físicas, Rio De Janeiro, 1956.

The Commonwealth Fund, Thirty-Eighth Annual Report for the Year Ending, June 30, 1956. Commonwealth Fund, New York, 1956. 61 pp.

Durability of Concrete. Highway Research Board Bull. 128. National Academy of Sciences–National Research Council, Washington, 1956. 50 pp. $0.90.

Notes on Some Intertidal Coleoptera with Descriptions of the Early Stages (Carabidae, Staphylinidae, Malachiidae). Trans. vol. XII, No. 11. Ian Moore. San Diego Society of Natural History, San Diego, Calif., 1956. 24 pp.

Oak Ridge Institute of Nuclear Studies, Tenth Annual Report. 30 June 1956. Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn., 1956. 113 pp.

Unmeasured Hazards. An analysis of the effects of tests of atomic and thermonuclear weapons. World Federation of Scientific Workers, London, 1956. 40 pp. 2s.

John and Mary R. Markel Foundation, 1955–56 Annual Report. The Foundation, New York 17, 1956. 79 pp.