the importance of the distinction, he cites the now-familiar example of the large family unit of the Chinese, a unit achieved by only a small proportion of its members, never the average or even common form of the family in that society. "Nevertheless, one of the most significant structural features of traditional China is the fact that the ideal structures which the gentry both held and to some extent approximated in actuality were also the ideal structures for the vast majority of all Chinese regardless of whether they were actually able to live up to them or not" (p. 29). This is presumably one of those hypotheses about the facts, and the reader is spared having to think about it further, for the only reference to the literature on the Chinese family is to the author's own book *The Family Revolution in Modern China*, itself equally hypothetical. For the implications of such stability of discourse, the reader would do well to look at pages 122 to 125.

It would be incorrect to suppose that the discussion of modernization proceeds throughout at this inconclusive level. The two chapters of part 1, on the structure of relatively modernized and relatively nonmodernized societies, are to be recommended to anyone who has himself ever attempted even half as much. Particularly intriguing is the brief section on what the author sees as one of the major problems of the relatively modernized society, which is the requirement that the socialization of the individual must prepare him "for an unknown future."

Developed at very great length is a consideration of the common elements and main lines of variation in societies, and the principal relationships among them. Here the author is at his best, nicely advancing many earlier discussions of these issues in the policy context. More specifically, an effort is made on the one hand to show the student of public affairs that societies can and must be considered as wholes, and on the other to wean him away from reification and personification of societal units, a common feature of macroanalysis in the social sciences properly excoriated by the author.

How can the achievement of this complex work be estimated? Only, I would suggest, by the productivity of its insights. Will future studies use it as a starting point? The author has not, in fact, provided very clear points of departure for such an advance. Will it succeed in its avowedly applied aim of sensitizing the practitioner of public affairs to the contributions which social analysis may make to his effectiveness? Perhaps so, if he is adept at relating his planning and experience to the structure provided by the author. It can be done, but it is likely to be attempted only by those already highly committed to the view that social science does speak to the issues of the day, no matter that its voice be uncertain.

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Tectonics

The first edition of **Traité de tectonique** (Masson, Paris, ed. 2, 1965. 457 pp., F. 215), by Jean Goguel, which appeared in 1952, was translated into English by Hans E. Thalmann (Freeman, 1962). I reviewed the first French edition 11 years ago [*Journal of Geology* **63**, 397 (1955)].

The new French edition differs little in format and relatively little in content from the first edition. The first part of the book deals with field observations, the intermediate part emphasizes geometrical analysis, kinematic analysis, and mechanics, and the last part is concerned with synthesis and interpretation. Goguel, because of his background in mathematics and engineering, is especially well versed in kinematics and mechanics, but is also a first-class field geologist.

The next to the last chapter, 14 pages in length and entitled "Margin of uncertainty in tectonic interpretations," is new. It has obviously been inserted to consider two hypotheses that have been emphasized in recent years. One concerns the extent to which crustal shortening is involved in folding. V. V. Beloussov believes that folding is caused by vertical movements and that the opposite sides of the folded belt are no closer together after folding than before. Goguel believes that much folding, such as that in the Alps, involves crustal shortening, the opposite sides of the belt being closer together after the folding. This question is of the utmost importance in analyzing the dynamics of the earth. The vast amount of paleomagnetic data gathered during the last two decades has led many geophysicists and geologists to revive the hypothesis of continental drift. Goguel does not discuss the basic principles of paleomagnetism nor does he analyze the data. Instead he reiterates the old arguments against continental drift. He concludes that neither Beloussov's hypothesis of folding nor the hypothesis of continental drift is sufficiently probable to necessitate rewriting his final chapter entitled "Search for an explanation."

The chapter on isostasy has been rewritten. This has been necessitated by the great progress made in seismology during recent years. "But, beneath this crust, the mantle shows notable differences, at least in the upper part, and appears to be the site of phenomena that should play an essential role in the localization of deformation of the crust. The time is past when the geologist thinks he can confine his study to the crust."

Although 14 of the 215 figures used in this edition were not in the first French edition, 9 of them were in the English translation. Fifteen percent of the text is not in the first French edition; of this, 11 percent is completely new, but 4 percent was in the English edition.

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History of Medicine

Yacqūb ibn Ishāq al-Kindī, who died about 874 and to whom this compilation of recipes is attributed, was known as the philosopher of the Arabs. He was one of the greatest intellectual figures in Islamic history, not only in medicine and philosophy, but in other sciences as well [for details, see my article "Al-Kindī, a ninth-century physician, philosopher, and scholar" in *Medical History* **9**, 328 (1965)]. This compilation, **The Medical Formulary of Aqrābadhin of al-Kindi** (University of Wisconsin Press, Madison, 1966. 424 pp., $8.50), was microfilmed and reproduced from the original manuscript, No. 3603, at the Aya Sofia Library (Istanbul, Turkey) and it was translated into English and annotated by Martin Levey, with an introduction, an etymological and philological interpretation of the drug simples, and two indices added.

This scholarly work fills gaps in the study of Arabic pharmacy and the evolution of materia medica. In the in-

troduction, Levey adequately covers the major types of Arabic literature on pharmacology, although the term is poorly defined in the footnote on page 3. He does better with the etymology and sources of Arabic names in materia medica but gives little attention to the life and times of al-Kindī.

It is, however, refreshing to note that Levey has included a reproduction of the original Arabic manuscript. He has rendered the translation thoughtfully, with good taste, and, for the most part, with meticulous accuracy. In several passages, however, words and sentences are incorrectly translated (see, for example, Nos. 13, 85, and 216 on pp. 42, 100, and 210 to 212, respectively). A few titles of subdivisions, moreover, have been ignored or overlooked—for example, No. 95 on page 108, where a new paragraph should read: "*Dentifrices:* The white dentifrice used to arrest (cure). . . ." No. 99, on page 110, should read: "Another dentifrice for the aforementioned ailment . . ." and No. 102, on page 112, should read: *The Yahūdī's* (*Jewish*) *Dentifrice* not the "Jewish Tooth." This possibly refers to a recipe prepared by Masarjawayh or another Jewish physician of the 8th or 9th century.

The publisher deserves credit for the excellent format, the fine reproduction of the Arabic manuscript, and the beautiful Arabic script included with the materia medica.

Scholars and Arabists interested in the history of Arabic medical sciences and etymology will find this book a welcome addition to any research involving the evolution of Arabic pharmacy and medical therapy.

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Organic Evolution

Important contributions to evolution in modern times have included numerous original books devoted to technical considerations of one aspect or another of this extremely and increasingly complex field. The names of such authors as Darlington, Dobzhansky, Fisher, Ford, Grant, Haldane, Huxley, Lerner, Mayr, Rensch, Schmalhausen, and Waddington at once rise to mind, and the list is very far from being exhaustive. Nevertheless there has been a dearth, one could almost say absence, of works covering the whole field of modern evolutionary theory briefly, simply, and authoritatively. That need is now filled by **Processes of Organic Evolution** (Prentice-Hall, Englewood Cliffs, N.J., 1966. 191 pp., $2.50) by G. Ledyard Stebbins, who also belongs in the previous list as author of a large technical work on variation and evolution in plants, one of the bases of the current synthetic theory.

As the title indicates, this book is concerned with the "how" of evolution ("What makes evolution go?"), and not with the what ("What has happened in the course of evolution?"), or the why ("What is the meaning of evolution, its transcendental reason, or its philosophical impact?"). It covers the selected field very well, indeed amazingly so for so concise a work. The first chapter outlines the synthetic theory and its origins briefly (it will go without further saying that everything is brief). Variation and variability (nature, sources, and significance) are next considered, first as embodied in organisms and then as itself organized and operative in reproducing populations. Progressive evolution in populations is dealt with, giving special consideration to competition and to the critical points of extreme delicacy and complexity of adaptation and of apparently nonadaptive characteristics.

Speciation is treated in a usefully restricted sense, as the outcome of reproductive isolation. The counterpart of such isolation is hybridization, a special interest of the author, given somewhat more space than would otherwise be expected. Inferences from the fossil record and such long-range phenomena as rates, trends, and emergence of novelty are summarized in the chapter "Major trends in evolution." Finally, human evolution is the exception to the intention not to discuss the course of evolution, but here, too, relevant processes are emphasized.

Each chapter is followed by questions, and the presentation is that of a text. It is otherwise an excellent one, but the material is scanty for a separate course on evolution, and as a textbook this may be most useful for inclusion as a part of a more general introductory biology course. It should also be accessible to honest enquirers outside of schools.

Illustrations are numerous and useful although a few are puzzling or contain misprints. There are also some other indications of careless editing. Many printings should be called for, and revision will be possible. In the meantime, this is an excellent book as it stands and worthily fills a great need.

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International Conference on the Earth Sciences

Advances in Earth Science (M.I.T. Press, Cambridge, Mass., 1966. 516 pp., $20), edited by P. M. Hurley, is a record of the papers presented at the International Conference on the Earth Sciences held on the occasion of the dedication of the Cecil and Ida Green Building at the Massachusetts Institute of Technology in September 1964. The papers are by 15 distinguished authors, one each from Munich, Oslo, Moscow, and Canberra and the other 11 from institutions well distributed in the United States. The subject matter ranges widely across many of the active fields of earth and space science—from solar and interplanetary physics and planetary astronomy (Goldberg, Biermann, and Kuiper); through atmospheric circulation and other meteorological phenomena (Lorenz, Eliassen, and Obukhov); oceanic circulation, waves, and sediments (Stommel, Munk, and Arrhenius); to a group of six papers on the "solid" earth: the figure of the earth as evidence of its mechanical properties, recent advances in seismology, the constitution of the earth's interior (MacDonald, Press, and Ringwood), and heat flow, geochronology, and convection in the upper mantle (Birch, Wasserburg, and Elsasser).

The type of treatment accorded these topics varies almost as widely as the subject matter. A few of the papers are quite technical; two offer no references to the literature of their topics; one or two are original contributions of new knowledge; but many of them are competent to excellent critical reviews of current literature and activities in their fields—reviews that have been written primarily for a nonspecialist audience. In commenting on a book that contains many excellent critical reviews and original contributions, it may seem unmannerly to mention one or two articles individually. Nevertheless, the ar-