reasoned that, because the abalone (*Haliotis* spp.) was found along the Pacific coast of California but not in the Vermilion Sea, there could be no northern connection between the sea and the Pacific Ocean. Hence, "el mar es un golfo."

Although Father Kino's deduction was largely ignored for nearly half a century, his geographical study was probably the first scientific inquiry into the marine geology of the Gulf of California. This pioneering work has been most impressively carried on in the recent publication *Marine Geology of the Gulf of California*, a symposium volume which contains 16 well-written papers concerning the latest geophysical, geological, oceanographical, and biological researches in the gulf. Most of the authors, including the editors, T. H. van Andel and G. G. Shor, Jr., are savants at Scripps or elsewhere in southern California. Like its predecessor which dealt with the Gulf of Mexico, this symposium volume will doubtlessly be well received.

Although considerable attention is given to the sediments, bathymetry, and biota of the gulf, the book is perhaps most outstanding for its presentation of geophysical data and geotectonic ideas regarding the origin of the gulf, and, incidentally, of the development of portions of the continental margin of southwestern United States and northwestern Mexico. These ideas are developed in a series of papers by Allison ("Geology of areas bordering Gulf of California"), Rusnak, Fisher, and Shepard ("Bathymetry and faults of Gulf of California"), Harrison and Mathur ("Gravity anomalies in Gulf of California"), Phillips ("Seismic refraction studies in Gulf of California"), Hilde ("Magnetic profiles across Gulf of California"), Biehler, Kovach, and Allen ("Geophysical framework of northern end of Gulf of California structural province"), and Rusnak and Fisher ("Structural history and evolution of Gulf of California"). These authors present impressive evidence, marshalled by Rusnak and Fisher, that large-scale crustal translocation formed the gulf in Miocene time. Incidentally, it is interesting to note that only passing notice is given to Warren Hamilton's earlier (1961) exposition of this idea. Because the southern portion of the gulf has an oceanic crust, those unmoved by the gravity-sliding interpretation may wish to regard this part of the gulf as a graben that lost its original continental foundation by subcrustal erosion, or to perhaps face the problem of evolving the granitic rocks of the outlying Baja California peninsula from an oceanic crust. The sliders appear to have won this round.

The book also includes papers on classical subjects—for example, Roden's "Oceanographic aspects of Gulf of California," Shepard's "Seafloor valleys of Gulf of California" (in which he once again comes to grips with his favorite subject, submarine valleys, although this time he deals with canyons cut in granite), Curray and Moore's "Pleistocene deltaic progradation of continental terrace, Coasta de Nayarit, Mexico" (a refreshing attack on the problem of the origin of the continental platform and slope, based on ideas gleaned from reflection profiles), and van Andel's lengthy (94 pp.) "Recent marine sediments of Gulf of California" (in which he shows that detrital debris is chiefly transported transversely into the Gulf from its flanks and not, as one might initially think, longitudinally from the Colorado River at its northern end).

In the next paper, "Factors affecting distribution of laminated diatomaceous sediments in Gulf of California," Calvert substantiates the concept that layered, diatom-rich slope sediments in the gulf are related to a zone of oxygen minimum in the water column. Parker's paper, "Zoogeography and ecology of macro-invertebrates of Gulf of California and continental slope of western Mexico," emphasizes the striking diversity of tropical and subtropical benthic communities in the gulf. In a companion paper, "Patterns of living benthonic Foraminifera, Gulf of California," Phleger describes what little information is available regarding the Foraminifera of this Pacific backwater. Ostracods are briefly treated by Swain, Miller, and Mandelbaum, and the Radiolaria by Benson.

Ideally, this book should be read from cover to cover, but individual contributions can be taken separately without undue reference to the preceding papers. Large-scale maps are included in a separate packet. The bathymetric chart in the packet is thoughtfully printed in deepening shades of blue that correspond to increasing depth zones, and thus is easily comprehended. This is an excellent chart, although for some reason San Lorenzo Island was not designated, Espíritu Santo Island was misspelled, and accent marks were not used on Spanish words as they were in the text of the book. *Marine Geology of the Gulf of California* is a worthy buy for most marine geoscientists as well as for those especially interested in this area, which is one of the world's most "readily inaccessible" regions.

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## Chemistry

**Organic Name Reactions**. A contribution to the terminology of organic chemistry, biochemistry, and theoretical organic chemistry. Helmut Krauch and Werner Kunz. Translated from the second revised German edition by John M. Harkin. Wiley, New York, 1964. xxiv + 620 pp. Illus. $16.

For various reasons, many organic reactions have come to be known by the names of their discoverers or early champions. Thus, organic chemists commonly speak and write of Friedel-Crafts reactions, Diels-Alder reactions, and the like, rather than referring to the reactions by more descriptive terms. This makes for efficiency in communication, particularly when the descriptive term would be long and involved. Many of the "name reactions" are not well known, and literature citations are sometimes omitted when they are referred to by name. Therefore a reference dictionary of name reactions is needed.

In this book, a translation of the German edition published in 1961, the main text (519 pp.) presents about one reaction per page. Virtually every reaction is illustrated by an eye-appealing chemical equation with structural formulas. A few descriptive remarks, mostly well-chosen, are made about each reaction, the probable mechanism is often briefly indicated, and important literature references are listed.

An "addendum" section (pp. 521–559) gives additional literature citations, reaction by reaction, many relating to work published during the period 1960 to 1963. The bibliographical material is quite good, but for almost every reaction the bibliography is split

between two parts of the book, a most inconvenient arrangement.

An authoritative list such as this challenges one to find reactions that were omitted. I was able to find some: the Finkelstein and Menschutkin reactions, the Robinson annelation procedure, and the Wohl-Aue phenazine synthesis. I also found some surprising entries: the "Cope-Mamlock-Wolffenstein hydroxylamine elimination" (this is the Cope amine oxide pyrolysis), the "Lieben" iodoform test, and the "Kriewitz-Prins" formaldehyde-olefin addition. I had never before encountered the names of Mamlock, Wolffenstein, Lieben, and Kriewitz associated with these well-known reactions.

This work suffered a good deal in translation. Some downright mistakes were made, such as cuprous *acetate* for CuCN (twice on p. 395) and an incorrect statement regarding the mechanism of the von Richter reaction (the German edition was correct). Syntax and words strange to English sometimes appear; my favorite is *minuity* in translation of *Kleinheit* (p. 28). Russian names are given only in their German transliteration; thus, the reaction known to American chemists as the Chugaev xanthate pyrolysis is listed only under "Tschugaeff."

The Wagner-Meerwein carbonium ion rearrangement (described only as a reaction of terpenes) and the Whitmore "anionomerism" of carbonium ions are unfortunately presented as separate topics, without cross-referencing.

Although the "dire need for the development of a systematic classification of terminology for organic reactions" is mentioned in the foreword and in the preface, no attention is given to systematic terminology in the book. I am personally disappointed that a method for systematically naming substitution reactions, which I suggested some years ago [*J. Chem. Soc. (London)*, 4717 (1954)], and which is now rather widely employed, was not presented.

The authors describe their book as having become "practically a textbook" of the most important organic reactions. They regard it as a good "summarizing review of organic chemistry" for use, say, by advanced students studying for comprehensive examinations. I do not share this view. Although the statements made, reaction by reaction, concerning mechanisms and synthetic applications are for the most part unobjectionable, they are in nearly every case too brief to convey a proper appreciation of either. Moreover, the attaching of men's names to reactions has only a haphazard relationship to their significance (the reactions' or the men's). Many obscure and trivial reactions are included, and many important ones that happen not to have "names" are omitted.

As a reference work for identifying reactions mentioned by name, this book is obviously useful. But if only one book of this sort can be purchased for a library, this volume should be compared with Gowan and Wheeler's *Name Index of Organic Reactions* (1960), which lists perhaps 40 percent more reactions and which has a format that is in some ways more convenient.

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## Applied Botany

**Biogeochemical Methods of Prospecting**. Dmitrii Petrovich Malyuga. Translated from the Russian edition (Moscow, 1963). Consultants Bureau, New York, 1964. viii + 205 pp. Illus. $27.50.

The term "biogeochemical methods of prospecting" means the search for buried ore deposits by chemical analysis of living plants growing in the vicinity. In most parts of the world, ore deposits directly exposed at the surface have long since been found and developed. The present-day problem is to discover deposits that have been concealed beneath a blanket of soil or plant litter and thus cannot be found by casual inspection.

Malyuga's book is unquestionably the most complete synthesis to date of biogeochemical methods as they have been developed in the Soviet Union. The availability of this monograph in English gives the Western reader an insight into the very large volume of Russian activity that until now could be reviewed only in the Russian-language literature. Malyuga's list of references includes 375 items, of which 258 are Russian. The translation is excellent; the technical language is accurate, and the diagrams are if anything more legible than the original.

Unfortunately, the book suffers from certain fairly serious deficiencies. The text tends to be vague, so that the really significant and important observations, of which there are plenty, are difficult to winnow from the nondefinitive, wordy matrix. The maps and diagrams rarely have a scale of distance. The diagrams and tables are not always cross-referenced in a way that allows one to decipher easily the correlations and understand the interpretations that the author is trying to make. These, however, are technical problems, and Malyuga is not the only Russian author who can be accused of such sins.

The professional exploration geologist, whose eye is caught by the word "prospecting" in the title, will probably be disappointed in the author's uncritical treatment of his data. Only rarely are the plant data compared point-for-point with parallel data on trace elements in soils, and nowhere are they compared with the data of coextensive geophysical surveys. Nothing is said anywhere about the economics of the methods—how many samples or how large an area per man-day. And no legitimate case histories of biogeochemical discoveries, or even of operational field experience, are described. This failure to live up to the promise contained in the title will probably reduce the number of people who are willing to pay the rather shockingly high price that is asked for this volume.

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## Mammalian Reproduction

**The Biochemistry of Semen and of the Male Reproductive Tract**. Thaddeus Mann. Methuen, London; Wiley, New York, 1964. xxiv + 493 pp. Illus. $16.50.

This book is an updating and an expansion of the material first published 10 years ago in *The Biochemistry of Semen*, a book that has been translated into French, Japanese, and Polish. This expanded second edition will receive the same acclaim accorded its predecessor by students of the reproductive processes and of biochemistry, practitioners of animal and of human medicine, and researchers and specialists in fields where a ready reference to the literature on male reproduction is needed. Although the book is primarily concerned with the