cussed that are normally not treated in paleobotany textbooks, such as the concept of a flower (= an inflorescence). However, Emberger has been most diligent; almost every topic usually mentioned in other paleobotany textbooks finds some representation here. His discussions are brief, written in French that is easily translated, but he avoids critical issues. For example, specimens of microfossils from the Lower Carboniferous of Russia, assigned to the genus *Tetraporina*, are illustrated with the noncommittal statement that the Russian authors consider the fossils to be angiospermous pollen grains but other palynologists consider them indeterminable or as algae. Greguss' examples of *Musciphyton* and *Hepaticaephyton* are illustrated and discussed as mosses, with mention that their "identifications are controversial." Emberger does not express a preference, and as a result questionable material acquires a measure of sanction.

Emberger's discussion of angiosperm polyphylesis is stimulating. He does not regard double fertilization and embryo sac necessarily as precluding derivation of angiosperms from several different gymnospermous groups. He points out difficulties in comparison of different primitive angiosperm types that have contrasting modes of placentation. Apparently the leaves of both *Sanmiguelia* (palm type) and *Furcula* (dicot type) are taken as evidence that monocot and dicot lines may be very ancient. Emberger does not consider the possibility that these modern-appearing types of foliage belonged to plants that reproduced like gymnosperms. His suggestions as to the different types of gymnosperms from which angiosperms may have been derived are no more convincing than previous suggestions. Nevertheless, these ideas probably deserve more consideration.

In a book of this size, some inconsistencies are inevitable. The text is not well coordinated with the extensive bibliography. The sources of quoted statements often are vaguely referenced, and it may be difficult to recognize innovations of interpretation. French vernacular terminations commonly are used in referring to families and taxa of higher rank. These contribute a certain amount of ambiguity, but are less objectionable than the attempt to change the spelling of *Ginkgo* (p. 490), Ginkgoales, *Ginkgoidium*, and so on to "Ginkyo-" because of questionable meaning and etymology. Such changes are contrary to both the preamble and article 73 of the Code of Nomenclature. Emberger also has used the term "phylum" in various applications. For this and other reasons, the book would not serve as a good basis for systematic study. Nevertheless, it is evident that much information is included in this volume, and, in conjunction with its adequate index (but names of authors are not indexed), the volume serves as a useful compendium.

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Data on Catalysis

Scientific Selection of Catalysts. A. A. BALADIN, B. A. KAZANSKII, V. E. VASSERBERG, G. V. ISAGULYANTS, and G. I. LEVI, Eds. Translated from the Russian edition (Moscow, 1966) by A. Aledjem. Israel Program for Scientific Translations, Jerusalem, 1968 (U.S. distributor, Davey, Hartford, Conn.). viii + 274 pp., illus. $11.50. Problems of Kinetics and Catalysis, No. 11.

One of the axioms of being an expert in catalysis is to avoid predicting the behavior of catalysts. The present book attacks this difficult problem. It presents most of the papers given at a conference that was organized by the late A. A. Balandin and was held in Moscow in July 1964.

The first chapter, by Balandin, presents probably his final thoughts on catalysis and the multiplet theory. This theory is mentioned in most chapters and is seriously considered in some. The book contains scores of correlations of data from catalytic reactions (bond energies, activation energies, reaction rates, the nature of the rate equation, and rates of exchange) with properties of the catalyst (magnetic moments, ionic radius, heats of formation, forbidden-zone width, contact potentials, holes in *d*-bands, Fermi levels), as well as cross-comparisons of different reactions. Many of these comparisons are interesting, but critical appraisal will require more than a casual reading. The "scientific" selection of catalysts still remains a process of collecting available data on catalytic reactions and properties of catalysts and making an educated guess. Nevertheless, it is a rewarding exercise to pause occasionally to evaluate the problems of catalyst selection.

Many of the principal Russian catalytic chemists are represented in this book. Most of the papers are summaries of substantial research, and are not the irksome short communications common in the Russian literature. Some papers are so highly condensed that the reader may find the text difficult; possibly the symposium audience had heard these arguments before. The chapters are crammed with practical catalytic data, reaction rates, and activation energies. The work of the surface physicist with his clean surfaces in ultrahigh-vacuum environments is not included.

The translation is good, except for an infrequent choice of a word or two that might cause the reader to pause momentarily. The book is nicely printed, but the type is too small for rapid reading. There are no indexes. A subject index would have been useful for finding work on particular reactions, correlations, and catalysts.

The translation merits a place in scientific libraries and in the personal libraries of those interested in the correlation of catalyst behavior with properties of catalytic materials.

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Vasoconstrictor

Serotonin. IRVINE H. PAGE. Year Book Medical Publishers, Chicago, 1968. 144 pp., illus. $7.95.

Two decades have elapsed since Irvine Page and his co-workers isolated and identified serotonin as the vasoconstrictive principle in serum, and during this period publications numbering in the thousands have attempted to elucidate the physiological function of this biogenic amine. Such an effusion of papers sometimes leaves even the most diligent reader with an impression that the serotonin literature is hopelessly chaotic, and the appearance of a succinct appraisal of this important field of research corrects a major deficiency in the literature. Few authors could equal Page's perspective in providing this timely overview of serotonin.

The monograph admittedly is not comprehensive and omits many tangential topics. Its chief value is in presenting a concise account of the trends and highlights in the major areas of serotonin research. In addition to an