scribed, and the main trends are made perfectly clear. The treatment of the attempts to find a proper nomenclature for organic compounds is truly masterful and should provide the starting point for a whole host of further, more particular, studies.

Crosland's faults seemed few and minor to me. His style is a bit monotonous, and there are repetitious passages that could be eliminated. On the whole, however, the book is one that can be wholeheartedly recommended. It is an exciting work that should be indispensable to both the practicing chemist and the historian of chemistry.

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Nontechnical Earth Science

Earth, Sea, and Air. A survey of the geophysical sciences. Jerome Spar. Addison-Wesley, Reading, Mass., 1962. vii + 152 pp. Illus. Paper, $1.75; cloth, $2.95.

In recent years we have witnessed an unparalleled rekindling of interest in our earth and with it the need for an introductory, interdisciplinary text designed for readers with only a general high-school acquaintance with mathematics and science—readers who do not intend to make a career in science. This tidy little volume by a meteorologist who has distinguished himself in teaching and research will be welcomed by such readers as well as by anyone teaching a one-semester course on earth science for nontechnical students.

The first chapter is concerned with the earth as a member of the solar system. The basic laws of planetary motion are described from a historical point of view, and the motions of the earth are outlined in some detail, including their relation to our time base and the seasons. The development of our understanding of gravity is outlined with emphasis on the meaning of its variations with respect to isostasy and the structure of the earth. The section in which some of the most common types of map projections are described will help the reader to understand better the relation between projected maps and the characteristics of the areas represented.

The second chapter, on the solid part of the earth, is concerned with how geophysical studies provide information on the earth's major features. After a brief historical introduction, the contributions of seismology and geomagnetism are treated in some detail. The coverage of geological problems is of necessity brief in a short book of this type. The author has succeeded in directing attention to the principal areas where geophysical studies contribute to geological knowledge. As such, the book provides a valuable supplement to conventional treatments of earth science which emphasize surface geology.

Chapter 3, on the oceans, treats the topography of the ocean basins, the physical properties of ocean water, ocean currents, waves, and tides. An effective balance is achieved between descriptions of the phenomena and the methods used to observe them. Interactions of the atmosphere and ocean are emphasized in a way that makes clear the interdisciplinary nature of earth science. The excellent explanations of the phenomena are marred by an unfortunate confusion between the wind (drift) currents which disappear at a depth of a few hundred feet and the deeper currents which owe their origin to the wind; the deeper currents are geostrophic and disappear at an average depth of 4500 feet. The sequence of topics creates the false impression that the baroclinic geostrophic currents and wind-driven currents like the Gulf Stream are distinctly different phenomena.

The fourth and last chapter is about the atmosphere; Spar considers the composition of air, vertical distributions of temperature and pressure, the global circulation, weather systems, climate, and the special properties of the highest portions of the atmosphere. The treatment, though brief, is imaginative, interesting, and well balanced, and it includes a historical development of important concepts. The otherwise superb exposition is blemished by an incorrect picture of the meridional circulation in middle latitudes; in this treatment the westerlies are made to owe their existence at all levels to a northward component of their motion—a picture that is illogical (there must be a return flow at some level) and in disagreement with recent evidence that the westerlies derive their kinetic energy from large quasi-horizontal disturbances in the flow which also transport heat and momentum from low to high latitudes.

Several bonus features increase the usefulness of the book. There are numerous illustrations which are imaginatively conceived and well drawn. A section on laboratory exercises presents six experiments—on time, gravity, geomagnetism, ocean currents, waves, and weather observing. Finally there are lists of references to introductory texts on the material covered in each chapter.

Despite its minor flaws, this book serves as a very satisfactory introduction to earth science, and it is a much-needed addition to the elementary texts on this subject.

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Coordination Chemistry

An Introduction to the Chemistry of Complex Compounds. Aleksander Abramovich Grinberg. Translated from the second edition (1951) by J. Rovtar Leach. D. H. Busch and R. F. Trimble, Jr., Eds. Pergamon, London; Addison-Wesley, Reading, Mass., 1962. 384 pp. Illus. $15.

Until recently, chemists unable to read Russian have had to consult Feterowsky's German translation, *Einführung in die Chemie der Komplexverbindungen* (Technik, Berlin, 1955), in order to become acquainted with Grinberg's Stalin Prize-winning classic *Vvedenie v Khimiyu Kompleksnykh Soedinenii*. But this readable translation of the second Russian edition (1951) of Grinberg's book will enable English-reading chemists to investigate for themselves the approach of the "Russian school" to coordination chemistry.

This systematic survey, suitable for use as a text or reference book in intermediate and advanced inorganic chemistry courses, covers the entire field, largely from a physicochemical viewpoint, with emphasis on "descriptive" chemistry and stereochemistry. If the author seems to stress unduly the contributions of Russian chemists, it must be remembered that for many years the major proportion of research on platinum metal complexes, which are emphasized in this book, emanated from Russia and its world-famed Platinum Institute. The experimental and theoretical foundations of coordination chemistry, from its earliest beginnings up to 1951, are here discussed in a lucid and logical manner.

The volume has a decidedly historical flavor, with numerous references to specific researches; unfortunately, only a few of these are provided with

literature citations. Crystal and ligand field theory, π-bonded compounds, and similar post-1951 topics are, of course, lacking, but the editors have succeeded to some extent in remedying this by providing brief commentaries in footnotes. An entire chapter is devoted to Chernyaev's *trans* effect and its implications; the final chapter relates the complex-forming tendencies of the elements to their position in the periodic table.

The book is liberally provided with structural diagrams, equations, reaction schemes, tables, and figures, and the extensive annotated bibliography, mostly to Russian sources, is a model of organization. A short supplementary bibliography of review articles, compiled by the editors, contains one reference to a paper published in 1961. The author and subject indexes seem inadequate, if one considers the tremendous amount of material covered. The number of misspellings and typographical errors (at least 75) is far in excess of those permissible for a book of this length; almost all could have been prevented by more thorough proofreading.

This modest-sized volume is refreshingly different, and despite its shortcomings, it complements the growing Western literature on coordination compounds. I unreservedly recommend it to instructors and students alike.

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Gymnosperms

Gnetum. Botanical Monograph No. 1. P. Maheshwari and Vimla Vasil. Council of Scientific and Industrial Research, New Delhi, India, 1961. xiv + 142 pp. 40s.

This monograph on an unusual genus of gymnosperms is the first in a series on higher plants which will be published by the Indian Council of Agricultural Research; the council has already issued six volumes on lower plants. India has become a leader in some aspects of botanical science, and it behooves us to accord proper recognition to the accomplishments of Indian workers, as they have done to advances in the West.

The authors have attempted to bring together all known information on the genus *Gnetum*. The most valuable contributions are the data dealing with development of the male and female apparatus and of the embryo following fertilization. This monograph brings together the reports of recent years, but, more important, it also includes previously unpublished descriptions and illustrations from at least three theses by students of Maheshwari, a world-famous authority on angiosperm embryogeny. The photographs and line drawings are sharply reproduced on high-quality paper, and the strong binding will ensure the book's long life. The extensive bibliography and the carefully documented references in the text make this a most desirable reference for classes studying gymnosperms.

The only previous book to contain detailed information on the morphology of *Gnetum* was H. H. W. Pearson's *Gnetales* (1929), which treated also *Welwitschia* and *Ephedra*. Despite their marked individuality, these three unusual genera share certain reproductive and vegetative features that point to a common ancestry. Since the new volume contains significant new data, it is not repetitive of the earlier work.

The authors state that *Gnetum* has been investigated more thoroughly than any other genus of gymnosperms. However, although some 30 species are known, anatomical studies have been almost confined to *Gnetum africanum*, *G. gnemon*, and *G. ula*, presumably because of their greater availability. It is unfortunate that no data more recent than 1930 were available on American species; there is now herbarium material to confirm distribution in Panama, Colombia, and Peru.

The entire report on roots is contained in one paragraph, and the discussion of leaves occupies one and one-half pages of text. Only petiolar transections and stomal peels are illustrated. With so much recent emphasis on number and morphology of chromosomes, it is remarkable that only four persons reported counts, and that among these the haploid numbers vary from 11 and 12 to between 20 and 25.

The last ten pages, "Relationships," report little new information, because, as the authors concede, "*Gnetum* remains a phylogenetic puzzle." This listing of contents is not intended to reflect on either the book or its authors, but rather to emphasize how little we really know. Not until we have gathered additional information is the phylogenetic puzzle likely to be solved.

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Linderstrom-Lang Memorial

Selected Papers. Kaj Linderstrøm-Lang. Danish Science Press, Copenhagen; Academic Press, New York, 1962. 584 pp. Illus. $17.

This book, intended as a tribute and a memorial to the late K. U. Linderstrøm-Lang, is a selection of his scientific papers covering the period 1923 to 1957. These were chosen by an international committee on the basis of ". . . their particularly lasting value or because they have been published in less accessible scientific journals." This fact alone should earn the book a place on many library shelves.

The collection is devoted entirely to the works of Linderstrøm-Lang, with the exception of a very brief foreword. No eulogy for this truly great scientist has been included. Indeed, none is required. The scope and significance of the 25 representative papers are all that is necessary to demonstrate his greatness.

The selection committee has made an excellent choice. The papers are arranged chronologically beginning with "On the salting-out effect," published in 1923, followed by the well-known "On the ionization of proteins," published in 1924. The Lane Medical Lectures on Proteins and Enzymes, delivered at Stanford in 1952, comprise one-fifth of the book. Another long article considers the theoretical treatment of the Cartesian diver microrespirometer. All of the papers are written in English except one, "Über den Antagonismus von Zink und Bläusaure bei deren Einwirkung auf die Peptidaseaktivität."

Included in this collection are four of Linderstrøm-Lang's "special" publications. The first, "New Year 1957," which appeared in *Politiken*, is a plea for the continued hard work so necessary to achieve peace. It is an expression of uncertainty about the future and consternation at the present ways of man. The second of these, "Man, science, and industrial development," was an address to the European Brewery Convention in 1957. Here, Linderstrøm-Lang discusses the role of the scientist in industrial development and the necessity of industry to promote scientific freedom. The third is a sharp but witty analysis, "Taxi chauffeurs in New York," and the last is the classic treatise entitled "The thermodynamic activity of the male housefly," coauthored with F. Fizz-Loony.

Thus, the remarkable scientific