first edition were the air mass and frontal concepts of the Scandinavian school. Almost the only quantitative procedures were Petterssen's kinematic formulas, which were never very powerful tools.

The transformation of synoptic meteorology began (about the time the first edition was published) with Rossby's vigorous applications of dynamic meteorology to weather forecasting. The vorticity concept became a central idea of synoptic meteorology, culminating in Charney's development of numerical weather prediction, the computation of prognostic weather maps by means of high-speed computers. At the same time the expansion of networks of upper air observations during and after World War II eliminated the need for inference about the structure of weather systems, providing weather analysts with a tremendous body of new data which forced them to revise their ideas and techniques.

In addition to numerical weather prediction, the last 15 years have seen the development of other quantitative forecasting procedures of a statistical nature. Graphical and numerical techniques of forecasting have been developed. The latter have been facilitated by the use of electronic data-processing machines which make it possible to digest the mountain of meteorological data required to deduce statistically useful relationships.

The meteorological revolution has not yet reached weather forecasting at the "will it rain today?" level, and the public may question whether forecasts are better today than they were 15 years ago. But the impact of these technologic developments on the thinking of synoptic meteorologists is evident in Petterssen's new book. The distinction between dynamic (theoretical) and synoptic (applied) meteorology is being erased. Thus the author lays down a sufficient groundwork of dynamic meteorology in this book to justify its use as an introductory textbook in dynamic meteorology.

The book is published in two volumes. (I question the necessity for two volumes, which is both inconvenient and expensive.) The first volume is devoted to applied hydrodynamics and the prediction of pressure and wind systems. Applied thermodynamics and the prediction of weather is left to the second volume. In both volumes the treatment is thoroughly up to date, and the book abounds in examples and references from the last 5 years. The relatively small size of volume II and the brief portion of that volume devoted to *weather* forecasting (as opposed to pressure forecasting) is representative of the currently lopsided state of development of synoptic meteorology.

A few errors are found in the book. The European, rather than the American, definition of sleet has been retained in the new edition. The definition of balanced motion on page 57 is incomplete, no mention being made of a balance of forces at right angles to the motion. The definition of relative humidity adopted by the International Meteorological Organization in 1947 is omitted in favor of the older definition. An unfortunate omission is that of the integrated baroclinic (for example, thermotropic) models from the chapter on numerical prediction.

The author deserves high praise for accomplishing the formidable task of bringing synoptic meteorology up to date.

JEROME SPAR
Department of Meteorology and Oceanography, New York University

Polysaccharides in Biology. Transactions of the first conference, 27–29 April 1955, Princeton, N.J. Georg F. Springer, Ed. Josiah Macy, Jr., Foundation, New York, 1956. 271 pp. Illus. $5.

This book seems to be a verbatim transcription of a very informal conference. The table of contents looks interesting: "Problems of communication: nomenclature," M. L. Wolfrom; "Problems of classification," K. Meyer; "Bacterial polysaccharides," M. Heidelberger; and "Blood group substances," W. T. J. Morgan. Unfortunately the formal presentations are so frequently interrupted by questions and comments from the participants that it is very difficult to extract any useful information from the text. The comments are often amusing, if one has a taste for the macabre in science, and the book will make an interesting souvenir for the participants in the conference. This hardly seems justification for publishing such a book, and there is no excuse for selling it at $5.

MARK H. ADAMS
Department of Microbiology, New York University College of Medicine.

Bibliography of Solid Adsorbents, 1943–1953. An annotative bibliographical survey. NBS Circular 566. Victor R. Deitz. National Bureau of Standards, Washington, D.C., 1956 (order from Superintendent of Documents, GPO, Washington 25). iv + 1528 pp. $8.75.

V. R. Deitz and his collaborators at the National Bureau of Standards are to be commended for continuing to assemble the material that is published in this second volume in the series. The first volume covered the period 1900–42, whereas this one includes only the decade 1943–53. In spite of this shorter time period, the present volume cites twice as many publications as were listed for the previous four decades. However, the coverage is still restricted to heterogeneous phenomena at solid-liquid and solid-gas interfaces. Each entry is followed by a good abstract that has been prepared from the various abstract journals published here and abroad.

The authors list the references under seven chapter headings. Each chapter has a number of subsections. The first two chapters cover adsorption of gases and vapors and adsorption from solution, both on solid adsorbents. This material is followed by chapters on thermal effects and theories of adsorption. Chapter V is devoted to the refining of sugars and other applications of adsorbents. The last two chapters concern themselves with general information on adsorbents and special methods of investigation, together with the preparation of adsorbents. These are followed by a complete index of authors and subjects.

This reference volume does not claim to be complete, but the authors have not missed many publications. Workers in the field will find this volume more than useful, and younger investigators will be not only helped but stimulated by the thorough coverage of the important areas of solid-adsorbent research.

LLOYD H. REYERSON
Chemistry Department, University of Minnesota

Creatures of the Deep Sea. Klaus Günther and Kurt Deckert. Translated by E. W. Dickes. Scribner, New York, 1956. 222 pp. Illus. $3.95.

In general coverage of its subject, this is a thoroughly satisfactory volume, presenting an accurate, semipopular, overall picture and digested account of the known inhabitants of the deep sea. The scope of treatment may be judged by some of the chapter headings: "The poverty, sameness, extent, and inhabited regions of the deep sea," "Food of its fauna," "Inorganic foodstuffs," "Animal world of the ocean floor," and "Pelagic fauna and migration." The two most significant chapters deal with the biological peculiarities, distribution, and origin of deep-sea creatures.

To show one point of view of the authors, I quote a paragraph from one of the latter chapters.

"More general, though less striking at first, are the physical adaptations and peculiarities imposed on deep-sea animals by the other special features of their gloomy environment, the increasing cold in the depths, the relative stillness of the water, and the lack of calcium, especially