and an up-to-date discussion of the ocean bottom. The following 13 chapters are arranged to cover instrumentation and the statics and dynamics of the sea, and a final chapter on probability statistics and time series is included in order to provide the working knowledge necessary for full understanding of the mathematics of ocean waves as presented by the authors.

In the preface the authors write that the book is intended to meet the needs of three different groups: senior undergraduate students, beginning graduate students, and geophysicists requiring a reference text in physical oceanography. They are correct in noting that certain portions of the book will require abridgement for use in college. Unfortunately this would require considerable reworking on the parts of the instructor and students in the cases of the chapters on hydrodynamic equations, on wind waves, swell, and so forth, on turbulence and mixing, and on probability, time series, and statistics.

Since most of the oceanographic dynamics is included in these chapters, the book would be suitable as it stands for graduate students and geophysicists with advanced training. For the most part, serious oceanographic training is at present a graduate program; if the book is evaluated primarily from this viewpoint, it is outstanding among existing works, in the balance between complete coverage of physical oceanography and the necessary omission of reference data.

Chapters 10 and 12, on wave motion, will be considered either very useful or very useless depending on the skill and training of the reader. Since this is the subject of the authors' special study in recent years, it is understandable that these chapters might be the most penetrating and specialized. Neumann and Pierson appear to have realized this, but their attempt in chapter 10 to develop waves from the most elementary principles does not diminish the weightiness of the treatment as a whole.

In summary, Neumann and Pierson's book is a very good professional textbook on physical oceanography, which becomes rather difficult in the sections on dynamics, but which will probably become a standard graduate text in the subject.

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Séminaire Bourbaki

Research workers in mathematics will be pleased with the announcement of a hardbound edition of **Séminaire Bourbaki, 1948–1965** (Twelve volumes. Benjamin, New York, 1966. Individual volumes, $12.25; set, $129).

Mathematical research in the past 25 years has been greatly enriched by the publications of the international group of mathematicians who have written under the pseudonym of Nicholas Bourbaki. In addition to their universally respected series of monographs on advanced mathematics, this group has conducted a series of three seminars each year. Initially the seminars were held at the Ecole Normale Supérieure in Paris; more recently they have taken place at the Institut Henri Poincaré. At each seminar six mathematicians are invited to report on a particular paper or papers from the literature, or, in some cases, on their own work. These lectures stress the main ideas in the papers rather than the technical details. Since 1948 mimeographed notes containing a bibliography of related work have been prepared in advance and distributed at each seminar.

Copies of these notes (which are almost entirely in French) have been available for limited distribution in 17 paperbound volumes. The Benjamin edition reprints these in 12 clothbound volumes (*1*). The reprinting is by photo-offset from the second edition of the original notes. The table of contents has been enlarged to show both the name of the speaker and the name of the author of the paper under discussion. Each volume contains an index of persons referred to in the bibliographies of the exposés.

These exposés are introductions to much of the most important mathematical research of the past 20 years and are indispensable reference materials for an active research worker. Since copies of the original version were limited in their distribution and fragile in their format, they have not been generally available to mathematicians outside of major centers. The publisher is to be congratulated for his enterprise in reprinting these in permanent bindings at a reasonable price. Every institution that fosters mathematical research should have a complete copy of these in its library.

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Bibliographic Note

1. Vol. 1948/49–1949/50, exposés 1–32; vol. 1950/51–1951/52, exposés 33–67; vol. 1952/53–1953/54, exposés 68–100; vol. 1954/55–1955/56, exposés 101–136; vol. 1956/57–1957/58, exposés 137–168; vol. 1958/59, exposés 169–186; vol. 1959/60, exposés 187–204; vol. 1960/61, exposés 205–222; vol. 1961/62, exposés 223–240; vol. 1962/63, exposés 241–258; vol. 1963/64, exposés 259–276; vol. 1964/65, exposés 277–294. Benjamin plans to continue publication of annual volumes.

The Nyssoninae

In **The Comparative Ethology and Evolution of the Sand Wasps**, by Howard E. Evans (Harvard University Press, Cambridge, Mass., 1966. 544 pp., illus. $15), we have a comprehensive synthesis of widely scattered, often fragmented information. By necessity the treatment is limited to one subfamily, the Nyssoninae, which contains nearly 1000 species, but the coverage is worldwide and extends in time from the Eocene to the present. According to the author, only about 5 percent of the species have been studied in the field in any detail and for another 10 percent there are only fragmentary records. In spite of this difficulty a great deal of information, both old and new, from representative sections of the entire subfamily, has been assimilated to form a total ethological picture. This information is presented in detail for selected species. These in turn are summarized for each genus and finally into a chapter on the comparative ethology of the subfamily.

Within the relatively broad confines of ethology, Evans discusses and compares the habitats, population densities, aggression among females, feeding, sleeping, reproductive behavior, nesting behavior, orientation, hunting and provisioning, oviposition, cleptoparasitism, cocoon spinning, and natural enemies. In each chapter that deals with the specifics of one or more genera the ethological information is preceded by a brief morphological description. This in turn is summarized and assimilated for the reader in chapter 13, which includes the fossil history, distribution, and comparative morphology of the Nyssoninae. Within this chapter is a discussion of the major trends in structural modification, including a tentative phylogenetic arrangement based on morphology. When this information was correlated with ethology it was found that the morphological classification required no major revision. Chapter 15, on the evolution of the behavior of sand

wasps, is of special interest and in a number of ways thought-provoking, especially in regard to the fine line, if any, that delimits instinctive and intelligent behavior.

The book will be of special value to students of insect behavior and bionomics and to those studying evolution and phylogeny, and it should be an inspiration to anyone confronted with a paucity of information about a large and complicated subject. The need for additional work is emphasized, the critical areas are indicated, and the author's interpretation of various behavioral patterns is stimulating. It is well organized and written and is liberally illustrated with drawings, pictures, and charts. There are 47 tables and 215 figures.

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Russian Papers

The most noticeable characteristic of **Atomic Collisions: The Theory of Electron-Atom Collisions** (V. Ya. Veldre, R. Ya. Damburg, and R. K. Peterkop, Eds.; M. V. Kurepa, Transl. M.I.T. Press, Cambridge, Mass., 1966. 143 pp., illus. $7.50), an English version of volume 13 of the *Transactions of the Latvian Academy of Sciences (U.S.S.R.)*, is the translation, which is awkward, unidiomatic, and in many places inaccurate. On almost every page a word or a phrase comes gratingly to the fore to remind the reader that the translator does not possess a full command of the English language.

This of course should not, and would not, be an overriding criticism of a collection of scientific articles, were the contents themselves of sufficient value. And, indeed, out of a total of 16 articles, 3 can be described as first rate and several others are of more than passing interest. The difficulty here lies in the fact that almost all of the valuable articles have already appeared (in a somewhat modified form, perhaps) in English-language journals or in Russian journals which are regularly translated. Thus an article by Damburg and Peterkop which introduces the M matrix into atomic physics is virtually identical to their 1962 article in the *Proceedings of the Physical Society (London)*. In this latter form, however, the paper is very well known, so that the presently translated version really serves no useful purpose. The same can be said of an article by Gailitis on the behavior of cross sections near the threshold for new reactions in the presence of Coulomb forces. If the subsequent *JETP* article is not as well known, it is only because most of the results were previously known from papers of Baz and of Newton and Fonda. A close coupling calculation of electron-hydrogen scattering above the inelastic threshold by Damburg and Peterkop is in a somewhat different category in that, even though a short summary was published in the *Proceedings of the Physical Society,* the present results are much more extensively tabulated and show that this Russian work deserves as much credit as more widely quoted English and American papers. There are a couple of papers by Gailitis on ionic excitation by electron impact which merit wider circulation. A paper of Vainstein which attempts to justify the types of truncation in the adiabatic polarization potential used by some of us is of reasonable importance. For most of the rest, however, I must say that the papers are interim in character and would only have been of value if the translated version had appeared, say, 2 years earlier.

One unintended bonus of the crude translation and provisional nature of many of the articles is that an outsider is thereby given the "flavor" of research in an outstanding Soviet center for theoretical investigation of electronic collisions.

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Note

The Report of the International Clearinghouse on Science and Mathematics Curricular Developments, 1966, compiled under the direction of J. David Lockard as a joint project of the AAAS and the Science Teaching Center at the University of Maryland (311 pp., paper. Available from J. D. Lockard, Science Teaching Center, University of Maryland, College Park), presents data about curriculum projects for elementary and secondary schools all over the world, and about college commissions and science and mathematics materials from state and local school systems in the United States. The volume is the first of a projected annual series.

New Books

Advances in Enzyme Regulation. vol. 4. Proceedings of the fourth symposium on Regulation of Enzyme Activity and Synthesis in Normal and Neoplastic Tissues (Indianapolis, Ind.), October 1965. George Weber, Ed. Pergamon, New York, 1966. 395 pp. Illus. $15. Twenty papers.

Advances in Tracer Methodology. vol. 3. A collection of papers presented at the Ninth and Tenth Symposia on Tracer Methodology (San Francisco and Zürich), October 1964 and March 1965. Seymour Rothchild, Ed. Plenum Press, New York, 1966. 343 pp. Illus. $12.50. Thirty-three papers.

Agricultural Development of Taiwan, 1903–1960. Yhi-Min Ho. Vanderbilt Univ. Press, Nashville, Tenn., 1966. 184 pp. Illus. $7.50.

Alcohol and Food in Health and Disease (*Ann. N.Y. Acad. Sci.* 133). Edward M. Weyer, Ed. New York Acad. of Sciences, New York, 1966. 95 pp. Illus. Paper. Twelve papers presented at a conference in January 1966.

Analysis and Synthesis of Tunnel Diode Circuits. J. O. Scanlan. Wiley, New York, 1966. 282 pp. Illus. $9.75.

The Analytic S Matrix: A Basis for Nuclear Democracy. Geoffrey F. Chew. Benjamin, New York, 1966. 115 pp. Illus. $7.50.

Annual Review of Phytopathology. vol. 4. James G. Horsfall and Kenneth F. Baker, Eds. Annual Reviews, Palo Alto, Calif., 1966. 433 pp. Illus. $8.50. Eighteen papers.

Antennas. Lamont V. Blake. Wiley, New York, 1966. 429 pp. Illus. $6.95.

Applied Queueing Theory. Alec M. Lee. Macmillan, London; St. Martin's Press, New York, 1966. 256 pp. Illus. $8.50.

Approaches to Psychopathology. James D. Page, Ed. Columbia Univ. Press, New York, 1966. 318 pp. $7.50. Thirteen papers.

The Astronomical and Mathematical Foundations of Geography. Charles H. Cotter. Elsevier, New York, 1966. 254 pp. Illus. $7.

Atomic Energy and Southern Science. William G. Pollard. Oak Ridge Associated Universities, Oak Ridge, Tenn., 1966. 147 pp. Illus. Paper.

Axenic Cultures and Defined Media (*Ann. N.Y. Acad. Sci.* 139). Edward M. Weyer, Ed. New York Acad. of Sciences, New York, 1966. 272 pp. Illus. Paper, $8. Twenty-one papers.

Basic Concepts of Anatomy and Physiology: A Programmed Study. W. B. Dean, G. E. Farrar, Jr., and A. J. Zoldos. Lippincott, Philadelphia, 1966. 352 pp. Illus. Paper, $4.50.

Basic Endocrinology for Students of Biology and Medicine. J. H. U. Brown and S. B. Barker. Davis, Philadelphia, ed. 2, 1966. 229 pp. Illus. Paper, $4.50.

Building with Large Prefabricates. Bohdan Lewicki. Elsevier, New York, 1966. 460 pp. Illus. $25.

Business Environment in an Emerging Nation: Profiles of Indonesian Economy. Rossall J. Johnson, Dale L. McKeen, and Leon A. Mears. Northwestern Univ. Press, Evanston, Ill., 1966. 354 pp. Illus. $8.50.

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