SCIENTIFIC BOOKS

LATTICE THEORY

Lattice Theory. Vol. XXV. Colloquium Publications. By GARRETT BIRKHOFF. v + 155 pp. New York: American Mathematical Society. 1940.

THE past decade has seen a tremendous and continuing growth of interest in modern abstract algebra. Algebraic concepts and technique have been found to be frequently applicable to other branches of mathematics as well as other sciences, and their fundamental value has been emphasized thereby.

A major portion of algebraic study has been concerned with mathematical systems consisting of a set of elements which behave with respect to two operations very much as ordinary numbers do with respect to addition and multiplication. In studying subsystems of the same type as a given system one usually considers the meet and join of any two of them, and finds that these are again subsystems of the same abstract type. Thus one may again abstract and study a new type of mathematical system consisting of two operations and a set of elements whose behavior with respect to the operations is now like those of subsystems with respect to meet and join. The application of algebraic research technique to this most recent phase of abstract algebra is a study which has strongly attracted many American algebraists and one of the most prolific workers in the field is Garrett Birkhoff, who has called the subject *Lattice Theory.*

Birkhoff's book is the first comprehensive treatment of the subject and its applications. It contains all the recent major developments in the subject in a unified form which will make the book an inspiring research reference for the relatively large number of research algebraists interested in the field. The exposition is clear and well written and should prove of great value in satisfying the demand of non-specialists in the subject who have been anxious for several years to obtain a text by the use of which it may be possible to present the subject as a graduate course in modern mathematics.

ADRIAN ALBERT

THE UNIVERSITY OF CHICAGO

FORAMINIFERA

A Catalogue of Foraminifera. By BROOKS F. ELLIS and ANGELINA R. MESSINA. 30,000 pp. The American Museum of Natural History. $100.00.

THE natural sciences have reached a stage in their development where the scientist is almost buried under the knowledge with which he has to deal. No longer can he make this knowledge usable by merely organizing it. He must now summarize it and catalogue it as well.

The summarizing and cataloguing of man's knowledge of even a relatively small branch of one of the natural sciences, such as a single group of animals, is a laborious task. When the group contains more than 18,000 species the task calls not only for much labor, but for great organizing ability on the part of the scientist and large-scale financial backing by some interested institution or government bureau. Few scientists have had the ambition to plan summaries or catalogues of this scope, fewer still have had the courage and energy to undertake their preparation, and very few, indeed, have had the ability to enlist the necessary financial support and carry the work through to completion. This catalogue is proof, however, that, given the man, such projects can be successfully carried out.

Because of their importance as index fossils in the search for petroleum and for other reasons the Foraminifera have received a good deal of attention from biologists and paleontologists in recent years. Much has been published concerning them in many languages. Some 18,000 living and extinct species have been described. The mere cataloguing of these species must have been a huge undertaking. The preparation of an *illustrated* catalogue was a task on which only a brave and optimistic man would have dared to venture. That Professor Ellis *did* undertake it is proof that he was both courageous and an optimist. That he completed it is proof that he was a practical idealist.

Undoubtedly the most practical thing which Professor Ellis did when he planned this project some ten years ago was to enlist the cooperation of Miss Messina, who shares with him the credit for its successful carrying through. With the generous assistance of the Work Projects Administration, the American Museum of Natural History, Columbia University and New York University, these authors have prepared and issued one of the most voluminous single publications relating to the natural sciences that has ever appeared in print. A staff of 125 artists, bibliographers, editors and other assistants was engaged for six years in the preparation of the manuscript and its printing.

The 30,000 pages of the catalogue contain one or more figures of every species of foraminiferan, living or extinct, a reference to the original description of the species, a transcript of the original description, a record of the time range, type locality and geographic range of each species, the depository of the type specimens and a list of bibliographic references. There are also included a discussion and bibliography of each genus, with a type reference, a transcript of the original description and the name of the genotype when a genotype was designated by the original author. The pages of the catalogue are bound in ledger type post binders to permit future rearrangement and the insertion of additional pages containing descriptions of new

genera and species which will be issued by the Department of Micropaleontology of the American Museum of Natural History.

The books are printed on sturdy paper. Their pages will need to be strong if they are to withstand the constant wear which such indispensable reference volumes are sure to receive at the hands of biologists and paleontologists for many years to come.

B. F. HOWELL

PRINCETON UNIVERSITY

SOCIETIES AND MEETINGS

THE TEXAS ACADEMY OF SCIENCE

ON Saturday, November 9, the Texas Academy of Science closed its three-day annual meeting held at the Plaza Hotel, San Antonio. The Texas Federation of Nature Clubs (Dr. Leo T. Murray, of Baylor University, *president*) and the Texas Wildlife Federation (Dr. Walter P. Taylor, of A. and M. College, regional representative, *chairman*) were cooperating organizations. The meetings included fifteen technical sessions, two public general sessions, three business sessions, six luncheons and special dinners and the annual dinner beside the business, technical and social sessions of the Collegiate and Junior Divisions of the Academy. An estimation of attendance places the number of separate individuals who were present at one time or another at well over one thousand.

Speakers following the Thursday dinner were: Colonel H. A. Finch, U. S. A., on the "Science of National Defense," and Dr. Robert Montgomery, of the University of Texas, on "The Effect of Monopolies on Our National Defense Program."

Following the Friday dinner Dean Oscar A. Ullrich, of Southwestern University, president of the academy, presented his presidential address, "The Adolescence of Social Science." He was followed by L. B. Kingman, of the Federal Bureau of Investigation, who spoke on "The Science of Crime Detection."

The Collegiate division of the academy, which consists of student chapters in the various colleges of the state, held three scientific, a business and a luncheon session during Friday and Saturday. About 100 division members attended.

The Junior division, consisting of high-school chapters throughout the state, presents its main program at the regional spring meetings. This is necessitated by the large area of the state. At the annual meeting only officers' conferences, prize and outstanding papers sent in from the preceding regional meetings, and local papers participate. However, twenty-three papers and a division breakfast appeared on the program.

Local colleges, museums and learned societies of San Antonio all participated in forwarding the plans for the meeting and in contributing to success.

There developed a strong movement, in the interests of forwarding some special plans to be announced definitely later, for maintaining a continuity of 1940 plans through 1941, and Drs. O. A. Ullrich, of Southwestern University, Frederick A. Burt, of A. and M. College, Otto O. Watts, of Hardin-Simmons University, and S. W. Bilsing, of A. and M., who served respectively as president, secretary, treasurer, and representative to the council of the A. A. A. S., will continue in their offices until the time of the next annual meeting. Over 100 new members were elected to membership, and 29 members of one or more years standing were by vote transferred to the list of fellows.

FREDERICK A. BURT,
Secretary

REPORTS

DEFERMENT FROM MILITARY SERVICE OF SCIENTIFIC MEN

THE question of deferment from military service of selected men in six scientific fields in industry and educational institutions is the subject of a report in answer to a request of Clarence A. Dykstra, director of the Selective Service System. It is signed by Dr. Isaiah Bowman, president of the Johns Hopkins University, and Dr. Frank B. Jewett, president of the National Academy of Sciences. The report was prepared under the auspices of the National Academy of Sciences and the Subcommittee on Military Affairs of the National Committee on Education and Defense, created jointly by the American Council on Education and the National Education Association.

The report follows:

Both because your letter asks for a prompt reply and because the entire structure of the defense program is not yet sufficiently developed to indicate the full extent to which scientific personnel should be exempted temporarily or permanently from military service, it is impossible at this time to express an opinion as to the whole field of fundamental and applied science.

All that this statement attempts to do therefore is to cover those fields of science in which the conditions seem clearly to indicate the general course that should be pursued in the best interests of the national defense program. As to the other fields of science, supplementary statements may be issued as soon as they can be more thoroughly studied from the standpoint of general procedure. Individual cases for deferment un-