SCIENTIFIC BOOKS

MILLER'S COLLECTED WORKS

WITH the publication by the University of Illinois Press of the second volume of the Collected Works of George Abram Miller this set begins to take on the appearance of an imposing monument to a long and well-spent life. The large body of mathematicians who are interested in the advancement of group theory realize with gratitude the great convenience to them of this collection of so many scattered papers, long and short, into a readily accessible form.

The papers of Volume II date mostly from the years Miller spent in California. He was then much interested in groups generated by operators with given relations between them, in groups of isomorphisms, in extensions of Sylow's theorem and in groups of prime power order. Of the many topics discussed in this volume, probably the most important is that of the groups of order p^m which contain cyclic subgroups of order p^{m-2}. This is well covered by three papers, on pages 89, 165 and 271. Certainly the most brilliant results are to be found in the paper, written in collaboration with H. C. Moreno, on non-Abelian groups in which every proper subgroup is Abelian. The most extensively studied and the most baffling problem of finite group theory is that of the existence of simple groups of odd composite order. In one of these papers (see page 83) Miller showed that if such a group does exist there must be more than 50 members in any complete set of conjugate operators or subgroups. The statement on page 13 that Turkin has announced the solution of the problem seems to be a mistake.

What with book reviews, short expository articles, reports on the progress of group theory prepared for the American Mathematical Society and historical essays at the beginning and end of this volume, it, like the first, has much to interest the general reader.

STANFORD UNIVERSITY W. A. MANNING

A GUIDE IN ENTOMOLOGY

A Laboratory Guide in Entomology. By ROBERT MATHESON. vii + 135 pp. 48 plates. Ithaca, N. Y.: Comstock Publishing Company. $2.00. 1939.

FOR many years there has been need for a satisfactory laboratory manual for the study of insects. Consequently, those entomologists and zoologists who are called upon to teach beginning courses in entomology will welcome Matheson's new laboratory guide. The manual seems to be well done, and, in as much as it presents a general view, it should be serviceable in giving a fundamental knowledge of insects to those who will branch out into other fields of biology as well as furnishing preparation for advanced studies in entomology.

The manual is based on the work offered in the beginning course in entomology at Cornell University. It begins with a brief study of a crayfish to refresh students' minds as to the fundamental structure of the arthropods. The essentials of insect anatomy, both external and internal, are gained from a thorough study of a grasshopper. This is followed by a comparative study of mouth-parts; metamorphosis and growth; structure and classification of principal orders, with keys for identification of families; and some work on adaptation, social life, insect pollinators, relation of insects to animal and plant diseases and insect control. Of practical value is the appendix on how to collect, prepare, mount, preserve and rear insects. Brief lists of references are given in connection with some of the exercises. There are forty-eight well-executed plates, most of which are for the student to interpret and label. The pages are perforated and punched so that the plates may be removed and inserted in a loose-leaf notebook. A glossary of technical terms used in the manual is included.

I. E. GRAY

SOCIETIES AND MEETINGS

INDIANA ACADEMY OF SCIENCE

THE fifty-fifth annual meeting of the Indiana Academy of Science was held on November 9, 10 and 11, in Terre Haute, Ind., with Indiana State Teachers College as host. Some 350 scientists from Indiana and adjoining states were in attendance. The general meetings were presided over by Dr. L. A. Test, vice-president, Purdue University, in the absence of the president, Dr. T. G. Yuncker, DePauw University, who is on a botanical research expedition in the South Seas. Dr. Willis S. Blatchley, one of the charter members of the academy and now eighty years of age, gave the principal address on "The Days of a Naturalist."

Some eighty-six research papers were read at the nine divisional meetings, and a panel discussion on "Teaching Bacteriology" was also carried out in the Bacteriology Division. The following divisional chairmen were chosen for 1940: archeology, Paul Weer, Indianapolis; bacteriology, Dona G. Graam, Indiana State Teachers College; botany, Ralph M. Kriebel, Soil Conservation Service, Bedford; chemistry, Karl Means, Butler University; geography and geology, W. D. Thornbury, Indiana University; mathematics, Cora B. Hennel, Indiana University; physics, James F. Mackell, Indiana State Teachers College; psychology, R. A. Acher, Indiana State Teachers College; zoology, W. H. Hiestand, Purdue University.

The dinner meeting was held on Friday evening with 150 in attendance, after which President