ties, geographical distribution and other broad topics with regard to distribution. Edwards based his discussion on that of J. P. Chapin, whose volume on "The Birds of the Belgian Congo," published in 1932, is now regarded as a classic. The birds have this in common with the mosquitoes, that they have been much studied and are comparatively well known. This might also be said of the butterflies, but they have not been treated in a sufficiently comprehensive manner.

Although Africa has 65 species of *Anopheles,* during my travels in central and south Africa in 1931, I did not find any, nor did any of our party suffer from malaria. This seems to have been due to the fact that we timed our visit so as to be in the dry season. In Siam, it was quite otherwise, and *Anopheles* swarmed everywhere. Edwards discusses the relation of the Culicine mosquitoes to disease. He points out that before 1928 *Aedes Aegypti* (also called *Stegomyia*) was supposed to be the only transmitting agent of the yellow fever virus. But since that time, it has been proved that several other species may be involved. Filariasis, caused by the worm *Filaria bancrofti,* is communicated in the main by two species of *Anopheles.*

The discussion of species and varieties shows how species which as adults appear almost exactly alike may differ strikingly in the male genitalia or else in the early stages or in habits. Races of *Anopheles* are in some cases distinguished mainly by features of the eggs. It is possible that hybrids may exist in nature, but of this we have no information.

Students of any group of insects may study Edwards's book with profit as an example of good taxonomy, and because the problems encountered are more or less similar in all groups of organisms.

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THE APPALACHIAN VALLEY OF VIRGINIA

Geology of the Appalachian Valley of Virginia. By CHARLES BUTTS. Bulletin 52. Virginia Geological Survey, Charlottesville, Virginia. Part I, "Geologic Text and Illustrations" (stratigraphy, structure and geological history. 568 pp., 63 plates); Part II, "Fossil Plates (72 full pages) and Explanations," totaling 270 pp.). Price, Parts I and II, $1.50. Part II available separately at 50 cents.

THE Appalachian Valley of Virginia is a land of plenty and good living; its history has been one of romance and hard-fought battles; but its rocks offer so many problems that an adequate description of its geology has long been delayed.

The rock structures of the Virginia Valley are complex, since the area lies between the open folding of the Cumberland Valley of Pennsylvania and the shingle blocks of the Valley of East Tennessee and Alabama. Its structures show illustrations of domes, anticlines and synclines, overthrust blocks, fensters and klippen, outliers and inliers and many areas of multiple shingle blocks.

Along its trend there are many faults of more than a hundred miles in length; one, traced beyond its area, has been followed for three hundred miles. The area exhibits many great overturned fault blocks; one ten miles across shows evidence of having been heaved and moved horizontally as much as twenty miles.

Even more difficult than its structure is the unraveling of its stratigraphy. Fossils are not abundant; in fact, they are lacking in many hundreds of feet of its beds; nor are these fossils well known; many are yet to be described. The sediments from which the rocks were formed were laid down in narrow embayed seas subject to varying currents and to frequent changes in the character of the materials brought in from the lands.

The two volumes by Charles Butts are epoch-making in the study of Appalachian stratigraphy. They are the summary statements, the synthetic views of Dr. Butts, who has devoted a lifetime to the study of this and adjacent areas. Not since the publication of the Rogers' reports in 1835–41 has there been issued a comprehensive report covering the whole valley, and fittingly the volumes are dedicated to this great pioneer geologist.

Volume I includes an introductory discussion of the topography, relief and physiographic history of the area; the stratigraphy of its rocks, from the Cambrian through the Pennsylvanian series; a discussion of the structural features of the valley and adjacent plateaus; and a comprehensive geological history of the area.

Part II is of priceless value to all students of Appalachian stratigraphy, since it brings together and illustrates in one volume more than 700 of the diagnostic and characteristic fossils, many new, of the various horizons. It gives to all workers criteria for correlations, which heretofore have been based largely on the judgment of individual "authorities."

Since Dr. Butts has furnished a large-scale geologic map of the area in his Virgnia Survey Bulletin 42, the most important method of his presentation in Volume I is by means of typical geologic sections, giving their lithology, thickness and fossil lists. His well-worded descriptions of locality outcrops and measured sections will be invaluable to all future students in the area.

In his stratigraphic interpretations, Dr. Butts has recognized, as he words it, "that the kind and character of the sediments of any area depend almost

entirely upon the physical geography and climate of the time of their deposition." Contemporary deposits thus may have different facies. The recognition of the contemporarity of such different facies is the supreme test of the stratigrapher. He not only must know his fossils and lithology but also the fundamental facts of sedimentation and of the historical geology of the area as well.

For those who have worked in the area and know something of its difficulties, it is heartening to note Dr. Butts's recognition of many such contemporaneous facies: for example, in the Cambrian the transitional equivalents of the Copper Ridge and of the Elbrook dolomites; the varying facies of the Blount group of the Ordovician; and the changing facies of the Devonian and Mississippian beds.

In this day of highly mechanized style it is worthy of note that the bulletin is written in beautiful English, printed in well-chosen type, on semi-gloss paper and illustrated by superb photography and reproduction. The two volumes are models for scientific publications in geology.

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SOCIETIES AND MEETINGS

THE INDIANA ACADEMY OF SCIENCE

THE Indiana Academy of Science held its fifty-eighth annual meeting on October 29–31, at the University of Notre Dame near South Bend, Indiana. Sectional meetings in botany, chemistry, geology and geography, psychology and zoology were scheduled and a total of 54 scientific papers were presented. Following the annual dinner on Friday evening, Dr. Melvin G. Mellon, of Purdue University, delivered an address as retiring president entitled "Science, Scientists and Society." He emphasized the responsibility of the scientist to society not only in his special field of work but in all his contacts with others.

The officers of the academy, elected to serve for the year 1943, are: *President,* Theodor Just, University of Notre Dame; *Vice-president,* Charles L. Porter, Purdue University; *Secretary,* Winona Welch, DePauw University; *Treasurer,* William P. Morgan, Indiana Central College; *Editor,* Prentice D. Edwards, Ball State Teachers College; *Press Secretary,* C. Mervin Palmer, Butler University. As chairmen of the various technical sections: *Anthropology,* G. K. Neumann, Indiana University; *Bacteriology,* L. S. McClung, Indiana University; *Botany,* Arthur T. Guard, Purdue University; *Chemistry,* Edward Hughes, Eli Lilly and Company; *Geology and Geography,* Wallace T. Buckley, Indiana University; *Mathematics,* Will E. Edington, DePauw University; *Physics,* O. H. Smith, DePauw University; *Psychology,* W. A. Kerr, R.C.A., Indianapolis; *Zoology,* Raymond M. Cable, Purdue University. It was decided to hold the 1943 meeting at Indianapolis.

The Junior Academy of Science held its twelfth annual meeting on Saturday, with high-school students and teachers in charge of exhibits, reports and business meetings. James Sarasien, a student of Elmhurst High School, Fort Wayne, Ind., presided as president.

C. M. PALMER,
Press Secretary

THE TEXAS ACADEMY OF SCIENCE

THE annual meeting of the Texas Academy of Science was held at A. and M. College, College Station, on November 12 to 14.

Fifty-two papers were read before the five sections of the Senior Academy. In addition to these sectional programs two symposia of five papers each were held. L. W. Blau was chairman of a symposium on "Conservation and Utilization of the Natural Physical Resources of Texas." Walter P. Taylor led a symposium on "Conservation and Use of Natural Biological Resources in Time of War." Both the Collegiate and the Junior divisions held business meetings and conducted programs on November 14.

Three special addresses were delivered before the Academy at this meeting. Following a luncheon on Friday, Captain H. A. Hammer, Chemical Warfare Service, U. S. Army, spoke on "Science in Relation to our Armed Forces." On the same occasion Dean Chauncey Leake, of the University of Texas Medical School, discussed "Mechanism of Action of Ordinary War Gases." Professor Henry B. Ward, of the University of Illinois, spoke, following the annual banquet on Friday evening, on "Utilization and Conservation of Biological Resources."

The following officers were elected for the coming year: *President,* Frederick A. Burt; *Executive Vice-president,* W. R. Woolrich; *Vice-president of Section I,* Paul C. Witt; *Vice-president of Section II,* C. S. Smith; *Vice-president of Section III,* C. A. Nichols; *Vice-president of Section IV,* Frederick B. Plummer; *Vice-president of Section V,* Gordon Gunter; *Treasurer,* Father James E. Norton; *Editor,* L. W. Blau. The assistant secretary, G. E. Potter, and the secretary are serving the second year of two-year terms.

The executive council voted to hold the next annual meeting at the University of Texas in Austin.

LEO T. MURRAY,
Secretary