

Associated Conservation Organizations of Illinois to further the Commission plan for the administration of the Department of Conservation in Illinois as embodied in the resolution of the 31st Annual Meeting of the Academy published in the *Transactions* of June, 1938.

Resolved, that the Illinois State Academy of Science express its approval of any action of the State Legislature or of other agencies public or private looking toward the preservation of sites within the state which are of archeological, historical, and of scientific interest.

The Junior Academy had its usual enthusiastic meeting. Some fine exhibits were set up in the local high school gymnasium and the groups representing the many high-school science clubs in the state showed high enthusiasm. Dr. C. T. Knipp, of the University of Illinois, gave the evening address to the Junior Academy, giving some interesting demonstrations of his singing tubes and other experiments he has developed. Dr. H. K. Gloyd, director of the Chicago Academy of Sciences, gave the annual public lecture of the Senior Academy, talking on the animal life in the Arizona deserts.

The annual tradition of scientific pilgrimages on Saturday was maintained by four such excursions into the surroundings of Springfield, which are especially rich in scientific and historical material.

At the council meeting on Saturday it was voted that the next annual meeting be held in Galesburg, Illinois, on May 3 and 4, 1940.

R. F. PATON

UNIVERSITY OF ILLINOIS

THE NEW HAMPSHIRE ACADEMY OF SCIENCE

THE twenty-first annual meeting of the New Hampshire Academy of Science was held on June 2 and 3 at Dartmouth College, Hanover, N. H. At the Friday evening session, Professor W. B. Unger showed motion pictures of Australian mammals and birds, and Mr. A. E. Bent, secretary of the Mount Washington Observatory, showed colored films of the mountains, the work at the observatory and hurricane damage at high altitudes. There followed a social meeting at the Wilson Museum sponsored by the Dartmouth Scientific Association. Professor C. J. Lyon and others made an exhibit for this meeting of specimens of most of the local wild flowers of the season, and the Dartmouth Natural History Club exhibited a collection of over fifty kinds of living animals from the vicinity. Other demonstrations of the local bird studies and of new state and academy publications were on view.

At the Saturday morning session, the chief feature was a symposium, "The Hurricane of September, 1938, and its After-Effects." The meteorology of the hurricane was discussed by Professor C. F. Brooks, of the Blue Hill Observatory. Forestry aspects were treated

by W. F. Hale, assistant state forester, and L. W. Rathbun, of the Society for the Protection of New Hampshire Forests. Mr. Kenneth Roberts spoke on flood control aspects, and T. J. Dent, of the New Hampshire Fish and Game Commission, and John Pearse, of the U. S. Biological Survey, discussed the effects of the hurricane on animals and game management.

On Saturday morning, the Dartmouth Eye Institute presented a program of four papers introducing their accomplishments and research projects. The Eye Institute was opened for the inspection of the academy members.

Saturday afternoon was given over to the reading of papers by other members, to the business meeting and to the address of the retiring president, Dr. Henry I. Baldwin, on "Scientific Freedom."

At the business meeting it was voted to award the grant-in-aid for the current year from the American Association for the Advancement of Science to Professor W. W. Bowen, curator of the Wilson Museum, Dartmouth College, for assistance in completing "A Survey of Bird Population Density in Relation to Various Ecological Factors." The publication committee announced plans for publishing a bulletin on "Glacial Geology of Mt. Washington" by R. P. Goldthwait and for replacing the mimeographed account of the annual meeting by a formal printed "Proceedings" containing abstracts of papers presented.

The following officers were elected for 1939-40: *President*, Professor George W. White, University of New Hampshire; *Vice-President*, Professor Bancroft H. Brown, Dartmouth College; *Secretary-Treasurer*, Professor W. W. Ballard, Dartmouth College; *Members of Executive Council*, Dr. Henry I. Baldwin, State Forestry Department, for five years, and Mr. Henry S. Shaw, Exeter, N. H., for three years.

W. W. BALLARD,
Secretary

THE NEW YORK STATE GEOLOGICAL ASSOCIATION

MORE than 160 persons attended the meeting of the New York State Geological Association on May 12 and 13 at Canton, N. Y., where the St. Lawrence University acted as host. The Gouverneur marble quarries, the Richville feldspar mine, where 42 different minerals have been found, the Edwards zinc mine, the Fowler talc mine, "Lost River," an underground portion of Boland Creek, the Reservoir Hill phacolith near Gouverneur, eskers, kames, pro-glacial deltas and lake features were visited in the field.

On Friday evening the annual dinner was held in the Men's Residence of St. Lawrence University, after which the following program was given: Address of Welcome, President Laurens H. Seelye; "Minerals of

St. Lawrence County," Dr. D. H. Newland, New York State Museum; "Some Aspects of Pleistocene Geology," Professor Earl T. Apfel, Syracuse University; "Adirondack Rocks in Kodachrome," and Movies of Buffalo Meeting, Professor H. L. Alling, University of Rochester; Report of Nominating Committee, Professor G. B. Cressey, Syracuse University.

The visiting delegates left for their homes on Saturday afternoon enthusiastic about the talks which they had heard and the geological features which they had seen and with their cars laden with mineral specimens collected.

The officers for next year are Professor George H. Chadwick, *president*; Robert W. Jones, *secretary-treasurer*, who will succeed Dr. Robert Wesley Brown and Dr. John S. Brown, retiring president and secretary-treasurer, respectively. The association is eagerly looking forward to next year's meeting, which will be held in the Catskills.

FIELD CONFERENCE OF PENNSYLVANIA GEOLOGISTS

THE ninth annual meeting of the Field Conference of Pennsylvania Geologists was held in West Virginia from May 27 to 30. More than fifty geologists from New York, New Jersey, Pennsylvania, Virginia and West Virginia attended.

The conference hosts were the members of the West Virginia Geological Survey. The 1939 committee consisted of Dr. Paul H. Price, state geologist of West Virginia, *chairman*; Dr. B. L. Miller, Lehigh University; Dr. R. E. Sherrill, University of Pittsburgh, and

M. N. Shaffner, Pennsylvania Topographic and Geologic Survey, secretary and treasurer.

The annual dinner was held at the University of West Virginia at Morgantown on Sunday evening. A welcome was extended to the group by the president of the university, Dr. Charles E. Lawall. Other speakers were, Dr. Paul H. Price; Dr. Arthur Bevan, state geologist of Virginia; Dr. B. L. Miller; Dr. R. W. Stone, Pennsylvania Topographic and Geologic Survey; E. T. Heck, West Virginia Geological Survey; Professor Herbert Woodward, University of Newark, and M. N. Shaffner.

The committee accepted an invitation from the New Jersey Geologists to meet with them in New Jersey in 1940, and the following committee was appointed for that meeting: Dr. Meredith E. Johnson, state geologist of New Jersey, *chairman*; Professor Herbert Woodward; Dr. Bradford Willard, Pennsylvania Topographic and Geologic Survey, and M. N. Shaffner.

On Sunday the excursion covered strata from Lower Mississippian to Upper Pennsylvanian in the area between Morgantown and White Sulphur Springs. On Monday strata from Upper Ordovician to Middle Mississippian were covered between White Sulphur Springs and Petersburg, and on Tuesday strata from Upper Silurian to Lower Mississippian were covered between Petersburg and Berkley Springs. The leaders were Dr. Paul H. Price, E. T. Heck, Herbert Woodward and Professor H. M. Fridley, West Virginia Geological Survey.

M. N. SHAFFNER,
Secretary and Treasurer

SPECIAL ARTICLES

THE RELATION OF "COENZYME R" TO BIOTIN

THE value of yeast or plant extracts as stimulants to growth of the root nodule bacteria (*Rhizobium* sp.) has been long recognized. Allison, Hoover and Burk¹ explained the stimulation on the basis that the extracts provide a specific coenzyme for respiration (Coenzyme R), and concluded that the active agent "is certainly not identical with bios, since its addition to synthetic medium essentially free from bios resulted in growth of yeast negligible compared with the heavy growth obtained where bios was present." Apparently, it has been assumed by many workers that this implies that biotin, a growth factor for yeast, is not a growth stimulant for rhizobia, a conclusion which does not necessarily follow from the foregoing statement.

Evidence obtained in this laboratory strongly indicates a relationship between the growth factor re-

quirements of yeast and rhizobia. Treatment of yeast extract with acids, alkalies, solvents, adsorbents and oxidizing agents resulted in parallel preservation or destruction of the activity for both *S. cerevisiae* and *R. trifolii*.

During preparation of biotin concentrates by the procedure of Kögl and Tonnies,² fractions were tested at each stage of purification, and total units and purity of the active factor assayed by growth of *S. cerevisiae* and *R. trifolii*. The concentration of biotin, as assayed by yeast growth, was accompanied by the same degree of purification of the *Rhizobium* factor, until the norite adsorption step was reached. Unexpectedly, the eluate (biotin fraction) was highly active with *R. trifolii*, but inactive with yeast. On addition of a small quantity of the filtrate, however, the activity for yeast was completely restored. Further investigation disclosed that the filtrate factor could be replaced by synthetic β -aniline. Following this lead, a prepara-

¹ F. E. Allison, S. R. Hoover and D. Burk, *SCIENCE*, 78: 217, 1933.

² F. Kögl and B. Tonnies, *Zeits. Physiol. Chem.*, 242: 43, 1936.