the side which is often likely to give encouragement and support to his studies. Perhaps if the elimination of the name of the person who made a change of genus were made, the tendency to split genera would be greatly reduced.

From a genetical standpoint, the arrangement of the manual is based on the Engler system, a system which is based on a preponderance of untenable propositions. To many the arrangement is of little importance, but a natural arrangement is of considerable assistance in establishing a comprehensive viewpoint in teaching taxonomy.

These points do not alter the fact that now we have concise descriptions of the 3,988 ferns and seed plants of the prairie-plains region in one book. The plants are well keyed in a standard manner. The time of blossoming or of fruiting is given and the ranges include the complete range of the plant. In addition there is a glossary and 600 pen sketches, illustrating at least one species each of about two thirds of the genera.

Although the book is quite complete systematically, one regrets that Rydberg did not live to add the phytogeographic discussion that was planned.

A list of abbreviations of authors' names by J. H. Barnhart completes the 969-page book. This book thus fills a long-felt want and will prove indispensable for work in the region covered.

To Dr. Marshall A. Howe, of the New York Botanical Garden, goes a great deal of credit for seeing the work through publication. Particularly is this credit to be acknowledged for the great care he has taken to have the work come out as nearly perfect as possible in a field quite outside of his own.

FRANK C. GATES

MANHATTAN, KANSAS

SOCIETIES AND ACADEMIES

THE OHIO ACADEMY OF SCIENCE, 1932

THE Ohio Academy of Science held its annual meeting for 1932 at Ohio Wesleyan University, Delaware, Ohio, from April 28 to 30, with about 200 members and visitors present, the program taking the usual form of business meetings (two), a general scientific session (one), and section meetings (eleven). An outstanding feature of the general scientific session was a motion-picture film showing the treatment of osteomyelitis with blowfly larvae by Drs. D. F. Miller, C. A. Doan and E. H. Wilson, of Ohio State University. In the sectional meetings some 141 papers were presented as follows: *Zoology,* Dwight M. DeLong, vice-president, 32; *Botany,* Arthur T. Evans, vice-president, 15; *Geology,* E. M. Spieker, vice-president, 19; *Medical Sciences,* Shiro Tashiro, vice-president, 25; *Psychology,* Horace B. English, vice-president, 15; *Physical Sciences,* Forrest G. Tucker, vice-president, 21; *Geography,* Eugene Van Cleef, vice-president, 14. A few of these papers will be published in full and abstracts of many others in the July, 1932, issue of the *Ohio Journal of Science,* which issue will be devoted almost entirely to the Proceedings of the annual meeting.

The annual banquet on Friday evening was a notable event, as it was on this occasion that President Smith delivered his scholarly presidential address on "Physics and Human Experience"; the banquet was notable also in the matter of attendance and various and delightful social features.

The academy put itself on record as unanimously in favor of a water conservation survey in Ohio (H. R. Bill 6478, Senate substitute 1704), the extension of a water conservation program, the conservation and preservation of wild flowers as outlined by the Wild Flower Preservation Society and the Central Ohio Anglers' and Hunters' Club, the setting apart of suitable areas in state parks as wild life sanctuaries to be free from disturbance of natural conditions and not open to picnic or camping parties or to provision of roadways or paths, legislation to protect hawks and owls and making the use of the pole trap illegal.

Some sixty new members were elected and the following members were elected to fellowship in the Academy: S. Prentiss Baldwin, Homer G. Bishop, Albert F. Burgess, Harry F. Dietz, Winston E. Dunham, Harold A. Edgerton, Linden F. Edwards, Ray Lee Edwards, Robert M. Geist, Louis D. Hartson, Robert A. Hefner, Neale F. Howard, Ralph A. Knouff, Chester O. Mathews, Francis N. Maxfield, Zeno Payne Metcalf, Claude R. Neiswander, James Ruey Patrick, Sidney L. Pressey, John W. Price, J. P. Sleesman, Isabel S. Smith, Guy Harold Smith, Laurence H. Snyder, Augustus W. Trettien, Richard S. Uhrbrock, Willard L. Valentine, Eugene Van Cleef and George W. White.

The following officers were elected for the ensuing year:

President: R. A. Budington.

Vice-Presidents: Zoology, W. C. Kraatz; *Botany,* Bernard S. Meyer; *Geology,* Carl Ver Steeg; *Medical Sciences,* F. A. Hitchcock; *Psychology,* L. D. Harston; *Physical Sciences,* A. A. Atkinson; *Geography,* Geo. D. Hubbard.

Secretary: William H. Alexander.

Treasurer: A. E. Waller.

To Executive Committee: Alpheus W. Smith and M. E. Stickney.

To the Joint Administrative Board of the Ohio Journal of Science: E. L. Rice and C. G. Shatzer.

W. H. ALEXANDER,
Secretary

THE TENNESSEE ACADEMY OF SCIENCE

THE Tennessee Academy of Science held its 1932 spring meeting on April 22, 23 and 24 at Memphis and Reelfoot Lake. Three sessions and the academy dinner on Friday evening, April 22, were held in the ballroom of the Peabody Hotel. Twenty-four papers were contributed by members from Memphis, Jackson, Nashville, Knoxville, and Franklin, Kentucky.

Dr. A. Richard Bliss, Jr., president, presided at the academy dinner, and Dr. Martin H. Fischer, professor of physiology in the University of Cincinnati, delivered an address on the "Constitution of Living Matter," illustrated with charts and chemical experiments. Three hundred and seventy-four members and guests were registered at the meeting in Memphis, and 154 attended the dinner.

On Saturday afternoon the non-resident members were taken in automobiles to Walnut Log Lodge, on Reelfoot Lake, where the fourth session was held that evening. The program consisted of a "Symposium on Reelfoot Lake," with special reference to its suitability as a location for a biological laboratory.

Several papers were devoted to the geographic and geologic features of the lake, its acquisition by the state for a public park and the setting apart by the 1931 General Assembly of ten acres and a building for a biological station for research, to be under the management and control of the Tennessee Academy of Science and an appropriation of $2,500 towards outfitting.

Following these were papers by the state commissioners of education, agriculture and public health on the value of such an institution to the state, and by the president of the Southwestern University on the interest and patronage of colleges and universities.

The remarkable richness of the lake and its environs in forms of vegetable and animal life was brought out by the state forester and the state game and fish warden and by Professors Jesse M. Shaver, of George Peabody College, Clarence E. Moore, of the West Tennessee Teachers College, and A. John Schwarz, of the University of Tennessee.

Dr. A. Richard Bliss, Jr., chairman of the habilitation committee, reported that the Cantillon Club House of eight rooms would be ready for use as a laboratory early next summer, the Walnut Log Lodge near-by to be used for residence of workers.

At a meeting of the Reelfoot Lake Biological Station trustees held on the morning of April 24, an executive committee was established, consisting of A. Richard Bliss, Jr., chairman, James B. Lackey, Richard G. Turner, Jesse M. Shaver, J. T. McGill, ex-officio, and the following resolution was adopted:

That the board of trustees of the Reelfoot Lake Biological Station invite the Tennessee State Departments of Education, Agriculture and Public Health, a number of universities and colleges and selected scientific organizations, each to appoint one or more research workers to take part in a physical and biological survey of Reelfoot Lake and its environs, to begin June 1, 1932.

Each department or institution may make such provision for expenses as it deems advisable.

Reports of the work are to be made to the trustees.

JOHN T. MCGILL,
Secretary

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A CONVENIENT METHOD OF PHOTOGRAPHING SMALL ANIMALS AT LOW MAGNIFICATION

DURING work on planarians I desired to take pictures of living animals in locomotion. The small size of the animals demanded pictures on an enlarged scale. Since in biological laboratories the need of photographing small living animals at low magnification frequently occurs, I will describe a method, which, in spite of its simplicity, leads to good results.

Photography on an enlarged scale requires either a relatively long exposure or a very intensive illumination of the photographed object. The intensity of the image formed by the lens on the photographic plate decreases as the square of the magnification increases. In order to take a picture of an object, *e.g.*, 5 times enlarged, it is necessary to use an exposure 25 times longer or stronger than for a picture in natural size. If a moving object has to be photographed, then the duration of the exposure is limited. It has to be considered that the speed of the motion in the image increases at the same rate as the magnification. A planarian, *e.g.*, which glides along with an average speed of 12 cm per minute and which has to be photographed five times enlarged, will move in the image with a speed of 60 cm per minute or 10 mm per second. To obtain a sufficiently sharp picture the exposure must not be longer than 1/50 second, if we suppose that a contour appears sharp when it is not broader than 0.2 mm. Should one wish a still sharper outline, *e.g.*, not broader than 0.1 mm, one would have to shorten the exposure even more (1/100 second). The picture can not be taken except by em-