enemy, he quotes approvingly even later and astounding statistics which assert that the plant lice descended from one individual of one species in a single season, where there is enough food, would weigh more than five times as much as all the people of the earth.

The award to Dr. Howard calls attention not only to his valiant service as a leader in this warfare, but also to the importance of the struggle in the agricultural world, where only the ingenuity of man can prevent the supremacy of the insect.—*The New York Times.*

SOCIETIES AND ACADEMIES

THE ILLINOIS ACADEMY OF SCIENCES

THE twenty-fourth annual meeting of the Illinois State Academy of Science was held in Peoria on May 8 and 9, 1931. General addresses were given on the following subjects:

"Research, Its Opportunities and Rewards," F. R. Jelliff, Galesburg, retiring president.

"Genesis of an Industry," W. Hoskins, Chicago.

"Physics and Physical Chemistry," T. R. Hogness, University of Chicago.

"Chemical Messengers," A. C. Ivy, Northwestern University Medical School.

"From Chance to Certainty in Education," F. G. Blair, Superintendent of Public Instruction, Springfield.

"Saving Illinois Streams from Pollution," H. F. Ferguson, Department of Public Health, Springfield.

The following resolution was adopted:

Realizing the large value and great importance of research along many lines and the benefits accruing to the people from inventions, explorations and discoveries in science, often the result of patient, persistent and painstaking endeavor, resolved that the Illinois State Academy of Science, while fully appreciating the recognition accorded such work, would respectfully recommend that Congress add to this the establishment of financial awards for the most noteworthy and valuable inventions and discoveries in the several branches of science, to be bestowed under such conditions as Congress may direct.

The officers elected for the year 1931–32 were:

President: Fay-Cooper Cole, University of Chicago.
First Vice-president: Frank C. Baker, University of Illinois.
Secretary: Harold R. Wanless, University of Illinois.
Treasurer: George D. Fuller, University of Chicago.
Librarian: A. S. Coggeshall, State Museum, Springfield.
Editor: Dorothy E. Rose, State Geological Survey, Urbana.

The following were chosen as chairmen of committees:

Membership: D. L. Carroll, State Geological Survey.
Affiliation: H. J. Van Cleave, University of Illinois.
Ecological Survey: A. G. Vestal, University of Illinois.
Conservation: H. C. Cowles, University of Chicago.
Legislation and Finance: F. R. Jelliff, Galesburg.
State Hall of Fame: M. M. Leighton, State Geological Survey.

Sectional chairmen selected for the next annual meeting are:

Zoology: F. C. Hottes, Millikin University, Decatur.
Physics and Chemistry: C. L. Cross, Illinois State Teachers' College, Normal.
Geology: T. E. Savage, University of Illinois.
Geography: Mabel Crompton, Illinois State Teachers College, Normal.
Psychology and Education: M. M. Maynard, Monmouth College, Monmouth.

The meeting was attended by about 800, including a large delegation of the junior section of the academy. Science exhibits prepared by high-school students were shown. Geological, biological and industrial field trips were taken to points of interest near Peoria on May 9.

H. R. WANLESS,
Secretary

THE TENNESSEE ACADEMY OF SCIENCE

THE spring meeting of the Tennessee Academy of Science was held at the University of Tennessee, in Knoxville, on Friday and Saturday, May 8 and 9. East Tennessee was represented on the program with sixteen papers and Middle Tennessee with nine. After a dinner on Friday evening the members by invitation of the University Student Body attended a lecture by Mr. Lorado Taft, sculptor, on "My Dream Museum." At the dinner Professor H. A. Webb substituted with a humorous pseudo-scientific narrative for Dr. E. E. Reinke, who on account of illness was prevented from giving an address on "A Mountain Station in the South for Biological Research." A trip to the Bird Preserve, near Knoxville, scheduled for from 6 to 8 o'clock Saturday morning and an excursion to the Great Smoky Mountains for Saturday afternoon had to be given up on account of a downpour of rain.

Mr. Henry Colton and Dr. L. C. Glenn were appointed a committee on State Aid to the Academy. The editor of the *Journal* was authorized to proceed

on a policy of increasing the exchange list and as he sees best respecting advertising in the *Journal*. Mr. Latimer J. Wilson was elected a delegate to the meeting of the American Association for the Advancement of Science at Pasadena in June, and Dr. J. T. McGill to the meeting at New Orleans in December.

The officers of the Academy for 1931 are:

President: L. R. Hesler, University of Tennessee, Knoxville.

Vice-president: H. A. Webb, George Peabody College, Nashville.

Editor: Jesse M. Shaver, George Peabody College, Nashville.

Secretary-Treasurer: John T. McGill, Vanderbilt University, Nashville.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A TRANSPARENT ELASTIC GLUE, USED IN MAKING CHAMBERS FOR INSERTION IN THE RABBIT'S EAR

IN connection with the new methods for studying the growth and reactions of living cells and tissues in the living mammal, originated and developed under the direction of Dr. E. R. Clark, it became necessary to find a satisfactory glue or cement substance which would fasten together various parts of the transparent chambers used for insertion into the rabbit's ear.

The first type of these chambers was developed by Dr. J. C. Sandison ('28)[1] and was made entirely of kodaloid, and the various parts were stuck together by parlodion. Later a number of workers in this laboratory collaborated on various improvements in the technique in order to obtain standardized chambers which would give uniform results and would be adapted to various types of observation and of experiment (Clark, Kirby-Smith, Rex and Williams, '30).[2] The thin kodaloid top proved to be unsatisfactory for such standardized chambers because of its tendency to warp and to allow the escape of moisture. Glass covers were much too fragile. Mica proved to be a satisfactory substitute as regards thinness and clearness, and the finding of a satisfactory glue to seal mica to heavy kodaloid or glass, used in the bases and supporting rings of the chamber, has obviated the chief difficulties inherent in the use of mica in the earlier chambers (Sandison, '24).[3]

A satisfactory glue for use in the construction of the chambers had to meet a number of requirements. It was necessary for it to be permanently adhesive and to be impervious to and unaffected by fluids, including the natural tissue fluids and antiseptic solutions such as phenol, hexyl-resorcinol and metaphen, and to be uninfluenced by moderate changes in temperature. In addition, it was highly desirable for it to be elastic, transparent and smoothly clear (without bubbles).

A large number of experiments were carried out before a glue which meets all these requirements was obtained. Balsams and resins of different varieties were tried with many different solvents. A number of varnishes and shellacs were also experimented with. Different commercial cements were tried. Celluloid compounds in different mixtures and combinations were used. Some of these substances, such as glyptal, passed the tests with water, but failed after the chamber was placed in one of the disinfecting solutions, or after insertion in the ear. Others (especially the cements such as Duco) were successful in sticking mica to glass, but had a tendency to warp the heavy kodaloid and to form bubbles.

The present glue forms a permanent, tenacious cement. It is smooth, transparent and waterproof, is unaffected by the moisture of the animal's tissues, by various antiseptics, or by moderate changes in temperature, and possesses the added advantage of elasticity. It will stick mica to kodaloid, to glass or to silver, kodaloid to glass or silver, and glass to glass.

The ingredients used and method of preparing the glue are as follows:

Pure gum copal (in lumps, *not* powdered)
Venice turpentine
Xylol

Select lumps of the copal which are clear and light amber in color. Heat copal in a porcelain dish until melted. While still over the flame, add a small amount of Venice turpentine and stir well. (The amount of Venice turpentine depends on the desired flexibility of the cement). Turn off the flame and continue stirring while adding xylol in small amounts. Some of the xylol evaporates, and it is therefore advisable to add a little xylol continuously while the

[1] J. C. Sandison, "The Transparent Chamber of the Rabbit's Ear, Giving a Complete Description of Improved Technic of Construction and Introduction, and General Account of Growth and Behavior of Living Cells and Tissues as Seen with the Microscope," *Am. J. Anat.*, Vol. 41, No. 3, p. 447, 1928.

[2] E. R. Clark, H. T. Kirby-Smith, R. O. Rex and R. G. Williams, "Recent Modifications in the Method of Studying Living Cells and Tissues in Transparent Chambers Inserted in the Rabbit's Ear," *Anat. Rec.*, Vol. 47, No. 2, p. 187, 1930.

[3] J. C. Sandison, "A New Method for the Microscopic Study of Living Growing Tissues by the Introduction of a Transparent Chamber in the Rabbit's Ear," *Anat. Rec.*, Vol. 28, No. 4, p. 281, 1924.