Clinical Aspects of Visceral Neurology with Special Reference to the Surgery of the Sympathetic Nervous System," covers a somewhat similar field, is outspoken on the subject of visceral pain. He believes that certain types of pain are intimately associated with the sympathetic nervous system and since such pain is mediated by afferent fibers passing in the sympathetic trunk it can not be completely abolished in an extremity by mere section of its somatic nerves.

In the clinical sections of the book, in which no extravagant claims are made, the pathological conditions and abnormal physiological states which may be cured or ameliorated by surgical procedures involving the autonomic nervous system are discussed. Peripheral vascular diseases, especially those which fall into the Raynaud's syndrome, are discussed at length and salutary results are recorded; relief from intractable pain, *e.g.,* of the extremities and of cardiac origin, is discussed and also the problem of hypertension. In discussing the gastro-intestinal tract White points out that Hirschsprung's disease in children may be dramatically benefited by sympathetic denervation. The final section relates to surgical procedures and to the technique of alcohol injection of sympathetic ganglia which White has done so much to develop. The book is provided with good bibliographies, clear illustrations and an excellent index.

YALE UNIVERSITY J. F. FULTON

## THE THEORY OF VALENCY

*The Optical Basis of the Theory of Valency.* By R. DE L. KRONIG, University of Groningen. The Macmillan Company, New York. x + 246 pp. Price, $4.50.

THIS new volume in the Cambridge Series of Physical Chemistry is an excellent general survey of the contributions of modern physics to the problem of chemical valence. For the chemically stable molecules x-ray and electron diffraction studies are available. The chemically unstable molecules, the chemists' free radicals, may be studied by spectroscopic methods, which are applicable also to the stable molecules, both diatomic and polyatomic, to the latter with ever-increasing success. All these studies are contributing to a quantitative picture of the configuration, shape, size and interatomic motions and forces of molecules. The author has stated the results of mathematical physical analyses of these problems, but without any detailed derivation. This constitutes at once an advantage and a limitation of the book. The beginner in this field and those specializing in other fields anxious to know, in general, what has been accomplished will find the book an excellent introduction. The basic material necessary to an understanding of the approach to chemical binding, as interpreted by Heitler-London, Slater-Pauling and Hund-Mulliken, is presented in outline. The stability of valence compounds as revealed by reaction rate theory is considered to lie outside the scope of the book. The editor of the series might bear this in mind when considering other volumes to be presented. The recent article by van Vleck and Sherman in Reviews of Modern Physics on "The Quantum Theory of Valence" is an illustration of a more advanced treatment of the subject to which this present volume forms a satisfactory introduction.

HUGH S. TAYLOR

PRINCETON UNIVERSITY

# SOCIETIES AND MEETINGS

## THE TENNESSEE ACADEMY OF SCIENCE

THE November meeting of the academy for 1935 was held on Friday and Saturday, November 29 and 30, at George Peabody College, Nashville, Tennessee.

The most noteworthy feature of the meeting was its generality. Twenty-five of the forty-three papers listed on the program were by representatives of twelve different schools: the University of Tennessee, a state college and a church college, in East Tennessee; Vanderbilt University, Peabody College, two state colleges, a church college and a city school in Middle Tennessee; two church colleges in West Tennessee; a high school in Kentucky. No two schools were of the same denomination. Seven papers were by representatives of five different departments of the state. The Tennessee Valley Authority contributed two papers, the U. S. Weather Bureau one, the National Park Service one. The program committee classified the papers listed for the general section under fourteen branches of science—geology leading with five, biology next with three.

Ferns claimed chief attention at the session of the botanical section, Dr. L. R. Hester, chairman. Other subjects included trees, bryophyles, algae and fungi. Dr. George R. Gage, of Vanderbilt University, reported that the Dutch elm disease has not yet been detected in Tennessee.

The presidential address was delivered by Dr. George M. Hall, professor of geology, University of Tennessee, at the dinner at the Hermitage Hotel on Friday evening. His subject was "The Economical and Cultural Value of Geology." On Saturday afternoon, Professors Jesse M. Shaver and Aaron J. Sharp led an excursion in search of native ferns and mosses.

The editor of the *Journal of the Tennessee Academy*

*of Science* was directed to advertise for sale copies of the "Life and Works of Doctor Augustin Gattinger" by Henry Nathaniel Oakes, published by the academy. The grant for scientific research allotted to the academy by the American Association for the Advancement of Science was awarded to Nathan H. Woodruff, of Donelson, Tennessee, to continue at Peabody College his research on the "acidity of soils at the roots of ferns in Tennessee." Dr. Charles G. Shoup, assistant professor of biology, Vanderbilt University, was elected a member of the board of trustees of the Reelfoot Lake Biological Station for the term of three years.

Officers elected for the year 1936 are: Claude R. Fountain, *president,* Nashville; Paul J. Kruesi, *vice-president,* Chattanooga; John T. McGill, *secretary-treasurer,* Nashville; Jesse M. Shaver, *editor,* Nashville; Eleanor Eggleston, *librarian,* Nashville.

JOHN T. MCGILL,
*Secretary-treasurer*

## THE OKLAHOMA ACADEMY OF SCIENCE

THE twenty-fourth annual meeting of the Oklahoma Academy of Science was held at the University of Oklahoma, Norman, Okla., on December 6 and 7, 1935. The academy program was divided into four sections which were as follows: Biology, Geology, Physical Sciences and Social Sciences. One hundred and twenty-eight papers were presented. A special section was arranged for high-school science teachers. The total membership in the Oklahoma Academy of Science is 387.

Dr. D. W. Ohern, geologist from Oklahoma City, Okla., gave the annual address to the academy on Friday evening in the university auditorium. The subject of this lecture was "Science in the Thought of To-day." Dr. Ohern was president of the Oklahoma Academy of Science in 1910.

Dr. Charles E. Decker gave the presidential address at the luncheon on Saturday. His subject was "The Oklahoma Academy of Science in Relation to the Advancement of Science and Research in the State."

More than 300 people were present at the meetings. The officers elected for 1936 are as follows:

*President,* Dr. Horace J. Harper, Oklahoma A. and M. College, Stillwater, Okla.

*Vice-president, Section A (Biology),* Dr. T. C. Carter, Northwestern State Teachers College, Alva, Okla.

*Vice-president, Section B (Geology),* Dr. Robert H. Dott, Oklahoma Geological Survey, Norman, Okla.

*Vice-president, Section C (Physical Sciences),* Dr. A. T. Goble, University of Tulsa, Tulsa, Okla.

*Vice-president, Section D (Social Sciences),* Dr. L. B. Hoisington, University of Oklahoma, Norman, Okla.

*Secretary-treasurer,* Dr. Duane Roller, Oklahoma University, Norman, Okla.

*Assistant secretary-treasurer,* Professor H. I. Featherly, Oklahoma A. and M. College, Stillwater, Okla.

DUANE ROLLER,
*Secretary*

# SPECIAL ARTICLES

## SPECTROSCOPIC SIMILARITY BETWEEN ERGOT (LYSERGIC ACID) AND THE YOHIMBINE ALKALOIDS

IN a previous communication,[1] announcing the isolation of ergotocin (the orally effective principle of ergot), the writers reported the alkaline hydrolysis products of ergotocin to be lysergic acid and a base which was at that time the object of further study. In the meantime Jacobs and Craig[2] have identified this basic hydrolysis product as propanolamine; our independent study, not previously reported, has led to the same result.

The degradation reactions commonly employed in establishing the constitutions of natural substances usually give very low yields of identifiable products; hence it seemed desirable, in view of the minute quantities of material available for the investigation of ergotocin to seek other means of attack. Comparison of the ultra-violet absorption spectra of ergotocin and its derivatives with those of other presumably related substances has proved a promising avenue of approach.

Early in this study we were impressed by the marked similarity in the molecular absorption curves for ergotoxine, ergotamine and ergotocin (Fig. 1). Probably these three substances have a common structural skeleton (lysergic acid) chiefly responsible for their respective ultra-violet absorptions.

That ergotocin might be structurally related to the harmala alkaloids is suggested by the similar fluorescence of their solutions; this possibility was, however, rejected after a comparison of the absorption curve of ergotocin with those of harmol, harmine, methyl harmine, harmaline[3] and tetrahydroharmine (Figs. 1 and 2).

[1] M. S. Kharasch and R. R. Legault, SCIENCE, 81: 388, 1935; *Jour. Am. Chem. Soc.,* 57: 1140, 1935.

[2] W. A. Jacobs and L. C. Craig, SCIENCE, 82: 16, 1935.

[3] For purposes of record it seems desirable to report that the same possibility of relationship had occurred to H. A. Shonle and E. C. Kleiderer, of the Eli Lilly Research Laboratories, early in June, 1935. At that time they prepared for publication and submitted to us for comment a note suggesting this relationship. Upon examination of our absorption curves, however, they withheld publication. We still believe that these curves constitute more cogent arguments against the structural relationship of ergotocin