SOCIETIES AND MEETINGS

THE ANNUAL MEETING OF THE SOUTHWESTERN DIVISION OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE Southwestern Division of the American Association for the Advancement of Science held its nineteenth annual meeting on May 2, 3, 4 and 5, in the extreme southeastern portion of its territory at Alpine, Texas, and the McDonald Observatory on Mt. Locke, forty miles from Alpine. Dates for the meetings were a week later than usual in order to make them coincide with the dedication of the new observatory. Inspection of the observatory, on May 2, and the dedication exercises, on May 5, were the unusual and distinctive features of the program. The attendance of the visiting astronomers who came to Alpine for the dedication ceremonies greatly enriched the meetings of the division. The delivery of the tenth John Wesley Powell Lecture by Professor Arthur H. Compton, on the topic "Physics Views the Future," was an outstanding event. The presidential address delivered by Dr. E. F. Carpenter, on the topic "The Revolt Against Thought," featured another evening of the sessions.

The attendance at the meetings was very good, particularly of those members who live in West Texas. The host institution, the Sul Ross State Teachers College, provided every facility possible for the comfort and entertainment of the visitors as well as presentation of the scientific features of the meetings. The exhibits at the museum of the West Texas Historical Society deserve special mention. In the business sessions the division voted to meet next year at Tucson, Arizona, with the University of Arizona, the Desert Laboratory and the Southwestern Forest and Range Experiment Station serving as host organizations. The meeting place for 1941 will be Lubbock, Texas, and for 1942, Las Cruces, New Mexico.

Officers of the division for the coming year, including those newly elected at the sessions, are as follows: *President,* J. R. Eyer, New Mexico State College, and *Vice-President,* C. V. Newsom, University of New Mexico. Dr. Emil Haury, University of Arizona, was elected as *Secretary-Treasurer* for the customary indefinite term of office. Members of the executive committee are as follows: E. F. Carpenter, University of Arizona, and S. B. Talmage, New Mexico School of Mines, who will serve until 1942; F. W. Sparks, Texas Technological College, and F. E. E. Germann, University of Colorado, who will serve until 1941; D. S. Robbins, State College, New Mexico, who will serve until 1940.

Section officers are as follows: Biological Section—*Chairman,* D. M. Crooks, University of Arizona, and *Secretary,* A. L. Hershey, New Mexico State College. Mathematics Section—*Chairman,* J. W. Branson, New Mexico State College; *Vice-Chairman,* E. J. Purcell, University of Arizona; *Secretary,* H. D. Larson, University of New Mexico. Social Science Section—*Chairman,* Emil Haury, University of Arizona; *Secretary,* Gordon C. Baldwin, University of Arizona. Physical Sciences Section—*Chairman,* C. W. Botkin, New Mexico State College; *Secretary,* O. B. Muench, New Mexico Normal University.

VEON C. KIECH,
Secretary

A SYMPOSIUM ON METRIC GEOMETRY

IN ordinary analytic geometry each point of the space is characterized by coordinates (each point of an n-dimensional space by n coordinates), and the distance between any two points is a certain function of their coordinates. At the beginning of this century this concept of space was remarkably generalized by Fréchet. He did not make any assumption concerning the nature of points. Points are simply elements of some set, not necessarily defined by coordinates or in any other particular way. Fréchet merely assumed that with each pair of points a number, called the distance between the two points, is associated. This concept was introduced in order to unite several classical theories into one general theory, an aim similar to that of E. H. Moore's general analysis. Since their introduction much has been learned of the topology of Fréchet's metric spaces, *i.e.,* of their properties of density, connectivity, etc. But only during the last ten years has a systematic theory of the metric properties of these general spaces been developd, *e.g.,* of their convexity properties, their geodesics, etc. Recently L. M. Blumenthal summarized this theory in a book, "Distance Geometry," published in the University of Missouri Studies (Vol. XIII, No. 2).

This metric geometry was the subject of the third annual mathematical symposium held on April 12 and 13 at the University of Notre Dame. In the first meeting on April 12, Dr. L. M. Blumenthal, of the University of Missouri, spoke about the characterization of pseudo-spherical sets with application to determinant theory. A set is called pseudo-spherical if it can not be isometrically imbedded into the sphere though its subsets can. A set which can not be imbedded into the plane, though each subset can, consists of exactly five points, as it can be shown, and is called a pseudo-plane quintuple. Dr. P. M. Pepper, of the University of Notre Dame, presented some recent re-

sults on pseudo-plane quintuplets. He mentioned two surfaces slightly more complicated than the plane into which these quintuples can be imbedded. Dr. M. Sadowsky, of the Armour Institute of Technology, presented a new model of surfaces whose local metric is that of the Euclidean plane. Dr. L. M. Blumenthal gave a new metric characterization of the straight line.

On the following morning Dr. Marston Morse, of the Institute for Advanced Study, spoke about metric spaces related to the theory of critical points and applied in the calculus of variations. Dr. Karl Menger, of the University of Notre Dame, analyzed the minimum problem of the calculus of variations from the point of view of metric geometry. Dr. I. J. Schoenberg, of Colby College, dealt with the analytical aspects of isometric imbedding. The discussion was conducted by Dr. G. A. Bliss, of the University of Chicago.

The last meeting, directed by Dr. Marston Morse, dealt with the problem of imbedding metric spaces into Euclidean and more general spaces. Dr. Emil Artin, of Indiana University and the University of Notre Dame, dealt with the algebraic treatment of the question; Rev. B. J. Topel, University of Notre Dame, with imbedding into groups; Dr. A. M. Milgram, of the University of Notre Dame, with the imbedding of partially ordered sets into certain universal ordered sets. Dr. Karl Menger, of the University of Notre Dame, sketched a general theory of relation-preserving imbedding synthesizing these various theories.

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REPORTS

TRYPARSAMIDE IN THE CONTROL OF AFRICAN SLEEPING SICKNESS

RECENT reports on the progress of the extensive campaigns against African sleeping sickness (*T. gambiense* infection) indicate that the outlook for satisfactory control is much more promising than has heretofore been the case. This encouraging situation is directly associated with tryparsamide therapy, the effects of which were first demonstrated in the Belgian Congo in 1921.[1,2]

One of the major obstacles to a successful solution of the problem has been the failure of therapeutic agents in advanced cases, that is, those with involvement of the central nervous system. It is now known from the results of cerebrospinal fluid examination, moreover, that this involvement occurs much earlier than was formerly thought. Various drugs which are of benefit in the early phases of the infection are of little or no avail in later stages. Not only does the disease progress to a fatal termination, but the recurring presence of trypanosomes in the peripheral circulation constitutes a potential reservoir of infection. In marked contrast to these unsatisfactory results are those obtained with tryparsamide, the therapeutic action of which extends to the advanced stages. Because of this unique property, tryparsamide can be used in the routine mass treatment of both early and late cases.

Campaigns against sleeping sickness have long been a prominent feature of public health activities in the various colonies concerned, for control of the disease is a vital necessity to tropical Africa. A marked intensification of this work began some fifteen years ago, and it is significant that it was directly associated with the demonstration of the curative action of tryparsamide. An example of the notable results achieved is shown in the accompanying tabulation of official statistics of the Belgian Congo for the eleven-year period 1926–37, during which time tryparsamide has been increasingly employed.[3]

ELEVEN-YEAR RESULTS OF THE SLEEPING SICKNESS CAMPAIGN IN THE BELGIAN CONGO
1926–1937

Year	Number of natives examined	Old cases under treatment	New cases	Index of new infections, per cent.
1927	1,704,477	70,940	16,260	0.95
1928	2,126,356	46,372	24,440	1.16
1929	2,383,892	50,244	27,046	1.12
1930	2,779,448	70,423	33,562	1.20
1931	2,685,768	67,272	25,582	0.95
1932	2,832,083	77,268	21,346	0.75
1933	3,572,423	93,954	27,939	0.78
1934	3,824,097	86,147	24,101	0.63
1935	4,356,270	66,774	18,930	0.43
1936	5,282,646	53,429	18,708	0.36
1937	5,034,442	50,980	14,921	0.29

It will be noted that, although the number of natives examined annually for sleeping sickness was trebled in this period, that is, from 1,704,477 examined in 1926 to 5,034,477 in 1937, the index of new infections in 1937, 0.29 per cent., had fallen to one fourth the maximum figures of 1.16, 1.12, 1.20 per cent. in 1928, 1929, 1930, respectively. In addition, there was a marked decrease in the number of old cases continued under treatment from year to year, that is, from the high number of 93,954 in 1933 to 50,980 in 1937, a result of particular significance from the standpoint of efficiency of treatment.

Highly satisfactory results are reported by the Fonds Reine Elizabeth. This organization has had a wide experience in sleeping sickness work since 1931,

[1] L. Pearce, *Jour. Exp. Med.*, 24: 6, Supplement No. 1, 1921.

[2] L. Pearce, *Rockefeller Institute for Medical Research Monograph 23*, 1930, Science Press.

[3] L. Van Hoof, "Rapport sur l'Hygiène Publique au Congo Belge," 1937.