

author has shown that the structure of graphite, as determined by X-ray analysis,<sup>8</sup> is exactly what would be obtained if it were built of layers of benzene hexagons of the type just described, the carbon-hydrogen bonds of the benzene molecules being replaced by carbon-carbon bonds between the layers. Such an arrangement not only accounts for the symmetry of the substance and for the observed spectra, but also for its known chemical and physical properties.

There are quite a number of aromatic compounds, including benzene itself, in crystals of which, according to the author's conjugation theory, we might expect the molecules to be in layers of much the same type as the layers in graphite. Assuming this to be the case, if the densities, axial ratios and axial angles are known, the dimensions of the hexagon in these crystals can be calculated. This has been done for a considerable number of substances, and in every case in which large distortions would not be expected, due to substituted groups, *the dimensions of the hexagon are very close to the corresponding dimensions in graphite*. If this result were obtained for one or two crystals, it might be considered merely a coincidence, but it is found to be general; the dimensions are found to correspond best where least distortion would be expected; and the axial ratios and angles, and the crystal form, symmetry and cleavage, as well as the actual distances, are found to conform to the structures assumed. Hence *this structure for the benzene nucleus must be considered proved*.

This method of proof was reported on by the author in a paper presented at the twenty-fourth special meeting of the California Section of the American Chemical Society, held in conjunction with the annual meeting of the Pacific Division of the American Association for the Advancement of Science, at Berkeley, California, on August 5, 1921, at which time the structures of quinol, pyrocatechin and

triphenyl carbinol were used as examples. The density of solid benzene was not then to be found in the literature. This is now obtainable, and from it and the axial ratios, by assuming close packing of the molecules in each layer, the hexagon dimensions can be computed. They again check with those in graphite.

A paper is now being prepared in which the method of proof and its application to a large number of aromatic compounds will be given in detail.

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#### THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE MEETING OF THE EXECUTIVE COMMITTEE OF THE COUNCIL

THE spring meeting of the executive committee was held in the board room of the Cosmos Club, Washington, D. C., on April 23. It was called to order at 4:10, with Dr. Simon Flexner in the chair and with all members present, and it adjourned at 11:30, a recess of an hour and a half having been taken for dinner. The main items considered are shown below.

(1) Minutes of the last meeting (December 31, 1922), and of two actions taken by mail ballot in the interim were approved. These interim actions were (1) the formal vote to authorize the summer meeting with the Pacific Division, which is to occur on June 22-24, at Salt Lake City, and (2) the election of Dr. J. McK. Cattell to succeed himself as a member of the Board of Science Service.

(2) The permanent secretary presented a report on the affairs of the association for the half-year ending March 31. A summary of that report is appended to the report of this meeting.

(3) It was voted that all members of the American Medical Association who are not already members of the American Association for the Advancement of Science may become members of this association without the payment of the usual entrance fee (\$5). The A. A. A. S. is unable each year to invite all

<sup>8</sup> Debye and Scherrer, *Phys. Zeit.*, 17: 277 (1916); 18: 291 (1917); Hull, *Phys. Rev.*, 10: 661 (1917).

The author's interpretation of the experimental results is a compromise between that of Hull and that of Debye and Scherrer.

new members of the A. M. A. to join the more general association, as they have the privilege of doing according to the rules for affiliated societies of the A. A. A. S., and the special privilege is now made general to all members of the A. M. A., without reference to when they joined.

(4) It was voted that the permanent secretary should prepare an invitation letter to be sent (about October 1) to each member of the American Medical Association resident in New England, Iowa and Oregon, asking him to become a member of the American Association for the Advancement of Science if he is not already a member; these special invitations are to be signed by the president of the American Association for the Advancement of Science (Dr. J. Playfair McMurrich), the chairman of the Executive Committee of the Council (Dr. Simon Flexner), the permanent secretary and several others. It is planned that a special invitation of this kind shall be sent to other American Medical Association members resident in other regions next year, etc., the entire list of the Medical Association being cared for in perhaps four or five years.

(5) The budget for the current year was increased by the following items: Salaries, \$180; printing, \$520; summer meeting, \$500.

(6) The permanent secretary was asked to secure good, readable reports of the meetings of all sections and of their related societies at the fourth Boston meeting, to have these published in *SCIENCE* about the last week of January, 1923, and to have this special issue of the journal sent to all members who do not receive *SCIENCE* regularly. The retiring president's address is to be published in the first issue of *SCIENCE* after the meeting, and reprints of this are to be made available, on request, to members who do not regularly receive the journal. It is planned that members in good standing who do not attend the annual meeting may receive copies of the general program, if they request them from the permanent secretary's office before the meeting.

(7) The making of arrangements for a speaker for one of the evening sessions of the summer meeting at Salt Lake City was referred to the general secretary with power.

(8) Dr. D. T. MacDougal reported that the

committee on Cooperation with Mexican Men of Science recommends that Dr. E. L. Hewett, of the School of American Research, Santa Fé, N. M., be appointed special commissioner to consult with officials of the Mexican government regarding the organization of Mexican men of science. Dr. Hewett was appointed and was requested to serve the association in this capacity on his forthcoming trip to the City of Mexico. A committee consisting of Drs. Howard and MacDougal was instructed to prepare a suitable letter of credentials for the use of Dr. Hewett, this to be addressed to the Secretario de Agricultura y Fomento, to be engrossed, and to bear the seal of the association.

(9) It was voted that the expenses of the Committee on Grants be paid from the funds in charge of the permanent secretary.

(10) Dr. T. Wingate Todd, Western Reserve University, Cleveland, Ohio, was elected vice-president for Section H (Anthropology).

(11) Dr. Bird T. Baldwin, Iowa Child Welfare Research Station, State University of Iowa, Iowa City, was elected vice-president for Section Q (Education).

(12) The election of Dr. S. C. Prescott as chairman of the local committee for the fourth Boston meeting was ratified.

(13) Thirty-three members were elected to fellowship, on proper nominations.

(14) The resignation of Mr. Herbert A. Gill, auditor of the association, was accepted with regret, and with great appreciation of the very valuable services he has given the association in past years, and the permanent secretary was instructed to secure an auditor, preferably a well-known scientist, the clerical expense to be met by the permanent secretary's office.

(15) The Committee on Convocation Week was completed so that it is constituted as follows: Dr. J. McK. Cattell, Garrison-on-Hudson, N. Y., *chairman*; Dr. E. H. Moore, University of Chicago, Ill.; Dr. J. P. McMurrich, University of Toronto, Toronto, Canada; Dr. H. S. Jennings, Johns Hopkins University, Baltimore, Md.; and Dr. Edwin B. Wilson, Massachusetts Institute of Technology, Cambridge, Mass.

(16) The Canadian Society of Technical Agriculturists was constituted an affiliated soci-

ety of the association. Its officers are: *President*, Mr. L. S. Klinck, University of British Columbia, Vancouver, Canada; *secretary*, Mr. Fred H. Grindley, Gardenvale, P. Q., Canada.

(17) The Executive Committee reaffirmed the desirability of holding the 1925 meeting in Kansas City, and expressed its appreciative thanks to the persons and organizations from whom invitations to meet in that city have been received.

(18) The policy of Section N (Medical Sciences) was approved, by which it is planned that the program of this section, at the annual meeting, shall deal with such fields of work as parasitology, medical entomology, public health service, and others, where many medical scientists have common interests with those working in other fields of biology.

(19) A committee was appointed, consisting of the president, the general secretary and the permanent secretary, to arrange for the sending of delegates to the Hull meeting of the British Association for the Advancement of Science.

(20) The proposed federation of biological societies was considered at length, and the committee expressed itself as in sympathy with the general aims of the societies involved. The hope was expressed that the organization of the association may be of service to the new federation.

(21) The controversy aroused by recent popular publications regarding the theory of evolution was considered, and a committee of three was appointed to deal with this matter and make recommendations at the meeting of the executive committee. The committee on the evolution controversy consists of Dr. Edwin G. Conklin, Princeton University; Dr. C. B. Davenport, Station for Experimental Evolution; and Dr. Henry Fairfield Osborn, American Museum of Natural History, New York City.

(22) The permanent secretary was asked to secure manuscripts for the general program for the fourth Boston meeting as early as may be, to the end that the difficulties of publication may be obviated as far as possible.

(23) The section committee of Section Q (Education) was authorized to publish a sep-

arate section program for the fourth Boston meeting—the expense, not to exceed \$25, to be met by the permanent secretary from current funds.

(24) The permanent secretary was authorized to provide suitable messenger service for the sessions of the biological societies meeting at Boston.

(25) It was voted that it is desirable for the association to secure a distinguished European scientist for an evening lecture at the fourth Boston meeting.

(26) The committee adjourned to meet in New York City (in the offices of the Science Press, by invitation of Dr. Cattell) on Saturday, October 21, 1922.

BURTON E. LIVINGSTON,  
*Permanent Secretary*

#### PERMANENT SECRETARY'S REPORT FOR THE HALF-YEAR ENDING MARCH 31, 1922<sup>1</sup>

THE last volume of the Summarized Proceedings, published in October, 1921, is now nearly out of print. The total cost of publication was \$6,744.16 and sales have amounted to \$2,587.00, making the net cost, at the present accounting, \$4,157.16. The volume is being sold to members for \$2.00 and to others for \$2.50. Fifty copies remain to be sold, besides twenty copies reserved for complete sets.—A booklet of information for prospective new members, which contains a statement of the organization and work of the association, was published in January. Copies may be secured from the permanent secretary's office.—The resolution regarding the United States Forest Service, adopted at the recent Toronto meeting, was printed as a leaflet and sent to all members of Congress and to other officials.

Invitations to join the association have been sent to 28,303 persons, of whom 830, or 3.4 per cent., have already joined. From September 30, 1921, to March 31, 1922, 1,111 new annual members and 9 new life members have been enrolled, and 22 members have been reinstated; the total gain was 1,142. During the same period 67 deaths were recorded, and 265

<sup>1</sup> Presented to the Executive Committee of the Council on April 23, 1922.