

ganic chemistry, inasmuch as this type of test trains the student only in his ability to recognize material once learned, while his training in being able to recall and apply his knowledge is neglected. Nevertheless,

this organic laboratory manual demands the attention of every serious-minded teacher of organic chemistry.

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DIGEST OF THE MINUTES OF THE EXECUTIVE COMMITTEE

POSTPONEMENT of the New York meeting, scheduled to have been held during the week of December 28, 1942, prevented the holding of the regular business sessions of the Executive Committee and of the Council at that time. Acting under a provision of the Constitution and By-Laws that "the Executive Committee shall have full power to act for the Council when the Council is not in session," the Executive Committee held a special meeting in Washington, D. C., on January 17, 1943, with eight of the ten members present, as follows: Drs. Livingston (chairman), Adams, Barker, Caldwell, Cannon, Compton, Moulton and Wrather.

The following actions were taken, all of which were by unanimous vote:

1. It was voted (a) that all work of the association, except the holding of general meetings, be continued until the holding of meetings is resumed, presumably after the close of the war; (b) that new officers of the association be elected by mail ballot of the council, a procedure that is valid under the constitution and by-laws of the association; (c) that joint local meetings with affiliated academies of science and joint local meetings of sections and affiliated societies be held when feasible; (d) that the special committees of the association be continued under the usual terms of tenure, and (e) that arrangements be made, if possible, for broadcasting addresses of retiring presidents.

2. In accordance with 1(b), it was voted that the council elect by mail ballot the president of the association for 1943, three members for the executive committee, two elected members of the council, and the vice-presidents for sections. (Report of the results of the balloting by the council, now in progress, will be published in *SCIENCE*.)

3. The following were elected a committee for the subsection on dentistry: Thomas J. Hill, chairman, 2085 Adelbert Road, Cleveland, Ohio; Paul C. Kitchin, secretary, Ohio State University; and B. Holly Broadbent, 2879 Fontenay Road, Cleveland, Ohio.

4. Glenn L. Jenkins, Purdue University, was elected chairman of the subsection on pharmacy for a three-year term, expiring at the end of 1945.

5. President Compton appointed R. G. Hoskins, Harvard University, and Henry Gilman, Iowa State University, as members of the grants committee, to represent medicine and chemistry, respectively, for terms ending at the close of the year 1946.

6. On recommendation of the finance committee, Charles S. Baker, Washington, D. C., was elected a member of the finance committee to succeed himself, for a four-year term ending at the close of the year 1946.

7. J. McKeen Cattell was nominated to succeed himself as a representative on the board of trustees of Science Service for a three-year term ending in April, 1946.

8. The Arkansas Academy of Science was accepted as an affiliated state academy and the American Association of Scientific Workers was accepted as an affiliated society.

9. The reports of the auditors (certified public accountants) of the accounts of the treasurer and of the permanent secretary for the fiscal year ended September 30, 1942, were accepted.

10. The executive committee approved the recommendation of the permanent secretary that in making arrangements for future meetings of the association the local committees in the communities in which meetings are to be held be charged with the responsibility of arranging for entertainment and excursions and providing clerical and other services, as heretofore, but be relieved from the onerous and disagreeable task of collecting funds for printing the general program and meeting other expenses.

11. The policy, in general, was adopted that hereafter grants for research shall be given only to applicants who have not previously received two grants from the association or from other sources in support of the research for which the application is made.

12. In carrying out certain terms of the agreement between the association and Dr. J. McKeen Cattell and Mrs. Josephine Owen Cattell, in so far as it concerns *The Scientific Monthly*, the permanent secretary was authorized and directed to accept the offer of Dr. and Mrs. Cattell and to pay \$9,499.59 in lieu of the annuity provided in the agreement, and Mr. Ware Cattell was elected as editor for a four-year term beginning January 1, 1943. The permanent secretary was also directed to publish *The Scientific*

Monthly in the name of the association and to accept the detailed unit cost estimate of the Science Press Printing Company for printing and mailing *The Scientific Monthly* for the calendar year 1943.

13. The following committees on resolutions were appointed:

(a) Resolution on interrelations of scientists of the Western Hemisphere. Dr. Walter B. Cannon was appointed chairman and Dr. E. C. Stakman was appointed a member of the committee. The chairman was authorized to appoint other members to the committee.

(b) Resolution in support of the war efforts of the Government. Dr. James B. Conant was appointed chairman, with authority to appoint other members to the committee.

(c) Resolution on freedom. Dr. Harlow Shapley was appointed chairman and Dr. Isaiah Bowman was appointed a member of the committee. The chairman was authorized to appoint other members to the committee.

(d) Resolution on declaration of scientific objectives. Dr. F. R. Moulton was appointed chairman with authority to appoint other members to the committee.

14. The following resolution in commemoration of

the hundredth anniversary of the National University of Chile was adopted:

WHEREAS, the National University of Chile has recently celebrated its centennial, and,

WHEREAS, among its faculties are included many of the outstanding scientists of the Western Hemisphere, and,

WHEREAS, since science transcends national boundaries and forms part of a worldwide culture,

Therefore, be it resolved, in recognition of the identity of its interests with those of the distinguished scientists of the National University of Chile, and the strong cultural bonds that link the scientific workers of the hemisphere, that the American Association for the Advancement of Science send its felicitations to the National University of Chile and its rector, on the part of the scientists of the United States of North America, and,

Be it further resolved, That the American Association for the Advancement of Science, in anticipation of closer cooperation of the scientists of the hemisphere, cordially invite the university to take steps leading to such cooperation.

15. It was voted to cancel the New York meeting, previously postponed on request of the Office of Defense Transportation.

SPECIAL ARTICLES

ON ESTERS OF PENICILLIN^{1,2}

THE chemotherapeutic effect of penicillin against the Gram-positive cocci in experimental animals and in man has been unequaled by any other agent so far tried. The practical use of penicillin, however, is still attended with some difficulties because of the instability and rapid excretion of the material. In a previous publication³ we have described attempts to stabilize penicillin by selective acetylation and benzoylation of the hydroxyl groups. Though the stability of such derivatives, especially of the benzoyl compound, was greater than that of the original penicillin, the products held no great promise.

Since the instability of penicillin, especially in acid solution, is partly due to the lability of a carboxyl group,^{4,5} experiments on esterification have been carried out by us during the past year and a half. The Oxford workers recently reported⁴ unsuccessful attempts to esterify the silver salt of penicillin with

alkyl iodides. We have prepared the methyl, ethyl, n-butyl and benzohydril esters by reacting the free acid of penicillin with the corresponding diazo compound. In contrast to the starting material, the esters are insoluble in neutral or slightly alkaline buffers, they are very soluble in benzene and are not precipitated from chloroform-benzene solutions by dry ammonia. On analysis, the methyl and ethyl esters were found to contain around 10 per cent. of alkoxy. Chromatographically the esters prepared from unfractionated penicillin showed three components.

In vitro the aliphatic esters have an activity of about 25 micrograms per cc in contrast to 0.08 to 0.3 micrograms per cc for the original penicillin fractions against hemolytic streptococci. The dilution method was used for these titrations.⁶ The constant and low activity of the esters is probably due to a partial hydrolysis of the esters by the hemolytic streptococci.

The aliphatic esters show, in contrast to their relative inactivity *in vitro*, a marked activity in mice. Mice were infected by the intraperitoneal injection of 1 cc of 10⁻³, 10⁻⁴ and 10⁻⁵ dilutions of a highly virulent strain of hemolytic streptococcus (C₂₀₃Mv). Treatment by the subcutaneous route was begun

¹ From the Departments of Ophthalmology and Medicine, College of Physicians and Surgeons, Columbia University, and the Edward Daniels Faulkner Arthritis Clinic, Presbyterian Hospital, New York.

² This work has been supported in part by a grant from the John and Mary R. Markle Foundation.

³ K. Meyer *et al.*, *SCIENCE*, 96: 20, 1942.

⁴ E. P. Abraham and E. Chain, *Brit. Jour. Exp. Path.*, 23: 103, 1942.

⁵ Unpublished experiments.

⁶ G. L. Hobby, K. Meyer and E. Chaffee, *Proc. Soc. Exp. Biol. and Med.*, 50: 277, 1942.