THE SYNTHESIS OF 1-*beta*-GLUCOSIDOFRUCTOSE. A CORRECTION

Sir:

In a recent publication by Pacsu, Wilson and Graf [THIS JOURNAL, **61**, 2675 (1939)] 1-β-glucosidofructose was described as a new disaccharide. The authors regret that in carrying out and publishing their work they have overlooked the fact that the same sugar had previously been prepared by Brigl and Widmaier [*Ber.*, **69**, 1219 (1936)] by a different method. The latter investigators used dibenzal-fructopyranose as starting material and obtained the disaccharide in a 18.8% over-all yield, whereas Pacsu, Wilson and Graf prepared the sugar from 2,3-4,5-diacetone-β-fructopyranose in a 50% yield. The physical constants of the disaccharide as reported from the two sources are practically identical. It should be added that no reference to the work of Brigl and Widmaier can be found either in the latest book on the carbohydrates (Micheel, "Chemie der Zucker und Polysaccharide," Akademische Verlagsgesellschaft m. b. H., Leipzig, 1939), or in the latest comprehensive report on the synthesis of the oligosaccharides (Zemplén, "Neuere Richtungen der Oligosaccharid-Synthese" in "Fortschritte der Chemie organischer Naturstoffe" edited by Zechmeister, Julius Springer, Wien, 1939).

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EUGENE PACSU

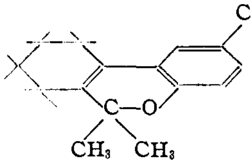
RECEIVED FEBRUARY 3, 1940

SYNTHESIS OF CANNABINOL

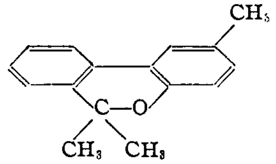
Sir:

We note in a recent communication (THIS JOURNAL, **62**, 2245 (1940)) that Adams and his coworkers have reported a method for the preparation of compounds analogous to cannabinol which involves the condensation of 5-methylcyclohexanone-2-carboxylate with orcinol in the presence of phosphorous oxychloride, followed by treatment with methylmagnesium iodide. One instance of the use of this method was reported to give a tetrahydropyran.

We wish to report that we have been using this method for some time in the synthesis of compounds analogous to cannabinol with the view to the synthesis of cannabinol itself. The condensation of cyclohexanone-2-carboxylate as well as 5-methylcyclohexanone-2-carboxylate with *p*-cresol, orcinol and olivetol in the presence of sulfuric acid have been carried out with subsequent treatment with methylmagnesium iodide to give the tetrahydropyran I (plates from alcohol, m. p. 69°, found: C, 84.24; H, 8.98; calcd.: C, 84.2; H, 8.77) and the glycol III (white crystals, m. p. 105–106°, found: C, 74.47; H, 8.98; calcd.: C, 74.5; H, 8.98).



I



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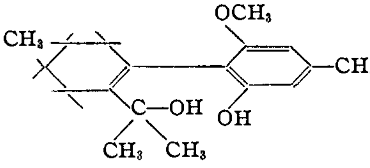

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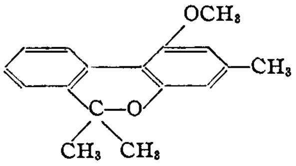

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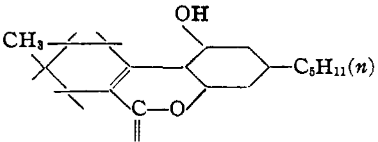

V

Some of these tetrahydropyrans have been dehydrogenated (II, white plates, m. p. 58°, found: C, 85.9; H, 7.35; calcd.: C, 85.7; H, 7.2) to establish the feasibility of passing from these to the pyrans of the cannabinol type. The condensation with orcinol has been carried out and the monomethyl ether of the condensation product treated with methylmagnesium iodide to give the glycol III, which was dehydrogenated, after the loss of the elements of water to close the pyran ring, to give a cannabinol type of compound, IV.

This route to cannabinol having been thus fairly well examined, we condensed 5-methylcyclohexanone-2-carboxylate with olivetol, giving a compound which we believe to be V (light brown crystals, m. p. 172–173°, found: C, 75.77; H, 8.2; calcd.: C, 76.0; H, 8.1). Work is now in progress in the treatment of pyrone V or its methyl ether with methylmagnesium iodide with the view of dehydrogenating it to cannabinol.

Isomerism is not excluded in these condensations with the dihydroxybenzenes, and we have refrained from reporting our results. The publication of the note by Adams and his co-workers makes it desirable to point out what has already been done in this type of condensation in these Laboratories.

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GARFIELD POWELL
THOMAS H. BEMBRY

RECEIVED AUGUST 12, 1940

NEW BOOKS

The Systematic Identification of Organic Compounds. By RALPH L. SHRINER, Professor of Chemistry in the University of Illinois, and REYNOLD C. FUSON, Professor of Chemistry in the University of Illinois. Second edition. John Wiley and Sons, 440 Fourth Avenue, New York, N. Y., 1940. xi + 312 pp. 15.5 × 24 cm. Price, $2.75.

The first edition of this book, in contrast to the more lengthy works in this field, was outstanding in its adaptability to the teaching of organic chemistry through the excellent medium of "organic qualitative" courses. This feature is retained in the second edition. Here also, the basic principle of dividing organic compounds into large groups according to their solubilities, and further subdividing these groups by certain classification reactions, remains unchanged. No discussion of the utility of this system as compared with others will be undertaken. That this method of attack is practical and useful, not only for the identification of organic compounds but also for teaching organic chemistry and as an introduction to organic research, has been abundantly demonstrated.

The considerably increased length of the book cannot be ascribed to any particular section or chapter but rather to the addition of new material and the introduction of modern ideas throughout. In Chapter II, the relation of solubility to structure is discussed in more detail. To many of the classification experiments have been added discussions of the limits of usefulness of the reactions. This information is extremely helpful in aiding the student to interpret the results of the tests. Five new experiments have been added in this chapter.

The chapter dealing with special laboratory methods includes, with the methods of determining physical constants, a discussion of the relationship of these constants to the structures of the compounds. New methods of analysis for the elements and for determination of saponification equivalent have been presented in detail.

The most extensive change in the form of the book is the separation of the tables of derivatives from the description of the methods of preparing them. These have been placed in separate chapters and arranged in a more convenient order. Almost an innovation for textbooks in this field are the tables and the data on derivatives of sulfonic acids which appear in this edition. A new chapter dealing with the interpretation of experimental data might prove to be particularly instructive to students.

The inclusion of most of the important recent advances in the field, both with regard to new derivatives and new experimental methods, should make the book as useful to the organic research man as to the teacher and the student.

WILLIAM P. CAMPBELL

Magnetism and Very Low Temperatures. By H. B. G. CASIMIR, Kamerlingh Onnes Laboratory, Leiden. Cambridge: at the University Press; New York: The Macmillan Company, 60 Fifth Avenue, New York, N. Y., 1940. 93 pp. 14 figs. 14 × 21.5 cm. Price, 6 s. net.

This short book deals primarily with investigations in the low temperature regions which have been made accessible by the adiabatic demagnetization method.

The author deals principally with methods of attacking both the experimental and theoretical side of the problems involved. Advantages and disadvantages of the several experimental procedures used in making magnetic and other measurements are presented in a brief and interesting manner.

No adequate quantum statistical methods of treating the magnetic data at very low temperatures have been devised but some progress has been made and the author's comments on the present status of this subject give a clear picture of such conclusions as may be drawn and some of the difficulties to be overcome.

The thermodynamic methods of treating magnetic data are presented. The equations by means of which thermodynamic temperature may be obtained from magnetic and calorimetric observations are given. The measurement of magnetic moment by the several static and induction methods and the importance of demagnetization corrections are treated.

Magnetic heat capacity, stark splitting, magnetic interaction including ferromagnetism are discussed.

Although the book does not attempt to summarize the experimental results so far obtained, a number of actual cases notably compounds of titanium, chromium, iron and gadolinium are discussed and some data are included.