0.001 *M* cadmium in 0.1 *M* potassium chloride (0.01% gelatin), and oxygen in 0.1 *M* potassium chloride (0.01% gelatin). A hand fabricated capillary (1.63 mg.$^{2/3}$ sec.$^{-1/2}$) and marine barometer tubing (2.05 mg.$^{2/3}$ sec.$^{-1/2}$) were used. The current time curves were approximately one-third order parabolas with a slight discontinuity after about the first 0.3 sec. (drop time 0.4 sec.). The log *i vs.* log *t* plot was approximately a straight line in each case. The average slope was 0.29 and not 0.17 as required by Ilkovič. The ratio of maximum current to average current (determined graphically) had a mean value of 1.29 instead of 1.17. It is of interest to note that Schulman, Battey and Gelatis[4] using a much slower recorder obtain a value of 1.25 for this ratio. Assuming the new current time relationship, the author was now able to accurately calculate the average current for a given applied e. m. f. and large series resistance.

In this preliminary communication, it is not possible to discuss the theoretical aspects of this study.

The author is deeply indebted to B. V. Hamon and the Electrotechnology Division of this Council for assistance. Grateful acknowledgement is due J. J. Lingane, M. C. Taylor and J. K. Taylor.

The above work forms part of the programme of Food Preservation Investigations of the Council.

(4) J. H. Schulman, H. B. Battey and D. B. Gelatis, *Rev. Sci. Instruments*, **18**, 226 (1947).

COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH
SYDNEY, AUSTRALIA
HUGH A. MCKENZIE

RECEIVED AUGUST 21, 1948

PHOTOBROMINATION OF METHYLSILOXANE FILMS ON GLASS SURFACES

Sir:

Methylchlorosilanes[1] are used for the production of hydrophobic films on glass and ceramic surfaces. It is supposed that molecules of the type $Si(CH_3)_2Cl_2$ are hydrolyzed to form a coating consisting of one or several layers of $-Si(CH_3)_2-O-Si(CH_3)_2-$ chains with an exposed surface of $-CH_3$ groups.[2]

We have speculated that it should be possible to bring about photobromination, photochlorination or other reactions of the $-CH_3$ groups on the surface. Following halogenation still different functional groups might be introduced by processes such as the Friedel–Crafts reaction, thus altering the surface properties to meet specific requirements.

Our initial tests have demonstrated that the silicone surface can be photobrominated.

Test samples consisted of Pyrex and soft glass surfaces rubbed with the liquid silicone on a cotton swab. These specimens were exposed to radiobromine[3] vapor at a pressure of about 10 mm. The air pressure in the flask was less than a millimeter; some water vapor was present. The samples were illuminated for one hour by a 1000-watt Mazda bulb placed about two inches from the flask. The surfaces treated with silicone picked up ten to thirty times the amount of bromine required for the monobromination of each methyl group in an estimated monolayer.[3] Very little pickup occurred in the absence of illumination or with glass which was not coated. Rubbing with a dry towel after exposure reduced the bromine on the surface to a difficultly removable residue equivalent to approximately one monobrominated monolayer, but prolonged washing with water or carbon tetrachloride had relatively little effect. Illumination in the presence of chlorine gas for one hour removed a large fraction of the bromine. Dilute sodium hydroxide solution removed 50% of the bromine from some samples in fifteen minutes but showed much slower attack when the equivalent of only one or two monobrominated monolayers was left on the surface.

These results suggest the potentialities of radiohalogens as tools for investigating silicone films and furnish preliminary evidence that it may be possible to alter siloxane surfaces to meet specific requirements by substitution reactions, after the application of the silicone to the surface.[4]

This work was supported in part by the Research Committee of the Graduate School from funds supplied by the Wisconsin Alumni Research Foundation.

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[1] Obtained for this work from the General Electric Co. under the designation Dri-Film 9987.

[2] Francis J. Norton, *Gen. Elec. Rev.*, **47**, no. 8, 6 (1944); Eugene G. Rochow, "Introduction to the Chemistry of the Silicones," John Wiley and Sons, Inc., New York, N. Y., 1946.

(3) Item No. 11 United States Atomic Energy Commission Radioisotopes Catalog No. 2. The specific activity when received was sufficient to give 20,000 counts per minute from one square inch of sample covered by an estimated monomolecular film of 5 × 10^{-9} moles of silicone[2] if each of the $-CH_3$ groups was converted to a $-CH_2Br$ group.

(4) A more complete discussion of these experiments is contained in the senior thesis of G. L. Vandervort filed with the library of the University of Wisconsin in June, 1948.

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF WISCONSIN
MADISON, WISCONSIN
G. L. VANDERVORT
JOHN E. WILLARD

RECEIVED AUGUST 7, 1948

THE CONFIGURATION OF STREPTOSE

Sir:

Crystalline ethyl N-acetyldihydrothiostreptobiosaminide[1] was demercaptalated with aqueous mercuric chloride and the product hydrogenated with Raney nickel catalyst at 95° and 100 atm. for seven hours to yield the crystalline N-acetyltetrahydrostreptobiosamine, m. p. 78–80°, $[\alpha]^{26}D$ $-104°$ (*c* 0.838, water).

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(1) F. A. Kuehl, Jr., E. H. Flynn, N. G. Brink and K. Folkers, THIS JOURNAL, **68**, 2096 (1946).

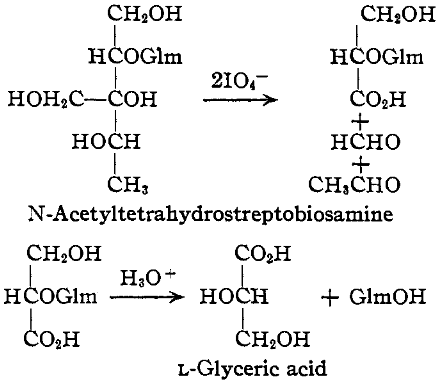
Anal. Calcd. for $C_{15}H_{29}NO_{10}\cdot H_2O$: C, 44.88; H, 7.78; N, 3.49. Found: C, 44.70; H, 7.71; N, 3.33.

N-Acetyltetrahydrostreptobiosamine, on oxidation with two moles of periodate and subsequent acid hydrolysis gave N-methyl-L-glucosamine, one mole of formaldehyde, one mole of acetaldehyde and L-glyceric acid. The acid was separated from the mixture by low-pressure distillation as the methyl ester and was identified as the crystalline calcium salt dihydrate, m. p. 134–135° (dec.), $[\alpha]^{30}\text{D}$ −12° (*c* 2.60, water).

Anal. Calcd. for $(C_3H_5O_4)_2Ca\cdot 2H_2O$: Ca, 14.00. Found: Ca, 13.85. H. O. L. Fischer, *et al.*,[2] report $[\alpha]\text{D}$ +12.9° (*c* 5.19, water) for calcium D-glycerate dihydrate.

Since it has been shown that C2 and C3 of streptose have the same configuration,[3] and that C4 has the L-configuration,[4] then streptose is 3-C-formyl-L-lyxomethylose, a result in confirmation of the findings of Kuehl, Bishop, Flynn and Folkers[5] whose work was based upon application of the hydrazide rule to polarimetric data. This evidence also represents an independent proof for the skeletal structure of streptose and the point of attachment of N-methyl-L-glucosamine thereon, since there is only one structure that would give the products obtained.

The reactions involved may be represented as



GlmOH = N-acetyl-N-methyl-L-glucosamine

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RECEIVED JULY 29, 1948

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[2] E. Baer, J. M. Grosheintz and H. O. L. Fischer, THIS JOURNAL, **61**, 2607 (1939).

[3] N. G. Brink, F. A. Kuehl, Jr., E. H. Flynn and K. Folkers, *ibid.*, **68**, 2405 (1946); **70**, 2085 (1948).

[4] J. Fried, Doris E. Walz and O. Wintersteiner, *ibid.*, **68**, 2746 (1946).

[5] F. A. Kuehl, Jr., Mary Neale Bishop, E. H. Flynn and K. Folkers, *ibid.*, **70**, 2613 (1948).

[6] Bristol Laboratories Research Fellow of The Ohio State University Research Foundation (Project 224).

NEW BOOKS

Fatty Acids, Their Chemistry and Physical Properties. By KLARE S. MARKLEY, Principal Chemist, Oil, Fat and Protein Division, Southern Regional Research Laboratory, U. S. Department of Agriculture, New Orleans, La. Interscience Publishers, Inc., 215 Fourth Ave., New York 3, N. Y., 1947. x + 668 pp. 81 figs. 15.5 × 23.5 cm. Price, $10.00.

Throughout the vigorous development in most branches of organic chemistry, the field of fatty compounds did not attract much interest until the last two decades when the fatty acids and their derivatives have been subjected to an intensive study. Physico-chemical and physical techniques are now employed in this field perhaps more extensively than in many other branches of organic chemistry.

As a result of the ever-increasing development of appropriate tools and methods, a vast quantity of information has been produced by workers approaching the various problems from different angles. The literature, both old and new, is widely scattered and consequently there is an urgent need for a comprehensive, well-organized book which adequately presents these modern developments, and often unrelated data, in integrated form.

Klare S. Markley's book is the first and successful attempt to adequately cover the field. The material is grouped into six main chapters, dealing with the nature and history of fats and waxes, classification and structure of the fatty acids, their physical properties, chemical reactions, synthesis, and the isolation and identification of fatty acids. The following topics, picked at random, may indicate the scope of the book: isomerism, X-ray diffraction, polymorphism, spectral properties, esterification, hydrogenation, oxidation, biological oxidation, nitrogen derivatives, *in vitro* synthesis, biosynthesis. The author, in his endeavor to give a comprehensive picture of the subject matter, broadened the scope so that, in addition to the presentation of the fatty acids, he also discussed derivatives whenever it seemed desirable. It is evident, from his presentation, that physico-chemical and physical means are to an appreciable extent responsible for the new development in the field of fatty acids.

The interest in fatty acids is rapidly broadening and the number of research men working in this field is increasing accordingly. Much of the existing information is being corrected or modified and a large quantity of new information is constantly being produced so that a revised edition of the present book may become necessary in the not too distant future. The subject matter may then have grown to such dimensions that the author may find it expedient to have individual chapters in his book written by specialists in the respective fields.

Markley's monograph will prove useful in the hands of every chemist, physicist, biochemist, medical man and technologist engaged in studies dealing with fatty acids and their derivatives. The author has succeeded in pre-