

potency of approximately 27 $\mu\text{g.}$ per g. of the original liver powder. The chick thus appears to utilize the substance about four times as efficiently as *L. casei*, probably because of partial hydrolysis in the intestinal tract.

The substance is readily adsorbed by charcoal at pH 1 but not at pH 9 and only partially at pH ± 5 . It is slowly extractable by ether from strongly acid solutions and from preliminary tests appears to be precipitated by lead acetate. It is stable at pH 1 for at least forty-eight hours at 37°, but a sample lost 77% of its potency on autoclaving in 0.5 *N* hydrochloric acid for one hour at 15 pounds pressure. It has been found not only in liver, but also in yeast, vitab, cheese and eggs. The amount present varies from a trace to more than half of the original total pantothenic acid activity. Attempts to isolate the substance are in progress.

DEPARTMENT OF BIOCHEMISTRY
COLLEGE OF AGRICULTURE
UNIVERSITY OF WISCONSIN
MADISON, WISCONSIN

A. L. NEAL
F. M. STRONG

RECEIVED JULY 19, 1943

CRYSTALLINE NATURAL α - AND γ -TOCOPHEROLS

Sir:

In a recent paper the purification of natural α -, β -, and γ -tocopherols was described.¹ Further investigation has shown that natural α - and γ -tocopherols thus purified can be crystallized.

(1) Baxter, Robeson, Taylor and Lehman, *THIS JOURNAL*, **65**, 918 (1943).

Synthetic *d,l*- α -tocopherol (Merck) was also converted to a solid but amorphous state. This note describes the method of crystallization and certain properties of the crystalline products.

α -Tocopherol (0.5 g.) in methyl alcohol (20 cc.) was cooled to -35° and scratched occasionally with a glass rod. After eight to ten days the tocopherol crystallized in transparent needles, m. p. 2.5 - 3.5° . The extinction coefficient of the crystals in ethyl alcohol ($E_{1\text{cm.}}^{1\%} = 71$) was slightly but not significantly lower than that of uncrystallized α -tocopherol ($E_{1\text{cm.}}^{1\%} = 73.7$).¹ This provides additional evidence of the purity of the latter.

Crystalline γ -tocopherol, obtained by the same procedure, consisted of clumps of transparent needles which melted at -3 to -2° and had $E_{1\text{cm.}}^{1\%} = 93.2$. Uncrystallized γ -tocopherol had $E_{1\text{cm.}}^{1\%} = 92.8$.¹ Therefore, the extinction coefficient of γ -tocopherol was also unchanged significantly by crystallization.

Synthetic α -tocopherol (Merck) was obtained as a white amorphous solid when cooled to -35° in methyl alcohol solution and seeded with natural α -tocopherol crystals. It melted to a light straw colored oil at about 0° and had $E_{1\text{cm.}}^{1\%} = 70$.

Attempts to crystallize natural β -tocopherol were unsuccessful.

CONTRIBUTION NO. 49 FROM THE LABORATORIES OF
DISTILLATION PRODUCTS, INC.
755 RIDGE ROAD WEST
ROCHESTER, NEW YORK

CHARLES U. ROBESON

RECEIVED JULY 19, 1943

NEW BOOKS

Dictionary of Biochemistry and Related Subjects. Editor-in-Chief, WILLIAM MARIAS MALISOFF, Professor of Biochemistry at the Polytechnic Institute of Brooklyn. Published by Philosophical Library, Inc., 15 East 40th St., New York, N. Y., 1943. 579 pp. 15.5 \times 23.5 cm. Price, \$7.50.

The intention of the Editor-in-Chief in compiling this work is expressed in the preface as follows: "The Dictionary of Biochemistry is a pioneering effort in an entirely new field. There have been no previous dictionaries of this kind. Furthermore, the concept of a "dictionary" has been changing from that of a mere alphabetical glossary to something resembling an encyclopedia. . . . The dictionary contains a great deal of glossary material and also

a great deal of fairly lengthy authoritative discussion. It tries to maintain a balance between obsolescent, established, and newly explored material. It is designed for readers of biochemical literature who might want the definitions of terms used more than a decade ago as well as of terms just coined. There was no intention of replacing textbooks or abstract or review journals, except insofar as certain items are greatly neglected or are not easily available."

One will find in this volume about ten thousand definitions of biochemical terms. In addition, there are short articles on various topics by forty-six collaborators. Among these collaborators, one will find the names of many leading investigators in the medical sciences. Some of the