saponifiable matter was of a non-sterol character. The nature of this fraction has not yet been determined.

Quantitative Composition of the Fat.—The approximate quantitative composition of the simple lipids of *A. sydowi* as calculated from neutral equivalents and iodine numbers is given in Table III. The percentages, except as otherwise indicated, are based on weights actually isolated.

TABLE III

COMPOSITION OF THE SIMPLE LIPIDS OF *A. sydowi*[a]

Fatty acids	80.8	Unsaturated acids	52.9
Volatile acids (calcd.		Oleic	29.6
as butyric)	0.46	Linoleic	16.3
Saturated acids	22.6	Higher acids	1.7
Palmitic	8.8	Unsaponifiable	8.18
Stearic	11.0	Total sterols	5.36[b]
n-Tetracosanic	0.9	Glycerol	4.2

[a] Figures indicate percentage of the original lipids.

[b] Based on the colorimetric sterol determination.

Summary

1. The alcohol–ether extract of *A. sydowi* has been shown to contain a phospholipid which appears to possess rather unusual properties.

2. The following fatty acids were isolated from the simple lipids and identified: oleic, linoleic, palmitic, stearic and *n*-tetracosanic.

3. The water soluble fraction was shown to consist largely of glycerol.

4. Ergosterol was isolated from the unsaponifiable material.

MADISON, WISCONSIN RECEIVED DECEMBER 29, 1933

[CONTRIBUTION FROM THE CHEMICAL LABORATORY OF THE UNIVERSITY OF ILLINOIS]

The Preparation of Anhydrous Ethylenediamine

BY JOHN C. BAILAR, JR.

In the course of an investigation undertaken some time ago, it was necessary to use considerable amounts of anhydrous ethylenediamine. Apparently only two methods of preparing this material have been suggested. A. W. Hofmann, who first reported the great stability of the hydrate,[1] obtained the anhydrous base by repeatedly distilling the material from metallic sodium.[2] This method has been used by subsequent investigators.[3] Kraut, Rhoussopoulos and Meyer[4] discovered that the base can be dehydrated by heating to 100° in a sealed tube for several hours with freshly melted sodium hydroxide. Since neither of these methods is convenient for the preparation of more than very small amounts of material, a new method was developed.

The method depends upon the fact that ethylenediamine reacts with zinc oxalate to give a compound which is stable at room temperatures, but decomposes readily on heating to 200°. This salt crystallizes from water in white needles, which analysis shows to be $[ZnC_2H_4(NH_2)_2]C_2O_4$.

Anal. Calcd.: Zn, 30.62; C, 22.49; H, 3.77; N, 13.14. Found: Zn, 30.44; C, 22.63; H, 3.82; N, 12.81.

Procedure.—Zinc oxalate is mixed with a little more than an equivalent weight of ethylenediamine hydrate and the compound so formed is dissolved in a minimum amount of boiling water (about 1 cc. for each gram of zinc oxalate used). The crystals that form on cooling are filtered off and washed with a little alcohol. More crystals are obtained by concentrating the mother liquor. When the crystalline material is thoroughly dry, it is heated *in vacuo* to 200°. The anhydrous ethylenediamine is liberated, and condenses to a colorless liquid. The zinc oxalate which remains after the distillation usually has a slight yellow color; the contamination is very slight, however, and the zinc oxalate may be used repeatedly.

The ethylenediamine so prepared boils between 116 and 117° and has a density of 0.907 at 17°. Redistillation from sodium will remove any trace of moisture which was not removed in the drying of the zinc oxalate complex salt. The yield is nearly quantitative.

URBANA, ILLINOIS RECEIVED JANUARY 2, 1934

(1) Hofmann, *Jahresber. Fortschritte Chem.*, **11**, 343 (1858).

(2) Hofmann, *Proc. Roy. Soc.* (London), **10**, 229 (1859).

(3) (a) Michaelis and Granz, *Ber.*, **30**, 1009 (1897); (b) Elgort, *J. Russ. Phys. Chem. Soc.*, **61**, 950 (1929).

(4) Kraut, Rhoussopoulos and Meyer, *Ann.*, **212**, 255 (1882).