tion with chlorosulfonic acid the 1,4-benzoquinone-2,5-(2,6?)-dithioglycolic acid forms a thioindigoid dye.

CHICAGO, ILLINOIS

[CONTRIBUTION FROM THE CHEMISTRY LABORATORY OF THE JOHNS HOPKINS UNIVERSITY]

THE EFFECT OF DISSOCIATED WATER VAPOR ON CERTAIN VEGETABLE OILS

BY G. I. LAVIN AND E. EMMET REID

RECEIVED FEBRUARY 15, 1930 PUBLISHED JUNE 6, 1930

Introduction

Bonhoeffer[1] has shown that atomic hydrogen will attack the double bond in a straight-chain compound like oleic acid. Watermann and Bertram[2] found that active hydrogen (dried) caused the oleic acid to undergo a polymerization along with the hydrogenation. Wood[3] has conducted some experiments with cottonseed oil and atomic hydrogen and

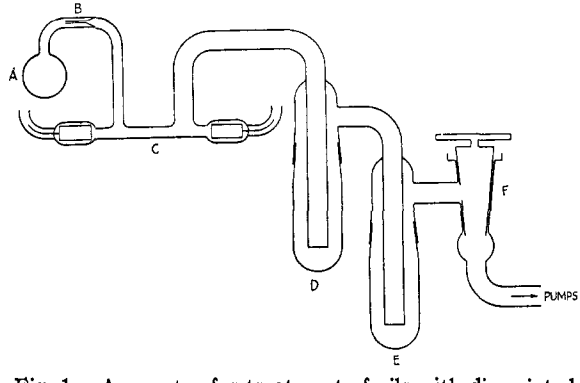

Fig. 1.—Apparatus for treatment of oils with dissociated water vapor.

obtained a white solid. In a recent paper Urey and Lavin[4] have shown that water vapor dissociated in a discharge tube is an energetic reducing agent and it is the purpose of this note to describe some experiments carried out with dissociated water vapor and cottonseed oil.

Apparatus.—The apparatus used is shown in the accompanying diagram. It consists essentially of a source of water vapor A, a capillary B, discharge tube C and traps E and F.

[1] Bonhoeffer, *Z. physik Chem.*, **113**, 199 (1924).

[2] Watermann and Bertram, *Chem. Umschau Fette, Oele, Wachseu. Harze*, **34**, 255 (1927).

[3] Private communication.

[4] Urey and Lavin, THIS JOURNAL, **51**, 3290 (1929).

Experimental

The cottonseed oil was poured into the first trap E, so that it formed a film on the walls; the second trap F was cooled with dry ice and ether to protect the pumps from water vapor. Under the influence of the active gas from the discharge the oil was almost immediately converted into a solid.

The reaction takes place rapidly and appears to go best on the walls; the product forms as a tightly stretched film or skin. A small piece of iron was placed in the bulk of the oil and by the use of an electromagnet it was possible to stir the mass and so renew the oil surface. With this arrangement it was easy to observe the continued formation of the film.

The product is a white solid, fibrous and resilient. It is insoluble in water and in all of the organic solvents tried and can be washed free of unchanged oil by ether. When the solid is shaken with ether it seems to absorb the ether and swells somewhat. The substance does not melt but chars. Under the same conditions olive oil, linseed oil and castor oil yield white, insoluble substances which have similar properties.

Summary

It has been shown that cottonseed oil is attacked by the active gas from a water vapor discharge tube. Fibrous substances are produced which are insoluble in ether and other organic solvents. Olive oil, linseed oil and castor oil yield similar compounds.

BALTIMORE, MARYLAND

[CONTRIBUTION FROM THE CHEMISTRY LABORATORY OF THE UNIVERSITY OF MICHIGAN]

THE ACTION OF THE SYSTEM Mg + $MgBr_2$ UPON TRIPHENYLCARBINOL, TRIPHENYLBROMOMETHANE AND UPON TRIPHENYLMETHYL[1]

BY M. GOMBERG AND W. E. BACHMANN

RECEIVED FEBRUARY 17, 1930 PUBLISHED JUNE 6, 1930

The method used by Conant[2] for the reduction of carbinols directly to free radicals suggested that a similar reduction, but in non-aqueous solvents, might be accomplished by the system Mg + $MgBr_2$.[3] Triphenylmethyl was actually produced in this manner from triphenylcarbinol, but its formation, we found, was brought about by a secondary reaction, and not by direct reduction of the carbinol.

When a solution of triphenylcarbinol in a mixture of ether and benzene

[1] From a paper presented before the Division of Organic Chemistry, American Chemical Society, at the third Organic Symposium, Princeton, New Jersey, December, 1929.

[2] Conant, THIS JOURNAL, **45**, 2466 (1923).

[3] From experiments by Dr. F. J. Van Natta, this Laboratory.