

significance in this field [Whitmore, *THIS JOURNAL*, **54**, 3274 (1932); Whitmore and Rothrock, *ibid.*, **54**, 3431 (1932)].

DEPARTMENT OF CHEMISTRY
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DEHYDRATION OF DIETHYLCARBINOL

Sir:

By dehydrating diethylcarbinol in a flow reactor at 40 lb. pressure and at 365–410° with a phosphoric acid catalyst on silica gel we have obtained a mixture of olefins of b. p. 65–70° which on ozonolysis gives formaldehyde, acetaldehyde, propionaldehyde and butyraldehyde. The first two were identified by the resorcinol-sulfuric acid test and as acetaldehyde-ammonia, respectively. The last two were converted to the 2,4-dinitrophenylhydrazones, which were identified by melting point and mixed melting point determinations. Small amounts of impure 2,4-dinitrophenylhydrazones probably corresponding to methyl ethyl ketone and diethyl ketone were also obtained. These results show that the dehydration of diethylcarbinol gives both the normal and rearranged products. This study is to be continued on a larger scale in an endeavor to determine quantitatively the various modes of dehydration.

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THE REACTION OF ACID IODIDES WITH ETHERS

Sir:

In a recent paper by Meerwein and Maier-Hüser [*J. prakt. Chem.*, **134**, 51 (1932)] on the cleavage of ethers by acid halides and anhydrides in the presence of catalysts, these workers have called attention to the isolated observation of Kishner [*J. Russ. Phys.-Chem. Soc.*, **41**, 651–659 (1909); *Chem. Zentr.*, II, 1132 (1909)] that benzoyl iodide is capable of splitting primary aliphatic ethers at 100° without the presence of a catalyst, giving alkyl iodides and benzoates. This work has not previously received the further study which its suggestive character would indicate.

With the hope that aliphatic acid iodides might prove more reactive, permitting the cleavage of ethers at ordinary temperatures, we have investigated the behavior of acetyl iodide and the chloro substituted acetyl iodides with a number of aliphatic ethers, thio ethers and oxides. This

study has shown that the cleavage reaction between acid iodides and ethers proceeds in all probability through a preliminary formation of an oxonium compound between the ether and the acid iodide.

Secondary ethers have been found to be much more readily cleaved into alkyl iodides and esters than are primary ethers. The substitution of chlorine in the α -position in aliphatic acid iodides has been found to diminish their ability to cleave ethers. The tendency of acetyl iodide, chloroacetyl iodide and dichloroacetyl iodide to split primary ethers was found to be diminished by increasing substitution of chlorine. Trichloroacetyl iodide showed no tendency to cleave either primary or secondary ethers at ordinary temperatures even in the presence of zinc iodide as a catalyst, though evidence of the formation of an oxonium compound was obtained. Similarly, substitution of chlorine in the α -position in aliphatic ethers greatly increased their resistance to cleavage by acid iodides.

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IS THE NUTRILITE FOR "GEBRÜDE MAYER" YEAST OF UNIVERSAL BIOLOGICAL IMPORTANCE?

Sir:

We have obtained a considerable body of evidence that a single unknown hydroxy acid with molecular weight about 200 is the responsible agent for a remarkable growth stimulation of "Gebrüde Mayer" yeast.¹ Furthermore, what appears to be this same acid has been found universally in a great variety of living tissues.

The tissues extracted include (1) rice polish (Spermatophyta), (2) *Aspergillus niger* (Fungi), (3) *Spirogyra* and *Oscillatoria*, mixed (Algae), (4) *Bacillus subtilis* (Schizophyta), (5) Planarian worms (Plathylminthes), (6) Earthworms (Annulata), (7) Oysters (Mollusca), (8) Sea urchin eggs (Echinodermata), (9) Crabs eggs (Arthropoda), (10) Beef liver (Chordata), (11) Milk (Chordata). Not only was a growth stimulating substance present in every extract but on fractional electrolysis in an eight-compartment cell the activity in each case migrated under our experimental conditions to a cell with *PH* value of about 4 and was usually completely removed from cells having a *PH* of 5 or more.

¹ The criticism of Richards [*J. Biol. Chem.*, **96**, 416 (1932)] that our results may have been due to inorganic materials is not valid inasmuch as the article cited [*THIS JOURNAL*, **53**, 4171 (1931)] states that the activity was lost on ignition (p. 4176). Yeast nutrition like mammalian nutrition is undoubtedly affected by traces of elements of less frequent occurrence, but the effect of unknown organic materials is of entirely different order of magnitude and operates over an incomparably larger range.