

Reduction of Murexide.—Leucomurexide has not been described previously, although postulated by Labes and Freisburger [*Arch. expl. Path. Pharmacol.*, 156, 226 (1930)] as well as by Kuhn and Lyman. One gram of pure murexide dissolved in 900 cc. of water at 30° was treated with a filtered solution of one g. of sodium hydrosulfite in a mixture of 20 cc. of water and 10 cc. of ammonia. In a few moments complete decolorization occurred. Salting out with 60 g. of ammonium chloride gave on filtering, washing with 60% methanol and finally with absolute methanol, and drying at 110°, 0.98 g. (98%) of a buff-colored microcrystalline powder which turned pink in the air. It contained the theoretical percentage of nitrogen for ammonium dihydropurpurate. Since its composition is identical with uramil (its molecular formula is simply twice that of uramil), a distinguishing test was sought. This was found in the action of potassium ferricyanide, which immediately converts leucomurexide to murexide, while uramil yields colorless oxidation products. Aeration of a dilute suspension of leucomurexide in water quickly regenerates murexide, 70% (by titration) having been obtained in one experiment after thirty minutes of aeration.

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RHEOPEXY IN BENTONITE

Sir:

Recently during the course of an investigation in the thixotropic properties of the clay mineral bentonite, gels showing pronounced rheoplectic properties were observed. These gels are of particular interest inasmuch as Freundlich and Juliusburger in the original article describing rheopty [*Trans. Faraday Soc.*, 31, 920 (1935)] state that they were unable to find any evidence of rheopty in bentonite.

The discovery of rheopty in bentonite may be attributed to a new technique of fractionation which the authors have developed and described at the thirteenth Colloid Symposium at St. Louis, Mo., in June of 1936. Natural bentonite is dispersed in distilled water and then run through a high speed continuously fed centrifuge of the Sharples type. At various distances up the centrifuge bowl different particle size fractions of bentonite are removed and then

refractionated. The finest fractions are a beautiful perfectly transparent golden-yellow color and completely amiconic while the coarser fractions are more opaque. There is a large percentage of amiconic particles present in the Wyoming Bentonite being used. By such a method of preparation the authors are establishing the influence of particle size upon thixotropy and rheopty in bentonite.

Specifically 10 cc. of a very fine fraction (1.3% bentonite) was placed in a test-tube 1 cm. in diameter and 1 drop of saturated potassium chloride added. The setting time at 23° when the tube was kept perfectly still was twenty-five minutes, whereas slight tapping of the tube on a pad of rubber reduced the setting time to fifteen seconds. Additional potassium chloride makes it so stiff that it cannot be liquefied. Such a gel is perfectly transparent. In addition these fine bentonite fractions show pronounced streaking upon being stirred. This streaking phenomenon is greatly increased after electro dialysis. Altogether the bentonite fractions prepared in this manner act very similarly to the vanadium pentoxide system described by Juliusburger and Pirquet [*Trans. Faraday Soc.*, 32, 445 (1936)].

From a consideration of the properties of a 1.3% bentonite gel in comparison to those gels of 10–20% concentration described by Freundlich, Schmidt and Lindau [*Kolloidchem. Beih.*, 36, 43 (1932)], one is forced to the conclusion that particle size is of paramount influence in this case of thixotropy. In fact we have found evidences of gel structure at concentrations as low as 0.01% by wt. in the low colloidal range. It may be stated, however, that if hydrogen bentonite produced by electro dialysis is ever allowed to dry, it fails to exhibit thixotropy in low concentrations. This property can still be observed providing the material is never allowed to dry.

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RECEIVED JULY 31, 1936

EXCHANGE BETWEEN SODIUM IODIDE AND ETHYL IODIDE*

Sir:

It was reported a few months ago in these columns [Hull, Schifflett and Lind, *THIS JOURNAL*,

* This work was supported in part by the Fluid Research Fund of the Graduate School.

58, 535 (1936)] that while there is no exchange between radioactive iodine and ethyl iodide when heated together for fifteen minutes at 87°, as determined by the subsequent measurement of the activities of the two substances, yet in alcoholic solution at 100° a ready exchange takes place between sodium iodide and ethyl iodide. Further experiments on this latter reaction have shown the existence of a marked temperature effect.

The general procedure in these experiments has been as follows: A solution of 50 micro-moles of iodine in a liter of iodobenzene is irradiated with the neutrons from a Rn-Be source for a period of one and one-half hours or longer. After removal of the neutron source, the iodine is extracted and precipitated as silver iodide, which is then transformed into dry sodium radioiodide. This is dissolved in 1-2 cc. of ethyl alcohol and mixed with 100 micro-moles of inactive ethyl iodide. This mixture is heated to the desired temperature for a stated interval of time and then quickly cooled. (In the one experiment carried out below room temperature both solutions were cooled before being mixed.) The two iodides are separated by shaking the solution with excess ether and water, and are transformed into silver iodide for measurement. The activity of each precipitate is measured by means of a tube counter. The results obtained in a series of experiments at different temperatures are given in tabular form.

Temp., °C.	Time, min.	Exchange
100	5	Complete
100	1	Complete
80	5	Complete
29	5	Partial
29	1	None
24	5	None
19	5	None

The authors are grateful to Dr. K. W. Stenstrom of the University Hospital for the gift of 150 millicuries of radon, and to Dr. J. H. Williams of the Department of Physics for the use of a low resistance amplifier [of the type described by Neher and Harper, *Phys. Rev.*, **49**, 940 (1936)], without which it would not have been possible to carry on this work during the recent hot weather.

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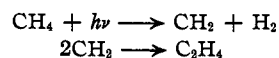
RECEIVED AUGUST 22, 1936

THE PHOTOCHEMICAL DECOMPOSITION OF METHANE

Sir:

Methane at atmospheric pressure is photochemically decomposed when irradiated with the light which is transmitted by a thin fluorite window from a hydrogen discharge tube. The effective radiation would appear to lie near the limit of transmission of fluorite. Although no direct measurements of quantum yield have been made, a crude estimate based on a comparison with the rate of the ozone synthesis in the same cell indicates a value of the order of unity.

Among the products we have identified hydrogen and unsaturated hydrocarbons (probably ethylene) in the approximate molecular ratio of 4:1. Higher saturated hydrocarbons may also be produced but have not been detected. The large ratio of hydrogen to unsaturation in the products indicates that the decomposition



cannot be the only process involved.

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NEW SYNTHESIS OF GLYCOFURANOSIDES

Sir:

In the last decade considerable progress in sugar chemistry had been made from the study of the glycopyranosides. Further developments can likely be expected from a greater than our present knowledge of the glycofuranosides, or, as E. Fischer originally named them, γ -glycosides. The physical, chemical and biological properties, the conversion into the pyranosides under certain conditions, and the chemical structure in general, of these γ -glycosides should be thoroughly investigated. To be sure, such studies have already been made in the past, in a few isolated instances. However, a review of the literature reveals that only five or six γ -glycosides are known in pure crystalline form obtained mostly in small yields by cumbersome methods. The majority of the γ -glycosides described in the literature were prepared by the original method of E. Fischer [*Ber.*, **28**, 1145 (1895); **47**, 1980 (1914)] yielding only sirupy mixtures that could not be separated. Obviously, a general method which leads to well-defined, crystalline products,