Pure Ethyl Alcohol for Absorption Spectrophotometry

ETHYL alcohol which has been dehydrated by an azeotropic process is liable to contain traces of absorbent impurities, for example, benzene[1], which make it more difficult to purify for absorption spectrophotometry. Alcohol known to have been produced by one of the above methods was subjected to the following processes:

(1) To each litre of alcohol 20 c.c. of water and 4 c.c. of sulphuric acid were added and the mixture refluxed for 2–3 hours, after which it was distilled, rejecting the first and last 10 per cent.

(2) 1·5 gm. of silver nitrate was dissolved in the minimum quantity of water and added to the alcohol in a tall vessel. To this was then added drop by drop and without shaking a solution of 3 gm. potassium hydroxide in 10–15 c.c. alcohol. This allows the silver oxide to precipitate in a finely divided form, and the vessel is left until all the precipitate has settled. The silver oxide is either filtered off or the liquid decanted and distilled, rejecting the first and last fractions as before[2].

(3) To remove the water, the alcohol was refluxed with calcium oxide in an atmosphere of nitrogen, the oxide itself having been prepared in an atmosphere of nitrogen.

(4) The purification was completed by distilling the product from (3) in an atmosphere of nitrogen.

Of the various methods which have been suggested for the purification of ethyl alcohol, the above sequence was found to be the most satisfactory, each step extending the transmission farther into the ultra-violet, the absorption curve for the final product being almost identical with that found by Harris[3] and superior to that found by Leighton, Crary, and Schipp[4] and Bielecki and Henri[5]. A final distillation from aluminium amalgam did not increase the transmission in the ultra-violet.

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[1] Fritzweiler and Dietrich, *Z. Spiritusind*, **53**, 27 (1930).
[2] Dunlop, *J. Amer. Chem. Soc.*, **28**, 395 (1906).
[3] Harris, *J. Amer. Chem. Soc.*, **55**, 1940 (1933).
[4] Leighton, Crary and Schipp, *J. Amer. Chem. Soc.*, **53**, 3017 (1931).
[5] Bielecki and Henri, *Ber.*, **45**, 2819 (1912).

Points from Foregoing Letters

N. Bohr, R. Peierls and G. Placzek discuss the typical difference between nuclear reactions in the regions of discrete and continuous level distributions of the compound nucleus. The argument developed is used to clear up an apparent difficulty as regards the order of magnitude of the cross-sections of heavy nuclei for the photo-effect with ejection of neutrons.

La. Goldstein, A. Rogozinski and R. J. Walen have studied the diffusion of fast neutrons by uranium nuclei and the possibility of showing the emission of neutrons when this nucleus explodes. The sum of the cross-sections for elastic and inelastic scattering and for fission found implies that a chain reaction of fission, if such chain is possible, may be observed in a smaller mass than was hitherto thought necessary.

D. F. Gibbs and G. P. Thomson describe experiments with an intermittent source which show that the majority of the neutrons produced in the fission of uranium appear with a delay of less than 10^{-3} sec.

J. B. R. Rajam, P. C. Capron and M. de Hemptinne describe a method of determining the beta upper energy limits of radio-elements. The ordinary absorption data are used to construct the Fermi and Konopinski-Uhlenbeck curves, from which the upper limit is deduced by extrapolation. Results are given for radio-rhodium and radio-silver.

J. Aharoni suggests a new method for determining e/m for electrons of about a million volts energy. It is particularly applicable to electrons and positrons forming the continuous spectrum from radioactive bodies.

The exchange of phosphatide molecules between plasma and organs is compared by L. Hahn and G. Hevesy with the turnover of phosphatides in the latter.

C. R. Harington and R. V. Pitt Rivers report experiments confirming the recent observation of Ludwig and Mutzenbecher that treatment of casein with iodine under carefully controlled conditions yields a product which has physiological activity similar to that of thyroglobulin and from which thyroxine can be isolated. The mechanism of the formation of thyroxine under these conditions is discussed.

Some six periods of flaking have been recognized by J. Reid Moir upon the artefacts from the basal layer of the Cromer Forest Bed. One of the assemblages of specimens referred to is composed of the well-known yellow implements and flakes found upon the foreshore site at Cromer. The conditions existing at this site make it improbable that these specimens have been flaked by wave action.

R. D. Purchon states that in three families of Lamellibranchia the ctenidia are reduced to one demibranch on each side. This has always been assumed to be the inner one. By determining the position of the afferent and efferent veins, the former always running through the axis, it has been shown that in the Lucinidæ and Teredinidæ the inner demibranch has been lost; only in the Montacutidæ has the outer one been lost.

A. Lamont records an unexpected reduction in the number of cranidial muscle-scars in '*Illœnus*' *proles* var. *shelvensis*, and points to the possible use of these features in the systematic subdivision of a difficult family.

An interesting phenomenon of one insect ovipositing in the body of another of its own species was observed in *Nemeritis canescens* (Grav.), by E. S. Narayanan. In Ephestia larvæ superparasitism by Nemeritis is a common occurrence, but all except one die in the first instar. In the abdomen of an adult parasite two larvæ were found, one in the third instar and the other in the second instar.