

Organic Analysis.

Determination of Carbon Dioxide in Fermenting Mixtures. A. L. Raymond and H. M. Winegarden. (*J. Biol. Chem.*, 1927, **74**, 189–202.)—In connection with a research on enzymic behaviour it was necessary to develop a simple and expeditious method for the determination of the carbon dioxide formed during fermentations. Cain and Maxwell (*J. Ind. Eng. Chem.*, 1919, **11**, 852) for the determination of carbon in steel absorbed the carbon dioxide, formed by combustion, in known volumes of barium hydroxide solution and followed the precipitation of barium carbonate by measurements of the electrical conductivity of the solution. Spoehr and McGee (*Ind. Eng. Chem.*, 1924, **16**, 128) applied this to the determination of carbon dioxide in their studies on plant respiration, and now this general method has been made applicable to studies on fermentation. Full experimental details are given. The carbon dioxide from the fermentation mixtures is liberated by shaking, carried by means of a stream of air (free from carbon dioxide) to the absorption vessels, which contain barium hydroxide, and then the change in resistance of the barium hydroxide solutions is measured. The method is applicable to either aerobic or anaerobic investigations, and its advantages and limitations are pointed out. For biological studies there is difficulty in securing sterility. The specific resistances of barium hydroxide solutions from 0.065 to 0.12 *N* have been determined at 25°, 30° and 37° C., since those found in the literature are almost exclusively at 25° C. and do not agree well. The rate of the evolution of carbon dioxide from aqueous solutions under various conditions has also been examined.

P. H. P.

Conductivity Method for the Determination of Carbon Dioxide. L. E. Bayliss. (*Biochem. J.*, 1927, **21**, 662–664.)—A method is described for the determination of the amount of carbonate in a sodium hydroxide and sodium carbonate mixture, by measurement of the conductivity of the solution, since the migration velocity of the $\text{CO}_3^{''}$ ion is considerably smaller than that of the OH' ion, so that the conductivity of a solution of sodium hydroxide falls as it absorbs carbon dioxide. This method is chiefly valuable for the determination of the amount of carbon dioxide absorbed by a caustic soda solution, and it is believed to be the best and quickest method for the rapid absorption and relative measurement of large quantities of this gas. A calibration curve, which can easily be obtained and plotted, is given, showing the conductivities of mixtures, in varying proportions, of solutions of caustic soda and sodium carbonate of equivalent concentration. It is nearly a straight line for carbonate proportions above 0.3. An empirical equation which was derived experimentally is given for calculations. The standard conductivity apparatus is suitable for these measurements, except that, as the equivalent conductivities of the solutions to be used are relatively high, a conductivity cell must be employed which has small electrodes set well apart, so that the actual value of the resistance measured is not less than 10 ohms; trouble may be experienced otherwise, from heating of the solution during measurement, and from the fact that the resistance of the leads to the cell may not be negligible.

P. H. P.

Grape Seed Oil. L. Margailan. (*Compt. rend.*, 1927, **185**, 306–307.)—Grape-seed oil, when freshly and carefully prepared, is insoluble in alcohol, and may have an acetyl value as low as 4. On the other hand, carelessly prepared oils, or oils which have been exposed, may undergo oxidation or enzymic hydrolysis action, and have acetyl values as high as 25. The acid value, however, remains low. The acetyl value is also increased by “blowing” at 125° C., though to a less extent than for rape oil. Oxidation by blowing is more complex than spontaneous oxidation. The fresh oil bears no resemblance to castor oil. J. G.

Unsaturated, Aliphatic Alcohols of Sperm Oil. E. Andre and M. T. François. (*Compt. rend.*, 1927, **185**, 279–281.)—The unsaturated, aliphatic alcohols of sperm oil consist of a mixture of at least two alcohols, in which oleic alcohol predominates. The other alcohol may be separated in the end-fraction during the distillation of the corresponding mixture of esters under a pressure of 3 mm. The bromine derivative ($C_{22}H_{42}OBr_4$) indicates a doubly ethylenic alcohol. A number of derivatives of oleic alcohol have been prepared, and their properties are described. Among these the β -naphthyl-urethane and allophanatè of oleic alcohol (m.pts. 44° to 45° and 129° C., respectively), and the phenylurethane and β -naphthylurethane of its isomer, elaïdic alcohol (m. pts., 55° to 56° and 71° C., respectively) are new. The derivatives of oleic alcohol are difficult to obtain pure on account of the isomeric changes it undergoes during the process. Elaïdic alcohol, however, is stabler (*cf.* ANALYST, 1921, **46**, 197, and 1926, **51**, 644). J. G.

Determination of Allantoic Acid as Xanthylurea. R. Fosse and V. Bossuyt. (*Compt. rend.*, 1927, **185**, 308–310.)—A solution of pure potassium allantoate may be hydrolysed to urea in the presence of sulphuric or hydrochloric acids (0.02 N to 0.1 N) at 60° C. for 30 minutes. The liquid is then made slightly alkaline with potassium hydroxide, and twice its volume of acetic acid and one-tenth to one-twentieth of the total volume of methyl xanthidrol added. After at least 2 hours the xanthylurea is collected and weighed. The weight, divided by 7, gives the urea produced, and this quantity, multiplied by 1.466, gives the allantoic acid. The error is about –1 per cent. for solutions of about 1 grm. of potassium allantoate in a litre. Allantoic acid was determined in an aqueous extract of the leaves of *Acer pseudoplatanus* by the hydrolysis of 10 c.c. of the extract with 1 c.c. of N hydrochloric acid at 60° C. for 30 minutes. The liquid was clarified with basic lead acetate, centrifuged, and the excess of lead removed with hydrogen sulphide. The above method then gave 2.70 grms. of allantoic acid per 1 kilo of dry leaves. J. G.