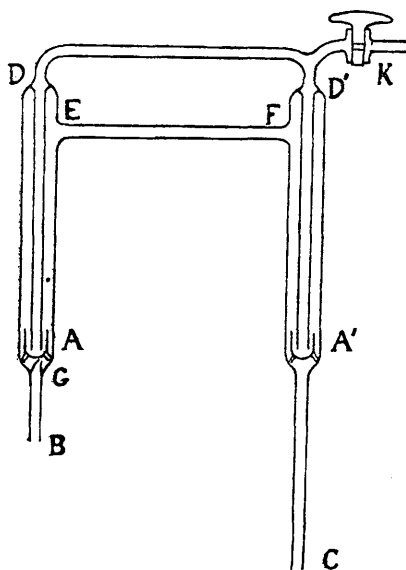


BACTERIOLOGICAL, PHYSIOLOGICAL, ETC.

Chemical Composition of *Oscillaria Prolifica*. B. B. Turner. (*J. Amer. Chem. Soc.*, 1916, **38**, 1402-1417.)—The air-dried substance of this alga contains

46.25 per cent. of proteins, 9.70 per cent. of moisture, 6.40 per cent. of ash, and 2.20 per cent. of substances soluble in ether. The remaining 35.5 per cent. consists mainly of carbohydrates. A small quantity of a crystalline magnesium salt of an organic acid (possibly caproic) was obtained from the alga; saponin is not present in appreciable amount, but a glucoside or polysaccharide having physical properties similar to saponin exists in the plant. The bad smell and taste of the decaying alga appears to be due largely to higher acids of the fatty series. Indole and skatole are present in traces, as is also an aromatic compound which is soluble in petroleum spirit. The alga contains chlorophyll and a blue substance soluble in water and glycerol, the solutions having an intense red fluorescence. The chief carbohydrate in the plant is a pectin-like substance;

this is hydrolysed very slowly by boiling with 5 per cent. sulphuric acid, the products being a non-reducing substance with a high positive rotation and a reducing sugar with a smaller rotatory power. A new form of extraction apparatus, suitable for continuous extraction of large quantities of material with volatile solvents, is



described. It consists of a double siphon, so constructed that an intermittent flow is obtained, as in a Soxhlet apparatus, allowing of the periodic filling and emptying automatically of an ordinary flask between two fixed levels without a tubulure or aperture in the side of the flask. This apparatus is shown in the illustration. The outer tubes must not be too wide, nor the inner tubes too narrow, as a large volume of air in the outer siphon delays the filling of the outer limb, $A' C$, whilst if the inner tubes are not wide enough to allow a fairly rapid flow of liquid from one cup to another, A' and A , the outer limb may not fill at all, and the liquid will trickle over, so that the level of the liquid in the flask cannot be drawn below that of the cups, A' and A . The tap, K , is introduced for convenience in filling. The sealed glass joints at D and D' may be replaced by corks, and the tube, $E F$, made in two parts and connected by a rubber joint. A micro-Kjeldahl apparatus is described for the determination of nitrogen in very small quantities (10 mgrms.) of substance.

W. P. S.

Volatile Oil of *Euthamia Caroliniana* (L.) Greene. G. A. Russell. (*J. Amer. Chem. Soc.*, 1916, **38**, 1398-1402.)—The plant *Euthamia Caroliniana* Greene grows abundantly in moist, sandy old fields near the coast in the Eastern United States, especially in Florida; it is rarely found on new land or in woods. The small yellow blossoms of the plant yield 0.69 per cent. of volatile oil, which has a yellow colour and a characteristic aromatic odour. The oil has a specific gravity of 0.8587, a refractive index of 1.4804, and a specific rotation of -10.80° at 23°C . It consists essentially of dipentene with a trace of pinene and possibly a small amount of limonene. Free acids are absent, but a small quantity of combined acids, probably formic and acetic acids, are present. Esters are present to the extent of 2.10 per cent., calculated as $\text{CH}_3\text{COOC}_{10}\text{H}_{17}$; the alcohols amount to 7.01 per cent., of which 5.35 per cent. are free, and 1.66 per cent. combined. Aldehydic substances are also present. In addition, the oil contains about 10 per cent. of a compound or compounds having lævo-rotatory properties and a comparatively high specific gravity.

W. P. S.

Optimal Reaction for Pepsin. S. Okada. (*Biochem. J.*, 1916, **10**, 126-129.)—The solution employed had always the same salt concentration—about 0.16 N. Experimental evidence is adduced for the conclusion that the optimal point for the action of pepsin is about $[\text{H}^+] = 4 \times 10^{-2}$. Between $[\text{H}^+] = 5.8 \times 10^{-2}$ and 1.7×10^{-2} there is no considerable difference in the rate of hydrolysis.

H. F. E. H.

Optimal Conditions for the Proteoclastic Action of Taka-Diastase. S. Okada. (*Biochem. J.*, 1916, **10**, 130-136.)—Taka-diastase, although usually employed by reason of its amyloclastic activity, has been shown by Wolgemuth (*Biochem. Zeitsch.*, 1916, **39**, 324) to contain, weight for weight, 100 times as much proteoclastic enzyme as human or animal pancreatic juice, so that its value from the clinical point of view is probably greater in this respect than for its starch-splitting capacity. Using as substrate Witte peptone, the author gives experimental

evidence for his conclusion that the optimal reaction is at $[H^+] = 8.5 \times 10^{-6}$ —that is to say a medium of slightly acid reaction is better than one of neutral or slightly alkaline nature. It was also found that the proteoclastic activity is considerably resistant to acid, and regains its activity after neutralisation if the acidity does not exceed that usually met with in the stomach of men and animals. H. F. E. H.

Seed Kernels of *Pseudo-phaenix Vinifera* Beccari. A. L. van Scherpenberg. (*Chem. Weekblad.*, 1916, **13**, 862-871.)—The kernels of the fruit of the Haitian palm, *Pseudo-phaenix vinifera*, are known as "Grains Cartiers." Extracted with ether, they yielded a greyish-brown fat, melting at 23° C., and having an unpleasant odour. They had the following composition: Fat, 13.85; water, 11.65; proteins, 5.26; ash, 6.15; soluble carbohydrates, 19.98; crude cellulose, 9.95; and undetermined substances, 33.16, per cent. The dried material contained 0.63 per cent. of an acid saponin, and 1.32 per cent. of neutral saponin. C. A. M.

New Salt of Uric Acid and its Application to the Analysis of Uric Acid and Phenol. J. L. Morris. (*J. Biol. Chem.*, 1916, **25**, 205-210; through *J. Soc. Chem. Ind.*, 1916, **35**, 866.)—Attempts to obtain a compound of zinc and uric acid in a pure state were unsuccessful, but there is strong evidence that zinc urate is formed when uric acid and a zinc salt are brought together under certain conditions. Uric acid may be precipitated completely from its solution by means of zinc as follows: The uric acid solution is acidified with acetic acid, an excess of 10 per cent. zinc acetate solution is added, and the mixture is then rendered alkaline to litmus by the addition of saturated sodium carbonate solution. If it is desired to determine the amount of uric acid present, the precipitate formed is collected on a filter, dissolved in acetic acid, the solution treated with a small amount of bismuth carbonate, boiled, and saturated with hydrogen sulphide. The mixed bismuth and zinc sulphides are separated by filtration, the filtrate is boiled to expel hydrogen sulphide, then concentrated to about 10 c.c., and the uric acid estimated colorimetrically by means of phosphotungstic acid. The method is useful for the removal of uric acid from urine previous to the determination of phenol. Four c.c. of the urine are treated with 1 c.c. of 10 per cent. zinc acetate solution and a quantity of acetic acid sufficient to dissolve the zinc phosphate formed; the mixture is then rendered just alkaline with saturated sodium carbonate solution, filtered, and the precipitate washed with about 10 c.c. of dilute sodium carbonate solution. The filtrate is boiled with the addition of about 0.5 gm. of calcium carbonate and 1 c.c. of 10 per cent. sodium oxalate solution, filtered, the filtrate acidified with oxalic acid, and the phenol determined colorimetrically.