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I—APPARATUS, PLANT EQUIPMENT AND UNIT OPERATIONS

W. L. BADGER

34:61374
Microporous ebonite as a filtration medium. Evilova. *Byull. Obmen Opyt. Lakokrasochnoi Prom.* 1939, No. 6-7, 28.—Pure distd. water stops filtering through microporous ebonite. This is not due to swelling of ebonite but to electrically charging of water by the ebonite. D. A.

Electrostatic dust sampler as used in sampling lead fumes. Edgar C. Barnes. *Penna. Dept. Labor and Ind., Safe Practice Bull.* No. 57, 8 pp. (1939).—A portable electrostatic dust sampler is described. The pptn. unit consists of cylindrical Al electrodes. The power supply consists of an ignition coil, high-voltage rectifier tube, and condenser furnishing about 10,000 v. An efficiency of 99% is claimed. Earl H. Brown

Investigations with the super [electron] microscope. H. Kalden. *Chem.-Ztg.* 64, 129-33 (1940).—The construction of the electron microscope is described and illustrated and the technique of prep. and observing specimens is presented. Photographs are reproduced of colloidal Au, various bacteria, tobacco mosaic virus, potato X virus and PbO smoke; also of asbestos and Thomas meal with respect to their role in producing silicosis. T. H. Dunkelberger

A gas-detection apparatus for qualitative microchemistry. C. L. Wilson. *Analyst* 65, 407-8 (1940).—The reaction vessel is a micro test tube connected to the testing chamber by a suitable glass arm. Cotton wool or glass wool is placed in this arm to retain spray before the evolved gas enters the testing chamber which is a piece of straight glass tubing. Inside this is a series of glass rings which just slide into the tubing and serve for holding the various test papers. The procedure is illustrated by the detn. of AsH₃ in the presence of H₂S. The latter is removed first by passing the gas through the requisite no. of papers impregnated with Pb(OAc)₂, as detd. by expt. A subsequent disk is impregnated with AgNO₃ + HNO₃ to serve for detecting AsH₃ after the H₂S has been removed. W. T. H.

The photoelectric automatic analyzer. V. A. Mikhailov. *Avtomatika i Telemekhanika* 1937, No. 3, 7-40; *Khim. Referat. Zhur.* 1938, No. 6, 116.—The app. described can be applied to automatic measurement of turbidity, color or residual Cl in water, to the automatic control of N oxides that absorb light in the visible region, to the automatic control of H-ion concn. (by use of colored indicators), and to the detn. of transparency in gaseous and liquid media. The app. possesses a stable photometric accuracy of measurement of $\pm 1-2\%$, which is not affected by the aging of the photoelements or by variations of c. d. The measurements are entirely automatic. W. R. Henn

Apparatus for rapid determinations of arsenic in the presence of antimony. Valerije Biskupski. *Bull. soc. chim. roy. Yougoslav.* 10, 75-9 (in German, 79-80) (1939).—A distn. app. is described permitting quant. sepn. of AsCl₃ from SbCl₃ in the Fischer method (*Z. anal. chem.* 21, (1882)) of detn. of As and Sb by distg. between 70 and 100°. HCl is circulated through the app. at a const. rate to facilitate the distn., promote formation of As⁺⁺⁺ and absorption of the gases. J. G. Tolpin

L. I. Demkina's tricolor colorimeter in ultramarine color determinations. S. G. Evsiovich. *Byull. Obmen Opyt. Lakokrasochnoi Prom.* 1939, No. 6-7, 22.—Demkina's tricolor colorimeter (cf. C. A. 32, 1061⁴; Russ. pats. 20,381 and 20,094, C. A. 26, 5456) can be success-

fully applied in factory control of the quality of ultramarine. Six curves are given. David Aelony

An investigation of the comparative solubilities of typical acid-resisting materials in acids of various concentrations. L. N. Muravlev. *Trudy Inst. Ogneporov* 1937, No. 18, 82-96; *Khim. Referat. Zhur.* 1938, No. 6, 117-18.—Beshtauinite (SiO₂ 71%, Al₂O₃ 18% and Fe₂O₃ 2%), acid-resistant bricks (SiO₂ 59%, Al₂O₃ 28% and Fe₂O₃ approx. 8%) and acid-resistant thin ceramic material (SiO₂ 58%, Al₂O₃ 33% and Fe₂O₃ 2%) were examd. The samples were powdered, and 10-g. lots were treated for 10 days with 100 cc. of H₂SO₄ (d. 1.84), HCl (d. 1.19), HNO₃ (d. 1.40), 60% AcOH and 5 N, N and 0.1 N solns. of these acids and in solns. of tartaric acid of the same concns. The insol. residues were filtered off, washed, dried and heated to const. wt. The treatment of each sample was repeated 4 times, and the soly. detd. from the total loss of wt. A preliminary roasting lowered considerably the soly. of the substances in acids. The soly. of the acid-resistant brick was 2 to 7.9% in the various acids, that of beshtauinite 1.7-6.16%, that of the thin ceramic material 0.94-2.80%. In general the acid resistance increased with the increase of the Al₂O₃ content and with the decrease of the contents of Fe₂O₃, CaO and MgO. W. R. Henn

A new design of combustion-boat tongs. H. F. Priest. *Ind. Eng. Chem., Anal. Ed.* 12, 473 (1940). G. G.

Power, capacity and efficiency of pumps. W. F. Schaphorst. *News Ed. (Am. Chem. Soc.)* 18, 658 (1940).—A nomographic chart is given by which the relationships of horsepower, gal./min., head-feet, and pump efficiency (in percentage) are detd. easily. W. C. Ebaugh

A new regeneration process for absorption cooling plants. I. Badykes. *Kholodil'naya Prom.* 16, No. 1, 13-16 (1938); *Chem. Zentr.* 1938, II, 3844.—An arrangement is described in which regeneration takes place in the generator. The lower part of the app. is in the form of a bundle of tubes. The NH₃-rich soln. flows in a thin layer over these tubes; the vapor arising passes to a heat exchanger. The economic advantages of the arrangement are discussed. M. G. Moore

Graphical determination of heat-transfer coefficients for tube bundles. Josef Böhm. *Wärme* 62, 425-31 (1939); *Science Abstracts B*, 42, No. 501, 449; cf. C. A. 34, 4⁸.—After a short description of the use of the principle of similitude for the detn. of heat-transfer coeffs., equations are derived for tube bundles subjected to either transverse or parallel fluid flow. The heat-transfer coeffs. are represented in terms of the customary dimensionless groups of variables Nu, Pe and Re, and nomograms are reproduced which enable solns. to be read off for various particular cases. Their use is illustrated by means of examples. C. L. B.

New thermoelectric pyrometers. B. Kinkulkin. *Stal* 8, No. 6, 15-19 (1938); *Chem. Zentr.* 1938, II, 3954.—The most satisfactory combinations were found to be C¹-W and C²-Mo. The C¹ and C² designate C electrodes prep'd. in a particular manner. Al₂O₃ proved to be best for insulating the thermoelements. Temps. up to 1660° can be measured and 5-6 measurements can be made before the elements must be discarded. Pt thermoelements can be replaced by the combination Mo-stellite for measurements up to 1200°. M. G. Moore

Temperature measurement with blocking-layer photo-