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CHEMICAL ABSTRACTS

Vol. 42 SEPTEMBER 10, 1948 No. 17

I—APPARATUS, PLANT EQUIPMENT, AND UNIT OPERATIONS

W. L. BADGER

A report of laboratory technique.—Apparatus for drawing liquids from containers by means of pressure. Giuseppe Pruner. *Rend. ist. super. sanità* 11, 201–7(1948).—The following are described: (*a*) a method for transferring liquids to and from bottles through glass tubes with the aid of pressure; (*b*) the cleaning and rinsing of pipets; (*c*) a method of folding filter paper so that it will fit funnels with an angle different from 60°; (*d*) a funnel-holder that can be rested on the edge of the filtration beaker. George Gorin

The liquid hydrogen plant at the Clarendon Laboratory, Oxford. G. O. Jones, A. H. Larsen, and F. E. Simon. *Research* (London) 1, 420–32(1948).—Description is given of a plant to produce runs of 50–100 l. of liquid H_2. The Linde cycle was used by incorporating several novel features. One of these was a charcoal adsorption vessel which not only purified the H but also catalyzed the exothermic ortho-para H_2 conversion so that the resulting liquid had improved keeping qualities. Another was the use of a submerged expansion valve, so that the issuing H_2 was completely liquid, the heat transfer being by boiling of the liquid from the exterior metal surface of the valve and its supply tube, resulting in higher actual efficiencies due to lower entrainment of liquid in the low-pressure H_2 line. The liquefier proper was in 3 stages. Stage A was a condensation cleaning stage cooled by liquid air at 3–4 cm. Hg pressure. The high-pressure H_2 passed to stage B through a heat exchanger and through charcoal at the temp. of liquid air at $^2/_3$ atm. pressure. The H was kept cold and passed to stage C which was a regenerative Linde-Hampson liquefier cooled by liquid air at 3–4 cm. Hg pressure. The H was throttled from 170 atm. to 1.5 atm. The liquid-air levels were maintained automatically; the liquefier room was sound-proofed; emergency controls were provided; these gave the operator confidence. Consumption of liquid air was 1.7 l./l. H_2 produced, higher than conventional app., owing to the ortho-para H_2 conversion and to the simplicity of operation which resulted in complexity of app. B. L. Harris

Antireflux distillation head with siphon tube. Nicolò Gandolfo. *Rend. ist. super. sanità* 11, 199–200(1948).—A device is described for the purpose of collecting distillate without danger of its being sucked back into the distn. app. George Gorin

Control of continuous fractionation columns. C. W. Hills, Jr. (Shawinigan Chemicals Ltd., Shawinigan Falls, Can.). *Can. Chem. Process Inds.* 32, No. 6, 536–40(1948).—A system to control the changes in feed which alter the equil. compn. of the material in process and its operation are outlined. W. H. Boynton

A shaking device for multiple containers. Sam Lavin, Leo E. Farr, and J. Howard Mueller (Harvard Med. School, Boston). *Proc. Soc. Exptl. Biol. Med.* 68, 99–100 (1948).—A motor-driven app. for shaking 12 separatory funnels is described and illustrated. L. E. Gilson

Microapparatus for reactions in the vapor or gaseous phase. J. Erdos. *Mikrochemie ver. Mikrochim. Acta* 33, 361–4(1948)(in German).—Six drawings are shown of a suitable app. W. T. Hall

Micro hot-air and hot-gas evaporator. J. Erdos. *Mikrochemie ver. Mikrochim. Acta* 33, 385–8(1948)(in German).—A simple app. is shown in which air or other gas is passed through tubing heated to a desired temp., and then blown gently upon the surface of the soln. to be evapd. W. T. Hall

A semi-microanalysis apparatus for carbon and hydrogen. Keiichi Shishido and Akira Ouchi. *J. Soc. Chem. Ind. Japan* 47, 899(1944).—A simple combustion app. capable of detg. H and C to within 0.3% in a 20-mg. sample is described. The combustion tube is electrically heated. J. Kawai

A new cryostat of the gas-flow type and a quartz-fiber microbalance adopted for magne-crystalline measurements. Akshayananda Bose (Indian Assoc. Cultivation Sci., Calcutta). *Indian J. Phys.* 21, 275–84(1947).—An automatically controlled cryostat of the gas-flow type for use between 80 and 300°K. was described. The app. is suitable for making magnetic measurements on single crystals. The temp. can be controlled to within 0.01°C. Techniques for the measurement of anisotropies and principal susceptibilities at low temps. were described. A quartz fiber torsion microbalance was devised specially for the latter measurement. E. G. Meyer

A method of particle size determination of soils, cement, etc., by means of a chainomatic specific gravity balance. Eugene V. Barrett (Public Works Lab., Caracas, Venezuela). *Am. Soc. Testing Materials, Proc.* 46, 1355–72, discussion, 1373–6(1946).—A chainomatic sp. gr. balance with a plummet suspended by a stainless steel wire is used to det. the surface area and particle-size distribution of fine-grained materials. The plummet is a highly polished glass sphere approx. 1.50 cm. in diam., having a vol. of 2 cc. A 7-g. sample of washed and dried soil is dispersed with sodium silicate in distd. water in a 250-ml. graduate. A no. of graduates are mounted in a water-bath tank which can be raised beneath the balance to immerse the plummet. Hydraulic operation was found to be preferable to elec. for raising and lowering the tank. Portland cement is dispersed with oleic acid in kerosene as in the Wagner method. A group of 14 soil samples can be tested in less than 8 min. per sample. Reproducibility of test results is better than with any other method except the pipet method. Accuracy is better than that obtained with the hydrometer. It has not been checked against the Lea-Nurse (*C.A.* 34, 2674[1]) or Blaine (*C.A.* 35, 2392[2]) methods. Complete details for constructing the app. are given. J. L. Gilliland, Jr.

Improved balancing of the series 3 Coleman pH meter. E. D. Coleman. *Chemist-Analyst* 37, 48(1948).—The suggestion made by Wicks and Ellis (*C.A.* 42, 4402h) is technically unsound. W. T. Hall

Ammonia absorption machine. M. Rubenmann. *Trans. Inst. Chem. Engrs. (London) North Western Branch, Advance Copy*, Nov. 11, 1947, 2–10.—The principles of absorption refrigeration are discussed. The paper indicates the method for calcg. the efficiency of the machine, as well as methods of calcn. involving the *H–x* diagram (where *H* = enthalpy, *x* = NH_3 content) and methods of detg. pressures, temps., compns., heating loads, and the application of Whitby's diagram in the design of the absorption machine. Calcns. based on the ammonia-absorption machine are given, but it is indicated that compns. other than ammonia and water ought to be investigated theoretically. The generator and rectifier of an ammonia-absorption machine. *Ibid.* 11–17.—The effect of temp. gradation over the packed generator is analyzed, and a sample calcn. is made of a particular case. The transfer of heat and matter in an

E. B. Hughes, *et al. Ibid.* 556–601. Fine chemicals and medicinal substances. N. R. Campbell. *Ibid.* 602–14. Essential oils, isolates, and derivatives. G. R. A. Short. *Ibid.* 615–21. Photographic materials and processes. D. J. T. Howe (Elliott & Sons Ltd., Herts, Eng.). *Ibid.* 622–43. Sanitation and water purification. John Hurley. *Ibid.* 644–60.—*Reviews with many references.* *Cf. C.A.* 40, 1613[3]. G. G.

Chemistry industry and the National Security Resources Board. W. T. Hack. *Chem. Eng. News* 26, 2884–5(1948). E. J. C.

Heavy chemical industries. D. Venkateswarlu. *Indian Textile J.* 58, 919–28(1948).—A review and comparison is made of some aspects of the chem. industry in India and abroad. W. H. Boynton

Chemicals—industrial giant. Caldwell R. Walker. *Mfrs.' Record* 117, No. 8, 35, 57–8(1948).—A brief survey of the industry. Leopold Scheflan

Chemical industries of Japan. Campbell Osborn (213 Woodward Bldg., Washington, D.C.). *Chem. Eng. News* 26, 3018–21(1948). E. J. C.

A plan of industrial training for chemists and engineers. Charles H. Kline, Jr. (General Elec. Co., Pittsfield, Mass.). *Chem. Eng. News* 26, 2002–4(1948). E. J. C.

Work at Israel's Sieff Institute. Milton Orchin (Univ. of Mines, Pittsburgh, Pa.). *Chem. Eng. News* 26, 2956–7 (1948).—The work and personnel of the Daniel Sieff Institute in Rehovoth, Israel, are described. In addn. to basic research much effort is devoted to problems relating to the intensive industrialization and scientific agriculture that are needed to support a large number of people in a small land area. Milton Orchin

Rock wool investigations. G. F. Murphy and E. DeWolfe (Nova Scotia Tech. Coll., Halifax). *Nova Scotia Dept. Mines, Ann. Rept.* 1946, 151–5(1947).—The important consideration in the choice of raw materials for rock wools is that the material be self-fluxing. If the acidic and basic portions are nearly equal by wt., and the loss on ignition (CO_2) is between 20 and 30% the material will be suitable. Chem. analyses of various limestones are given, and mixts. suggested for obtaining better-quality rock wool. Marie L. Lindberg

Report on industrial minerals. M. G. Goudge (Dept. Mines, Halifax). *Nova Scotia Dept. Mines, Ann. Rept.* 1946, 67–80(1947).—Production and mine operations for barite, ceramics, dolomite, fluorspar, granite, gypsum, limestone, salt, and slate are described. M. L. L.

Report on industrial minerals. M. G. Goudge (Dept. Mines, Halifax). *Nova Scotia Dept. Mines, Ann. Rept.* 1947, 56–69(1948.)—Production and mine operations for barite, ceramics, granite, gypsum, limestone, oil, salt, and silica are briefly described. Marie L. Lindberg

Sensitivity of calcium silicide smoke mixtures to static electrical discharge. Archibald Gillies (Natl. Research Labs., Ottawa, Can.). *Can. J. Research* 26F, 297–301 (1948).—During the recent war a number of fires occurred in plants prepg. a smoke mixt. contg. $CaSi_2$ 10-C_2Cl_6 45-ZnO 45%. When blended thoroughly the mixt. burns relatively slowly. Such behavior led to the misconception in the plants that the materials were quite safe to handle in all possible combinations. A static electricity generator was used to test 0.5 g. samples of various combinations of the ingredients to det. the lowest voltage required to cause ignition. It was concluded that there is a wide range of mixts. with silicide content varying from 20–90% that can be readily ignited (50 v. or less). To avoid such concns., the final mix was approached from a 50–50 ZnO-C_2Cl_6 mixt. These two components were well blended and the $CaSi_2$ was slowly added. No fires were experienced under the above mentioned procedure. James C. Eubanks

Cyclone apparatus for dust-separation industries. W. Muhlrad. *Génie civil* 124, 152–5(1947).—Practical formulas are developed for detg. the effect of different phys. and structural factors on the efficiency of the collector and, also, for detg. the best yield obtainable under a given condition. The phys. laws involved in sepg. dust from a gas are discussed in detail. In practice, it was found that increasing the temp. of the gas from 0° to 400° increased the wt. of dust not collected by 50%. A reduction in density of the dust particle from 1.8 to 0.8 increased the wt. of dust particles not collected by 60%, due to the film of gas. Each app. has its optimum speed. Dynamic dust collectors are not satisfactory for tiny particles (microns in size), for toxic dusts, or for the recovery of valuable dusts, where 100% efficiency is desired. Recent progress suggests an ultimate yield of 92–95%. Ann Nicholson Hird

An improved method of reclaiming industrial diamonds from bit drills. A. R. Hazelgrove (Can. Industries Ltd., McMasterville, Que.). *Can. Metals Met. Inds.* II, No. 9, 26(1948).—Diamond reclamation from drill bits may be effected from the 3 types of powd. alloy rings. The types are: (I) iron, W, brass, C alloys, (II) iron, WC, brass alloys, and (III) Cu-Co-Mo alloys. The treatments are: for (I): (*a*) The bits are dissolved in a mixt. of 40–60 pts. 70% HNO_3, 40–20 pts. 60% HF, and 20 pts. water. The salts, after decanting the excess acid and washing the salts with water, are dissolved by one of 2 methods; a 1:1 mixt. of NH_4OH and water is added to the salt, stirred and filtered, and washed with warm HCl (1:1) or a mixt. of 1 pt. H_3PO_4 (85%) and 1 pt. water is added to the crystals and the mixt. stirred and warmed if necessary; (*b*) Alternately the bits are dissolved in a mixt. of 1 pt. HNO_3 (70%), 1 pt. HF (48% or 60%), and 1 pt. H_3PO_4 (85%). This mixt. will dissolve all but minor amts. of C. (II). This alloy is not sol. in *b*, but the salts resulting from soln. in the regular HNO_3-HF acid mixt. are sol. in the same reagents and by the procedure as Type I alloy except for warming the mixt. with 1:1 H_3PO_4 to effect soln. (III) This alloy is completely sol. in: (*a*) 40–60 pts. HNO_3, 40–20 pts. HF, and 20 pts. water, or (*b*) the same mixt. as in I. W. H. Boynton

Radiation hazards in industry. Charles R. Williams (Harvard School of Public Health, Boston, Mass.). *J. Ind. Hyg. Toxicol.* 30, 204–9(1948).—The industrial use of x-rays, and of naturally and artificially radioactive elements is discussed. G. M. Petty

Working conditions and health protection measures in the mining of ozocerite. P. L. Braginskii (Kiev. Inst. Profess. Hyg.). *Gigiena i Sanit.* 13, No. 5, 24–8(1948).—Analyses of air samples taken from various parts of the mine showed the presence (in mg./cu. m.) of hydrocarbons 0.1–11.56, CH_4 0.3–2.73, CO_2 1.01–2.73, H_2S traces–0.003, SO_2 traces–0.0085. The limits of the compn. of the hydrocarbons (other than CH_4) were: total satd. 2.3–5.96, total unsatd. 0.62–9.02, heavy satd. 0.5–1.5, heavy unsatd. traces, light satd. 2.32–5.19, light unsatd. 0.6–1.56. The relative compn. of the hydrocarbons, in %, was CH_4 1–4, light satd. 46–72, light unsatd. 16–25, heavy satd. 10–24, heavy unsatd. traces, aromatic traces. During the 1st 2 hrs. after mining, 8 g. ozocerite evolved, in mg./l. air, light hydrocarbons 24.27, heavy 30, CH_4 0.48; the amts. evolved during the 1st 2 hrs. by the ozocerite-contg. ore, 10 g., were 1.22, 1.88, and 0.31, resp. Ventilation and other protective measures are discussed. N. Thon

Contamination of air with lead from molten typographic metal. *V. G. Mutsak* (Central Hygiene Lab., Moscow). *Gigiena i Sanit.* 13, No. 5, 46–8(1948).—As a rough approximation, 1 sq. m. of the metal surface, in the temp. range 270–300°, evolves 1.4–2.0 g. Pb per hr. At 400°, the amt. is 4–6 g./hr. N. Thon

Clinical data regarding damage to the eyes from smoke or fumes. Roggenklämper (Augenheilanstalt, Mülheim an der Ruhr, Ger.). *Klin. Monatsbl. Augenheilk.* 111, 173–6(1947); *Chem. Zentr.* 1947, I, 835.—Injury to the eyes by the action of smoke or fumes is discussed. It is held that the observed damage to the cornea is true chem. trauma, in which there is a disturbance of the synthesis of the protein mols. of the tissue, with the result that toxic substances are liberated by the disintegration of these mols. M. G. Moore

The pathology of diseases due to the inhalation of dust. Fr. Boenike. *Med. Monatsschr.* 1, 2–6(1947); *Chem. Zentr.* 1947, I, 835.—Four principal types of anatomical changes resulting from inhalation of dust are: lymphatic

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CHEMICAL ABSTRACTS®

Vol. 53 NOVEMBER 10, 1959 No. 21

1—APPARATUS, PLANT EQUIPMENT, AND UNIT OPERATIONS

J. T. BANCHERO

Stabilization of oscillator for high-frequency titration. Tomokuni Ishikawa and Kazuo Ishikawa (Tokyo-Shibaura *Elec. Works, Ltd., Kawasaki*). *Kōgyō Kagaku Zasshi* 61, 153–6(1958).—An oscillator circuit for a high-frequency titrator is proposed with compensation for variations of the primary voltage in the range of 90–105 v. without noticeable decrease of sensitivity. Titrations of acid and Ba^{++} solns. are given as examples. Katsuya Inouye

High-frequency titration. I. Apparatus. T. Gäumann, J. Hoigné, and Hs. H. Günthard (Eidg. Tech. Hochschule, Zurich, Switz.). *Helv. Chim. Acta* 42, 426–37(1959)(in German).—The construction of a beat-frequency app. for high-frequency titrations and for measurements of dielec. consts. is described. The stability of the system is discussed and the accuracy of the device for cond. titrations is tested statistically. II. Dielectric measurements. Jörg Hoigné and Tino Gäumann (Eidg. Tech. Hochschule, Zurich, Switz.). *Ibid.* 437–45; cf. *C.A.* 52, 19274*b*.—With the heterodyne beat app. a continuous measurement *of the dielec. const. can be made. An electrode arrangement* suitable for measurements in small quantities of soln. (1 ml.) is described. Examples illustrate the accuracy obtainable for dielec. const. and increment measurements and for dielec. titrations. E. M. Loebl

The automatic measurement of differential-thermal analysis. Seizo Nagasaki and Kiyoshi Yonemitsu (Rigaku-Denki Co. Ltd., Tokyo). *Nendokagaku no Shimpo* 1, 159–65(1959).—Principles of an automatic recorder of differential-thermal curves are explained. In the app. described heating of the sample is entirely adiabatic and the temp.-thermal change relation is recorded by an *X-Y* recorder through an amplification system. K. Inouye

Hydraulics of the Uniflux fractionating tray. H. M. Muller and D. F. Othmer (Polytech. Inst. of Brooklyn, Brooklyn, N.Y.). *Ind. Eng. Chem.* 51, 625–32(1959).—Performance of an improved bubble-cap tray is described. Hydraulic data on these trays in a 5½-ft. exptl. column with a N-absorption oil system show an operating range of about 8–1. Max. tray capacity was approached when entrainment rate was 20–40% and when total tray pressure drop increased sharply with small increases in vapor or liquid flow. The tray remained stable at vapor loads as low as 12% of the max. operating rate at liquid rates above 2 gal./min./in. of outlet weir. An increase of tray spacing *from 24 to 30 in. increased vapor-liquid handling capacity* by 16%. Liquid backup in the downcomer caused by an artificial restriction to liquid flow had no effect on limiting tray capacity. James M. Gillingham

Photoelectric nephelometer. V. E. Eskin (Inst. High-molecular Compds., Leningrad). *Soviet Phys.—Tech. Phys.* 3, 1354–9(1958)(English translation) *Zhur. Tekh. Fiz.* 28, 1459–66.—Radiation, from a point source ultra-high-pressure Hg lamp, is focused by a condenser, passes through a monochromating filter, through a small orifice, is rendered parallel by an achromatic lens, passes through a glass plate, 2 polarizing prisms, and a diaphragm, strikes the cylindrical cell contg. the soln. under study, and is absorbed by a blackened light trap. Light scattered by the soln. passes through 2 diaphragms and falls on the photocathode of the electron multiplier tube, producing a deflection of a microammeter. The axis of the receiver diaphragms can be turned in a horizontal plane about the vertical axis of the cell over a range of angle of 25–155° with respect to the incident beam. The light reflected from the glass plate is directed toward a 2nd photomultiplier and this is used to correct for changes in the intensity of the source by means of a compensating device, a diagram of which is given. The sensitivity of the photometric part of the app. toward scattered light is 1.5×10^{-5}/cm. for 1 division of the microammeter. The first polarizing prism was fitted with a dial so that the angle of rotation could be read to an accuracy of 1 min. Details of the method of measurement are given. Abs. values were detd. by use of a standard. The removal of dust from solns. by filtering through glass filters was inadequate; it was removed by centrifuging 20–25 min. at 4000 g. The angular distribution of light scattering for polystyrene (mol. wt. = 2.4×10^6) in butanone and toluene are shown. Marian C. Neumann

Hydraulic transport of solids in vertical pipe-lines. B. J. Gliddon (*Imp. Coll., London*). *J. Inst. Fuel. Chem. Eng. Soc.* 11, 152–61(1957).—A review with 13 references. H. L. List

The hydraulic resistance of beds of granular materials. V. G. Pavlov and A. A. Chechulin. *Khim. i Tekhnol. Topliv i Masel* 4, No. 5, 60–5(1959).—Measurements of the resistance of packed beds of granular materials, ranging in av. diam. from 2 to 40.5 mm., to flow of air at 0.5 m./sec. *are correlated by the equation* $\Delta P = K l w^2 \gamma/d_e 2g$, where K is the coeff. of resistance (a function of Reynold's no., Re), l the height of the bed, assumed to be 1 m., d_e the equiv. *diam.* of the particles, i.e. an av. diam. equal to the diam. of the granules of a material of the same resistance, but with a single particle size, w the velocity of the flow in m./sec., γ the d. of the air in kg./cu. m., g is the acceleration in m./sec.^{2}, and η is the viscosity of air in kg/m. sec. Also, $K = C/Re^n$; for $Re > 180$, $K = 41.7/Re^{0.3}$; for $Re < 180$, $316/Re^{0.8}$. Combining these relations, $d_e = [Cw^2\gamma/2g_c\Delta P(w\gamma/\eta)^n]^{1/(2-n)}$. Plots of log K vs. log Re between limits of log Re of 1.3 and 3.5 are straight lines of unequal slope intersecting at log Re equal to 2.2. H. L. Olin

Flowmeter for measuring the flow rate of uranium hexafluoride. Donald J. Stoneking and Frederick M. Teetzel (Natl. Lead Co. of Ohio, Cincinnati). *U.S. At. Energy Comm.* NLCO-770, 21 pp.(1959).—The use of a Hastings flowmeter in metering the flow of UF_6 gas is described. Investigation indicated that this type of flowmeter could successfully measure the flow of UF_6 provided certain changes were made to obtain desired reliability, such as (1) more ruggedly designed sensing elements, (2) operating heated thermocouples at a lower temp. to prevent breakdown of UF_6, and (3) coating of the wires. W. J. Lawson

Investigation of damping capillary waves in fluids of different chemical composition. L. Mészáros (Univ. Szeged, Hung.). *Acta Univ. Szegediensis, Acta Phys. et Chem.* [N.S.] 4, 165–8(1958)(in English).—An app. is described which may be used to photographically record capillary waves produced by disturbing the surface of a still liquid. It has been found that the shape of these waves is a characteristic phys. feature of the system. K. I. Jagel, Jr.

Universal tensile testing machine (UPR). L. I. Vasil'ev (State Univ., Tomsk). *Fiz. Metal. i Metalloved., Akad. Nauk S.S.S.R.* 7, 314–16(1959).—A description is given of a new small lab. machine for tensile testing at const. speeds, at const. stress, and relaxation tests at low or elevated temps. B. N. Daniloff

Simple buret for drop volumes in the 10^{-3}-ml. range. Heinrich Ploum (Max-Planck-Inst. Eisenforschung, Dusseldorf, Ger.). *Z. anal. Chem.* 167, 408–10(1959).—By inserting a polyethylene capillary tip on a microburet the *drop vol. is reduced to 0.005 ml. By keeping Et₂O vapor* over the soln. in the buret the drop vol. is reduced to 0.003 ml. K. G. Stone

Temperature-controlled chamber using thermoelectric cooling. W. R. Danielson (Whirlpool Corp., Chicago). *Refrigerating Eng.* 67, No. 2, 30–3(1959).—Peltier couples using modules of bismuth telluride thermoelements for thermoelec. cooling are described. A. H. Johnson

Ed. J. Australia 1959-II, 105–13.—A lecture on pernicious anemia, Co, and vitamin B_{12}. Erich Hirschberg

Isoniazid and the organism. Experimental physiopathological research. Gennaro Di Mauro (Univ. Rome). *Sci. Med. Ital.* (Eng. ed.) 7, 243–53(1958).—Studies on the capacity of isoniazid to change the reactivity of the organism to pathological stimuli indicate that, on the whole, the neurovegetative orientation tends to be predominantly cholinergic. Erich Hirschberg

Alterations in liver nucleic acids in rats during carcinogenesis with 4-dimethylaminoazobenzene. A. Khadzhilov (Med. Fac., Sofia, Bulgaria). *Z. Krebsforsch.* 62, 361–9(1958).—Histochem. and biochem. detns. indicate that during the first 45–50 days of carcinogenesis hepatic ribonucleic acid (RNA) decreases while deoxyribonucleic acid (DNA) increases. RNA disappears from dying hepatic cells and is low in rapidly growing cholangioepithelial cells. At a later period (95–100 days), the content of RNA begins to increase, together with the amt. of DNA. Hepatomas and cholangiomas are characterized by a high level of RNA and DNA. Erich Hirschberg

Glycogen content in carcinomas of the oral cavity. Erhard Fasske and Konrad Morgenroth (Städt. Krankenanstalten, Essen, Ger.). *Z. Krebsforsch.* 62, 375–83(1958).—Histochem. measurements indicate that a larger percent of oral malignant carcinomas than of carcinomas of the portio uteri contain glycogen. Detns. in normal oral mucosa are also presented. Glycogen content does not depend on the level of circulating insulin. Erich Hirschberg

Anticancer experiments. H. Okamoto, S. Koshimura, R. Hirata, K. Murasawa, Y. Bando, and R. Shimizu (Univ. Kanzawa). *Z. Krebsforsch.* 62, 408–18(1958)(in English).—*Living hemolytic streptococci* inhibit the growth of the Ehrlich ascites carcinoma and the Yoshida ascites sarcoma, presumably by forming streptolysin S at the expense of tumor ribonucleic acid. Other microorganisms (e.g. *Streptococcus faecalis, Staphylococcus aureus, Diplococcus pneumoniae, Escherichia coli, Neisseria gonorrhoeae*) do not have these effects. The Yoshida tumor is inhibited by nitrouin and by 6-(2-hydroxy-3,5-dibromophenylazo)-4-hexylresorcinol (I), but not by 6 hydroxybenzylidenes, 5 phenoxazones, 11 quinones, and 24 miscellaneous compds. tested in these expts. Inhibition of the Ehrlich tumor by I was more striking than that by mitomycin, carzinophilin, actinomycin J, 6-mercaptopurine, triethylenethiophosphoramide, or 1,6-bis(2-chloroethylamino)-1,6-deoxy-D-mannitol. I also inhibited the ascitic form of sarcoma 180. E. Hirschberg

Energy reactions inducing anoxygenic synthesis demonstrable in human tumors. F. Windisch (Deut. Akad. Wiss., Berlin), W. Nordheim, and W. Heumann. *Z. Krebsforsch.* 62, 423–33(1958).—Decoctions of various human cancer tissues may cause a marked generative effect on anabiotic fermenting yeast cells, but have no influence on the growth of respiring cells. Erich Hirschberg

Chemically defined substances, identical in action with materials present in cancer, endowed with an anoxygenically energy-liberating potential. F. Windisch, U. Gerhardt, W. Nordheim, W. Heumann, and H. Kerner (Deut. Akad. Wiss., Berlin). *Z. Krebsforsch.* 62, 568–84(1958).—A microbiol. test with *Saccharomyces carlsbergenesis* strain U (preceding abstr.) is used to det. the ability of various materials to cause cell multiplication under strictly anaerobic conditions. The test is pos. with a series of plant and animal oils and lipide-contg. materials, e.g. sunflower oil, butter, and egg yolk (but not with liquid paraffin); with crude and purified lecithin (but not with lysolecithin); with crude cephalin and some of its fractions; with oleic, linoleic, linolenic, arachidonic, and clupanodonic acids (but not with petroselinic or erucaic acids). DL-6,8-Dimercaptooctanoic acid is inactive at noncytostatic concns. Diphosphopyridine nucleotide is inactive under these anaerobic conditions but active with aerobiosis. 63 references. Erich Hirschberg

A new procedure for cancer diagnosis. The agar-binding reaction. G. Csaky and I. Toro (Med. Univ., Budapest, Hung.). *Z. Krebsforsch.* 62, 481–94(1958).—A pos. reaction consists in the appearance of turbidity when the serum of cancer patients is added to agar under defined conditions. The reaction was pos. in 80% of 375 histologically proven carcinomas, in 13% of 528 patients with a wide variety of other diseases, and in 7% of normal subjects. In expts. dealing with the theoretical basis of this reaction, heparin, galactose, glucose, and fructose inhibited the formation of turbidity with cancer serums. It is postulated that rapidly growing tumor cells attack the hyaluronic acid-heparin barrier built up against them in the organism, liberating mucopolysaccharides demonstrable in the circulation by the agar-binding reaction. Erich Hirschberg

Influence of dehydroascorbic acid on tumor metabolism. E. Heise, W. Lührs, and O. Neunhoeffer (Deut. Akad. Wiss., Berlin). *Z. Krebsforsch.* 62, 509–15(1958).—Dehydroascorbic acid (I) reduces anaerobic glycolysis, proportionately to its concn., by 34–68%; aerobic glycolysis is reduced 24% and respiration increases by 42%. I is not toxic up to 500 mg./kg. administered to rats. At 2 mg./kg., intravenous injections of I retarded the growth of Jensen sarcoma and Walker carcinosarcoma 256 in rats and of the Ehrlich ascites tumor in mice. Higher doses of I were not more effective. Erich Hirschberg

Influence of zymosan on experimental animal tumor growth. W. Lührs, E. Heise, and H. Berndt (Deut. Akad. Wiss., Berlin). *Z. Krebsforsch.* 62, 516–18(1958).—The intravenous injection of 20 mg./kg. zymosan into rats bearing the Jensen sarcoma or the Walker carcinosarcoma 256 retards tumor growth, presumably by influencing the level of properdin. Erich Hirschberg

Uptake of methionine-S^{35} by the mitochondria of neoplastic cells. C. Giulice and V. Mutolo (Cancer Research Center, Palermo, Italy). *Z. Krebsforsch.* 62, 548–51(1958) (in English).—DL-Methionine-S^{35} was injected into normal mice and mice bearing the Ehrlich ascites tumor. Normal liver cells and ascites tumor cells were fractionated, and the sp. activities of the fractions were studied. Tumor mitochondria took up the labeled methionine at a lower rate than those of normal liver cells. After 3 hrs., the trichloroacetic acid-sol. fraction was more active in the tumor cells than in the normal cells. These differences were not found when the labeled methionine was administered *in vitro* to cultures of normal or malignant cells. Erich Hirschberg

Influence of adrenochrome on tumor cell metabolism. E. Heise, W. Lührs, and O. Neunhoeffer (Deut. Akad. Wiss., Berlin). *Z. Krebsforsch.* 62, 555–60(1958).—Adrenochrome increases the respiration of cells of Jensen sarcoma or Walker carcinosarcoma 256 to double the normal amt. but does not influence aerobic and anaerobic glycolysis when added at a level of 0.3 ml. of a 0.01 *M* soln. Adrenochrome has no effect on the growth of Jensen sarcoma in rats. Adrenaline probably can be oxidized to adrenochrome by means of dehydroascorbic acid. Erich Hirschberg

Carcinogenic effect of asbestos implanted into rats. Dietrich Schmähl (Univ. Bonn, Ger.). *Z. Krebsforsch.* 62, 561–7(1958).—Asbestos fibers and small fragments were applied subcutaneously and intraperitoneally in 39 rats. Of the 30 rats which survived 15 months, 11 developed sarcomas at the site of implantation. Erich Hirschberg

Reactions of lymphoid tissue to stimulation by antigen. Albert H. Coons (Harvard Med. School, Boston, Mass.). *Harvey Lectures* 53, 113–29(1959); cf. *C.A.* 49, 15011*h*, 15012*a*.—A review. John O. Holmes

Significance of serum Fe determination in diagnosis of hepatobiliary diseases. Chin-Yüan Kuo, K'uo-Hsun Liang, Sün-Yi Wang, and Hsiang-Sheng Huang. *Chung Hua Nei K'o Tsa Chih* 6, 340–5(1958).—Serum Fe was detd. by the α,α'-dipyridyl method of Bothwell and Mallet (*C.A.* 49, 9720*e*), with slight modification. The color developed was read against a series of Fe standards in a Klett photoelectric colorimeter. Among 20 normal subjects the av. serum Fe value was 118 γ % for 10 males and 135.5 γ % for 10 females. In 27 cases of acute hepatitis the av. serum Fe value was clearly above normal: 225.1 γ %. There was no definite correlation between serum Fe and bilirubin in the different disease stages of hepatitis examd. In 5 cases of chronical hepatitis the av. serum Fe value increased to 218.4 γ %. In cirrhosis of the liver, the serum content of Fe was normal; the av. for 32 cases was 115 γ %. In obstructive jaundice serum Fe value was either equal to or below normal. The av. of 11 cases with gall stone was was 96.9 γ % significantly different from that of acute hepatitis. In neoplastic liver diseases the serum Fe value was lower than normal while in cases of hepatic necrosis, inflammations of the gall bladder and bile duct the serum Fe values were within the normal range. Microcytic anemia, acute infectious hepatitis, and malignant liver tumor showed lower than normal serum Fe. These clinical studies showed that detn. of serum Fe was an effective method in testing

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CHEMICAL ABSTRACTS®

Vol. 49 JULY 10, 1955 No. 13

1—APPARATUS, PLANT EQUIPMENT, AND UNIT OPERATIONS

W. L. BADGER

A continuous hydration apparatus. M. G. Pitkevich and S. G. Bogoslovskii. *Maslobolno-Zhirovaya Prom.* 20, No. 2, 8–11(1955).—A diagram of continuously operating gravity-flow vertical hydration app., with a diam. of 700 mm. and total length of 3550 mm., and its flow-sheet are presented. Vladimir N. Krukovsky

Apparatus for rapid oscillographic quantitative analysis. P. Valenta and J. Vogel (Polarografický ústav ČSAV, Prague). *Chem. Listy* 49, 361–6(1955).—A simple adapting unit for the cathode-ray oscilloscope "Křižík N-522" was designed. The device enables the method of saw-tooth-voltage impulse to be applied in quant. oscillo-polarographic analysis. The wiring diagrams are included. F. Š.

The bar viscometer. D. Tollenaar and M. C. Bisschop (Research Inst. T.N.O. Printing & Allied Inds., Amsterdam, Neth.). *J. Colloid Sci.* 10, 151–5(1955).—A bar viscometer suitable for use at shearing stresses in the range 10^6–10^9 dynes/sq. cm. is described. It consists of a metal bar mounted to pass through a metal ring contg. a viscous liquid such as printing ink or varnish, counterbalanced, and then weighted to drive it through the liquid. The problems of temp. increase resulting from internal friction, which are encountered with the usual type of viscometer, are minimized by the presence of large masses of metal with high heat capacity. H. K. Livingston

Fractionating converter for producing parahydrogen. W. F. Giauque (Univ. of California, Berkeley). *Rev. Sci. Instr.* 25, 886–7(1954).—A fractionating column permits the use of a partial converter in the main liquefier stream at temps. in the range of liquid N, but eliminates the possibility of back conversion of return gas from the pure para region at lower temps. Ralph Steinhardt, Jr.

The use of a sedimentation cell in the sampling of aerosols. J. F. Richardson and E. R. Wooding (Imp. Coll., London). *Chem. Eng. Sci.* 4, 26–8(1955).—A sedimentation cell consists of a spacer with an orifice and an upper and lower slide for closing the cell to trap within the orifice the aerosol sample. The design of the cell is related to the size of particles, and limitations on its use are discussed. C. McKinley

Apparatus for paper chromatography. Olvidio A. Valenciano (Univ. nacl., Ciudad Eva Perón, Arg.). *Rev. asoc. bioquim. argentina* 19, 319–24(1954).—Construction of simple equipment for mono- and didimensional paper chromatography is described. 15 references. F. Fromm

Automatic conductivity bridge for chromatographic analyses. Carl Henrik de Verdier and C. Iwar Sjöberg (Univ. Uppsala, Sweden). *Acta Chem. Scand.* 8, 1161–9(1954)(in English); cf. *C.A.* 46, 2990a.—An automatic cond. bridge based on a conventional a.-c. Wheatstone bridge has been designed for use with chromatographic columns. The two opposite arms of the bridge contain identical measuring and comparison cells, and balancing is performed automatically through a chart recorder. This app. has been used extensively in the sepn. of ordinary amino acids and peptides on ion-exchange columns. Richard N. Kniseley

A new column electrochromatography apparatus. Harry Svensson (LKB-Produkter Fabriksaktiebolag, Stockholm). *Ina* 25, 252–8(1954)(in English).—The app. has 4 main glass parts: (1) a water-cooled cylindrical column which can be filled with a powd., fibrous, or gel-like capillary system, (2) a U-shaped anode vessel, (3) a U-shaped cathode vessel with uneven arms, (4) a Mariotte flask for maintaining const. hydrostatic pressure during elution. Accessory app. is included to introduce the 2–3-ml. sample and collect the eluate; no air bubbles are introduced. The app. uses little buffer even after the current flows. Leo Schubert

A Pirani gage combined with a triode tube. Yosomatsu Takamura (Nara Women's Coll.). *Oyō Butsuri* 23, 558–60(1954); cf. E. J. Scott, *C.A.* 34, 1211⁴.—A Pirani gage is connected to the grid of a medium-$m\mu$ triode. The anode current can be made a linear function of the pressure by choosing an appropriate grid bias potential. The use of the triode increases the sensitivity 70–80 times. H. Chihara

A device for remote measurement of the density of a liquid having a varying surface level. Suekichi Kawata and Hideo Togawa (Kyoto Univ.). *Oyō Butsuri* 23, 310–13(1954).—A stiff wire and a cylinder are hung down vertically from a coil spring which is fixed at its upper end. The whole of the cylinder and a part of the wire are immersed in the liquid. A change of the d. of the liquid is detected by a change of buoyancy of the cylinder practically independent of the surface level. Two methods are tested and the practical one which makes use of a modified electromagnetic induction micrometer (cf. Cox, *J. Sci. Instr.* 19, 117(1942)) can detect the change of the d. by 0.1%. H. Chihara

A cone-and-plate viscometer. H. Markovitz, L. J. Elyash, F. J. Padden, Jr., and T. W. DeWitt (Mellon Inst., Pittsburgh, Pa.). *J. Colloid Sci.* 10, 165–73(1955).—A viscometer is described in which a rotating plate turns against an almost flat cone that is static. The liquid sample is held between the 2 surfaces and thermostatted by circulation of water in the surrounding walls. Comparable results are obtained with ½°, 2°, and 4° cones. The tip of the cone can be truncated to aid in positioning without changing the results. The main feature is the wide range of conditions that can be covered: 1–50,000-poise liquid viscosity and 0.0002–9000 sec.$^{-1}$ shear rate. H. K. L.

A method of effectively increasing the resolving power of a microscope to reveal unsuspected detail in thin sections. A. F. Frederickson (Washington Univ., St. Louis, Mo.). *Am. Mineralogist* 38, 815–26(1953).—Use of narrow pencils of highly inclined light effectively doubles the resolving power of an ordinary microscope. By use of this technique a mineral with a slightly higher index of refraction than its matrix can be made to exhibit high positive relief. Photomicrographs are shown of worm-shaped paths in quartz, feldspar, and biotite. These are presumed to be paths along which material has migrated through the rocks. G. Switzer

Apparatus for the distillation of fluorine as hydrofluosilicic acid. R. Mavrodineanu and J. Gwirtsman. *Contribs. Boyce Thompson Inst.* 17, 489–94(1954).—App. is described for the steam distn. of F as H_2SiF_6 from a perchloric acid soln. V. G. Parker

Application of mercury-intrusion method for determination of pore-size distribution to membrane filters. Edith Honold and Evald L. Skau (Southern Regional Research Lab., New Orleans, La.). *Science* 120, 805–6(1954).—Hg was forced into membrane filters of pore size 0.1 to 0.8 μ, under gradually increasing pressure up to 1000 lb. per sq. in. gage pressure. From the change of apparent d. of the filter with pressure, the distribution of pore sizes in the sample could be computed. The method is expected to be useful for a variety of porous materials. D. E. Mack

Steady-state fractionation of multicomponent and complex mixtures in an ideal cascade. I. Analytic solution of the equations for general mixtures. Andreas Acrivos and Neal R. Amundson (Univ. of Minnesota, Minneapolis). *Chem. Eng. Sci.* 4, 29–38(1955).—An analytic solution for steady-state operation of a fractionating column is presented. Application of this solution will be made later. Clyde McKinley

Modification of Friedrich's micro-alkimide apparatus. Aleksey A. Sirotenko (Columbia Univ.). *Mikrochim. Acta* 1955, 1–4(in English).—The app. of Friedrich (*C.A.* 24,

Research Inst., Tokyo). *J. Chem. Soc. Japan, Ind. Chem. Sect.* 57, 781–4(1954).—The catalytic activity of Ni on 2 kinds of Al_2O_3 carrier was exaind. for the synthesis of ethylamine. The specific surface area and pore dimension distribution were measured by CO_2 absorption and Hg replacement, resp. H adsorption characteristics at −100 to +500° was also studied. The activity showed a max. at approx. 8% Ni content. The results indicate that the most active Ni catalyst has an intermediate cryst. size on the carrier surface. Katsuya Inoue

Connection between activity, structure, and acidity of magnesium silicate catalysts. N. A. Dauliova. *Trudy Inst. Khim., Akad. Nauk Azerbaidzhan. S.S.R.* 13, 38–47 (1954)(in Russian).—MgO-SiO_2 catalysts, prepd. by ppln. (liquid glass mixed with $MgSO_4$ soln.) with different *excess of the reactants, were exaind. as to properties.* While the chem. compn. as such was substantially const. for the series, the phys. properties (apparent d., porosity) showed considerable differences, differences which were also reflected in their cracking activity in gasoline formation. The difference in activity was primarily a function of porosity. No direct relation was found between acidity and activity. Catalysts prepd. from more concd. solns. were more stable at high temp. Thus the thermal deactivation results not only from structural change by H_2O loss from a chemically bound form but also from alteration of the actual porosity. G. M. Kosolapoff

A highly active nickel hydrogenation catalyst. W. Lungenbeck, H. Dreyer, and D. Nehring (Deut. Akad. Wiss., Berlin). *Naturwissenschaften* 41, 332(1954).—Highly active Ni catalysts are made by decompn. of mixed Ni and Mg oxalates. A soln. of 25 g. $Ni(NO_3)_2.6H_2O$ and 225 g. $Mg(NO_3)_2.6H_2O$ in 600 cc. water is pptd. at 50° with a soln. of 122 g. $(CO_2H)_2.2H_2O$ in 500 cc. water. The mixed crystals contain 23.0 mole % Ni oxalate and 76.1 mole % Mg oxalate. After heating 4 hrs. at 350° in a H_2 current a black pyrophoric powder results contg. Ni and undecompd. Mg oxalate. It hydrogenates 5 cc. cyclohexene in 35 cc. benzene at room temp. and atm. pressure in 15 min., *only fifth the time required with Raney Ni. The rigid* Mg oxalate skeleton probably contributes to the quality. B. J. C. van der Hoeven

Industrial atmosphere. V. Formaldehyde in the atmosphere of working environment. J. Roubal, J. Zdrazil, *and F. Picha. Pracovní Lékařství* 4, 232(1953); *Public Health Eng. Abstr.* 33, No. 8, 5; cf. *C.A.* 48, 2855h.—The source of contamination of the air in work places where glues with a HCHO-urea base are used is to be found in the free HCHO contained in resins. Quantities of 0.56 to 1.4% of free HCHO were found in glues exaind. Technicians maintain that the use of glues which do not contain free HCHO is not practicable. Where resins are produced, it is necessary to provide good ventilation. Free HCHO remains for a long time on objects stuck together with synthetic glue or coated with a resin-contg. paste. Sites where such material is worked should contain adequate ventilation. It is best to use gas masks or respirators in places where HCHO is *used* in spraying hides for tanning. R. D. H.

Poisoning occurring during the manufacture of bromochloromethane. T. Hirokawa, I. Yokoyama, T. Ishikawa, and A. Kurisu. *Bull. Inst. Public Health* (Tokyo) 2, No. 2, 1–3(Sept., 1952); *Public Health Eng. Abstr.* 33, No. 12, 18(1953).—*Clinical descriptions of 3 cases of poisoning* during manuf. of CH_2BrCl were given. No precautions were taken against extensive leakage from app. in which MeCl and MeBr were mixed to produce the required reaction producing the final product. The final product *and (or) MeCl were presumed to have caused* the damage to circulatory system, liver, and nervous system. R. D. H.

Mortality from lung cancer in asbestos workers. Richard Doll (Med. Research Council, *London*). *Brit. J. Ind. Med.* 12, 81–6(1955).—*Among 105 persons who had been* employed at one asbestos (I) works, and for whom the cause of death was detd. at autopsy, 18 showed lung cancer. Of these 18, 15 also showed asbestosis; these 15 had started employment in the industry before 1923 and had worked at least 9 yrs. before dust-control regulations had become effective. Among 113 men who had worked at least 20 yrs. in places where they were liable to be exposed to I dust, there were 11 deaths from lung cancer, 22 deaths from other respiratory and cardiovascular diseases, and 39 deaths in all, as compared with expected no. of 0.8, 7.6, and 18.4, resp.; *all cases of lung cancer were assocd. with* asbestosis. Conclusion: Lung cancer was a specific industrial hazard of certain I workers. The risk has become less as the duration of employment under the old dusty conditions has decreased. Marion Horn Peskin

Burton's lead line at the gums in workers affected by lead poisoning. Dario Gallo (Univ. Milan). *Med. lavoro* 46, 39–45(1955).—The various parts of the Pb seam in lead poisoning are described. A. E. Meyer

Lead excretion of lead hardeners in a modern Swedish tool factory. K. G. Rigner, S. G. Sjöberg, *O. Sjöholm,* and R. Vesterberg. *Nord. Hyg. Tidskr.* 1953, 41–7; *Public Health Eng. Abstr.* 33, No. 12, 11.—In lead hardeners the amount of lead in the urine was higher than that of a control group. The porphyrin contents of the urine and the basophilic-aggregate values of the blood were on the same level as those of the control group. The exposure did not cause any evident symptoms of lead poisoning. R. D. H.

Two cases of lead poisoning in stonemasons. M. Oltramare. *Z. Unfallmed. u. Berufskrankh.* 45, 282–8(1952); *Public Health Eng. Abstr.* 33, No. 10, 9(1953).—Some 50 years ago it was customary in Switzerland for many stone-built houses to be coated with layers of white lead. Pb *intoxication contracted by two stonemasons* in the process of renovating such buildings is described. Clinical and lab. findings for the 2 men were, resp., as follows: hemoglobin 61, 70%; blood urea 50, 44 mg./100 ml.; blood lead 140, 122 γ/100 ml.; and urinary coproporphyrin concn. 1350, 450 γ/24 hrs. R. D. H.

The content of silica in the blood and urine of workers in dust-creating industries. R. Yu. Govorchuk (Ukrain. Inst. Ind. Hyg. and Occupational Diseases). *Bor'ba s Silikozom, Akad. Nauk S.S.S.R., Sbornik Statei* 1953, 309–11.—The presence of SiO_2 up to *10* mg. % in the blood and up to 20 mg. % in the urine is to be regarded as normal. *Inhalation of free* SiO_2 by the lungs increases its content in the blood and urine. No parallelism was discerned between the stages of progressive lung silicosis and the SiO_2 content of the blood or urine. The erythrocyte sedimentation rate tends to increase as the SiO_2 blood content is increased. B. S. Levine

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Analysis of phenols [in industrial effluents] (Commins) 7. *Patent:* Manuf. of silicone polymers without hydrolysis [for brake systems] (Guillissen) 31.

Catalyst. Mitchell S. Bielawski (to Universal Oil Products Co.). *U.S. 2,704,747, Mar. 22, 1955. A solid catalyst* is manufd. by (I) mixing over 50% by wt. of a phosphoric acid, a siliceous adsorbent, and about 0.5 to 10% by wt. of a Co oxide, hydroxide, or salt; and (2) drying and calcining the resultant mixt. The catalyst prepd. in this manner is active in promoting org. reactions, such as the *polymerization* of olefins. P. J. Wilson, Jr.

Magnesia-calcium oxide-silica composites. Wm. A. Parder and Geo. E. Elliott, Jr. (to Gulf Research & Development Co.). U.S. 2,706,168, Apr. 12, 1955. A MgO-CaO-SiO_2 composite contg. about *1–18%* CaO is subjected to the action of satd. steam at 250–600°F. and calcined. The lower temp. is used for a low-CaO and the higher temp. for a high-CaO composite. Examples are given showing that steaming results in a composite of increased d. and catalytic cracking activity. N. E. J.

Improving the activity of chlorite solutions. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler (Hermann Baier, inventor). Ger. 826,437, Jan. 3, 1952 (Cl. 8i, 2). Salts (I) of bi- or trivalent metals, such as Cu, Al, Mg, Ca, or mixts. thereof, are added to an acid chlorite soln. (II) to improve its activity in bleaching, sterilizing, pest control, etc. The quantity of I added should amount to at least 0.01 g. Cu (preferably 0.05–0.1 g.) and at least 0.1 g. *(preferably 0.5–1 g.)* Mg, Al, *or Ca per l.* II. When II is used in bleaching fibrous materials (III), it is suitable to pretreat III with a soln. of I and then with II. The rise in activity of II is based on the fact that the quantity of ClO_2 normally developed corresponding to $4NaClO_2 + 2HCl \rightarrow 2ClO_2 + NaClO_3 + 5NaCl + H_2O$ *is increased to 3 moles* (from 4 moles $NaClO_2$) by the addn. of 0.1 g. Cu (as $CuSO_4$) or 0.5 g. Mg (as $MgSO_4$) per l. II ($NaClO_2$ content 3.618 g./l.) at pH 3.6 and 60°; or to 3.5 moles by the addn. of 1 g. Al [as $Al_2(SO_4)_3$] or 1 g. Ca (as $CaCl_2$) per l. II. A

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The Ohio State University
Columbus, Ohio

13—CHEMICAL INDUSTRY AND MISCELLANEOUS INDUSTRIAL PRODUCTS

(PLASTICS, RESINOIDS, INSULATORS, ADHESIVES, ETC.)

HERMAN A. BRUSON

Mines safety and accident prevention. X. Suggestions for reducing accidents. Robert Boone. *Mines Mag.* (Colo. School of Mines) 31, 122, 134, 136, 141 (1941); cf. *C. A.* 35, 3082[7].—Descriptive. L. S. 1

Adequate medical facilities for control of lead absorption. Elston L. Belknap. *Natl. Battery Mfrs. Assoc., Rept. Ind. Hyg. Sessions* 15, Pt. 2, 65–70(1939); cf. *C. A.* 35, 821[1].—Potentially dangerous industrial exposure to lead develops when inhalation of finely divided lead compds. occurs in excess of 1.5 to 3 mg. of lead per 10 cu. m. of air. The commonest signs of lead absorption are a lead line, stippled cells in the blood and lead in the urine (0.1–0.2 mg. per liter). Very frequent medical examination of lead workers is recommended. A. L. Elder 2

Growths in the respiratory tract. (Preliminary notice.) A. J. Amor. *Ber. 5 intern. Kongr. Unfallmed. u. Berufskrankh.* 2, 941(1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 33(1940).—Five regions of the respiratory tract are especially sensitive to the action of inhaled vapors and dust: (1) the anterior end of the middle turbinated bone, (2) the portion of the septum opposite (1), (3) the nasopharynx, (4) the larynx and (5) the carina and the entrance to the principal bronchi. The mucous membrane of the respiratory tract is frequently irritated by dust, *Cl and SO_2, which cause an epithelial metaplasia.* The harmful action of chromic acid and As and Cu salts on the nose causes chronic inflammatory changes, and ulcerations and perforations of the septum. The perforations usually appear in region (2). Each of these substances is an etiological factor *in the development of growths of the* respiratory tract. Two types of occupational cancer of the lungs are described in the literature: (a) The Schneeberg miners, who suffer from tumors, work with ores contg. Ag, Ni, Co, Bi, As and Ra, which renders the air highly radioactive; *As is a known cancerigenic agent and Ra is often* considered one. Carcinoma can be produced experimentally with K arsenide. (b) Those who work with chromates, especially with their purification, are also subject to malignant growths of the lungs. The tumors particularly considered in this work are those found in workers engaged in the prepn. of $CuSO_4$ and in Ni refining. The ore contains Cu, Ni, Co, S and noble metals of the Pt group. The Cu is extd. with H_2SO_4 contg. As. The metallic residues which contain Cu and up to 4% As are ground and calcined. The dust contains Cu arsenide which is continuously inhaled. The air also contains definite amts. of SO_2 and SO_3. The tumors in these workers were all in the ethmoid region. Only 1 case of carcinoma of the nasopharynx and none of the larynx were found. The age of the patients, the period of exposure to the danger and the av. age at death were similar to those in the Schneeberg lung carcinoma and in cancer of the bladder in workers on aniline dyes. Suitable changes with the elimination of As were undertaken; it is assumed that these diseases will disappear in the future. Ruth Berggren 3 4 5 6 7 8

Occupational lung cancer. L. Teleky. *Acta Unio Intern. contra Cancrum* (Paris) 3, 253(1938); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 33(1940).—A very detailed and crit. work *on occupational injuries which can lead to lung* carcinoma. Diagnosis has changed during the last decades: silicosis is found today where formerly pulmonary tuberculosis would have been the diagnosis; approx. three-fourths of the miners in Joachimsthal now die of lung cancer where earlier, the existence of lung cancer was denied. Scepticism is urged concerning the assertion that lung cancer is increasing. A crit. evaluation of numerous studies on silicosis and cancer reveals no frequent coincidence of lung cancer and severe pneumoconiosis; i. e., there is no evidence that pneumoconiosis predisposes to lung cancer. Although it is theoretically possible that cancer can develop from the scar produced by dust induration in the bronchial mucous membrane, there is no practical basis for the development of lung cancer from pneumoconiosis in general or silicosis in particular. It is highly probably, however, that asbestosis predisposes to the development of cancer (6 cases of lung carcinoma in 39 published autopsies on asbestosis). The irritant action of *asbestos dust may be purely mech.* in contrast to the chem. action of quartz dust. Chromate dust also appears to stimulate the development of cancer of the lungs and perhaps also of other organs. The inhalation of producer gas (contains 0.7% tar vapor) has caused several cases of *lung cancer in Japan. The no. of observations is yet too* small to permit any conclusions. Skin cancer is frequently found in workers exposed to tar dust, pitch dust and tar vapors, but no lung carcinoma has yet been found in such workers. Exhaust gases from motor vehicles contain no substance which has yet been *shown to favor the development* of cancer. Isolated observations on lung cancer in the As, Ni and Fe oxide industries stimulate further work but do not yet permit any conclusions. However, the cancerogenic action of radioactive substances, especially the Rn emanation (Schneeberg, Joachimsthal) is certain. This injurious action requires years, usually decades, before lung cancer occurs; the cancer often does not develop until years after removal of the harmful action. A true cancer always develops. Ruth Berggren 9

Lung cancer and occupation. Koelsch. *Acta Unio Intern. contra Cancrum* (Paris) 3, 243(1938); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 32–3(1940).—Practically, dust inhalation alone cannot be recognized as a significant cause of lung carcinoma, in spite of the assumed anatomical possibility. The acute and chronic action of irritants (acid industry) and war gases might in very rare cases cause bronchial cancer. The occurrence of lung cancer in asbestos workers (12 cases to date) must be studied further. *Chromate workers are in specific danger of lung cancer.* The question of the harmful effects of tar and the action of tobacco smoke has not yet been fully investigated. In England 14 cases of lung cancer and 16 of cancer of the accessory nasal cavities have been observed among workers on *Ni ores. The action of Rn emanation is the cause of* lung cancer in the miners of Joachimsthal and Schneeberg. Prophylactic measures are briefly discussed. Ruth Berggren

Chromate lung cancer. W. Alwens and W. Jonas. *Acta Unio Intern. contra Cancrum* (Paris) 3, 102(1938); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 32(1940).—A report on recently established cases of lung cancer in chromate workers, most of whom had long since left the industry. The latency period was very long (about 30 years). Chem. investigation revealed a distinct storage of chromates in the lung tissue. The chronic injury of the nasopharynx (almost all had perforations of the septum) through the continuous irritation of the chromates and other industrial products was a particularly marked factor. The hilus glands were always enlarged. Prophylaxis is of prime importance in the control of chromate lung cancer. Ruth Berggren

Chemistry in national defense. Edward R. Weidlein. *News Ed. (Am. Chem. Soc.)* 19, 453–6(1941).—National problems and the program of the Chemicals, Drugs and Allied Products Section of the Office of Production Management are presented. Defense calls for trained men in the chem. industries and in universities, so they should *not be withdrawn from their present positions except when* such action is necessary for chem. work in the military service. Civilian as well as military needs are given consideration, but the latter take precedence. Problems confronting us now are minor as compared with conditions in *1917. Cooperation with the Army and Navy Munitions* Boards, Council of National Defense, the Office of Administrator of Export Control and the Office of Production Management is stressed. As illustrations of the work done

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CHEMICAL ABSTRACTS

Vol. 36 JUNE 20, 1942 No. 12

I—APPARATUS, PLANT EQUIPMENT AND UNIT OPERATIONS

W. L. BADGER

Detection of radon by means of a proportional counter. Sanborn C. Brown, L. G. Elliott and Robley D. Evans. *Rev. Sci. Instruments* 13, 147–51(1942).—The construction of a counter and amplifier is described. The Ra is either condensed in a liquid-air trap before transferring it to the counter or it is swept into the counter with an inert gas. H. G. Bowlus

An apparatus for determining essential oils. S. S. Lyashenko. *Farmatsiya* 1939, No. 10, 15–17; *Khim. Referat. Zhur.* 1940, No. 4, 63.—The plant material (in a gauze bag) and the receptacle are placed in a 1.5-l. flask equipped with a reflux condenser connected to a steam generator. From the condenser the essential oil is passed directly into a graduated receptacle of special design. W. R. Henn

Analytical cell for the ultracentrifuge. Morris Rosenfeld. *Rev. Sci. Instruments* 13, 154–7(1942).—The construction and theory of a partitioned cell for an angle-type quantity rotor are described. The position of the moving boundary can be calcd. from experimentally detd. concn. in the compartments. H. G. Bowlus

An automatic apparatus for determining the pH value by means of a glass electrode. P. G. Kovalenko and V. I. Gusev. *Zavodskaya Lab.* 8, 1006–7(1939); *Khim. Referat. Zhur.* 1940, No. 4, 65–6.—The app. consists of (1) a spherical glass electrode coupled with a satd. calomel half cell; (2) an augmenting lamp; (3) a reconstructed mechanism of a "Micromax" type recorder. A 2-v. heating battery and a 60-v. anodic battery are used as the source of current. The pH values are recorded on a paper ribbon. Light and sound signals are automatically given when the limiting pH value is reached. W. R. H.

A simple sodium press for the small laboratory. Walter C. Beard, Jr. *J. Chem. Education* 19, 214(1942). E. H.

Apparatus for studying surface tension at high pressures. Laurence B. Heilprin. *Phys. Rev.* 59, 921(1941). H. G.

A modified micropipet for density determinations in heavy-water analysis. Fred Roseberry and W. E. Van Heyningen. *Ind. Eng. Chem., Anal. Ed.* 14, 303–4 (1942).—Construction details. The instrument is a modification of the micropipet of Keston, *et al.* (*C. A.* 32, 1612[9]) by means of which drops of water of highly uniform size can be expelled and measured for d. by the falling-drop method of Fenger-Eriksen, *et al.* (*C. A.* 30, 7000[3]). T. H. Dankelberger

Apparatus for semimicro filtration. Jacob Cornog and Floyd O. Krause. *J. Chem. Education* 19, 217(1942). E. H.

Semimicroanalysis of gas. R. K. Gol'ts. *Zavodskaya Lab.* 8, 1078–85(1939); *Khim. Referat. Zhur.* 1940, No. 4, 65; cf. *C. A.* 34, 6855[7].—For analysis of 5 cc. of gas a 21-cc. buret is used consisting of a tube (5.5 mm. in diam.) with a widening at the middle; the vol. of the part above the widening is 5 cc., that of the widening 10 cc. and that of the lower part 6 cc. For illuminating gas a 28-cc. buret (5 + 15 + 9 cc.) is proposed, the lower part of which (9 cc.) is made from a tube 7 mm. in diam. The upper and lower parts are divided into 0.05-cc. scale divisions. At the top of the buret there is a 120° stopcock by means of which the buret can be connected to the pipet or funnel (sealed to the buret) and the funnel to the pipet. Below the stopcock the buret has a capillary with 0.01-cc. scale divisions for measuring the amt. of the absorbing liquid. The buret is surrounded by a water jacket. A series of pipets (for KOH, Br water, yellow P, for absorbing CO, for combustion of H and for combustion of CH_4) is used. Their construction and the method for manipulating the app. are described. CO_2 is absorbed in 1 min.; heavy hydrocarbons from natural gas in 8 min.; those from coal gas in 2–3 min. Oxygen is absorbed by P in 1 min. The detn. of CO requires 1 min. The accuracy of the analysis is not less than that obtained in macro app. W. R. Henn

Compressed air for ammonia oxidation. Donald G. Morrow. *Trans. Am. Inst. Chem. Engrs.* 38, 377–88 (1942).—Among the processes requiring compressed air ammonia oxidation presents exacting requirements as to constancy of flow at uniform pressure and freedom from contamination. The manner in which these requirements are met is discussed. Compression of a substantial portion of the total air requirements utilizing reheated spent gas from the process as motive power has become general practice. The development of this method of operation and the equipment for this purpose has been outlined in some detail. C. L. Mantell

Chemical engineering aspects of centrifugal fan design. Carl V. Herrmann. *Trans. Am. Inst. Chem. Engrs.* 38, 365–76(1942).—The factors in centrifugal fan design which are of particular importance when handling corrosive or erosive gases are discussed. The ways in which these factors can modify the more-standard details of the regular ventilating fan designs are reviewed. C. L. Mantell

Use of fusible alloy in vapor-diffusion pumps. F. R. Abbott. *Rev. Sci. Instruments* 13, 187(1942).—A Bi-Pb-Sn alloy was boiled in a metal pump by a tungsten-to-alloy arc. The pump warmed up in 3 min. to approx. 180°, and gave a rough to fine vacuum of 40 μ to 0.5 μ. H. G. Bowlus

Limiting flow in liquid-liquid extraction columns. Forrest H. Blanding and Joseph C. Elgin. *Trans. Am. Inst. Chem. Engrs.* 38, 305–38(1942).—The flooding velocities of 3-in. diam. by 5-ft. high glass extn. columns have been studied with a solvent naphtha-water and the water-methyl isobutyl ketone systems. Drop size, type of packing, and design, packing support, and the discontinuous liquid were varied. The data cover the full range of ratios of continuous phase flow rate to discontinuous phase rate possible with the columns. They supply the only systematic flooding data for such columns which have been published. The operation of the columns in the flooding range is described. A definitive and reproducible flooded state was obtained by proper end design and a definite flooding point for liquid-liquid columns has been established. The end design is shown to be of controlling importance in detg. flooding. Because of improved end design liquid throughputs obtained at the true flooding point with the present columns are as much as 100% greater than those obtained with the columns employed in previously reported extn. studies. It is shown that spray columns may be satisfactorily operated in the flooded state by suitable end design. A theoretical treatment of the flooding mechanism of the spray column has been developed. This agrees well with the exptl. data. The relation obtained may be used for prediction. The importance of the work to the design and operation of plant scale extn. columns is discussed. C. L. Mantell

marrow injury. The porphyrinuria is most intense in the presence of a bone marrow inhibition with the simultaneous appearance of a myelocytic shift in the bone marrow. This observation renders it not improbable that the porphyrinuria is to be connected with the primary disturbance in the bone marrow. The cardiovascular and central nervous injuries are interpreted as signs of porphyrin poisoning. Ruth Berggren

Miners' nystagmus. D. L. Davies. *Lancet* 1940, I, 573; *Zentr. Gewerbehyg. Unfallverhüt.* 27, 238(1940).—Miners' nystagmus is not considered to be a psychoneurosis. The illumination theory is also disputed. It is believed to be a form of chronic poisoning, caused either by bacteria or gases. Ruth Berggren

Physical diagnosis of radium poisoning. I. Franke. *Fundamenta Radiol.* 5, 113(1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 124(1940).—The occurrence and course of Ra poisoning and the size of the toxic dose are considered. The necessary conditions for a method of diagnosis of Ra poisoning or for the supervision of those exposed to Ra have been studied. Detn. of the intensity and distribution of the Ra deposits by the γ-radiation emitted by the radioactive substances constitutes the most exact and certain method. A method is described which permits the detn. of Ra deposits in amts. of 0.2 μ g. Ra-element or more in a few min. An app. for carrying out the practical diagnosis of Ra deposition is described and the application is explained. Ruth Berggren

Röntgen study of the fine structure as a method of medical investigation. Gärtner. *Reichsarbeitsblatt* [N. F.], 20, III, 193(1940); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 229(1940); cf. *C. A.* 33, 7428⁸.—Quartz, fluorite, calcite, kaolin, clay, sillimanite, Carborundum, corundum and sericite, grindings of Main, Palatinate, Taunus and Eifel sandstone, dusts of MnO_2, Thomas slag, limestone and tobacco and grindings from the Solinger works were studied with a Mikro-Metallix-Röntgen fine-structure app. (Firma C. H. F. Müller). Tobacco dust from a tobacco factory was found to contain 20% insol. silicic acid. Dust from the lungs of miners, grinders and porcelain workers was also studied and compared in some cases with the industrial dust. A satisfactory diagnosis could almost always be obtained; it could, in part, be confirmed by chem. analyses. In some instances, only kaolin or sillimanite, without the participation of the free silicic acid, could be suspected as the cause of the silicosis. A quant. diagnosis is theoretically possible but meets with practical difficulties. Ruth Berggren

Pathological anatomy and pathogenesis of asbestosis. Giacomo Mottura and Emanuele Fagiano. *Rass. med. ind.* 11, 233–84(1940); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 229–30(1940).—Two fatal cases of asbestosis are described in detail: one occurred after 30 years of uninterrupted work in an asbestos plant, the other after 7 years of work followed by an interval of 30 years. This 2nd case would indicate that a relatively early change of work is of little value. Since asbestos particles were still present after many years and since no connection could be found between the no. of asbestos particles and the degree of fibrosis, the theory of the development of fibrosis by soln. of the asbestos particles, followed by chem. reaction, is considered incorrect. The lymph corpuscles do not indicate any essentially sclerotic changes. The difference between these and silicotic changes is clearly shown. A relation between tuberculosis and asbestosis is not considered probable but a connection with the development of lung cancer is believed possible. Ruth Berggren

Recent questions in industrial hygiene. III. Dust. O. Ehrismann. *Deut. med. Wochschr.* 1939, II, 1281; *Zentr. Gewerbehyg. Unfallverhüt.* 27, 181(1940); cf. *C. A.* 36, 3287⁸.—Previous results of the study of silicosis, asbestosis, Thomas-slag pneumonia, and Mn and other dust injuries are given. Ruth Berggren

Use of the acidity quotient of the urine in the selection of stone cutters and those endangered by stone dust. A. Wiesinger. *Veröffentsarz. u. Krk. kuste* 7, 220(1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 161(1940).—The development and progress of silicosis are believed to depend on the tissue acidosis; in acid lung tissue the dissolved silicic acid exerts a nonspecific acid irritation in addn. to its special irritant action, while in the alk. tissue the silicic acid, which gradually dissolves, is neutralized and excreted as a salt through the kidneys. A concept of tissue acidosis is outlined and a suitable method for detg. the acid-base ratio in the tissues is established. On the basis of this method, numerous examples are given which show that the acidity quotient is increased in stone cutters with severe silicosis, while low or neg. acidity quotients predominate in those with mild symptoms of silicosis, in spite of working with stone for years. The relation of the tissue acidosis to the pyknic habitus and mode of nutrition is illustrated with addnl. examples. The diet of those exposed to stone dust should be predominantly alk. and markedly severe phys. work should be avoided because of the increase in lactic acid. In severe pneumoconiosis with diminution of the alveolar surface and subsequent cardiac insufficiency, however, the combustion is lowered in consequence of O deficiency and a lasting tissue acidosis results. Ruth Berggren

Industrial application of a method for determining the theron content of air. R. D. Evans, S. J. Nilson, C. Goodman and N. R. Bertz. *Ber. 8. Intern. Kongr. Unfallmed. u. Berufskrankh.* 2, 1006(1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 121(1940); cf. *C. A.* 34, 4334⁸, 6977⁸, 5102⁸.—A new instrument is described for the detn. of the Tn content of the air. Practical expts. in various factories with analytical evaluation in the lab. showed a Tn content of the air in individual locations in plants which was 100–1000 times higher than that which is ordinarily considered harmless. In such cases adequate ventilation should be provided. Ruth Berggren

Plastic molding. Leo Gusman and Murray H. Reich. *City Coll. Vector* (N. Y.) 5, 30–1, 52(1942).—Descriptive. The high first cost of molds and dies in both the compression and the injection processes is one of the largest items of expense in plastic molding. The use of plastic materials, as polystyrene, and synthetic rubbers, as the molds, opens new possibilities and new economies in the field of plastic molding. Leopold Scheflan

Synthetic-resin molding materials. E. Mattuscheck. *Fördertechnik* 32, 261, 285(1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 235(1940).—A detailed article on the compn., manuf. and working up of molding materials and their many forms of use. Ruth Berggren

The thermal and electrical properties of bitumastic compounds containing quartz sand. Willis Jackson. *Phil. Mag.* 33, 81–9(1942).—An increase in the thermal cond. without appreciable detriment to the elec. properties is obtained by incorporating sand into compns. of the bitumastic type used as insulators. Data are reported for expts. made on 3 types of bitumastic compn. The addn. of 80% sand by wt. reduces the thermal resistance to less than one sixth of its normal value for any particular bitumastic. The effect of the sand grain-size on the thermal resistivity is small. The dropping and pouring temps. begin to rise rapidly when the sand content reaches 70%. Quartz sand decreases the dielec. strength, but not by an objectionable amt. The power factor is increased, owing probably to moisture absorption. S. Tolansky

Properties of heat-insulating materials. E. A. Allcut and D. H. Hamly. *Eng. J.* 24, 511–24(1941).—A discussion of the character of heat-insulating materials, the difficulties in detg. their relative value experimentally, the effect of air spaces and surface resistance and the possibility of saving fuel by taking advantage of solar radiation and heat stored in the structure of the building itself. J. M. Noy

Production of dermatine on calenders. P. M. Bogatyrev and G. O. Petrzhik. *Nauch.-Issledovatel. Raboty Lab. Clavtekhkani* 1939, 105–12; *Khim. Referat. Zhur.* 1940, No. 4, 121.—Dermatine was prepd. on differential 3- and 4-roller calenders, with moleskin, duck, canvas and cambric as foundation. Best results were obtained by using 100 parts of collodion, 80 parts of dibutyl phthalate, 40 parts of castor oil, 100 parts of alc. and 125 parts of pigments. The mass, mixed in Werner-Pfleiderer

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CHEMICAL ABSTRACTS®

Vol. 47 APRIL 25, 1953 No. 8

1—APPARATUS, PLANT EQUIPMENT, AND UNIT OPERATIONS

W. L. BADGER

Hempel pipet for use with the manometric Van Slyke apparatus. *R. W. Green (Univ. Malaya). Chemistry & Industry* 1953, 103–4.—The 3-way capillary stopcock in the modified Hempel pipet is replaced by 2 straight stopcocks whose bore is not crit. By manipulation of these stopcocks and slight modifications of the technique the simplified pipet can be used for the estn. of aliphatic amino N in conjunction with the Van Slyke app. R. J. Roth

A small high-pressure pump for pilot-plant service. Raymond W. Hiteshue and E. L. Clark (U.S. Bur. of Mines, Bruceton, Pa.). *Mech. Eng.* 75, 215–6(1953).—A review is given of the factors to be considered in high-pressure pilot-plant pump design and maintenance, and the pump design used at Bruceton is illustrated and briefly described. R. W. R.

Scale divisions of the Gay-Lussac alcohol meter. J. Spaepen. *Mededeel. Vlaam. Chem. Ver.* 14, 172–6(1952).—The scale divisions of alc. meters are discussed. A table is given showing the deviations of (1) the scale calcd. from data by Frost (*C.A.* 25, 3538), (2) the German, (3) the French, and (4) the Swedish scale from the scale calcd. from data by Osborne, McKelvy, and Bearce (*C.A.* 7, 2889). M. H. J. Wijnen

A new flame photometer. B. Lange. *Dechema Monograph* 17, 149–59(1951).—The history of flame photometers is reviewed. Lange's new instrument is described, and a table of wave lengths and sensitivities of various elements is given. Earl H. Brown

Temperature-stable capacitance pressure gages. D. C. Pressey (Oxford Univ., Engl.). *J. Sci. Instr.* 30, 20–4 (1953).—This is a theoretical and math. discussion of the effect of temp. changes on such gages. J. H. Moore

A controlled fluid-feed atomizer. J. C. Gage (Ind. Hyg. Research Labs., Welwyn, Engl.). *J. Sci. Instr.* 30, 25 (1953).—An app. is described similar to that designed at Chicago Univ., but in which the fluid is fed to the jet by a power-driven syringe, making the feed *independent of the* Venturi effect in the Chicago app. J. H. Moore

Console polariscope for investigation of strains by optical method. Z. D. Vishnevetskii (Sverdlov Turbomotor Works). *Zavodskaya Lab.* 16, 1145–6(1950).—The app. utilizes the system of the reflector polariscope. B. Z. Kanich

An instrument for determining the electric-charge distribution in aerosols. T. Gillespie and G. O. Langstroth (Sulfield Exptl. Sta., Ralston, Alberta, Can.). *Can. J. Chem.* 30, 1056–68(1952).—The elec. charges on a relatively large no. of aerosol particles can be measured in a short time by using a small electrostatic precipitator arranged to catch the deflected particles on microscope slides. Both negatively and positively charged particles are counted, and positions are recorded for the computation of charge distribution. The theory, based on spherical particles, was proven by varying air flow and field independently. The use of the instrument was illustrated by a study of the charge distribution in silica-dust aerosol at various times after generation. It was found that the av. charge carried is proportional to the particle radius, except for small times after generation. W. W. Pendleton

Streaming potentials across glass capillaries for sinusoidal pressure. Robert Gay Packard (Univ. of Texas, Austin). *J. Chem. Phys.* 21, 303–7(1953).—A math. expression for the streaming potential developed across capillaries for sinusoidal pressure variations was derived. The theory was checked by measurements on glass samples. Good agreement was obtained. Henry Leidheiser, Jr.

Scale for quantitative evaluation of granular structures. S. A. Saltykov. *Zavodskaya Lab.* 16, 1084–8(1950).—Basic defects of the ASTM scale are listed. The proposed scale consists of 2 halves, a black network on a white background and a white network on a black background; this facilitates its use with a differently developed polyhedric structure. Evaluation can be made for any magnification, provided the structure is within the limits of the scale. Comparison of structure with the scale is not on the basis of grain size but on the basis of d. of lines of grain boundaries. B. Z. Kanich

Molecular still. Eric G. Meek (Birmingham Univ., Engl.). *Chemistry & Industry* 1953, 102–3.—The still for the purification of small samples of labile sirups consists of 2 glass tubes, one being insertable and sealable into the other by means of a socket and cone and a connection for vacuum application. The outer tube has 2 bulges of about 1.5-cc. capacity located at the side of the tube and slightly above its lowest point, one bulge being superposed above the other. Liquid air is poured into the inner tube and the sirup into the outer tube which is heated in a liquid bath. The volatile material distils and solidifies on the lower outside of the inner tube. When the app. is held horizontally, the nonvolatile material runs into the lower bulge of the outer tube and the distillate, on warming, drips into the upper bulge. The product is removed *from* the upper bulge by means of a curved pipet. R. J. Roth

Dean and Stark apparatus. Brit. Standards Inst., London, S.W.1. *Brit. Standard* 756, 1952. 25 pp. 4s.—An app. is specified for the detn. of water by distn. with an immiscible liquid. It has 12 figures, and covers the material, design, and dimensions of the distn. vessel, condenser, and receivers of various types and sizes. L. M. M.

Continuous distillation in the laboratory. E. Krell. *Chem. Techn.* 4, 443–50(1952).—A review with 33 references. E. H.

The design of bubble-cap distillation columns. D. C. Freshwater (Birmingham Univ., Engl.). *Ind. Chemist* 28, 538–44(1952).—The design of bubble-cap distn. columns is considered both from the standpoint of *fixed features and* from operating variables. The fixed features are: column diam., plate spacing, size and type of weir, size and type of downcomer; size, type, and no. of cups; cap-skirt clearance; cap submergence at no load; and cap spacing. The operation variables are: pressure drop through the column; liquid head over the weir; liquid head over the slots; liquid head across the plate; liquid head in the downcomer, and *vapor distribution between the cups.* Cross flow is recommended for columns up to 3 ft. in diam.; for columns 3–8 ft. in diam. simple cross flow with coordinated reflux is preferred. The detn. of the fixed-plate features must be considered a preliminary design until checked for pressure drop and liquid heads across the plate. Pressure drop is usually kept, for atm. columns, between 2 and 4 in. of liquid. As to mech. design, attention is given to plate and cap supports, to drain holes, inspection covers, and leakage. The usual materials of construction are cast iron, mild steel, alloy steel, and Cu. W. A. Pennington

Solvent extraction: selective extracting of liquids by solvents. Franc Premerl. *Nova Proizvodnja* 2, 147–9(1951) (English summary).—A discussion is given of the general principles of solvent extn., *and an example* of detg. the sepn. factor is shown. Two methods of solvent extn. are discussed, e.g., extn. in steps, in which portions of the solvent are mixed with the liquid being extd. and then the 2 liquids are sepd., and sepn. in a column. The choice of method is largely detd. by the phys. properties of the 2 liquids, particularly the difference in their sp. gr. and viscosity. The use of extn. by centrifuge is also discussed briefly. Extn. is used where distn. or crystn. is not applicable, e.g., (a) for removing a substance which is found in very small concn., (b) if the substance being extd. is sensitive to temp., (c) for sepg. 2 substances whose b.ps. are close but which differ in

reabsorption which are independent of filtered Na load. 35 references. Theresa McKee

Study of mast-cells in human subjects with relation to atheroma, heparin and cholesterol. D. P. Hasu. *Indian Heart J.* 4, 65-71(1952).—Mast cells occur in the human aorta, coronary artery, and lungs. Fewer occur in atheromatous vessels and under these conditions rupture of the cells occurs. Few mast cells occur in the lung when there is pulmonary hypertension and the pulmonary artery has undergone atheromatous changes. A large no. of mast cells occur in lung tissue when there is pulmonary tuberculosis with no atheromatous changes in the pulmonary artery. These findings suggest a close connection between mast cells, atheromatous changes, and cholesterol. It is suggested that the stress on arterial walls, which is caused by generalized or pulmonary hypertension, damages the mast cells with a subsequent reduction in heparin production; the power to rupture the globulin lipide bond then decreases. This agrees with the view that an increase in the no. of mast cells produces extra heparin and thus produces a lowered plasma cholesterol concn. Theresa McKee

Lung carcinoma caused by asbestos inhalation. Fr. Henneke (Städt. Krankenanstalten, Dortmund, Ger.). *Med. Monatsschr.* 7, 77-81(1953).—The relation between fibrotic changes caused by asbestos deposits in the lung and carcinoma is discussed. The lower lobe is the site of predilection. Characteristic are the multicentered developments of flat epithelium carcinoma. A. E. Meyer

Determination of 17-ketosteroids in acne rosacea. Rodolfo Néstor Corti and Pedro H. Magnin. *Semana méd.* (Buenos Aires) 1953, I, 113-15.—The values found were normal in rosacea, higher in common acne, which difference is of diagnostic importance. A. E. Meyer

Altered liver function of chronic congestive heart failure. John M. Evans, Hyman J. Zimmerman, J. Grant Wilmer, Lawrence J. Thomas, and Clayton B. Etheridge (George Washington Univ., Washington D.C.). *Am. J. Med.* 13, 704-12(1952).—Impairment of the hepatic excretory capacity for Bromsulphalein was often marked, generally paralleling the severity of heart failure. Flocculation and turbidity tests were less frequently abnormal, the latter usually in assocn. with the hyperglobulinemia found in some of the patients. Serum bilirubin concns. were moderately increased in about 25% of the patients, particularly in those with higher levels of venous pressure. The serum albumin concn. was less than 3.5 g./100 ml. in 35 of 56 patients; the serum globulin was 3.50% or above in 15 of 56 patients. The impaired excretion of Bromsulphalein showed a pos. correlation with the height of the venous pressures; no significant correlation was observed with the degree of arterial O unsatn. 34 references. Barbara R. Murray

Autoimmune hemolytic disease and cryoglobulinemia associated with chronic lymphocytic leukemia. Hematologic and metabolic studies. Albert B. Craig, Christine Waterhouse, and Lawrence E. Young (Univ. of Rochester, Rochester, N.Y.). *Am. J. Med.* 13, 703-804(1952).—Reductions in the no. of circulating lymphocytes, in the size of the peripheral lymph nodes, and in the rate of red cell destruction were sustained for 9 months following administration of 1250 mg. adrenocorticotropic hormone (ACTH) in 15 days. A 2nd course of ACTH produced a less marked but still well-sustained response. The expected loss of N, P, and K occurred. 32 references. Barbara R. Murray

Observations upon the absorption of urinary constituents after ureterosigmoidostomy. The importance of renal damage. C. D. Creevy and M. P. Reiser (Univ. of Minnesota, Minneapolis). *Surg., Gynecol. Obstet.* 93, 689-90(1952).—Absorption of urinary chlorides through the mucosa of the colon after ureterosigmoidostomy can cause hyperchloremia and acidosis. Barbara R. Murray

Systemic lupus erythematosus. A review of the literature. S. William Ross and Benjamin B. Wells (Univ. of Arkansas, Little Rock). *Am. J. Clin. Pathol.* 23, 139-60(1953).—The review includes changes in the blood chemistry and the "L.E." factor. 188 references. J. T. M.

Electrolyte equilibria in erythrocytes during diabetic acidosis. George Nichols, Jr., and Nancy Nichols (New England Deaconess Hosp., Boston, Mass.). *J. Clin. Invest.* 32, 113-28(1953).—Values for plasma and erythrocyte Na, K, and water during diabetic acidosis are compared with the values in 21 normal subjects. During acidosis, plasma base concn. was normal and plasma water decreased. Erythrocyte Na and K concns. were decreased while the water content was normal. Following therapy with insulin and 0.85% NaCl soln. the patients showed rapid clinical improvement and return of the plasma pH, bicarbonate and water to normal. Undesirable side effects were occasional hypernatremia, const. transient hyperchloremia, and hypokalemia, which persisted several days. With treatment the erythrocytes lost no further K, but did lose water and Na. Na reaccumulated in the cells more rapidly than did K or water. In most patients, both cell water and K were lower than normal at the time of discharge from the hospital. There is a parallelism between water and base shifts in the erythrocytes and in the total cell mass during recovery from diabetic acidosis. 28 references. John T. Myers

The cholate:cholesterol relationship in clinical and experimental nephrosis. Ray H. Rosenman, Meyer Friedman, and Sanford O. Byers (Mt. Zion Hosp., San Francisco, Calif.). *J. Clin. Invest.* 32, 121-4(1953).—An excess accumulation of bile acid (hypercholatemia) was found in the blood of human subjects with nephrosis and in the blood of rats in which expti. nephrosis had been induced by injection of antirat-kidney serum when hypercholesterolemia was also present. The nephrotic rat also showed a diminished ability to rid his blood of excess injected cholate. Feeding of cholate to nephrotic rats appeared to prevent the decrease of plasma cholesterol, which usually occurred following the initial rise. John T. Myers

Pulmonary hypertension. I. Pulmonary circulatory dynamics in patients with pulmonary emphysema at rest. Paul N. G. Yu, Frank Lovejoy, Jr., Howard A. Joos, Robert E. Nye, Jr., William S. McCann, S. John Vernarelli, and Carol Gourevitch (Univ. of Rochester, Rochester, N.Y.). *J. Clin. Invest.* 32, 130-7(1953).—The degree of pulmonary hypertension varied directly with the severity of emphysema, hypercapnia, and anoxia. The O satn. of arterial blood varied inversely with the mean pulmonary artery pressure, but did not parallel the other determinants. The O tension of arterial blood did not vary predictably with any of the determinants. The CO_2 tension of arterial blood correlated closely with mean pulmonary artery pressure, total pulmonary resistance, and arteriolar resistance, but not with "pulmonary capillary" pressure. The ratio of residual vol. to total capacity varied directly with mean pulmonary artery pressure and total pulmonary resistance. The role of anoxia in the pathogenesis of pulmonary hypertension is confirmed. CO_2 retention is probably important in raising pulmonary artery pressure and in increasing pulmonary vascular resistance. 33 references. J. T. M.

The effect of thyrotropic hormone on the metabolism of radioiodine in euthyroid, hyperthyroid and acromegalic individuals. David V. Becker, J. E. Rall, Wendell Peacock, and Rulon W. Rawson (Sloan-Kettering Inst. and Memorial Center, New York, N.Y.). *J. Clin. Invest.* 32, 149-60(1953).—The effect of a single intramuscular injection of thyroid-stimulating hormone (TSH) on the metabolism of a tracer dose of I^{131} was studied in 3 euthyroid, 8 hyperthyroid, and 3 acromegalic patients. When administered 4-8 days after the tracer I^{131}, TSH increased the level of protein-bound I^{131} and I^{127} in the blood and of I^{131} in the urine. Methods are presented for the estn. of the total thyroid hormone discharged from the thyroid after TSH and for calcg. the total I content of the thyroid. Following a standard dose of TSH, euthyroid patients appeared to secrete more thyroid hormone than did hyperthyroid patients. The max. effect of TSH appeared in the first 24 hrs. in the hyperthyroid patients, and not until 48 hrs. in euthyroid patients. Three hyperthyroid patients demonstrated an unusual method of handling radio-I, which was characterized by a very rapid turnover rate of I by the thyroid with abnormally elevated serum protein-bound radio-I and urinary radio-I levels. 22 references. John T. Myers

Histamine sensitivity and anaphylaxis in the pertussis-vaccinated rat. Saul Malkiel and Betty J. Hargis (Northwestern Univ. Med. School, Chicago). *Proc. Soc. Expti. Biol. Med.* 81, 689-91(1952).—Inoculation of the white rat with *Hemophilus pertussis* increased its sensitivity to histamine. Pertussis organism mixed with horse serum markedly enhanced the ability of the horse serum to later produce anaphylactic sensitivity. Richard F. Riley

Electrophoretic studies of the serum of horses infected with experimental infectious anemia. Jean Hirtz (Inst. françois fievre aphteuse, Lyon, France). *Rev. immunol.* 16, 397-405(1952).—Electrophoretic studies of 4 horses in-

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CHEMICAL ABSTRACTS

Vol. 36 JANUARY 10, 1942 No. 1

I—APPARATUS, PLANT EQUIPMENT AND UNIT OPERATIONS

W. L. BADGER

Valves and cocks for chemical plant—fundamental types and refinements. C. H. Butcher. *Chem. Age* (London) 45, 165–7(1941). E. H.

Distillation columns and gas washers in modern construction. C. H. Borrmann. *Kraftstoff* 17, 78–80(1941).—New evapg., condensing and cooling units operating with sprays are described with drawings. F. W. J.

Distillation and dynamic azeotropism. Georgette Schouls. *Bull. soc. chim. Belg.* 49, 214–22(1940); cf. *C. A.* 26, 340.—Fundamental thermodynamic relations are derived for distn., with emphasis on vaporization rates, particularly in azeotropic distn. The hypothesis of distn. at const. rates conforms to expti. conditions and explains thermodynamically the constancy of temp. and pressure in azeotropic distn. G. W. Ayers

Apparatus and method for the determination of the specific gravity of fine powders. W. C. Knollaugh and A. J. Boyle. *Bull. Am. Ceram. Soc.* 20, 334–5(1941).—The app. consists of 2 water-jacketed 50-ml. burets, a 600-mm. water-cooled reflux condenser, 3 Pyrex brand 50-ml. volumetric flasks, 2 beakers, a thermostatically controlled hot plate, and a supporting stand. Since CaO and periclase are the principal ingredients of the powd. clinkers tested, toluene is used as the medium instead of water. The toluene is boiled in contact with the sample to minimize errors due to air in the pores of the clinker. Use of a 20-g. sample and 50 ml. of toluene increases the accuracy. C. H. Kerr

An apparatus for the determination of the solubilities of gases at high temperatures and high pressures. V. N. Ipatieff and G. S. Monroe. *Science* 94, 422–4(1941). E. H.

Effect of velocity on the mixing of liquids in porous media. V. V. Hendrix and R. L. Huntington. *Petroleum Engr.* 13, No. 1, 48, 51, 52, 54(1941).—A study is reported of the effect of velocity on the mixing of liquids in porous media with particular reference to the dilu. of reservoir fluids in the exploitation of distillate-bearing structures. Hexane and CCl_4 were used as the fluids and 200-mesh Wilcox sand, unconsolidated Wilcox sand, large and small spherical glass beads, and lead shot as the porous media. A $^1/_4$-in. and a 1-in. tube served as packed reservoirs. The porous medium in the tube was satd. with CCl_4 which was then displaced with hexane injected at 30 lb./sq. in. into the bottom of the vertical tube. The amt. of mixing was detd. for flow rates of from $^3/_4$ to 15 cc./min. Best mixing was obtained when the Reynolds no. was approx. one. A flow plan of the app. used and graphs of test results are included. E. D. Farley

Practical apparatus for the pH control during operation. Hartleb. *Fette u. Seifen* 47, 546–7(1940).—A pH meter equipped with a reading scale is described. It is used for the continuous detn. of the pH of process waters, wash waters of all sorts, etc. Wm. J. Harlan

Optical applications of transparent organic substances. Georges A. Boutry and Jacques Doucerain. *Compt. rend.* 211, 557–8(1940).—Optical lenses ground from org. glasses obtained from acrylic acid derivs. are just as satisfactory as ordinary inorg. glass lenses as regards transparency, homogeneity and spherical aberration; the high coeff. of expansion and the low surface strength are unsatisfactory. The dispersive properties offer certain advantages; the Abbe values for n_D values from 1.49 to 1.51 vary continuously from 57 to 52. T. J. D.

An improved cell for optical diffusion measurements on solutions. Hans Neurath. *Science* 93, 431–2(1941). H. E. Wirth

Vacuum presses. G. Gerth and E. Schoedel. *Eng. Progress* (Berlin) 21, 31–3(1940).—De-aeration is effected by various types of vacuum presses. *Ceramic bodies* can be homogenized; their strength is increased, water absorption is reduced. F. H. Rathmann

Compressometer for small test pieces [of nonferrous metals]. D. A. Morelli. *Commonwealth Engr.* 29, No. 3, 71–2(1941). G. G.

The economy of coarse grinding equipment. J. Hodel. *Tonind.-Ztg.* 65, 17–19, 37–9(1941).—Grinding expts. were made with limestone of medium hardness and hard-baked brick. The size of the material to be ground was 3–40 mm.; the final product had to pass a 3-mm. mesh screen. The specific output of the crushers in kg. per horsepower per hr. was 180 for the screened continuous ball mill (German type), 190 for the rolls, 220 for the hammer mill, and 360 for the Symons cone crusher, for limestone, and 200 for the rolls, 275 for the Symons cone crusher, for brick. The screen analysis was slightly in favor of the Symons crusher (least fines); the others were about equal. The advantage of closed-circuit grinding is proven and samples of calcns. are given. J. M. Noy

Measuring surface area in grinding. Fred C. Bond. *Am. Inst. Mining Met. Engrs., Tech. Pub.* No. 1412, 1–8 (1941).—Discussion. Cf. *C. A.* 35, 2998[8]. A. H. B.

Agitation—heat- and mass-transfer coefficients in liquid-solid systems. Arthur W. Hixson and Sidney J. Baum. *Ind. Eng. Chem.* 33, 1433–9(1941).—Results on melting rates of cubes and cylinders of ice, HOAc, $PbNO_3$ and C_6H_6 in stirred vessels of 7 sizes from 15.2 to 119 cm. in diam. are correlated by the equation $(hd/k) = 0.287 (nd^2\rho/\mu)^{0.67}(c\mu/k)^{0.5}$ for values of $(nd^2\rho/\mu)$ above 6.7×10^4, where h is the heat-transfer coeff., d is the vessel diam., n is the rate of rotation, and ρ, μ, k and c are the d., viscosity, thermal cond. and sp. heat, resp., of the liquid, in consistent units. This equation was developed for a geometrical arrangement of the agitator and vessel as follows: liquid depth equal to d, stirrer length equal to $d/3$, stirrer width equal to $d/12$, and stirrer clearance from the bottom equal to $d/6$. The stirrers were of the propeller type with 4 flat blades inclined at 45°. Mass-transfer coeffs. previously obtained (*C. A.* 33, 4662[2]) could be correlated with these heat-transfer coeffs. by the equation $K = 0.774\, h\, (D/k\rho c)^{0.5}$ where K is the mass-transfer coeff. and D is the diffusivity. T. H. C.

A modified calorimeter for high temperatures. The heat content of silica, wollastonite and thorium dioxide above 25°. J. C. Southard. *J. Am. Chem. Soc.* 63, 3142–6(1941).—The calorimeter described here is to measure heat contents at high temps. (to 1500°); it is a modification of the standard one in which a capsule contg. the sample is heated in a furnace to a detd. temp. and at a given moment dropped into a calorimeter of known heat capacity. The modifications described were introduced primarily to remove the necessity for dismantling a considerable portion of the app. to return the sample to the furnace in prepn. for another detn. This permits more rapid operation than has previously been consistent with good work. Data are given for the heat content above room temp. for wollastonite (to 1150°), thorium dioxide (to 1514°) and silica glass (to 1250°). The data are

many diseased states it remains substantially the same as in normal serum. L. E. G.

Chemiluminescence of alcaptonuric urines. Lynn D. Abbott, Jr. *Proc. Soc. Expl. Biol. Med.* 49, 14–15 (1942).—Alcaptonuric urines, as well as solns. of homogentisic acid and Pb homogentisate, give off light when made alk. with NaOH and shaken with air. L. E. G.

Intravenous administration of bovine serum albumin as a blood substitute in experimental secondary shock. 2
Harry A. Davis and A. G. Eaton. *Proc. Soc. Expl. Biol. Med.* 49, 20–2(1942).—Bovine serum and plasma and bovine serum globulin are very toxic when injected intravenously into dogs. The toxicity of the whole serum or plasma seems to be due to the globulin or one of its related fractions. Bovine serum albumin is harmless when injected and is effective in raising and maintaining the blood pressure of dogs after severe hemorrhage. L. E. G.

Effect of renal and systemic bloods from normotensive and renal hypertensive dogs on arterial rings. M. R. Salk and G. E. Wakerlin. *Proc. Soc. Expl. Biol. Med.* 49, 22–4(1942).—The vasoconstricting effects of heparinized renal vein and femoral artery bloods from 3 dogs before and after production of renal (Goldblatt) hypertension were studied on arterial segments from mesenteric arteries of beeves. No significant differences were found. 3
L. E. Gilson

Changes in antitryptic power of the blood associated with anaphylaxis in guinea pigs. Kenneth L. Burdon. *Proc. Soc. Expl. Biol. Med.* 49, 24–7(1942).—Preliminary. 4
L. E. Gilson

Encephalitis virus antibody in serums of experimentally infected animals by agglutination of virus-coated cells. E. C. Roberts and L. R. Jones. *Proc. Soc. Expl. Biol. Med.* 49, 52–4(1942); cf. *C. A.* 35, 4831[2], 5177[8].—Preliminary. 5
L. E. Gilson

Experimental necrotizing arteritis. II. Mercuric chloride as effective as uranium nitrate in its production. Russell L. Holman and Willard C. Hewitt. *Proc. Soc. Expl. Biol. Med.* 49, 58–62(1942); cf. *C. A.* 35, 8089[6].—$HgCl_2$ produced the same effects as *U* nitrate when used as previously described. L. E. Gilson

Experimental atherosclerosis and soybean lecithin. Homer D. Kesten and Ruth Silbowitz. *Proc. Soc. Expl. Biol. Med.* 49, 71–3(1942).—Feeding soybean lecithin to 6
rabbits receiving cholesterol restricts hypercholesterolemia and diminishes arteriosclerosis. L. E. Gilson

Electrophoretic identification of antibody to tuberculin protein. Florence B. Seibert and J. Walter Nelson. *Proc. Soc. Expl. Biol. Med.* 49, 77–80(1942).—Antibody to tuberculin protein was identified in serum as a component with an electrophoretic motility close to α-globulin. This component increases in serums following sensitization 7
to the protein, and is removed in part with the specific ppt. produced by adding antigen to the immune serum. L. E. Gilson

Characterization of milk influence in spontaneous mammary carcinoma [in mice]. Maurice B. Visscher, Robert G. Green, John J. Bittner, Zelda B. Ball and Heinz A. Siedentopf. *Proc. Soc. Expl. Biol. Med.* 49, 94–6(1942); cf. *C. A.* 36, 1509.—Preliminary. The active carcinogenic agent or agents in the lactating breast from high-cancer 8
mice appear to be concd. in a fraction obtained by ultracentrifugation of homogenized tissue. This fraction is virtually free of matter above colloidal dimensions and contains a large share of the sol. material of high mol. wt. L. E. Gilson

Pancreatic calculi. Mangaldas J. Shah. *Indian Med. Gaz.* 76, 516–19(1941).—A clinical report is given of 3 cases. There were no symptoms typical of this disease alone, except the radiological findings. Glucosuria and hyperglycemia were present as well as increased and undigested fat in the stools. Helen Lee Grquhl 9

The effect of chlorination on the production of immunity and the immunobiological stability of the organism. G. A. Ionkin and M. N. Khania. *Vestnik Mikrobiol. Epidemiol. Parasitol.* 18, No. 3–4, 23–65(in French, 265)(1939).—The method of sp. immunization of an organism and the production of immune bodies (agglutinins, precipitins, hemolysins) under the influence of Cl were investigated. Therapeutic doses of Cl were used for the expts. (1:200,000). Chlorine-treated rabbits immunized with anti-diphtheria toxin produced a higher titer of agglutinins and precipitins than did the control rabbits; in rabbits immunized with sheep erythrocytes considerably smaller differences between the control and chlorine-treated animals were obtained. Chlorine treatment had no appreciable effect on the production of hemolysins. The absence of any changes in the titer of the hemolysins during chlorine treatment indicates the probable existence of a different reactivity of individual physiol. systems of an organism to the same action. The immunobiol. stability of guinea pigs against diphtheria toxin under the influence of chlorine changed very little during immunization with anatoxin and without immunization. Fourteen references.
W. R. Henn

The content of bromine in blood during the various phases of tuberculosis in children. E. M. Mondini. *Pediatria* (*Rio.*) 48, No. 5, 329–31(1940).—The blood content of bromine was found to be normal in the initial stages of bone and pulmonary tuberculosis. However, in tuberculosis of the large serous, pleural and peritoneal membranes the amt. of Br is always high when the process is of an exudative type. It is normal in the active type. To judge from the deposition of excess of Br in exudative tuberculosis of the pleura and peritoneum it is believed that concomitant disturbances are related to the chlorine metabolism. R. P. E. Hopf

Lung cancer due to asbestos dust in animal experiments. Martin Nordmann and Adolf Sorge. *Z. Krebsforsch.* 51, 168–82(1941).—When 180 white mice were exposed to asbestos dust for a total of 67–80 hrs. over a 6-week period or for a total of 72 hrs. over a 13-week period, 61 survived for examn. 20 weeks later. Of these 61, 20% showed a keratinized multicentric squamous epithelial lung carcinoma and 42–67% showed epithelial lung neoplasms in all stages. This finding supports the authors' view that asbestos dust may cause primary lung carcinoma in workers. Marion Horn

Observations on the blood of rats with implanted Jensen sarcoma. Hans v. Euler and Inga Pettersson. *Z. Krebsforsch.* 51, 193–8(1941).—The abnormally high pyruvic acid content of the blood of rats with implanted Jensen sarcoma (av. 50 γ/cc. as contrasted with the normal 12 γ/cc.) is considerably reduced (to 25 γ/cc.) within a few hrs. after injection of 1 mg. nicotinamide. The pyruvic acid content, however, does not drop completely to normal even if as much as 4 mg. nicotinamide is given. An action similar to that of nicotinamide is exhibited by cozymase, insulin and adenosinetriphosphoric acid. Marion Horn

Cleavage of *d*-leucylglycine by serums, blood and organ extracts. A. Voss v. Euler, L. Adlercreutz, B. Högberg and Ann Marie Lilja. *Z. Krebsforsch.* 51, 348–72(1941). —Ability to cleave *d*-leucylglycine appears more often in the serum of cancer patients than in that of normal human subjects, but the difference is not sharp enough for use in diagnosis of cancer. Serum of rabbits with metastatic Brown-Pearce carcinoma showed regular ability to cleave *d*-leucylglycine. In the serum of a rabbit refractory to transplantation of Brown-Pearce carcinoma, ultraviolet irradiation elicited ability to cleave *d*-leucylglycine.
Marion Horn

Complement fixation in rickettsial diseases. Ida A. Bengtson and Norman H. Topping. *Am. J. Pub. Health* 32, 48–58(1942); cf. *C. A.* 35, 7517[4].—The complement-fixation test for endemic typhus is of value in the detection of active or past infection. Titers of 1:128 and 1:250 may be reached on the 9th or 10th day of illness and 1:1,000 and 1:8,192 on the 14th or 15th day. The complement-fixation reaction is a better criterion of past infection with endemic typhus than is the Weil-Felix test as complement-fixing antibodies may be present in significant titers up to 5 or more years after the illness. The complement-fixation test may probably be used to differentiate between endemic typhus and Rocky Mountain spotted fever. Spotted fever serums tested against a

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CHEMICAL ABSTRACTS

Vol. 37 JANUARY 10, 1943 No. 1

I—APPARATUS, PLANT EQUIPMENT AND UNIT OPERATIONS

W. L. BADGER

"Perspex" in laboratory work. J. A. Radley. *Analyst* 67, 229(1942).—Cells made of this new plastic have been found very suitable for physicochem. work of various kinds. W. T. Hall 3

An ultramicroburet for measurement of very small quantities of liquid. Marcel J. Dallemagne. *Bull. soc. chim. biol.* 23, 321–6(1941).—The app. is graduated to 0.0001 cc. and estn. is possible to 0.00001 cc. The accuracy of measurement of vol. depends upon the parts being constructed with extreme mech. exactitude.
André Mirhmanoff, L. E. Gilson

How to clean glass tubes. W. F. Schaphorst. *Water Works & Sewerage* 89, 430(1942).—Glassware is soaked in 5% HF for 15–20 min., then rinsed. A. A. Hirsch 4

Graphite crucibles in wartime. John Desmond. *Metal Treatment* 8, 36–7(1942).—Precautions necessary to obtain max. life from these restricted supplies are enumerated with regard to storing, setting, first use, melting and combustion conditions. F. G. N.

Constant-level device. Armand J. De Rosset. *Chem. Warfare Bull.* 28, 172–3(1942).—This article describes a simple app. which can be made for use with stationary smoke generators. It can also be used wherever a const. level of a liquid is required in a small container which is fed from a large closed reservoir. A. L. Kibler 5

Ross filter foils by evaporation. J. C. Clark and R. H. Esling. *Rev. Sci. Instruments* 13, 393–6(1942).—Powd. Sb is evapd. in vacuum from a heated crucible to form a 0.0015-cm. deposit on cellophane; this foil is balanced with rolled Sn foil for use in Ross balanced filters for x-ray analysis. H. G. Bowles 6

Approximation methods for solving the problem of filtration through two layers. N. Kalinin. *Compt. rend. acad. sci. U. R. S. S.* 30, 599–602(1941)(in French).—Math. M. Hosch

Simple rubber-stopper economizer. R. C. Peter. *Chemistry & Industry* 1942, 383.—A circular glass plate, 1/8 in. thick, having a hole to accommodate a small rubber stopper, is ground to fit the lip of a ring-neck flask. H. G. Bowles 7

New process for the separation of salt mixtures. H. Vigneron. *La Nature* 1940, No. 3062, 350–7.—Some applications of the flotation process are described. Ruth Berggren

Fractionation and fractionating plant. G. A. Drummett. *Gas World* 117, No. 3031, Coking Sect. 76–9, No. 3035, Coking Sect. 89–96(1942).—The design of fractionating columns is discussed. P. J. Wilson, Jr. 8

Extraction of oil from a porous solid. Donald F. Boucher, John C. Brier and James O. Osburn. *Trans. Am. Inst. Chem. Engrs.* 38, 967–93(1942).—Expti. data were collected on semibatch and continuous countercurrent extns. of porous plates satd. with soybean oil, with perchloroethylene and a carbon tetrachloride–ethylene dichloride mixt. as solvents. The liquid-film resistance was found to be negligible as compared with the resistance to diffusion within the solid. The extn. process was found to be one of pure mol. diffusion, the diffusion coeffs. being substantially const. for any one temp. and system, independent of liquid concn., despite the large difference in the solute and solvent viscosities. The diffusion coeffs. were correlated as a function of the product of the viscosities of the solute and solvent. Some data were collected on continuous countercurrent extns. of soybean flakes which indicated that the removal of the extractable portion of the oil in the flakes was likewise a process of mol. diffusion. C. L. Mantell

Liquid-liquid extraction employing solvents in the region of their critical temperatures. A. W. Hixson and J. B. Bockelmann. *Trans. Am. Inst. Chem. Engrs.* 38, 891–930(1942).—This investigation was undertaken to continue in another direction the work of Hixson and Hixson (Diss., A. N. Hixson, 1941). The study is concerned with liquefied, normally gaseous solvents at temps. in the neighborhood of their crit. temps. It was found that certain substances when used as solutes with these solvents undergo a rapid decrease in mutual soly. with the solvent in this region of temp. The mutual soly. decreases until the soln. becomes satd. with solute, then the sepn. of a second liquid phase occurs. Of the various solutes and solvents which form solns. exhibiting this phenomenon, the binary systems of several pure triglycerides and pure acids (*loc. cit.*) with liquid propane were studied intensively. These soly. measurements together with those obtained in an exploratory soly. survey enabled the authors to make several generalizations with regard to the influence of structure of the solutes on their solubilities. The practical aspect of the investigation was concerned with an extensive study of the system: liquid propane–oleic acid–refined cottonseed oil. It was shown that oleic acid can be extd. from a vegetable oil-oleic acid mixt. with liquid propane as the solvent. By means of the data for this system, as detd. at 85° and 98.5°, it was demonstrated that they form the basis of a new liquid-liquid extn. process for the refining of crude, long-chain fatty acids. The advantage of this process would be greater product recovery efficiency over the present vacuum distn. refining methods. There would also be no loss of glycerides such as now occurs in the "still" bottoms, and the yield of glycerol would be increased since the glycerides recovered in the new process can be returned to the "splitting" operation. The precision of the data allows their use as a guide for detg. in a simple manner the performance of liquid propane solvent extn. equipment. The lubricating oil refiners did not have until now a system as precisely known as the present one. The methods used and the results obtained in the course of this study indicate that this class of solvents will be of use in the solution of many other problems involving the sepn. or refining of complex mixts. of natural products. C. L. Mantell 6

Apparatus for the determination of soluble bromide. J. Ehrlich. *Trans. Faraday Soc.* 38, 85b–91(1942).—A cell is described for the electrometric detn. of sol. halide. The cell contains a Pb, $PbSO_4$, $MgSO_4$ chain, while, for convenience, the Pb is in the form of a 5% amalgam. The following chain is shown to give reliable and reproducible results: *Pt/Hg, Pb/PbSO₄/MgSO₄/Unknown/AgBr/Ag.* Victor R. Deitz 7

Apparatus for iodometric determination of tin. Wm. M. Rhoriberger. *Ind. Eng. Chem., Anal. Ed.* 14, 801 (1942).—A 500-ml., 3-necked, distg. flask has been found suitable for the titration of $SnCl_2$ solns. with KIO_3. One of the necks is connected to an air condenser, the middle neck contains the buret and the third neck serves for the escape of CO_2 which is introduced through the air condenser. W. T. H. 8

Measuring liquids in tanks. J. H. Wigner. *Soap,*

Albert G. Reynolds and John T. Volland (to R. Y. P. Mfg. Co.). U. S. 2,305,193, Dec. 15. Various structural, mech. and operative details. 1

Reclaiming carbon dioxide used in storage tanks for fruit juices. Bergedorfer Eisenwerk Akt.-Ges. Astra-Werke. Ger. 707,928, May 29, 1941 (Cl. 53k. 1.01).

Decomposition of dry vegetables. Chemisches Werk Dr. Klopfer-G. m. b. H. Ger. 707,782, May 29, 1941 (Cl. 53c. 6.01). The dry vegetables are comminuted and treated with solvents for chlorophyll and carotene. To the soln. is added a neutral fat and the chlorophyll and the carotene are distd. off. 2

Isolating vegetable proteins such as soybean protein. Percy L. Julian and Bernard T. Malter (to The Glidden Co.). U. S. 2,304,099, Dec. 8. The material, such as soybean meal, is extd. with water, caustic alkali and lime are added to the sepd. ext., and the resulting alk. liquor is centrifuged and the protein is recovered from the clarified ext.

Preserving green feed. Wilhelm Klein. Ger. 708,094, June 5, 1941 (Cl. 53g. 5.01). Green matter is preserved with $Na_2S_2O_5$. For 100 kg. of the green matter, an aq. soln. of up to 10 g. of $Na_2S_2O_5$ and the required quantity of acid to decomp. this salt are used. 3

13—CHEMICAL INDUSTRY AND MISCELLANEOUS INDUSTRIAL PRODUCTS

(PLASTICS, RESINOIDS, INSULATORS, ADHESIVES, ETC.)

HERMAN A. BRUSON

Mellon Institute in wartime. E. R. Weidlein. *Chem. Eng. News* 21, 407–78(1943); cf. *C. A.* 36, 2051[1].—The annual report is curtailed because of wartime restrictions. A table shows the industrial fellowships in operation during the fiscal year March 1, 1942 to March 1, 1943 and some discussion is given of investigations on cotton, high-temp. electrical insulation materials, plate glass, special plastics for aircraft and (under the heading "War services of Industrial Hygiene Foundation") lost workdays in essential manufacturers, plant-hygiene surveys and toxicology, Mg-dust hazards, industrial exhaust ventilation and Al powder in the treatment of silicosis as well as (from the Institute's Department of Research in Pure Chemistry) synthetic antimalarials, modified cinchona alkaloids, congeneric synthetics and drug standardization. 4

E. J. C.

Chemical industry advances in Brazil. Charles F. Bonilla. *Chem. & Met. Eng.* 50, No. 3, 96–9(1943). 5

E. H.

Chemical warfare and the mission of the veterinary. R. G. Espinet. *Rev. med. vet.* 22, 437(1940); *Anales asoc. quim. argentina* 30, 31B(1942).—Present knowledge of the action of chem. agents, their classification, and a description of the most important are given. Symptomatology, lesions and treatment of animals which have suffered from the effects of chem. agents, particularly horses and dogs, are given. 6

E. M. Symmes

Protection of civilians from vesicant agents. T. F. Bradley, J. T. Cassaday, T. G. Moore and Wm. C. Moore. *Chem. Eng. News* 21, 373–5(1943).—A description is given of the mobile war gas casualty station developed by the Stamford, Conn. civilian defense group. The decontamination truck, carrying the hot-water showers, was constructed for approx. $500. A list of auxiliary equipment and an operation schedule are given. Use of mobile units of this type avoids vesicant contamination of regular transportation and first-aid facilities. Four references. 7

Richard G. Rowe

Sorption of acetylene. E. V. Alekseevskiĭ and O. M. Kuznetsova-Kharina. *J. Gen. Chem. (U. S. S. R.)* 12, 296–304(in English, 304–5)(1942).—The suitability of a variety of commercial carbons, charcoals, silica gel and $Fe(OH)_3$ gel and a variety of carbons treated with numerous inorg. salts, as packing for gas-masks or respirators for protection against acetylene; all of these materials were found to be totally unsuitable. The sorption isotherms were detd. for acetylene on ethyl heptadecyl ketone, cellulose, acetylcellulose, acetylstearoylcellulose, nitrocellulose and nitroacetylcellulose. Only cellulose and acetylstearoylcellulose were found to have appreciably large sorption of C_2H_2. 8

G. M. Kosolapoff

The poisons in chemical industry. Victor Audriska. *Kem. Lapja* 2, No. 10, 2–3, No. 11, 1–4(1941); *Chem. centr.* 1942, I, 1400.—A review on the various poisonous substances, their manner of entering the organism, action, the individual reaction, treatment and prophylaxis. 9

A. E. Meyer

Sulfur dioxide injuries. Symanski. *Arbeitsschutz.* 1941, 405(1941); *Chem. Zentr.* 1942, I, 1907.—SO_2 injuries (frequently occurring in founding Mg alloys) although generally of temporary nature, may lead to indispositions lasting a week or longer.

R. P. E. Hopf

The occupational cancer of asbestos workers. A. J. Lintbach and H. W. Wedler. *Arch. path. Anat. (Virchow's)* 307, 387–409(1941); *Chem. Zentr.* 1942, I, 1513; cf. *C. A.* 33, 9488[1].—Description of a severe asbestosis of the lungs in a 60-year-old man with development of a cornifying squamous-celled epithelioma in the right inferior lobe. Asbestos injury was considered to be the cause of the cancer. The disease is, therefore, in agreement with Nordmann (*C. A.* 36, 2000[1]), to be considered an occupational cancer. Mech. tissue injury and chem. effects (hornblende and serpentine asbestos) are involved as injurious factors of the asbestos.

Ruth Berggren

Advances in plastics during 1942. G. M. Kline. *India Rubber World* 107, 573–5; *Mech. Eng.* 65, 245–7, 260 (1943); cf. *C. A.* 37, 1205[2].—A review, with 110 references.

C. C. Davis

The influence of temperature on the strength of plastics. II. Impact strength at high and low temperatures. R. Nitsche and E. Salewski. *Kunststoffe* 31, 381–8 (1941); *Chem. Zentr.* 1942, I, 933; cf. *C. A.* 34, 8104[1].—Strength tests were performed on 26 plastics in the temp. range −70 to +200°. Test specimens 10 × 15 × 120 mm. were used. The specimen was previously brought to the desired temp. then placed in position in the pendulum-type testing app. and sprayed with liquid of the same temp. The liquid stream was interrupted only for the actual test. The influence of temp. on strength is most marked in the cellulose derivs. In unlaminated moldings the strength-temp. curve depends largely on the nature of the filler. Laminated moldings show a steady increase in strength up to about +80°, above which it starts to diminish. Among the thermoplastics polyvinyl chloride and "Copolymer MP" show a marked temp. effect above 0°. It is proposed to use 20 ± 1° as a test temp. for cellulose acetate Type A, benzyl cellulose, vulcanized fiber and Cl-contg. vinyl polymerizates; 20 ± 2° for other plastics. There is no obvious relationship between the impact strength-temp. curve and the impression hardness-temp. curve.

Anthony M. Schwartz

Investigation of the mechanical behavior of synthetic resins at low temperatures and its dependence upon preparation and pretreatment. W. Röhrs and K. H. Hauck. *Kunststoff-Tech. u. Kunststoff-Anwend.* 11, 213–28(1941); *Chem. Zentr.* 1942, I, 643–4.—Investigation of the modulus of elasticity (I), and the elastic limit (II) of hardenable and nonhardenable synthetic resins in relation to temp. in the realm of low temps. (+20 to −70°). From compression measurements with a definite compression velocity, I and II were detd. in relation to temp. Expansion measurements and polystyrene viscosity measurements also served to complete the investigation. For phenol-formaldehyde cast resins and molding compds. as well as urea-formaldehyde molding material, the influence of the degree of hardening upon the mech. properties was

Free amino acids in Jensen sarcoma of rats studied by chromatography. Salvatore Di Bella (Stockholm Univ.). *Arkiv Kemi* 5, 89–91(1952)(in English).—Liver, kidney, spleen, lung, and heart of rats bearing Jensen sarcoma showed consistently high concns. of cystine and methionine, and sometimes also arginine. An increase in histidine and a decrease in lysine were not always evident. E. H. a

Pathology of the parathyroid and of the calcium and phosphate metabolism. G. Fanconi (Univ. Zurich, Switz.). *Deut. med. Wochschr.* 78, 85–9(1953).—A lecture. Erich Heftmann

Diminution of serum iron in infectious diseases. H. Overkamp (Städt. Krankenanstalten, Solingen, Ger.). *Klin. Wochschr.* 31, 53–4(1953).—After intravenous injection of colloidal Fe into persons with or without infectious the blood Fe concn. returns to the preinjection level within 24–48 hrs. It is concluded that the low Fe level in infectious diseases is not due to a lowered Fe-binding capacity of the serum, but rather to an activation of the reticuloendothelial system. Erich Heftmann b

Suitability of dehydrocholic acid for a liver-function test. J. Beyreder and H. Rettenbacher-Däubner (Kaiserin Elisabeth Spital, Vienna). *Klin. Wochschr.* 31, 62–4(1953).—The subject receives 1 g. dehydrocholic acid (I) by mouth and 3 urine samples are collected, one immediately, the other 2 at 3-hr. intervals. I is detd. by a modified Zimmermann reaction. Excretion of more than 2 mg. I in 6 hrs. indicates liver damage. Erich Heftmann c

Inhibition of the diabetogenic action of alloxan by previous administration of glucose. Helmut Maske, Hanns Wolff, and Benno Stampfl (Univ. Munich, Ger.). *Klin. Wochschr.* 31, 79–81(1953).—After prolonged glucose administration, no Zn could be demonstrated in the pancreatic islets of rabbits. Intravenous administration of 100 mg. alloxan per kg. to these rabbits did not produce diabetes. Erich Heftmann d

Blood picture in the rat after muscle trauma (crush-syndrome). Recalcification and prothrombin time, Costa reaction, specific gravity of the serum, erythrocyte and leucocyte counts, differential blood picture. L. Koslowski, W. Marggraf, and D. Weber (Univ. Göttingen, Ger.). *Klin. Wochschr.* 31, 81–3(1953); cf. *C.A.* 46, 7646b.—After muscle ischemia there was a shortening of the prothrombin and recalcification time, no increase in the fibrinogen fraction, but conversion of fibrinogen to prothrin, and hemoconcn. Erich Heftmann e

Behavior of SH- glutathione in blood in gastric ulcer and gastric carcinoma. D. Helbig (Univ. Würzburg, Ger.). *Arztl. Wochschr.* 8, 107–8(1953).—The blood level of SH-glutathione was elevated in patients with gastric ulcer and diminished in patients with gastric carcinoma. It returned to normal after resection of the ulcer, but not always after removal of the carcinoma. Erich Heftmann f

Disturbances in the digestion and absorption of iron as pathogenic factors in essential hypochromic anemia. F. Thelering, Jr., and R. Beck (Univ. Tübingen, Ger.). *Klin. Wochschr.* 31, 127–32(1953); cf. *C.A.* 46, 7189d.—Nutritional Fe deficiency is not a significant factor in essential hypochromic anemia. The rate of Fe absorption increases in the order inorg. Fe^{++} salts, org. Fe^{++} salts, Fe^{+++} salts, and Fe^{+++} salts plus vitamin C. Women in Fe balance absorb more Fe than men in Fe balance. Fe-deficient women can absorb less Fe than Fe-deficient men. Erich Heftmann g

Positive Abderhalden degradative enzyme reaction (A.R.) in tumor patients with a substrate of tumor tissue. Ernst Tetzner (Kreiskrankenhaus Soltau, Han., Ger.). *Klin. Wochschr.* 31, 133–4(1953); cf. Abderhalden and Fabian, *Fermentforschung* 17, 457(1945).—The Abderhalden reaction was pos. in 6 out of 7 human cancer tissue substrates. Erich Heftmann h

Hypoglycemia: clinical and experimental. Max Trumper. *Med. Clin. N. Amer.* 37, 277–98(1953).—Discussion of the causes, significance, and detection of hypoglycemia. Erich Heftmann

Plasma fractions and sedimentation in various diseases. E. Haschè. *Münch. med. Wochschr.* 95, 175–6(1953).—Sedimentation rate and plasma fibrinogen content showed no interdependence. Erich Heftmann i

Occurrence and distribution of mucopolysaccharides in the synovialis in pathological states of the knee joints. W. Burkl and A. Sonnenschein (Univ. Vienna). *Virchow's Arch. pathol. Anat. u. Physiol.* 322, 442–51(1952).—The joints in cases of rheumatism, dysenteric gonitis, and synovitis exhibit pronounced metachromasia with toluidine blue. The mucopolysaccharides are spread over a greater area of the synovialis; they appear to be low-polymer forms. Numerous mast cells are in evidence. E. H.

A general theory of bone tumors. Lent C. Johnson (Armed Forces Inst. of Pathol., Washington, D.C.). *Bull. N.Y. Acad. Med.* 29, 164–9, discussion 170–1(1953).—The subjects discussed are: histology of the tumors, biochem. and cytological background, interpretation of relationship of tumor types, skeletal metabolic fields, place and origin of tumors, time and origin of tumors, and quant. factors in tumor incidence. Theresa McKee

Current concepts of diabetes. Sol Sherry (Univ. of Cincinnati, Cincinnati, O.). *Bull. N.Y. Acad. Med.* 29, 203–23(1953).—A review. Among the subjects discussed are: metabolic blocks in diabetes, endocrine regulation of carbohydrate metabolism, and the pathogenesis of diabetic ketosis. 34 references. Theresa McKee

The pathological physiology of hemorrhagic conditions. Armand J. Quick (Marquette Univ., Milwaukee, Wis.). *Bull. N.Y. Acad. Med.* 29, 220–34(1953).—A review. Biochem. factors are extensively discussed. T. McK.

Renal excretion of water, sodium, and chloride. Comparison of the responses of hypertensive patients with those of normal subjects, patients with specific adrenal or pituitary defects, and a normal subject primed with various hormones. Robert Birchall, S. W. Tuthill, W. S. Jacobs, W. J. Trautman, Jr., and Thomas Findley (Tulane Univ., New Orleans, La.). *Circulation* 7, 258–67(1953).—In normotensive subjects the intravenous infusion of hypertonic saline inhibited H_2O diuresis. In hypertensive subjects, with or without Cushing's syndrome, H_2O diuresis was not inhibited and the renal tubules rejected an abnormally large fraction of filtered Na and Cl. Subjects with diabetes insipidus failed to show antidiuresis, but their renal tubules continued to reabsorb a normal fraction of filtered Na and Cl. Under basal conditions the normotensive and hypertensive subjects could not be distinguished on the basis of the relation of reabsorbed to filtered Na and Cl. The difference appeared only under the stress imposed by an increased load of hypertonic saline. It is suggested that hypertension with or without Cushing's syndrome is not accompanied by hypopitressinemia since the tubular rejection of filtered Na and Cl greatly exceeded that of subjects with diabetes insipidus. There was a striking similarity between the response of a hypertensive patient and a normal subject primed with cortisone. Pituitrin neutralized the diuretic response to cortisone, but had no effect on the reabsorption of Na and Cl. 21 references. Theresa McKee

A quantitative metabolic defect in lipide metabolism associated with abnormal serum lipoproteins in man. Max W. Biggs and David Colman (Univ. of California, Berkeley). *Circulation* 7, 393–402(1953).—Use of tritium-labeled cholesterol (I) demonstrated a metabolic defect which involved the partition of oral I into the free and esterified I pools of the serum. Patients with abnormal serum lipoprotein (II) spectra carried a greater proportion of their newly absorbed I in the esterified form than did normal subjects. The different I-specific activity curves correlated with the serum II distribution, as demonstrated with the ultracentrifuge, but the absorption curves did not correlate with the total serum I value. Thus ultracentrifugal analysis of the serum II measured a metabolic defect in lipide metabolism which could be independent of the total serum I present. I-fed rabbits had abnormal I specific activity absorption curves and abnormal II spectra. I-fed dogs had a normal absorption curve assocd. with a normal II spectrum. Rabbits became atherosclerotic on I feedings alone; dogs did not. Theresa McKee

Effects of posture on renal excretion of sodium and chloride in orthostatic hypotension. Daniel M. Bachman and William B. Youmans (Univ. of Oregon, Portland). *Circulation* 7, 413–21(1953).—Large decreases in Na and Cl excretion and glomerular filtration occurred in patients with orthostatic hypotension when they assumed the upright posture following a recumbent period. When they returned to the recumbent position, Na excretion was not restored immediately in spite of immediate restoration of filtered Na load. Changes in Cl excretion were parallel and approx. equal to changes in Na excretion. The increase in Na excretion is considered to be caused in part by the decreased filtered Na load and in part to changes in tubular

reabsorption which are independent of filtered Na load. 35 references. Theresa McKee

Study of mast-cells in human subjects with relation to atheroma, heparin and cholesterol. D. P. Basu. *Indian Heart J.* 4, 65–71(1952).—Mast cells occur in the human aorta, coronary artery, and lungs. Fewer occur in atheromatous vessels and under these conditions rupture of the cells occurs. Few mast cells occur in the lung when there is pulmonary hypertension and the pulmonary artery has undergone atheromatous changes. A large no. of mast cells occur in lung tissue when there is pulmonary tuberculosis with no atheromatous changes in the pulmonary artery. These findings suggest a close connection between mast cells, atheromatous changes, and cholesterol. It is suggested that the stress on arterial walls, which is caused by generalized or pulmonary hypertension, damages the mast cells with a subsequent reduction in heparin production; the power to rupture the globulin lipide bond then decreases. This agrees with the view that an increase in the no. of mast cells produces extra heparin and thus produces a lowered plasma cholesterol concn. Theresa McKee

Lung carcinoma caused by asbestos inhalation. Fr. Boemke (Städt. Krankenanstalten, Dortmund, Ger.). *Med. Monatsschr.* 7, 77–81(1953).—The relation between fibrotic changes caused by asbestos deposits in the lung and carcinoma is discussed. The lower lobe is the site of predilection. Characteristic are the multicentered developments of flat epithelium carcinoma. A. E. Meyer

Determination of 17-ketosteroids in acne rosacea. Rodolfo Néstor Corti and Pedro H. Magnin. *Semana méd.* (Buenos Aires) 1953, I, 113–15.—The values found were normal in rosacea, higher in common acne, which difference is of diagnostic importance. A. E. Meyer

Altered liver function of chronic congestive heart failure. John M. Evans, Hyman J. Zimmerman, J. Grant Wilmer, Lawrence J. Thomas, and Clayton B. Etheridge (George Washington Univ., Washington D.C.). *Am. J. Med.* 13, 704–12(1952).—Impairment of the hepatic excretory capacity for Bromsulphalein was often marked, generally paralleling the severity of heart failure. Flocculation and turbidity tests were less frequently abnormal, the latter usually in assocn. with the hyperglobulinemia found in some of the patients. Serum bilirubin concns. were moderately increased in about 25% of the patients, particularly in those with higher levels of venous pressure. The serum albumin concn. was less than 3.5 g./100 ml. in 35 of 56 patients; the serum globulin was 3.5% or above in 15 of 56 patients. The impaired excretion of Bromsulphalein showed a pos. correlation with the height of the venous pressures; no significant correlation was observed with the degree of arterial O unsatn. 34 references. Barbara R. Murray

Autoimmune hemolytic disease and cryoglobulinemia associated with chronic lymphocytic leukemia. Hematologic and metabolic studies. Albert B. Craig, Christine Waterhouse, and Lawrence E. Young (Univ. of Rochester, Rochester, N.Y.). *Am. J. Med.* 13, 793–803(1952).—, Reductions in the no. of circulating lymphocytes, in the size of the peripheral lymph nodes, and in the rate of rbc cell destruction were sustained for 9 months following administration of 1250 mg. adrenocorticotropic hormone (ACTH) in 15 days. A 2nd course of ACTH produced a less marked but still well-sustained response. The expected loss of N, P, and K occurred. 32 references. Barbara R. Murray

Observations upon the absorption of urinary constituents after ureterosigmoidostomy. The importance of renal damage. C. D. Creevy and M. P. Reiser (Univ. of Minnesota, Minneapolis). *Surg., Gynecol. Obstet.* 95, 589–96(1952).—Absorption of urinary chlorides through the mucosa of the colon after ureterosigmoidostomy can cause hyperchloremia and acidosis. Barbara R. Murray

Systemic lupus erythematosus. A review of the literature. S. William Ross and Benjamin B. Wells (Univ. of Arkansas, Little Rock). *Am. J. Clin. Pathol.* 23, 139–60 (1953).—The review includes changes in the blood chemistry and the "L.E." factor. 193 references. J. T. M.

Electrolyte equilibria in erythrocytes during diabetic acidosis. George Nichols, Jr., and Nancy Nichols (New England Deaconess Hosp., Boston, Mass.). *J. Clin. Invest.* 32, 113–20(1953).—Values for plasma and erythrocyte Na, K, and water during diabetic acidosis are compared with the values in 21 normal subjects. During acidosis, plasma base concn. was normal and plasma water decreased. Erythrocyte Na and K concns. were decreased while the water content was normal. Following therapy with insulin and 0.85% NaCl soln. the patients showed rapid clinical improvement and return of the plasma pH, bicarbonate and water to normal. Undesirable side effects were occasional hypernatremia, const. transient hyperchloremia, and hypokalemia, which persisted several days. With treatment the erythrocytes lost no further K, but did lose water and Na. Na concentrated in the cells more rapidly than did K or water. In most patients, both cell water and K were lower than normal at the time of discharge from the hospital. There is a parallelism between water and base shifts in the erythrocytes and in the total cell mass during recovery from diabetic acidosis. 28 references. John T. Myers

The cholate:cholesterol relationship in clinical and experimental nephrosis. Ray H. Rosenman, Meyer Friedman, and Sanford O. Byers (Mt. Zion Hosp., San Francisco, Calif.). *J. Clin. Invest.* 32, 121–4(1953).—An excess accumulation of bile acid (hypercholatemia) was found in the blood of human subjects with nephrosis and in the blood of rats in which exptl. nephrosis had been induced by injection of antirat-kidney serum when hypercholesterolemia was also present. The nephrotic rat also showed a diminished ability to rid his blood of excess injected cholate. Feeding of cholate to nephrotic rats appeared to prevent the decrease of plasma cholesterol, which usually occurred following the initial rise. John T. Myers

Pulmonary hypertension. I. Pulmonary circulatory dynamics in patients with pulmonary emphysema at rest. Paul N. G. Yu, Frank Lovejoy, Jr., Howard A. Joos, Robert E. Nye, Jr., William S. McCann, S. John Vernarelli, and Carol Gouverneur (Univ. of Rochester, Rochester, N.Y.). *J. Clin. Invest.* 32, 130–7(1953).—The degree of pulmonary hypertension varied directly with the severity of emphysema, hypercapnia, and anoxia. The O satn. of arterial blood varied inversely with the mean pulmonary artery pressure, but did not parallel the other determinants. The O tension of arterial blood did not vary predictably with any of the determinants. The CO_2 tension of arterial blood correlated closely with mean pulmonary artery pressure, total pulmonary resistance, and arteriolar resistance, but not with "pulmonary capillary" pressure. The ratio of residual vol. to total capacity varied directly with mean pulmonary artery pressure and total pulmonary resistance. The role of anoxia in the pathogenesis of pulmonary hypertension is confirmed. CO_2 retention is probably important in raising pulmonary artery pressure and in increasing pulmonary vascular resistance. 33 references. J. T. M.

The effect of thyrotropic hormone on the metabolism of radioiodine in euthyroid, hyperthyroid and acromegalic individuals. David V. Becker, J. E. Rall, Wendell Peacock, and Rulon W. Rawson (Sloan-Kettering Inst. and Memorial Center, New York, N.Y.). *J. Clin. Invest.* 32, 149–61 (1953).—The effect of a single intramuscular injection of thyroid-stimulating hormone (TSH) on the metabolism of a tracer dose of I^{131} was studied in 3 euthyroid, 8 hyperthyroid, and 3 acromegalic patients. When administered 4–8 days after the tracer I^{131}, TSH increased the level of protein-bound I^{131} and I^{131} in the blood and of I^{131} in the urine. Methods are presented for the estn. of the total thyroid hormone discharged from the thyroid after TSH and for calcg. the total I content of the thyroid. Following a standard dose of TSH, euthyroid patients appeared to secrete more thyroid hormone than did hyperthyroid patients. The max. effect of TSH appeared in the first 24 hrs. in the hyperthyroid patients, and not until 48 hrs. in euthyroid patients. Three hyperthyroid patients demonstrated an unusual method of handling radio-I, which was characterized by a very rapid turnover rate of I by the thyroid with abnormally elevated serum protein-bound radio-I and urinary radio-I levels. 22 references. John T. Myers

Histamine sensitivity and anaphylaxis in the pertussis-vaccinated rat. Saul Malkiel and Betty J. Hargis (Northwestern Univ. Med. School, Chicago). *Proc. Soc. Exptl. Biol. Med.* 81, 689–91(1952).—Inoculation of the white rat with *Hemophilus pertussis* increased its sensitivity to histamine. Pertussis organism mixed with horse serum markedly enhanced the ability of the horse serum to later produce anaphylactic sensitivity. Richard F. Riley

Electrophoretic studies of the serum of horses infected with experimental infectious anemia. Jean Hirtz (Inst. français fièvre aphteuse, Lyon, France). *Rev. immunol.* 16, 397–403(1952).—Electrophoretic studies of 4 horses in-

Med. J. Australia 1959-II, 105–13.—A lecture on pernicious anemia, Co, and vitamin B_{12}. Erich Hirschberg

Isoniazid and the organism. Experimental physiopathological research. Gennaro Di Mauro (Univ. Rome). *Sci. Med. Ital. (Eng. ed.)* 7, 243–53(1958).—Studies on the capacity of isoniazid to change the reactivity of the organism to pathological stimuli indicate that, on the whole, the n. vegetative orientation tends to be predominantly cholinergic. Erich Hirschberg

Alterations in liver nucleic acids in rats during carcinogenesis with 4-dimethylaminoazobenzene. A. Khadzhilov (Med. Fac., Sofia, Bulgaria). *Z. Krebsforsch.* 62, 361–9 (1958).—Histochem. and biochem. detns. indicate that during the first 45–50 days of carcinogenesis hepatic ribonucleic acid (RNA) decreases while deoxyribonucleic acid (DNA) increases. RNA disappears from dying hepatic cells and is low in rapidly growing cholangioepithelial cells. At a later period (95–100 days), the content of RNA begins to increase, together with the amt. of DNA. Hepatomas and cholangiomas are characterized by a high level of RNA and DNA. Erich Hirschberg

Glycogen content in carcinomas of the oral cavity. Erhard Fasske and Konrad Morgenroth (Städt. Krankenanstalten, Essen, Ger.). *Z. Krebsforsch.* 62, 375–82(1958).—Histochem. measurements indicate that a larger percent of oral malignant carcinomas than of carcinomas of the portio uteri contain glycogen. Detns. in normal oral mucosa are also presented. Glycogen content does not depend on the level of circulating insulin. Erich Hirschberg

Anticancer experiments. H. Okamoto, S. Koshimura, R. Hirata, K. Murasawa, Y. Bando, and R. Shimizu (Univ. Kanzawa). *Z. Krebsforsch.* 62, 408–18(1958)(in English).—*Living hemolytic streptococci inhibit the growth of the* Ehrlich ascites carcinoma and the Yoshida ascites sarcoma, presumably by forming streptolysin S at the expense of tumor ribonucleic acid. Other microörganisms (e.g. *Streptococcus faecalis, Staphylococcus aureus, Diplococcus pneumoniae, Escherichia coli, Neisseria gonorrhoae*) do not have these effects. The Yoshida tumor is inhibited by nitromin and by 6-(2-hydroxy-3,5-dibromophenylazo)-4-hexylresorcinol (I), but not by 6 hydroxybenzylidenes, 5 phenoxazones, 11 quinones, and 24 miscellaneous compds. tested in these expts. Inhibition of the *Ehrlich tumor by I was more* striking than that by mitomycin, carzinophilin, actinomycin J, 6-mercaptopurine, triethylenethiophosphoramide, or 1,6-bis(2-chloroethylamino)-1,6-deoxy-D-mannitol. I also inhibited the ascitic form of sarcoma 180. E. Hirschberg

Energy reactions inducing anoxygenic synthesis demonstrable in human tumors. F. Windisch (Deut. Akad. Wiss., Berlin), W. Nordheim, and W. Heumann. *Z. Krebsforsch.* 62, 423–33(1958).—Decoctions of various human cancer tissues may cause a marked generative effect on anabiotic fermenting yeast cells, but have no influence on the growth of respiring cells. Erich Hirschberg

Chemically defined substances, identical in action with materials present in cancer, endowed with an anoxygenically energy-liberating potential. F. Windisch, U. Gerhardt, W. Nordheim, W. Heumann, and H. Kerner (Deut. Akad. Wiss., Berlin). *Z. Krebsforsch.* 62, 565–84(1958).—A microbiol. test with *Saccharomyces cartilagenesis* strain U (preceding abstr.) is used to det. the ability of various materials to cause cell multiplication under strictly anaerobic conditions. The test is pos. with a series of plant and animal oils and lipide-contg. materials, e.g. sunflower oil, butter, and egg yolk (but not with liquid paraffin); with crude and purified lecithin (but not with lysolecithin); with crude cephalin and some of its fractions; with oleic, linoleic, linolenic, arachidonic, and clupanodonic acids (but not with petroselinic or erucaic acids). DL-6,8-Dimercaptooctanoic acid is inactive at noncytostatic concns. Diphosphopyridine nucleotide is inactive under these anaerobic conditions but active with aerobiosis. 63 references. Erich Hirschberg

A new procedure for cancer diagnosis. The agar-binding reaction. G. Csaba and I. Toro (Med. Univ., Budapest, Hung.). *Z. Krebsforsch.* 62, 481–94(1958).—A pos. reaction consists in the appearance of turbidity when the serum of cancer patients is added to agar under defined conditions. The reaction was pos. in 86% of 375 histologically proven carcinomas, in 13% of 528 patients with a wide variety of other diseases, and in 7% of normal subjects. In expts. dealing with the theoretical basis of this reaction, heparin, galactose, glucose, and fructose inhibited the formation of turbidity with cancer serums. It is postulated that rapidly growing tumor cells attack the hyaluronic acid-heparin barrier built up against them in the organism, liberating mucopolysaccharides demonstrable in the circulation by the agar-binding reaction. Erich Hirschberg

Influence of dehydroascorbic acid on tumor metabolism. E. Heise, W. Löhrs, and O. Neunhoeffer (Deut. Akad. Wiss., Berlin). *Z. Krebsforsch.* 62, 509–15(1958).—Dehydroascorbic acid (I) reduces anaerobic glycolysis, proportionately to its concn., by 34–68%; aerobic glycolysis is reduced 24% and respiration increases by 42%. I is not toxic up to 500 mg./kg. administered to rats. At 2 mg./kg., intravenous injections of I retarded the growth of Jensen sarcoma and Walker carcinosarcoma 256 in rats and of the Ehrlich ascites tumor in mice. Higher doses of I were not more effective. Erich Hirschberg

Influence of zymosan on experimental animal tumor growth. W. Löhrs, E. Heise, and H. Berndt (Deut. Akad. Wiss., Berlin). *Z. Krebsforsch.* 62, 516–18(1958).—The intravenous injection of 20 mg./kg. zymosan into rats bearing the Jensen sarcoma or the Walker carcinosarcoma 256 retards tumor growth, presumably by influencing the level of properdin. Erich Hirschberg

Uptake of methionine-S^{35} by the mitochondria of neoplastic cells. G. Giudice and V. Mutolo (Cancer Research Center, Palermo, Italy). *Z. Krebsforsch.* 62, 548–51(1958) (in English).—DL-Methionine-S^{35} was injected into normal mice and mice bearing the Ehrlich ascites tumor. Normal liver cells and ascites tumor cells were fractionated, and the sp. activities of the fractions were studied. Tumor mitochondria took up the labeled methionine at a lower rate than those of normal liver cells. After 3 hrs., the trichloroacetic acid-sol. fraction was more active in the tumor cells than in the normal cells. These differences were not found when the labeled methionine was administered *in vitro* to cultures of normal or malignant cells. Erich Hirschberg

Influence of adrenochrome on tumor cell metabolism. E. Heise, W. Löhrs, and O. Neunhoeffer (Deut. Akad. Wiss., Berlin). *Z. Krebsforsch.* 62, 555–60(1958).—Adrenochrome increases the respiration of cells of Jensen sarcoma or Walker carcinosarcoma 256 to double the normal amt. but does not influence aerobic and anaerobic glycolysis when added at a level of 0.3 ml. of a 0.01 *M* soln. Adrenochrome has no effect on the growth of Jensen sarcoma in rats. Adrenaline probably can be oxidized to adrenochrome by means of dehydroascorbic acid. Erich Hirschberg

Carcinogenic effect of asbestos implanted into rats. Dietrich Schmähl (Univ. Bonn, Ger.). *Z. Krebsforsch.* 62, 561–7(1958).—Asbestos fibers and small fragments were applied subcutaneously and intraperitoneally in 39 rats. Of the 30 rats which survived 15 months, 11 developed sarcomas at the site of implantation. Erich Hirschberg

Reactions of lymphoid tissue to stimulation by antigen. Albert H. Coons (Harvard Med. School, Boston, Mass.). *Harvey Lectures* 53, 113–29(1959); *cf. C.A.* 49, 15011*h*, 15012*a*.—A review. Julia O. Holmes

Significance of serum Fe determination in diagnosis of hepatobiliary diseases. Chin-Yüan Kuo, K'uo-Huan Liang, Sün-Yi Wang, and Hsing-Sheng Huang. *Chung Hua Nei K'o Tsa Chih* 6, 340–5(1958).—Serum Fe was detd. by the α,α′-dipyridyl method of Bothwell and Mallet (*C.A.* 49, 9720*e*), with slight modification. The color developed was read against a series of Fe standards in a Klett photoelectric colorimeter. Among 20 normal subjects the av. serum Fe value was 118 γ %, 135.5 γ % for 10 males and 100.5 γ % for 10 females. In 27 cases of acute hepatitis the av. serum Fe value was clearly above normal: 225.1 γ %. There was no definite correlation between serum Fe and bilirubin in the different disease stages of hepatitis exam'd. In 5 cases of chronical hepatitis the av. serum Fe value increased to 218.4 γ %. In cirrhosis of the liver, the serum content of Fe was normal: the av. for 32 cases was 115 γ %. In obstructive jaundice serum Fe value was either equal to or below normal. The av. of 11 cases with gall stone was was 96.8 γ %, significantly different from that of acute hepatitis. In neoplastic liver diseases the serum Fe value was lower than normal while in cases of hepatic necrosis, inflammations of the gall bladder and bile duct the serum Fe values were within the normal range. Microcytic anemia, acute infectious hepatitis, and malignant liver tumor showed lower than normal serum Fe. These clinical studies showed that detn. of serum Fe was an effective method in testing

adhesives contg. natural rubber, this flow was found to require an activation energy of 22 kcal. A second process concerned in the adhesion of those materials was the van der Waals' adsorption of the adhesive by the substrate. The energy, identified as the differential heat of adsorption, depended on the chem. nature of the substrate material. In the case of a particular natural-rubber-contg. adhesive, the heat of sorption was found to be within the range of 5.8 to 10.2 kcal., and there appears to be a correlation between the expti. heats of sorption and the chem. valency for metals. The third process appears to be the chemisorption of an acidic ingredient of the adhesive on a metallic surface, the latter probably oxide covered. In the case of adhesive-contg. rosin acids applied to a Au surface, the activation energy was found to be 50 kcal. Practical applications of pressure-sensitive tapes. James E. Corbin (Minnesota Mining & Manufg. Co., St. Paul). 139–41.—The uses of pressure-sensitive tapes were discussed, as follows: masking, holding, reinforcing, sealing, protecting, splicing, and identifying. Bonding of unsupported nitrocellulose films. H. P. Meissner and J. Byrne (Massachusetts Inst. of Technol., Cambridge). 142–5; cf. C.A. 47, 3788.—The spontaneous bonding of thin, unsupported films of nitrocellulose to solid surfaces on contact was reviewed, and work in progress was outlined. Aircraft structural adhesives. T. J. Martin (Wright Air Development Center, Dayton, O.). 146–7.—The advantages and disadvantages of using adhesives in aircraft manuf. were listed. Air force elastomer adhesion problems. J. H. Bernstein (Wright Air Development Center, Dayton, O.). 148–9.—These adhesion problems with elastomers are a result of severe conditions of usage and difficult structural considerations. Temps. varying over a wide range, high stresses, and exposure to liquids all take their toll. Room-temperature-setting adhesives for metals and plastics. H. A. Perry, Jr. (Naval Ordnance Labs., Silver Spring, Md.). 150–7.—The desirable properties of room-temp.-setting adhesives for different geometrical shapes, various combinations of adherends, and widely different environments were considered. A review of synthetic adhesives with a section on recent developments. P. L. Brunwyche. 158–64.—A review with 44 references. The adhesion of metals. G. W. Rowe (Univ. Cambridge, Engl.). 165–7.—A brief review is presented of the evidence suggesting that strong adhesive forces are a natural property of metallic and other surfaces in a state of complete cleanliness. 24 references. Joining aluminum: A summary of present practice. E. G. West. 168–78.—A summary of the methods of joining Al at present used in production and those aspects of the processes of particular interest in studying the general subject of adhesion have been indicated. 17 references. The adhesion of organic coatings in the manufacture of metal boxes. J. H. Brittain. 179–84.—A review with 12 references. The adhesion of rubber and textiles. W. C. Wake. 185–9; cf. C.A. 49, 8641b.—Tentative theories, as to the mechanism of adhesion of rubber and textiles, were advanced. It was indicated that a great deal of work is needed to det. the relative importance of mech. and chem. factors. Adhesion in siting textile fibers. K. W. Mieszkis. 190–2.—The adhesion of sizes and gums for cotton, rayon, and nylon is discussed. The importance of specific adhesion for keeping a size on the yarn is emphasized. It was suggested that knowledge of intermol. forces between the size and fiber surface may lead to a development of suitable sizes for the new man-made fibers. Physicochemical properties of animal glue. R. Barry Drew. 193–202.—The role played by viscosity, setting point, plasticity, tensile strength of jelly and of dry glue in the formation of a wood joint is discussed. The relation of these properties to grade is set out. It is suggested that to a first approximation they are a reflection of the degree to which the original long-chain gelatin mol. has undergone thermal scission during manuf. Sodium silicate as an adhesive. W. S. Macfarlane and J. F. Sewell. 203–8.—The properties and applications of Na silicate adhesives were discussed. 10 references. Industrial adhesives of vegetable and synthetic origin. W. J. Opie. 209–12.—Uses of industrial adhesives (starch and dextrin, natural gums, resin, rubber, lacquer types, thermosetting types, hot-melt adhesives, and emulsion adhesives) were reviewed. Adhesive compositions prepared from resin and rubber emulsions, by admixture with hydraulic cements. L. H. Griffiths. 213–17.—The compns. and uses of this type of adhesive were reviewed. Nondestructive testing of adhesives by ultrasonic waves. A. G. H. Dietz (Massachusetts Inst. of Technol., Cambridge). 218–24.—A nondestructive method of measuring dynamic moduli, elastic consts., elasticity, or Young's modulus and viscous modulus, with ultrasound to follow progressive deterioration of a bonded specimen caused by various phys. and chem. means, is described. Microcalorimeter for the measurement of energies of adhesion. Philip E. Berghausen (Univ. of Cincinnati, Cincinnati, O.). 225–7.—A twin microcalorimeter was designed and constructed specifically for the measurement of the energy of immersion. The calorimeter is capable of measuring the heat of one cal. with an accuracy of 1%. Comments on adequacy and limitations of current test methods. Lucius Gilman. 228–6.—The field of testing, as applied to adhesives and adhesion, was reviewed, indicating the present satisfactory methods and the need for new or improved methods. J. C. Arthur, Jr.

Selenium data. (Revision of *Inform. Circ.* 7690). J. D. Sargent (U.S. Bur. Mines, Washington, D.C.). *U.S. Bur. Mines, Inform. Circ.* 7715, 29 pp. (1955); cf. C.A. 48, 13564d.—Statistics are given on U.S. consumption, production, stocks from 1913 to 1954, geographic distribution, and foreign production, and Se minerals, chem. and phys. consts., methods of production, and use are reviewed. 192 references. C. W. Schuck

Technical isophorone. Rosarina Carpignano (Univ. Turin, Italy). *Ann. chim.* (Rome) 45, 81–7(1955).—A tech. sample (150 g.) of isophorone had d_4^{20} 0.920, n_D^{20} 1.4786, η_{20} 3.01. Distn. gave 26 g. b. up to 206° with the resp. consts. 0.922, 1.4769, 2.91; 41 g. b. 208–10°, 0.923, 1.4783, 2.83; 55 g. b. 210–11°, 0.920, 1.4788, 2.78; 20 g. b. 211–12°, 0.919, 1.4791, 2.84; 3.0 g. b. above 212°, 0.920, —, —. The color reaction $Na_2Fe(NO)(CN)_5$ was studied photocolorimetrically. Reproducible results were obtained when the order of addn. of the reagents was EtOH soln. of isophorone, H_2O, $Na_2Fe(NO)(CN)_5$, NH_3, and dilu. with H_2O to the required vol. Beer's law was obeyed between the concns. of 0.02–0.08. Henry Feuer

Strength of Japanese agar-agar gel. Kiyoshi Tanii. *Bull. Tôhoku Regional Fish. Research Lab.* 2, 134–47(1953) (English summary); cf. C.A. 47, 7698e.—The rigidity coeff., T/θ, and the breaking load, T_s, of the agar gel are proportional to the square of its concn., C. By using this relation, the phys. properties of the agar gel processed from 10 kinds of the seaweed were studied. With an elastic gel, the ratio C_s/C_g was high (T/θ = 1.51 (C_g)², T_s = 11.9 (C_g)²). Changes in C_s/C_g were studied during oiling, freezing, thawing, washing, bleaching, and drying. The values of T/θ and T_s both decreased when the agar was heated at 98° for 90 min. below pH 5.6, but that of T/θ changed only slightly under the same conditions at pH 8.8. When the agar was stored for more than 5 years, the value of C_s/C_g decreased remarkably. H. Fujita

Determination of pectin grade with the Ridgelimeter. H. C. Lockwood (Cadbury Bros. Ltd., Birmingham, Engl.). *Analyst* 80, 315–16(1955).—The Ridgelimeter was devised for detg. the strength of gelatin and agar jellies and applied to pectin in 1932. The method has been fully tested and here somewhat simplified directions are given. W. T. H.

Investigation of the nature of absorbents. I. Production of absorbents. V. B. Aleskovskii. *Trudy Leningrad. Tekhnol. Inst. im. Lensoveta No.* 27, 29–45(1953); *Referat. Zhur., Khim.* 1954, No. 32958.—The investigation concerned (1) production of a gel-like mass by mixing dry silica gel powder with CCl_4, dichloroethane, and other apolar liquids so that the gel obtained would not differ in its properties (syneresis upon standing and thixotropy upon shaking) from ordinary gels, and (2) the production of a C gel by the action of H_2SO_4 on concd. sugar solns. The adhesion of small particles of silica gel evacuated for 3 hrs. at 350° confirms the assumption on the interjoining of particles in the formation of active solid bodies. Distinct particles combine into a skeletal structure by polycondensation or polymerization. In this process phys. forces apparently play a secondary role. The presence of distinct particles in this structure is held unlikely. The formation of active solid bodies occurs also in chem.-extn. processes. Leaching of coal with a boiling mixt. of 400 ml. concd. H_2SO_4, 100 g. K_2SO_4, and 20 g. $CuSO_4$ for 8 hrs. yields active C. Calcination leads to similar results. M. Hoseh

Nickel supported on alumina as catalyst for synthesis of ethylamines from acetaldehyde, ammonia, and hydrogen. Hiroshi Uchida and Hideo Ichinokawa (Govt. Chem. Ind.

Research Inst., Tokyo). *J. Chem. Soc. Japan, Ind. Chem. Sect.* 57, 781–4(1954).—The catalytic activity of Ni on 2 kinds of Al_2O_3 carrier was exaind. for the synthesis of ethylamine. The specific surface area and pore dimension distribution were measured by CO_2 adsorption and Hg replacement, resp. H adsorption characteristics at −100 to +500° was also studied. The activity showed a max. at approx. 8% Ni content. The results indicate that the most active Ni catalyst has an intermediate cryst. size on the carrier surface. Katsuya Inouye

Connection between activity, structure, and acidity of magnesium silicate catalysts. N. A. Danilova. *Trudy Inst. Khim., Akad. Nauk Azerbaidzhan. S.S.R.* 13, 28–47 (1954)(in Russian).—MgO-SiO_2 catalysts, prepd. by co-pptn. (liquid glass mixed with $MgSO_4$ soln.) with different concns. of the reactants, were exaind. as to properties. While the chem. compn. as such was substantially const. for the series, the phys. properties (apparent d., porosity) showed considerable differences, differences which were also reflected in their cracking activity in gasoline formation. The difference in activity was primarily a function of porosity. No direct relation was found between acidity and activity. Catalysts prepd. from more concd. solns. were more stable at high temp. Thus the thermal deactivation results not only from structural change by H_2O loss from a chemically bound form but also from alteration of the actual porosity. G. M. Kosolapoff

A highly active nickel hydrogenation catalyst. W. Langenbeck, H. Dreyer, and D. Nehring (Deut. Akad. Wiss., Berlin). *Naturwissenschaften* 41, 332(1954).—Highly active Ni catalysts are made by decompn. of mixed Ni and Mg oxalates. A soln. of 25 g. $Ni(NO_3)_2.6H_2O$ and 225 g. $Mg(NO_3)_2.6H_2O$ in 600 cc. water is pptd. at 50° with a soln. of 122 g. $(CO_2H)_2.2H_2O$ in 600 cc. water. The mixed crystals contain 23.9 mole % Ni oxalate and 76.1 mole % Mg oxalate. After heating 4 hrs. at 350° in a H_2 current a black pyrophoric powder results contg. Ni and undecompd. Mg oxalate. It hydrogenates 5 cc. cyclohexene in 35 cc. benzene at room temp. and atm. pressure in 15 min., one fifth the time required with Raney Ni. The rigid Mg oxalate skeleton probably contributes to the quality. B. J. C. van der Hoeven

Industrial atmosphere. V. Formaldehyde in the atmosphere of working environment. J. Roubal, J. Zdrazil, and F. Picha. *Pracovní Lékařství* 4, 283(1953); *Public Health Eng. Abstr.* 33, No. 8, 5; cf. *C.A.* 45, 2355h.—The source of contamination of the air in work places where glues with a HCHO-urea base are used is to be found in the free HCHO contained in resins. Quantities of 0.50 to 1.4% of free HCHO were found in glues exaind. Technicians maintain that the use of glues which do not contain free HCHO is not practicable. Where resins are produced, it is necessary to provide good ventilation. Free HCHO remains for a long time on objects stuck together with synthetic glue or coated with a resin-contg. paste. Sites where such material is worked should contain adequate ventilation. It is best to use gas masks or respirators in places where HCHO is used in spraying hides for tanning. R. D. H.

Poisoning occurring during the manufacture of bromochloromethane. T. Hirokawa, I. Yokoyama, T. Ishikawa, and A. Kurisu. *Bull. Inst. Public Health* (Tokyo) 2, No. 2, 1–3(Sept., 1952); *Public Health Eng. Abstr.* 33, No. 12, 16(1953).—Clinical descriptions of 3 cases of poisoning during manuf. of CH_2BrCl were given. No precautions were taken against extensive leakage from app. in which MeCl and MeBr were mixed to produce the required reaction producing the final product. The final product and (or) MeCl were presumed to have caused the damage to circulatory system, liver, and nervous system. R. D. H.

Mortality from lung cancer in asbestos workers. Richard Doll (Med. Research Council, London). *Brit. J. Ind. Med.* 12, 81–6(1955).—Among 165 persons who had been employed at one asbestos (I) works, and for whom the cause of death was detd. at autopsy, 18 showed lung cancer. Of these 18, 15 also showed asbestosis; these 15 had started employment in the industry before 1923 and had worked at least 9 yrs. before dust-control regulations had become effective. Among 113 men who had worked at least 20 yrs. in places where they were liable to be exposed to I dust, there were 11 deaths from lung cancer, 22 deaths from other respiratory and cardiovascular diseases, and 39 deaths in all, as compared with expected no. of 0.8, 7.6, and 15.4, resp.; all cases of lung cancer were assocd. with asbestosis. Conclusion: Lung cancer was a specific industrial hazard of certain I workers. The risk has become less as the duration of employment under the old dusty conditions has decreased. Marion Horn Peskin

Burton's lead line at the gums in workers affected by lead poisoning. Dario Gallo (Univ. Milan). *Med. lavoro* 46, 39–45(1955).—The various parts of the Pb seam in lead poisoning are described. A. E. Meyer

Lead excretion of lead hardeners in a modern Swedish tool factory. K. G. Rignér, S. G. Sjöberg, O. Sjoholm, and R. Vetterberg. *Nord. Hyg. Tidskr.* 1953, 41–7; *Public Health Eng. Abstr.* 33, No. 12, 11.—In lead hardeners the amount of lead in the urine was higher than that of a control group. The porphyrin contents of the urine and the basophilic-aggregate values of the blood were on the same level as those of the control group. The exposure did not cause any evident symptoms of lead poisoning. R. D. H.

Two cases of lead poisoning in stonemasons. M. Oltramare. *Z. Unfallmed. u. Berufskrankh.* 45, 282–8(1952); *Public Health Eng. Abstr.* 33, No. 10, 9(1953).—Some 50 years ago it was customary in Switzerland for many stone-built houses to be coated with layers of white lead. Pb intoxication contracted by two stonemasons in the process of renovating such buildings is described. Clinical and lab. findings for the 2 men were, resp., as follows: hemoglobin 61, 70%; blood urea 50, 44 mg./100 ml.; blood lead 140, 122 γ/100 ml.; and urinary coproporphyrin concn. 1350, 450 γ/24 hrs. R. D. H.

The content of silica in the blood and urine of workers in dust-creating industries. R. Yu. Govorchuk (Ukrain. Inst. Ind. Hyg. and Occupational Diseases). *Bor'ba s Silikozom, Akad. Nauk S.S.S.R., Sbornik Statei* 1953, 309–11.—The presence of SiO_2 up to 10 mg. % in the blood and up to 20 mg. % in the urine is to be regarded as normal. Inhalation of free SiO_2 by the lungs increases its content in the blood and urine. No parallelism was discerned between the stages of progressive lung silicosis and the SiO_2 content of the blood or urine. The erythrocyte sedimentation rate tends to increase as the SiO_2 blood content is increased. B. S. Levine

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Analysis of phenols [in industrial effluents] (Commins) 7. *Patent:* Manuf. of silicone polymers without hydrolysis [for brake systems] (Guillissen) 31.

Catalyst. Mitchell S. Bielawski (to Universal Oil Products Co.). U.S. 2,704,747, Mar. 22, 1955. A solid catalyst is manufd. by (1) mixing over 50% by wt. of a phosphoric acid, a siliceous adsorbent, and about 0.5 to 10% by wt. of a Co oxide, hydroxide, or salt; and (2) drying and calcining the resultant mixt. The catalyst prepd. in this manner is active in promoting org. reactions, such as the polymerization of olefins. F. J. Wilson, Jr.

Magnesia-calcium oxide-silica composites. Wm. A. Pardee and Geo. E. Elliott, Jr. (to Gulf Research & Development Co.). U.S. 2,706,168, Apr. 12, 1955. A MgO-CaO-SiO_2 composite contg. about 1–18% CaO is subjected to the action of satd. steam at 250–600°F. and calcined. The lower temp. is used for a low-CaO and the higher temp. for a high-CaO composite. Examples are given showing that steaming results in a composite of increased d. and catalytic cracking activity. N. E. J.

Improving the activity of chlorite solutions. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler (Hermann Baier, inventor). Ger. 826,437, Jan. 3, 1952 (Cl. 8i, 2). Salts (I) of bi- or trivalent metals, such as Cu, Al, Mg, Ca, or mixts. thereof, are added to an acid chlorite soln. (II) to improve its activity in bleaching, sterilizing, pest control, etc. The quantity of I added should amount to at least 0.01 g. Cu (preferably 0.05–0.1 g.) and at least 0.1 g. (preferably 0.5–1 g.) Mg, Al, or Ca per l. II. When II is used in bleaching fibrous materials (III), it is suitable to pretreat III with a soln. of I and then with II. The rise in activity of II is based on the fact that the quantity of ClO_2 normally developed corresponding to $4NaClO_2 + 2HCl \rightarrow 2ClO_2 + NaClO_3 + 3NaCl + H_2O$ is increased to 3 moles (from 4 moles $NaClO_2$) by the addn. of 0.1 g. Cu (as $CuSO_4$) or 0.5 g. Mg (as $MgSO_4$) per l. II ($NaClO_2$ content 3.818 g./l.) at pH 3.6 and 60°; or to 2.5 moles by the addn. of 1 g. Al [as $Al_2(SO_4)_3$] or 1 g. Ca (as $CaCl_2$) per l. II. A

rected contains from 0.6% to 0.05% of the ester. Cf. C.A. 44, 9032a. O. Johnson

Sweetening for canned fruit. Arvid M. Erickson (to Hawaiian Pineapple Co. Ltd.). U.S. 2,499,375, Mar. 7, 1950. A clear water-white syrup is prepd. by treating an aq. ext. of fruit, such as raisins, with lime and H_3PO_4 to remove acids and ash-forming materials that might detract from the sweetening powers of the sugars. This syrup is then used in suitable concn. in place of sucrose in canning fruits, such as pears and cherries, and in juices and permits the use of greener fruit for canning. O. J. a

Sodium-free flavoring compositions. Frank J. Cahn (to Louis Milani Foods, Inc.). U.S. 2,500,919, Mar. 21, 1950. A flavoring material is prepd. by mixing the amt. of finely divided K_2CO_3 or $KHCO_3$ required half to neutralize a given amt. of finely divided glutamic acid. This flavoring material may also be used as a base for dry soup concentrates. If the dry mixt. is to be canned, K_2CO_3 should be used. E. L. Sexton b

Pentosan and feed concentrates from cottonseed hulls. Henry E. Stiver (to Quaker Oats Co.). U.S. 2,500,435, Mar. 14, 1950. Hulls are ground so that approx. 50% will pass through a 50-60-mesh screen. The fine fraction contains approx. 2 times the fat content and 1.66 times the protein content of the original hulls. The concn. of palisade cells in the coarse fraction increases the pentosan content to approx. 1.5 times that in the original hulls. O. Johnson c

Vitamin concentrate. Adolf Rosenberg. U.S. 2,501,409, Mar. 21, 1950. In prepg. a vitamin concentrate suitable for supplementation of animal feeds, 200 parts by wt. of liquid condensed molasses-distiller's solubles (I) was heated to approx. 200°F., and 16–24 parts by wt. of a gum or synthetic emulsifying agent was added. This mixt. was stirred until it obtained a jellylike consistency. This jelly was added to approx. 1200 parts by wt. of I, and the mixt. agitated for 4–6 hrs. Following the addn. of 600 parts by wt. of fish-liver oils, the mixt. was agitated for 12 hrs. The resulting liquid was strained and the filtrate homogenized. This emulsion may be frozen (−30°) and returned to the liquid state without damaging the emulsion. E. L. Sexton d

13—CHEMICAL INDUSTRY AND MISCELLANEOUS INDUSTRIAL PRODUCTS

T. H. CHILTON

General report on the evolution of the chemical industry during the last century. Maire. *Mém. soc. ing. civils France* 101, Spec. III, 400–33(1948). M. Hartenheim a

World trade prospects for 1955; Our American chemicals will have to fight for foreign markets. Robert S. Aries (R. S. Aries & Assoc., Brooklyn, N.Y.). *Chem. Eng.* 57, No. 2, 128–30(1950).—The fertilizer, plastics, and dyestuffs industries of Western Europe have regained their vigor and are expected to provide lively competition to American firms in the export markets. J. C. Tallman b

How Calco planned a plant for future expansion. Morgan M. Hoover. *Chem. Eng.* 57, No. 2, 134–5, 190(1950).—Discussion of provisions for future expansion during design and construction of the new Willow Island, W. Va. plant of the American Cyanamid Co., Calco Chemical Division. J. C. Tallman c

Industry and the Chemical Corps. Anthony C. McAuliffe (U.S. Army, Washington, D.C.). *Armed Forces Chem. J.* 3, No. 8, 28–9(1950).—Industrial mobilization and procurement planning are discussed. L. W. G. d

Making research effective. G. G. Oberfell (Phillips Petroleum Co., Bartlesville, Okla.). *Chem. Eng. News* 28, 1278–83(1950). E. J. C.

Examination of the benzene market in America. P. P. Gardeniers. *Chem. Weekblad* 44, 93(1948).—At present with the high demand for steel there is just about sufficient by-product C_6H_6 available for the various chem. industries, but should the amt. of coke produced fall, as it may well do as a result of probable changes in steel processing, there is likely to be a severe shortage of C_6H_6 from coal tar, which will probably result in an increased price and an urge to manuf. more from petroleum. E. A. e

Prophylactic fluorination in a galvanic workshop. A. R. Khesina and V. M. Serebryakova (Moscow Med. Inst.). *Stomatologiya* 1949, No. 4, 28–9.—Partially beneficial results in prevention of dental caries with a NaF paste. N. Thon f

Panel on epidemiology, including environmental and occupational cancer. W. C. Hueper, *et al.* (Natl. Cancer Inst., Bethesda, Md.). *Proc. Natl. Cancer Conf.* 1949, 214–58; cf. *C.A.* 43, 7375g.—The following forms of occupational cancer are discussed: bladder tumors from β-naphthylamine and benzidine; skin cancer from petroleum fractions, shale oil, arsenicals, and radiation; lung cancer from chromates, asbestos, and Ni carbonyl; and bone cancer from radium. The possibility is being investigated that cancer may be produced by hars contg. radium used to prevent accumulation of static electricity in textile and printing plants. Beryllium compds. are reported to have produced tumors in animals and pulmonary disease but thus far no tumors in man. Marion Horn Peskin g

Injuries following continued administration of cadmium: Preliminary study of a clinical and experimental study. Lars Friberg (Natl. Inst. of Public Health, Stockholm). *Arch. Ind. Hyg. Occupational Med.* 1, 458–60(1950).—Workmen exposed to Cd and Ni dust in an alkali storage battery plant developed anosmia, emphysema of the lungs, lowered working capacity, proteinuria, increased erythrocyte sedimentation rate, and impairment of renal function. Exptl. evidence indicates that Cd is responsible for the proteinuria and emphysema, although Ni possibly contributes to the emphysema. C. L. Campbell h

Prophylaxis of dental caries in chemical industry. R. P. Sukhovol'skaya (Moscow Med. Inst.). *Stomatologiya* 1949, No. 4, 29–30.—Beneficial results of preventive treatment with a 75% NaF paste in plants producing HNO_3, SO_3, or handling Pb. N. Thon i

Prevention of silicosis. D. Evans and W. Schweisheimer. *S. African Mining Eng. J.* 60, II, 897–9(1950).—The problem of pneumoconiosis in the wider sense is discussed and the status of diagnosis, treatment, and prevention compared between England, the United States, and South Africa. Prevention of silicosis should principally consist in removal of all harmful dust concns., i.e., with more than 15%–20% SiO_2 exceeding 5 million particles per cu. ft. of air. Inhaling Al for prevention and treatment of silicosis is considered very helpful. In treating the use of a nebulizer to introduce drugs into the respiratory tracts in form of a fine mist proved effective only in combination with a valve introducing the mist under pressure and doing the miner's breathing for him if the disease has progressed so much as to impair the elasticity of the lungs. M. Hartenheim j

Packing incendiary bomb clusters. A container problem. Fred B. Shaw, Jr. (Army Chem. Center, Md.). *Armed Forces Chem. J.* 3, No. 8, 39–41, 40(1950).—The use of a moisture-proof drum and silica gel dehydrating agent materially reduced the moisture deterioration of Mg and incendiary-oil bombs. L. Wilson Greene k

Properties and essential information for the safe handling and use of formaldehyde. Anon. *Mfg. Chemists' Assoc., Chem. Safety Data Sheet* SD-4, 13 pp.(1949). E. H. l

Properties and essential information for the safe handling and use of paraformaldehyde. Anon. *Mfg. Chemists' Assoc., Chem. Safety Data Sheet* SD-6, 11 pp.(1950). E. H. m

Armour's star. Ralph H. Potts (Armour & Co., Chicago, Ill.) and Gordon W. McBride. *Chem. Eng.* 57, 124–7, 172–5(1950).—Description and flowsheet of Armour's new plant at McCook, Ill., for chem. production from fats, oils, and fatty acids. Principal products n

Processing citrus juices. Everette M. Burdick and James S. Allen (to Texsun Citrus Exchange). U.S. 2,563,705, Aug. 7, 1951. Scale-forming compds. are removed from citrus juice so that it may be concd. in an evaporator, in the production of citrus molasses, without depositing scale. The juice is made alk. with lime and heated with a submerged flame to ppt. pectin, acids, and other compds. which might form a scale. W. B. Esselen, Jr.

Thickening fruit composition. Albert C. Edgar and Orville J. Pickens. U.S. 2,563,996. The fruit is prepd. for processing. The thickening agents usually used in baking, plus sugar and spices, are well mixed, the juice is partially thickened, added to the fruit, and the fruit processed. The canned fruit is ready for immediate use in pastries, etc. The thickening agents employed are flour, gums, and starches. R. W. Elliott

Nut butter. Paul J. Mitchell, Jr. U.S. 2,562,630, July 31, 1951. The process consists of dispersing a stabilizer in nut butter at the time that it is ground, cooling rapidly, and storing at a temp. below the beta crystn. temp. Hydrogenated fats in concn. of 2–5% of the nut butter are employed as stabilizers. R. W. Elliott

Whipping composition from soybeans. Raymond S. Burnett and James K. Gunther (to Central Soya Co., Inc.). U.S. 2,489,173, Nov. 22, 1949. A stable, whipping agent of desirable odor, flavor, and color is prepd. by leaching solvent-extd. soybean flakes with water acidified to pH 4.0–5.0 to remove the bulk of sol. N-free ext., partly hydrolyzing the proteinaceous residue by the action of pepsin at 100°F. and pH 2.5, adding about 0.2% of a peptizing salt, such as NaCl or a Na phosphate, to dissolve part of the unhydrolyzed protein, removing the insol. material by filtration at about pH 3.0, adjusting the pH of the filtrate to 4.5, and drying it. E. O. Whittier

Reversible gel from soybeans. Arthur C. Beckel and Paul A. Belter (to the United States of America, as represented by the Secy. of Agr.). U.S. 2,561,333, July 24, 1951. A reversible gel is prepd. by extg. an alc.-extd. proteinaceous soybean residue with water, adding to the ext. contg. 10–25% solids 30–50% alc. by vol. of the water present, heating the soln. to between 75° and boiling, and cooling to below 30°. Flavorings, seasonings, fruit, or nuts may be added as the basis of food products, including desserts. The alc. may be added in the form of spirituous liquors to produce solidified cognac or wine. The gel may be whipped either with or without the added flavorings or other materials. Cf. *C.A.* 44, 3177g. E. O. Whittier

Soluble coffee. Roger Glimont. U.S. 2,563,233, Aug. 7, 1951. A process of producing sol. coffee consists of solvent-extg. ground roasted coffee, fractionating the solvent ext. by mol. distn. into sepd. aroma and fat constituents, decaffeinizing the solvent-extd. grounds, H_2O-extg. the solvent-extd. decaffeinized grounds and recombining the sepd., molecularly distd. aroma constituent with the H_2O-extd. constituent. The fatty constituent, not required in the beverage powder, is a useful edible fat. A heavier residue fat, useful for soap or other purposes, is also obtained. W. B. Esselen, Jr.

13—CHEMICAL INDUSTRY AND MISCELLANEOUS INDUSTRIAL PRODUCTS

C. L. MANTELL

Taxes and the chemical industry. World War II tax amortization revived. Robert A. Irwin (Ring Bldg., Washington, D.C.). *Chem. Eng. News* 29, 2369–72, 2437 (1951). Impact of tax structures on industrial research. Fred Olsen and T. Gaynor Blake (Olin Inds., Inc., East Alton, Ill.). *Ibid.* 2724–8. E. J. C.

The effect of government regulations on commercial chemical development. Coördination with the government. John L. Burns. *Chem. Eng. News* 29, 1716–19(1951). Chemicals and plastics. F. H. Carman (Manufg. Chemists' Assoc., Inc., Washington, D.C.). *Ibid.* 1719–21. Pattern for coöperation. Burton B. Biggs (Munitions Board, Washington, D.C.). *Ibid.* 1721–23. Labor, capital, and materials. Wesley Lindow (Irving Trust Co., New York, N.Y.). *Ibid.* 1816–19. NPA's Chemical Division. Joseph S. Bates (Natl. Production Authority, Washington, D.C.). *Ibid.* 1820–22. NPA's role in defense. Frank R. Creedon (Natl. Production Authority, Washington, D.C.). *Ibid.* 1822–3. Chemicals in foods. Isaac Fogg (Atlas Powder Co., Wilmington, Del.). *Ibid.* 1933–5. E. J. C.

World chemical trade. C. C. Concannon (Natl. Production Authority, Washington, D.C.). *Chem. Eng. News* 29, 2612–15(1951). E. J. C.

Transportation of chemicals. Transportation by railroad. J. Robert Spraul (General Am. Transportation Corp., East Chicago, Ind.). *Chem. Eng. News* 29, 2028–32(1951). Chemicals take to the road. C. Austin Sutherland (Natl. Tank Truck Carriers, Inc., Washington, D.C.). *Ibid.* 2460–3.—About transportation by truck. Seagoing chemicals. Oliver E. Beutel (Dow Chem. Co., Freeport, Texas). *Ibid.* 3526–8.—A discussion of the transportation of chemicals by ship. E. J. C.

Organization for development in a chemical company. Edward A. O'Neal. *Lectures, Monographs and Repts.* 1951, No. 2, 21.—12th Glucksteln memorial lecture. The organization of a chem. company is discussed and charts of typical administrative systems for a company and for the development departments are shown. H. L. Williams

The application of isotopes in chemical industry. Henry Seligman. *Chemistry & Industry* 1951, 724–7. E. H.

Research and development personnel in industrial laboratories. Myron J. Rand (Natl. Research Council, Washington, D.C.). *Chem. Eng. News* 29, 3804–8(1951). E. J. C.

Accident trends in the chemical industry. S. M. MacCutcheon (Dow Chem. Co., Midland, Mich.). *Chem. Eng. News* 29, 3609–11(1951). E. J. C.

Organizing for disaster control. Will H. Shearon, Jr. *Chem. Eng. News* 29, 3694–7(1951).—Of interest to chem. industry. E. J. C.

Recent work on toxic war agents. BAL (British antilewisite). Z. M. Bacq (Univ. Liége, Belg.). *Actualités biochim.* 8, 1–48(1947).—A review with 60 references. W. C. Tobie

Diseases of the lung resulting from occupational dusts other than silica. Kenneth M. A. Perry. *Thorax* 2, 91–120(1947).—A review on the toxic and pathol. effects of dusts contg. Mn, Be, V, Os, Pt, As, Ba, Al, graphite, china clay, talc, sillimanite, mica, asbestos, and various org. materials. Many references. W. C. Tobie

Study of dusts in industrial atmospheres. VI. Photoelectric apparatus and apparatus for collection of large samples. P. F. Holt (Univ. Reading, Engl.). *Metallurgia* 44, 108–10(1951); cf. *C.A.* 45, 9197i.—H. describes the photoelec. methods of obtaining instantaneous readings which are a measure of the dustiness of the atm. App. for the collection of large samples for fundamental research purposes is also described. H. Stoertz

The problem of reduction of atmospheric pollution. I. Pollution by sulfur compounds. S. R. Craxford. *J. Roy. Sanit. Inst.* 71, 209–12(1951).—No economic process has been developed for the removal of S compds. from flue gas. Rachel Brown

The control of air pollution in the chemical industry. Marcus Sittenfield. *Chem. Eng. Progress* 47, 481–3(1951).—A review. C. L. Mantell

Eye irritation caused by Los Angeles smog. Richard D. Cadle and Paul L. Magill (Stanford Research Inst., Stanford, Calif.). *Arch. Ind. Hyg. Occupational Med.* 4, 74–84(1951).—A mixt. contg. HNO_3, SO_2, SO_3, oil, particulate lampblack, O_3, NaCl, and gasoline was considered by human subjects to simulate natural smog in odor and irritating properties. While removal of all particulate components had little effect, removal of all gaseous components eliminated eye irritation of the artificial smog. C. L. C.

Industrial radium poisoning. Helmut Roth. *Deut. med. wochschr.* 76, 776–7(1951).—Ra poisoning in contrast to many other industrial poisonings takes a course which lingers over years, is comparable in some respects to the latent phase of an infection, and occasionally causes general injury to the hardiness of the organism. Care must be devoted to the avoidance of occupational injury from radioactive substances through intensive industrial hygiene protective measures such as sufficient ventilation of the work-

room, protection against rays, and a watch on the health of exposed persons. Morris B. Jacobs

Persistence of beryllium oxide in lungs after inhalation of dust. Frank R. Dutra, Edward J. Largent, Jacob Cholak, Donald M. Hubbard, and James L. Roth (Univ. of Cincinnati, Cincinnati, O.). *Arch. Ind. Hyg. Occupational Med.* 4, 65–73(1951); cf. *C.A.* 45, 9158c.—When rats were exposed to powd. BeO, calcined for 3 hrs. at 1200°, with a mean particle diam. of 0.285 μ, from 1 hr. to 5 days, progressive accumulation of BeO in the lungs occurred; the BeO remained within the lungs for over a year with little redistribution to other tissues. C. L. Campbell a

Generation of phosgene during operation of trichloroethylene degreaser. Louis W. Spolyar, R. N. Harger, J. F. Keppler, and H. E. Bumsted (State Board of Health, Indianapolis, Indiana). *Arch. Ind. Hyg. Occupational Med.* 4, 166–00(1951).—A worker operating a vapor degreaser with no water in the cold-section condenser, with $ClHCCCl_2$ as the solvent and heat-control set for Cl_2CCCl_2, incurred a fatal exposure to $COCl_2$, produced by the breakdown of $ClHCCCl_2$ by a heating coil operating at cherry-red heat. C. L. Campbell b

Chemical engineering unit processes review. Kinetics and equilibria. R. H. Wilhelm and R. K. Toner (Princeton Univ., Princeton, N.J.). *Ind. Eng. Chem.* 43, 1898–1907 (1951). Alkylation. R. Norris Shreve (Purdue Univ., Lafayette, Indiana). *Ibid.* 1908–18. Amination by reduction. Jesse Werner (General Aniline & Film Corp., Grasselli, N.J.). *Ibid.* 1917–19. Ammonolysis. Arthur C. Stevenson (E. I. Du Pont de Nemours & Co., Wilmington, Del.). *Ibid.* 1920–4. Combustion. Bernard Lewis and Guenther Von Elbe (U.S. Bur. Mines, Pittsburgh, Pa.). *Ibid.* 1925–41. Esterification. E. Emmet Reid (203 E. 33rd St., Baltimore, Md.). *Ibid.* 1942–7. Fermentation. Sylvan B. Lee (Commercial Solvents Corp., Terre Haute, Indiana). *Ibid.* 1948–69. Friedel-Crafts reactions. Philip H. Groggins and Samuel B. Detwiler, Jr. (U.S. Dept. Agr., Washington, D.C.). *Ibid.* 1970–4. Halogenation. Earl T. McBee and Ogden R. Pierce (Purdue Univ., Lafayette, Indiana). *Ibid.* 1974–8. Hydrogenation and hydrogenolysis. Harold W. Fleming (Girdler Corp., Louisville, Ky.). *Ibid.* 1978–86. Nitration. Willard deC. Crater (Hercules Powder Co., Wilmington, Del.). *Ibid.* 1987–90. Oxidation. L. F. Marek (Arthur D. Little, Inc., Cambridge, Mass.). *Ibid.* 1990–6. Polymerization. Charles C. Winding (Cornell Univ., Ithaca, N.Y.). *Ibid.* 1997–2006. Pyrolysis of coal and shale. Charles H. Prien (Univ. of Denver, Denver, Colo.). *Ibid.* 2006–15. Pyrolytic and catalytic decomposition of hydrocarbons. Vladimir Haensel and Melvin J. Sterba (Universal Oil Products Co., Riverside, Ill.). *Ibid.* 2016–22. Sulfonation and sulfation. Everett E. Gilbert and E. Paul Jones (Laurell Hill Research Lab., Long Island City, N.Y.). *Ibid.* 2022–32.—Reviews with many references. Cf. *C.A.* 44, 9589b. G. G. c d e f

Flotation of minerals, especially nonmetallic ones, and its relation to the chemical industry. Hector Canguilhem Contrucci. *Anales 1° congr. panamer. ing., minas y geol., Santiago, Chile* 4, 1796–1801(1942); cf. *C.A.* 39, 1968⁵.—Discussion of different applications of the flotation process in the chem. industry. Ilse Zeise g

Application of tests for randomness. Carl A. Bennett (General Elec. Co., Richland, Wash.). *Ind. Eng. Chem.* 43, 2063–7(1951).—The successive occurrence of like elements (runs) and the mean square successive difference indicate the types of nonrandomness commonly found in chem. data. Their use can avoid faulty conclusions because of incorrect assumptions, or can suggest investigation of factors systematically affecting the results. Four types of nonrandomness are illustrated: extreme values, discontinuities, trends, either rapid or long-term periodic fluctuations. The data treated are: weekly average coke yield, the d. of 89 samples of U detd. by two labs., and U content of a standard sample of U_3O_8. F. G. N. h

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Reaction of aromatic compds. with allyl chloride and allyl nic. in presence of acidic catalysts—C_6H_6 and toluene in presence of $AlCl_3$ [eye irritants] (Lowy) 10. Nature of tack (Voet) 2. *Patents:* Increasing the electrical insulating power of glasses or porcelains (Wakabayashi) 19. Chemical aftertreatment of high polymers contg. cyano groups [electrical laminations and insulation] (Brown) 31. Liquid copolymers of ethylene and styrene [dielectrics] (Young) 31. Polymers and copolymers of acenaphthylene [electrical insulation] (Flowers) 31. Chlorinated indan derivs. [heat-transfer agents, hydraulic fluids, etc.] (Warner) 10. i

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Brož, Josef: Receptář chemicko-technický. 2nd ed. Prague: J. Svoboda. 1947.

Jähne, Friedrich: Der Ingenieur im Chemiebetrieb. Weinheim: Verlag Chem.—1951. 264 pp. DM 14.80.

Moving solid catalyst regeneration system. Louis P. Evans, Russell Lee, and Wm. A. Hagerbaumer (to Socony-Vacuum Oil Co., Inc.). U.S. 2,566,285, Aug. 28, 1951. The catalyst stream entering the regeneration unit is split by new-type baffles to provide holes in the catalyst bed through which an O-contg. gas may be passed to burn off carbonaceous contaminants. The unit provides for removal of combustion products and intercooling for multistage operation. A max. spread of 70°F. in the temp. of the combustion zone is claimed. This allows catalyst regeneration at a temp. near that causing heat damage. L. J. S.

Catalyst for the preparation of olefin oxides by the vapor-phase oxidation of olefins. Tsuyoshi Okamoto, Mitsuo Mitani, and Hisao Kano. Japan. 179,485, June 29, 1949. The nonmetal carrier is treated with melted $AgNO_3$ and then treated in aq. $AgNO_3$ contg. a Au salt. K. Kitsuta

Silver-calcium catalyst. Adrien Cambron and Francis L. W. McKim (to National Research Council, Ottawa). U.S. 2,562,838, July 31, 1951. An oxidation catalyst, such as one useful for oxidation of C_2H_4, is composed of Ag alloyed with 1–15% alk. earth metal (with specific claim for Ca), from which at least 5% of the latter is subsequently removed. The latter may be done by subjection to oxidation, followed by acid leaching. Aq. AcOH may be the acid in the last step. The oxidation step is carried out by heating the catalyst to 200–400° in moist atm. G. M. K.

Catalyst regeneration. John W. Barker (to Houdry Process Corp.). U.S. 2,561,331, July 24, 1951. A description and explanation are given of a process for regenerating catalysts contg. carbonaceous deposits by contact with an O-contg. gas which is introduced into the kiln under pressure. Edgar R. Wright

Changing of alkaline earth ion exchange resin to sodium ion exchange resin. Toshio Yamamura and Yoshinori Noriyama (to Mitsubishi Chemical Industries Co.). Japan. 179,650, July 18, 1949. Regeneration of an exchange resin contg. Ca^{++} or Mg^{++} is effected by adding sea water or Na_2SO_4 at pH 3–6. K. Kitsuta

Sintered mixtures of oxides as dielectric thermoconductors. Sante Astaldi. Ital. 459,535, Sept. 25, 1950. Dielectric thermoconductors are dielectrics which become conductors at high temps. Mixts. of Fe oxides 70–90, CuO 4–5, MgO 4–5, H_3BO_3 3, TiO_2 10–20, and bentonite 2% are kneaded together and fired at 900–1400°. Ba, Sr, Al, and rare-earth oxides may also be added. C. Scandura

Rubber-insulated power cable. Stephen Bunish and Herbert C. Wittboft (to Anaconda Wire and Cable Co.). U.S. 2,558,929, July 3, 1951. To increase the heat cond. of multiconductor, rubber-insulated power cables, the usual jute fillers are replaced with graphite and (or) C black-filled rubber. From 5 to 20% graphite can be used successfully without impairing the insulating properties of the rubber. It is also proposed that the insulation of single conductor cable be also made of graphite-filled rubber covered by a regular jacket compd. and with an inner conductor jacket having superior dielec. strength. A typical compn. having high thermal cond. is given as: Neoprene gum stock 38.0, stearic acid 0.50, stabilizer 1.25, oily plasticizer 2.00, calcined magnesia 1.50, C black 44.25, graphite 10.00, and ZnO 2.50% by wt. This material is easily mixed, extruded, and vulcanized in the usual manner and has a good thermal cond. while having an elec. resistivity in excess of 200 megohms per cc. Both synthetic and natural rubbers can also be used with similar success. The construction given for single conductor cable is designed for low-voltage (600 v. or less) applications, such as distribution circuits where temporary overloading will not overheat the cables. The new insulation, by running cooler, gives a longer expected life and also reduces the fire hazard during short circuits on overloaded cable. The new cable is proposed for supplying power to coal-mining machinery where overloads up to 200% are not uncommon for short periods of time. W. W. Pendleton j k

E. B. Hughes, *et al. Ibid.* 576–601. Fine chemicals and medicinal substances. N. R. Campbell. *Ibid.* 602–14. Essential oils, isolates, and derivatives. G. R. A. Short. *Ibid.* 615–21. Photographic materials and processes. D. J. T. Howe (Elliott & Sons Ltd., Herts, Eng.). *Ibid.* 622–43. Sanitation and water purification. John Hurley. *Ibid.* 644–60.—Reviews with many references. Cf. *C.A.* 40, 1613⁹. G. G.

Chemistry industry and the National Security Resources Board. W. T. Hack. *Chem. Eng. News* 26, 2884–5(1948). E. J. C.

Heavy chemical industries. D. Venkateswarlu. *Indian Textile J.* 58, 919–28(1948).—A review and comparison is made of some aspects of the chem. industry in India and abroad. W. H. Boynton

Chemicals—industrial giant. Caldwell R. Walker. *Mfrs.' Record* 117, No. 8, 35, 37–8(1948).—A brief survey of the industry. Leopold Scheflan

Chemical industries of Japan. Campbell Osborn (213 Woodward Bldg., Washington, D.C.). *Chem. Eng. News* 26, 3018–21(1948). E. J. C.

A plan of industrial training for chemists and engineers. Charles H. Kline, Jr. (General Elec. Co., Pittsfield, Mass.). *Chem. Eng. News* 26, 2992–4(1948). E. J. C.

Work at Israel's Sieff Institute. Milton Orchin (Bur. of Mines, Pittsburgh, Pa.). *Chem. Eng. News* 26, 2956–7(1948).—The work and personnel of the Daniel Sieff Institute in Rehovoth, Israel, are described. In addn. to basic research much effort is devoted to problems relating to the intensive industrialization and scientific agriculture that are needed to support a large number of people in a small land area. Milton Orchin

Rock wool investigations. G. F. Murphy and F. DeWolfe (Nova Scotia Tech. Coll., Halifax). *Nova Scotia Dept. Mines, Ann. Rept.* 1946, 131–5(1947).—The important consideration in the choice of raw materials for rock wools is that the material be self-fluxing. If the acidic and basic portions are nearly equal by wt., and the loss on ignition (CO_2) is between 20 and 30% the material will be suitable. Chem. analyses of various limestones are given, and mixts. suggested for obtaining better-quality rock wool. Marie L. Lindberg

Report on industrial minerals. M. G. Goudge (Dept. Mines, Halifax). *Nova Scotia Dept. Mines, Ann. Rept.* 1946, 67–80(1947).—Production and mine operations for barite, ceramics, dolomite, fluorspar, granite, gypsum, limestone, salt, and slate are described. M. L. L.

Report on industrial minerals. M. G. Goudge (Dept. Mines, Halifax). *Nova Scotia Dept. Mines, Ann. Rept.* 1947, 56–69(1948).—Production and mine operations for barite, ceramics, granite, gypsum, limestone, oil, salt, and silica are briefly described. Marie L. Lindberg

Sensitivity of calcium silicide smoke mixtures to static electrical discharge. Archibald Gillies (Natl. Research Labs., Ottawa, Can.). *Can. J. Research* 26F, 297–301 (1948).—During the recent war a number of fires occurred in plants prepg. a smoke mixt. contg. $CaSi_2$ 10-C_2Cl_6 45-ZnO 45%. When blended thoroughly the mixt. burns relatively slowly. Such behavior led to the misconception in the plants that the materials were quite safe to handle in all possible combinations. A static electricity generator was used to test 0.5 g. samples of various combinations of the ingredients to det. the lowest voltage required to cause ignition. It was concluded that there is a wide range of mixts. with silicide content varying from 20–90% that can be readily ignited (50 v. or less). To avoid such concns., the final mix was approached from a 50–50 ZnO-C_2Cl_6 mixt. These two components were well blended and the $CaSi_2$ was slowly added. No fires were experienced under the above mentioned procedure. James C. Eubanks

Cyclone apparatus for dust-separation industries. W. Muhlrad. *Génie civil* 124, 152–5(1947).—Practical formulas are developed for detg. the effect of different phys. and structural factors on the efficiency of the collector and, also, for detg. the best yield obtainable under a given condition. The phys. laws involved in sepg. dust from a gas are discussed in detail. In practice, it was found that increasing the temp. of the gas from 0° to 400° increased the wt. of dust not collected by 50%. A reduction in density of the dust particle from 1.8 to 0.8 increased the wt. of dust particles not collected by 60%, due to the film of gas. Each app. has its optimum speed. Dynamic dust collectors are not satisfactory for tiny particles (microns in size), for toxic dusts, or for the recovery of valuable dusts, where 100% efficiency is desired. Recent progress suggests an ultimate yield of 92–95%. Ann Nicholson Hird

An improved method of reclaiming industrial diamonds from bit drills. A. R. Hazelgrove (Can. Industries Ltd., McMasterville, Que.). *Can. Metals Met. Inds.* 11, No. 9, 26(1948).—*Diamond reclamation from drill bits may be effected from the 3 types of powd. alloy rings.* The types are: (I) iron, W, brass, C alloys, (II) iron, WC, brass alloys, and (III) Cu-Co-Mo alloys. The treatments are: for (I): (*a*) The bits are dissolved in a mixt. of 40–60 pts. 70% HNO_3, 40–20 pts. 60% HF, and 20 pts. water. The salts, after decanting the excess acid and washing the salts with water, are dissolved by one of 2 methods; a 1:1 mixt. of NH_4OH and water is added to the salt, stirred and filtered, and washed with warm HCl (1:1) or a mixt. of 1 pt. H_3PO_4 (85%) and 1 pt. water is added to the crystals and the mixt. stirred and warmed if necessary; (*b*) Alternately the bits are dissolved in a mixt. of 1 pt. HNO_3 (70%), 1 pt. HF (48% or 60%), and 1 pt. H_3PO_4 (85%). This mixt. will dissolve all but minor amts. of C. (II). This alloy is not sol. in *b*, but the salts resulting from soln. in the regular HNO_3-HF acid mixt. are sol. in the same reagents and by the procedure as Type I alloy except for warming the mixt. with 1:1 H_3PO_4 to effect soln. (III) This alloy is completely sol. in: (*a*) 40–60 pts. HNO_3, 40–20 pts. HF, and 20 pts. water, or (*b*) the same mixt. as in I. W. H. Boynton

Radiation hazards in industry. Charles R. Williams (Harvard School of Public Health, Boston, Mass.). *J. Ind. Hyg. Toxicol.* 30, 294–9(1948).—The industrial use of x-rays, and of naturally and artificially radioactive elements is discussed. G. M. Petty

Working conditions and health protection measures in the mining of ozocerite. P. L. Braginskii (Kiev. Inst. Profess. Hyg.). *Gigiena i Sanit.* 13, No. 5, 24–8(1948).—Analyses of air samples taken from various parts of the mine showed the presence (in mg./cu. m.) of hydrocarbons 0.1–11.56, CH_4 0.3–2.73, CO_2 1.01–2.73, H_2S traces–0.003, SO_2 traces–0.0085. The limits of the compn. of the hydrocarbons (other than CH_4) were: total satd. 2.3–5.96, total unsatd. 0.62–9.62, heavy satd. 0.5–1.5, heavy unsatd. traces, light satd. 2.32–5.19, light unsatd. 0.6–1.56. The relative compn. of the hydrocarbons, in %, was CH_4 1–4, light satd. 46–72, light unsatd. 16–25, heavy satd. 10–24, heavy unsatd. traces, aromatic traces. During the 1st 2 hrs. after mining, 6 g. ozocerite evolved, in mg./l. air, light hydrocarbons 24.27, heavy 30, CH_4 0.48; the amts. evolved during the 1st 2 hrs. by the ozocerite-contg. ore, 10 g., were 1.22, 1.88, and 0.31, resp. Ventilation and other protective measures are discussed. N. Thon

Contamination of air with lead from molten typographic metal. V. G. Matsak (Central Hygiene Lab., Moscow). *Gigiena i Sanit.* 13, No. 5, 46–8(1948).—As a rough approximation, 1 sq. m. of the metal surface, in the temp. range 270–300°, evolves 1.4–2.0 g. Pb per hr. At 400°, the amt. is 4–6 g./hr. N. Thon

Clinical data regarding damage to the eyes from smoke or fumes. Roggenkämper (Augenheilanstalt, Mülheim an der Ruhr, Ger.). *Klin. Monatsbl. Augenheilk.* 111, 173–6(1947); *Chem. Zentr.* 1947, I, 835.—Injury to the eyes by the action of smoke or fumes is discussed. It is held that the observed damage to the cornea is true chem. trauma, in which there is a disturbance of the synthesis of the protein mols. of the tissue, with the result that toxic substances are liberated by the disintegration of these mols. M. G. Moore

The pathology of diseases due to the inhalation of dust. Fr. Boemke. *Med. Monatsschr.* 1, 2–6(1947); *Chem. Zentr.* 1947, I, 835.—Four principal types of anatomical changes resulting from inhalation of dust are: lymphatic

changes, tubercle formation, diffuse hardening, and cavity formation. It is assumed in agreement with Seymund, that a diffuse dusting of the lung tissue primarily takes place. Many developments are observed in silicosis which correspond to those of tertiary pulmonary tuberculosis. The importance of the blood passages in silicosis and the various views on tubercle formation and the growth of connective tissue are discussed. Pyrolusite dust causes hardening processes. Thomas-slag pneumonia, pulmonary disorders due to Al dust, and asbestosis are discussed. Attention is called to the assocn. of asbestosis with pulmonary carcinoma, the latter almost always taking the form of carcinoma of the pavement epithelium. It is possible that, in addn. to chem. processes, the purely mech. effects of the asbestos needles are also responsible for the development of carcinoma. M. G. Moore

Treatment of eye chemical burns. Thomas W. Nale (Union Carbide and Carbon Corp., New York, N.Y.). *Safety Eng.* 96, No. 2, 58, 63(1948).—An effective program has been developed. Ann Nicholson Bird

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Beryllium in industry (Manley) 9. Elec. resistance of insulating board (Mory) 23. Limestone deposit [manuf. of rock wool] (Messervey) 8. *Patents:* Acetals [intermediates and solvents] (Croxall) 10.

Dessart, A.: Chimie appliquée. Industries minérales. Bruxelles. A. De Boeck. 1947. 478 pp. Fr. 300. *Reviewed in Tech.-Wetenschap. Tijdschr.* 17, 132(1948).

Johnson, C. R.: Soil Analysis. Portland, Ore.: Northwest Drug Chem. Products Co. 1948. 16 pp. $0.50. Reviewed in *Anal. Chem.* 20, 881(1948).

Gillard, F.: Traité de physico-chimie des silicates. T. II. Le Verre. 1948. 307 pp. Fr. 305.

Removal of gaseous impurities from air. Egyesült Izzólámpa és Villamossági R.T. Hung. 129,048, Feb. 3, 1943. Air is cooled to 0° to remove water, and then led through containers filled with finely dispersed bauxite at temps. between 0 and −62.5°; 100 kg. bauxite is enough for treating 1 million cu. m. air, and can be regenerated by heating to 150–300°. Cf. Fr. 806,826 (*C.A.* 36, 4857). István Finály

Protection against arsine. Raphael E. Granjon and Paul de Puiffe de Magondeaux. Fr. 863,981, April 15, 1941. Arsine is absorbed by an aq. compn. of $FeCl_3$ (80%, 42°Bé.), $CuSO_4$ (10%, 20°Bé.), $HMnO_4$ (9%), and $HgCl_2$ (1%). L. A. Manning

Heat-developing mixture. József Nárai. Hung. 130,843, Jan. 2, 1943. Steel chippings 60–80, MnO_2 10–20, $MnCl_2$ 10–20, $KClO_3$ 5–10, NaCl 5–10, $FeSO_4$ and(or) $CuSO_4$ 5–10, and Zn 5–10% are powd., mixed, moistened, and kept for 10 min. in a container at 50–100°. Before use, 3 parts water is added to 100 parts of the mixt. to produce heat. István Finály

Pumice substitute. István Szegő. Hung. 131,018, Feb. 1, 1943. Fresh-water silt is mixed with carbonates, sulfides, org. substances, and other gas-developing agents and heated to 1150° to give a pumicelike mass of d. 0.3. István Finály

Ink eradicator. Lajos Sudfeld. Hung. 128,894, Jan. 2, 1942. Solid $KMnO_4$ pressed into small rods is moistened with dil. H_2SO_4 and rubbed on the ink spot; then the spot is treated with aq. H_2O_2. István Finály

Dust-preventing agent. Sándor Vajna. Hung. 128,897, Jan. 2, 1942. Hygroscopic substances ($CaCl_2$ or $MgCl_2$ or sulfite cellulose) are mixed with fungicides (NaF, K dinitrocresolate) and sterilizing agents (*p*-dichlorobenzene). István Finály

Hollow gel spheroids. Edmund L. Sargent (to Socony-Vacuum Oil Co., Inc.). U.S. 2,449,253, Sept. 14, 1948. Hollow spheroids having walls of gel are formed by spraying a sol in a viscous state and at a temp. above its b.p. into a gaseous atm. also at a temp. above the b.p. of the sol, or, alternately, into a body of liquid at such elevated temp. It is only necessary to evap. that portion of the H_2O in the sol which is readily evolved at the temp. of formation of the hollow spheroids. The gelable sol can be prepd. by rapid mixing of 2 or more reactant solns. in a mixing nozzle, and immediately after spraying into the heated atm. In a typical operation 2 solns. were prepd.; an acid soln. contg. 3.5% H_2SO_4 (100% concn.), 7.2% com. Fe-free $Al_2(SO_4)_3.15H_2O$, and 88.6% H_2O; and a dil. water glass prepd. by mixing 44.7% H_2O with 55.3% Na silicate (28.7% SiO_2, 8.9% Na_2O). When the 2 solns. were mixed in the ratio of 137 vol. acid to 150 vol. water glass, a clear gelable hydrosol was formed, which set in less than 1 sec. to a firm hydrogel contg. 10 g. SiO_2 and Al_2O_3 per 100 g. gel. The 2 solns. were pumped in the above proportions through heated tubes to a mixing nozzle. The temp. of the sol formed in the nozzle was 143°. The viscous sol was sprayed into a tower through which air was blown. The hollow spheroids collected from the tower were washed with water to remove sol. salts, base-exchanged with $Al_2(SO_4)_3$ to replace zeolytic Na, and dried slowly at a temp. of 121–149°. The dried material was heat-treated at 593°. The product was in the form of small, hollow spheres with smooth, glossy surfaces. In mass they were found to have a d. of 0.029 g. per cc. and a very low coeff. of thermal cond. P. J. Wilson, Jr.

Insulating gel. Edmund L. Sargent and Robert C. Wilson, Jr. (to Socony-Vacuum Oil Co., Inc.). U.S. 2,448,280, Aug. 31, 1948. The insulating material is made up of a plurality of air cells having porous walls composed of inorg. oxide gels. Diffusion through the gel walls is sufficiently slow so that it has little effect on the thermal insulating value of the material. The material is produced in a 2-step process, comprising: (1) forming a hydrosol of an inorg. oxide including SiO_2 having the inherent properties of setting to a hydrogel without change in chem. compn. after the lapse of a period of time, and of passing through the viscous stage just prior to gelation; and (2) spraying the soln. against a solid surface at a temp. in excess of the b.p. of the sol, the sol being at a temp. in excess of its b.p. at the pressure in the spray chamber and in the viscous state at the time of spraying; so that the water content of the hydrosol is vaporized and the drops expanded to bubbles which form a foamy mass on the surface, and the walls of the bubbles bond together. In a typical run a thermal insulating material was formed by diluting Na silicate with H_2O to 15% SiO_2, 4% Na_2O, and 81% H_2O by wt. The acid-alum soln. contained approx. 4.6% $Al_2(SO_4)_3$, 3.4% H_2SO_4, and 92% H_2O. The two solns. were preheated in sep. streams to 143°. They were then mixed in a nozzle and sprayed upward in a tower heated to 316° with preheated air. The mixed solns. contained about 13.5% by wt. solids, whereas the dried gel had a 92.5% solids content by wt., and a bulk d. of 2 lb. per cu. ft. The freshly formed gel did not disintegrate when allowed to stand for 6 days in water. P. J. Wilson, Jr.

Low-methoxyl pectinic acids. Rolland M. McCready, Harry S. Owens, and Wm. D. Maclay (to the United States of America as represented by the Secy. of Agr.). U.S. 2,448,818, Sept. 7, 1948. Low-methoxyl pectinic acids are isolated from aq. solns. of extn. liquors which have been prepd. by acidic, alk., or enzymic deesterification from source materials, such as citrus peel, apple pomace, etc. The isolation is carried out by treating the soln. with a mineral acid, such as H_2SO_4, HCl, or HNO_3, so that the pH does not exceed preferably 2.0. The pectinic acid is thereby caused to ppt. in a free-acid form. It is sepd. from the acidified soln., and the excess acid removed by water washing until the pH of the acid-water wash reaches a max. of about 2.2. The washed ppt. is finally dried. In an example, 500 cc. of 1.0% soln. of com. low-methoxyl apple pectin prepd. by acidic deesterification (methoxyl content 5.1%) was poured into 100 cc. of a soln. contg. 10 cc. concd. H_2SO_4, thus causing the pptn. of the pectinic acid. The pH of the acidified soln. was about 1.5. After washing and drying the recovery was 97% of the low-methoxyl pectinic acid in the original soln. P. J. Wilson, Jr.

Fishing bait. Isaac F. Richardson. U.S. 2,449,322, Sept. 14, 1948. A compd. suitable for fishing bait con-

Albert G. Reynolds and John T. Volland (to R. Y. P. Mfg. Co.). U. S. 2,305,193, Dec. 15. Various structural, mech. and operative details.

Reclaiming carbon dioxide used in storage tanks for fruit juices. Bergedorfer Eisenwerk Akt.-Ges. Astra-Werke. Ger. 707,926, May 29, 1941 (Cl. 53k. 1.01).

Decomposition of dry vegetables. Chemisches Werk Dr. Klopfer G. m. b. H. Ger. 707,782, May 23, 1941 (Cl. 53c. 6.01). The dry vegetables are comminuted and 2
treated with solvents for chlorophyll and carotene. To the coln. is added a neutral fat and the chlorophyll and the carotene are distd. off.

Isolating vegetable proteins such as soybean protein. Percy L. Julian and Bernard T. Malter (to The Glidden Co.). U. S. 2,304,099, Dec. 8. The material, such as soybean meal, is extd. with water, caustic alkali and lime are added to the sepd. ext., and the resulting alk. liquor is centrifuged and the protein is recovered from the clarified ext.

Preserving green feed. Wilhelm Klein. Ger. 708,024, June 5, 1941 (Cl. 53g. 5.01). Green matter is preserved with $Na_2S_2O_5$. For 100 kg. of the green matter, an aq. soln. of up to 10 g. of $Na_2S_2O_5$ and the required quantity of acid to decomp. this salt are used.

15—CHEMICAL INDUSTRY AND MISCELLANEOUS INDUSTRIAL PRODUCTS

(PLASTICS, RESINOIDS, INSULATORS, ADHESIVES, ETC.)

HERMAN A. BRUSON

Mellon Institute in wartime. E. R. Weidlein. *Chem. Eng. News* 21, 467–78(1943); cf. *C. A.* 36, 2951⁸.—The annual report is curtailed because of wartime restrictions. A table shows the industrial fellowships in operation during the fiscal year March 1, 1942 to March 1, 1943 and some discussion is given of investigations on cotton, high-temp. electrical insulation materials, plate glass, special plas- 4
tics for aircraft and (under the heading "War services of Industrial Hygiene Foundation") lost workdays in essential manufacturers, plant-hygiene surveys and toxicology, Mg-dust hazards, industrial exhaust ventilation and Al powder in the treatment of silicosis as well as (from the Institute's Department of Research in Pure Chemistry) synthetic antimalarials, modified cinchona alkaloids, congeneric synthetics and drug standardization.
E. J. C. 5

Chemical industry advances in Brazil. Charles F. Bonilla. *Chem. & Met. Eng.* 50, No. 3, 96–9(1943).
E. H.

Chemical warfare and the mission of the veterinary. R. G. Espinet. *Rev. med. vet.* 22, 437(1940); *Anales asoc. quim. argentina* 30, 31B(1942).—Present knowledge of the action of chem. agents, their classification, and a description of the most important are given. Symptoma- 6
tology, lesions and treatment of animals which have suffered from the effects of chem. agents, particularly horses and dogs, are given.
E. M. Symmes

Protection of civilians from vesicant agents. T. F. Bradley, J. T. Cassaday, T. G. Moore and Wm. C. Moore. *Chem. Eng. News* 21, 373–5(1943).—A description is given of the mobile war gas casualty station developed by the Stamford, Conn. civilian defense group. The decontamination truck, carrying the hot-water show- 7
ers, was constructed for approx. $600. A list of auxiliary equipment and an operation schedule are given. Use of mobile units of this type avoids vesicant contamination of regular transportation and first-aid facilities. Four references.
Richard G. Rowe

Sorption of acetylene. E. V. Alekseevskii and O. M. Kuznetsova-Kharina. *J. Gen. Chem.* (U. S. S. R.) 12, 296–304(in English, 304–5)(1942).—The suitability of a 8
variety of commercial carbons, charcoals, silica gel and $Fe(OH)_3$ gel and a variety of carbons treated with numerous inorg. salts, as packing for gas-masks or respirators for protection against acetylene; all of these materials were found to be totally unsuitable. The sorption isotherms were detd. for acetylene on ethyl heptadecyl ketone, cellulose, acetylcellulose, acetylstearoylcellulose, nitrocellulose and nitroacetylcellulose. Only cellulose and acetylstearoylcellulose were found to have appreciably 9
large sorption of C_2H_2.
G. M. Kosolapoff

The poisons in chemical industry. Victor Andriska. *Kem. Lapja* 2, No. 10, 2–3, No. 11, 1–4(1941); *Chem. centr.* 1942, I, 1400.—A review on the various poisonous substances, their manner of entering the organism, action, the individual reaction, treatment and prophylaxis.
A. E. Meyer

Sulfur dioxide injuries. Symanski. *Arbeitsschutz.* 1941, 405(1941); *Chem. Zentr.* 1942, I, 1907.—SO_2 injuries (frequently occurring in founding Mg alloys) although generally of temporary nature, may lead to indispositions lasting a week or longer.
R. P. E. Hopf

The occupational cancer of asbestos workers. A. J. Linzbach and H. W. Wedler. *Arch. path. Anat.* (*Virchow's*) 307, 387–409(1941); *Chem. Zentr.* 1942, I, 1513; cf. *C. A.* 33, 9489¹.—Description of a severe asbestosis of the lungs in a 60-year-old man with development of a cornifying squamous-celled epithelioma in the right inferior lobe. Asbestos injury was considered to be the cause of the cancer. The disease is, therefore, in agreement with Nordmann (*C. A.* 36, 2006¹), to be considered an occupational cancer. Mech. tissue injury and chem. effects (hornblende and serpentine asbestos) are involved as injurious factors of the asbestos.
Ruth Berggren

Advances in plastics during 1942. G. M. Kline. *India Rubber World* 107, 573–5; *Mech. Eng.* 65, 245–7, 290 (1943); cf. *C. A.* 37, 1203⁵.—A review, with 110 references.
C. C. Davis

The influence of temperature on the strength of plastics. II. *Impact strength at high and low temperatures.* R. Nitsche and E. Salewski. *Kunststoffe* 31, 381–8 (1941); *Chem. Zentr.* 1942, I, 935; cf. *C. A.* 34, 8104¹.—Strength tests were performed on 26 plastics in the temp. range −70 to +200°. Test specimens 10 × 15 × 120 mm. were used. The specimen was previously brought to the desired temp. then placed in position in the pendulum-type testing app. and sprayed with liquid of the same temp. The liquid stream was interrupted only for the actual test. The influence of temp. on strength is most marked in the cellulose derivs. In unlaminated moldings the strength-temp. curve depends largely on the nature of the filler. *Laminated moldings show a steady increase in* strength up to about +80°, above which it starts to diminish. Among the thermoplastics polyvinyl chloride and "Copolymer MP" show a marked temp. effect above 0°. It is proposed to use 20 ± 1° as a test temp. for cellulose acetate Type A, benzyl cellulose, vulcanized fiber and Cl-contg. vinyl polymerizates; 20 ± 2° for other plastics. There is no obvious relationship between the impact strengtl.-temp. curve and the impression hardness-temp. curve.
Anthony M. Schwartz

Investigation of the mechanical behavior of synthetic *resins at low temperatures* and its dependence upon preparation and pretreatment. W. Röhrs and K. H. Hauck. *Kunststoff-Tech. u. Kunststoff-Anwend.* 11, 213–23(1941); *Chem. Zentr.* 1942, I, 543–4.—Investigation of the modulus of elasticity (I), and the elastic limit (II) of hardenable and nonhardenable synthetic resins in relation to temp. in the realm of low temps. (+20 to −70°). From compression measurements with a definite compression velocity, I and II were detd. in relation to temp. Expansion measurements and polystyrene viscosity measurements also served to complete the investigation. For phenol-formaldehyde cast resins and molding compds. as well as urea-formaldehyde molding material, the influence of the degree of hardening upon the mech. properties was

marrow injury. The porphyrinuria is most intense in the presence of a bone marrow inhibition with the simultaneous appearance of a myelocytic shift in the bone marrow. This observation renders it not improbable that the porphyrinuria is to be connected with the primary disturbance in the bone marrow. The cardiovascular and central nervous injuries are interpreted as signs of porphyrin poisoning. Ruth Berggren 1

Miners' nystagmus. D. L. Davies. *Lancet* 1940, I, 573; *Zentr. Gewerbehyg. Unfallverhüt.* 27, 238(1940).—Miners' nystagmus is not considered to be a psychoneurosis. The illumination theory is also disputed. It is believed to be a form of chronic poisoning, caused either by bacteria or gases. Ruth Berggren 2

Physical diagnosis of radium poisoning. I. Franke. *Fundamenta Radiol.* 5, 113(1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 124(1940).—The occurrence and course of Ra poisoning and the size of the toxic dose are considered. The necessary conditions for a method of diagnosis of Ra poisoning or for the supervision of those exposed to Ra have been studied. Detn. of the intensity and distribution of the Ra deposits by the γ-radiation emitted by the radioactive substances constitutes the most exact and certain method. A method is described which permits the detn. of Ra deposits in amts. of 0.2 μ g. Ra-element or more in a few min. An app. for carrying out the practical diagnosis of Ra deposition is described and the application is explained. Ruth Berggren 3 4

Röntgen study of the fine structure as a method of medical investigation. Gärtner. *Reichsarbeitsblatt* [N. F.], 20, III, 193(1940); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 229(1940); cf. *C. A.* 33, 7428⁸.—Quartz, fluorite, calcite, kaolin, clay, sillimanite, Carborundum, corundum and sericite, grindings of Main, Palatinate, Taunus and Eifel sandstone, dusts of MnO_2, Thomas slag, limestone and tobacco and grindings from the Solinger works were studied with a Mikro-Metallix-Röntgen fine-structure app. (Firma C. H. F. Müller). Tobacco dust from a tobacco factory was found to contain 20% insol. silicic acid. Dust from the lungs of miners, grinders and porcelain workers was also studied and compared in some cases with the industrial dust. A satisfactory diagnosis could almost always be obtained; it could, in part, be confirmed by chem. analyses. In some instances, only kaolin or sillimanite, without the participation of the free silicic acid, could be suspected as the cause of the silicosis. A quant. diagnosis is theoretically possible but meets with practical difficulties. Ruth Berggren 5 6

Pathological anatomy and pathogenesis of asbestosis. Giacomo Mottura and Emanuele Pagiano. *Rass. med. ind.* 11, 233-84(1940); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 229-30(1940).—Two fatal cases of asbestosis are described in detail; one occurred after 30 years of uninterrupted work in an asbestos plant, the other after 7 years of work followed by an interval of 30 years. This 2nd case would indicate that a relatively early change of work is of little value. Since asbestos particles were still present after many years and since no connection could be found between the no. of asbestos particles and the degree of fibrosis, the theory of the development of fibrosis by soln. of the asbestos particles, followed by chem. reaction, is considered incorrect. The lymph corpuscles do not indicate any essentially sclerotic changes. The difference between these and silicotic changes is clearly shown. A relation between tuberculosis and asbestosis is not considered probable but a connection with the development of lung cancer is believed possible. Ruth Berggren 7

Recent questions in industrial hygiene. III. Dust. O. Ehrismann. *Deut. med. Wochschr.* 1939, II, 1281; *Zentr. Gewerbehyg. Unfallverhüt.* 27, 181(1940); cf. *C. A.* 36, 3287⁶.—Previous results of the study of silicosis, asbestosis, Thomas-slag pneumonia, and Mn and other dust injuries are given. Ruth Berggren 8

Use of the acidity quotient of the urine in the selection of stone cutters and those endangered by stone dust. A. Wiesinger. *Vertrauensarzt. u. Krk. kasse* 7, 229(1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 181(1940).—The development and progress of silicosis are believed to depend on the tissue acidosis; in acid lung tissue the dissolved silicic acid exerts a nonspecific acid irritation in addn. to its special irritant action, while in the alk. tissue the silicic acid, which gradually dissolves, is neutralized and excreted as a salt through the kidneys. A concept of tissue acidosis is outlined and a suitable method for detg. the acid-base ratio in the tissues is established. On the basis of this method, numerous examples are given which show that the acidity quotient is increased in stone cutters with severe silicosis, while low or neg. acidity quotients predominate in those with mild symptoms of silicosis, in spite of working with stone for years. The relation of the tissue acidosis to the pyknic habitus and mode of nutrition is illustrated with addnl. examples. The diet of those exposed to stone dust should be predominantly alk. and markedly severe phys. work should be avoided because of the increase in lactic acid. In severe pneumoconiosis with diminution of the alveolar surface and subsequent cardiac insufficiency, however, the combustion is lowered in consequence of O deficiency and a lasting tissue acidosis results. Ruth Berggren 9

Industrial application of a method for determining the thoron content of air. R. D. Evans, S. J. Nilson, C. Goodman and N. R. Bernz. *Ber. 8. intern. Kongr. Unfallmed. u. Berufskrankh.* 2, 1006(1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 124(1940); cf. *C. A.* 34, 4334⁷, 4977⁶, 5102⁸.—A new instrument is described for the detn. of the Tn content of the air. Practical expts. in various factories with analytical evaluation in the lab. showed a Tn content of the air in individual locations in plants which was 100–1000 times higher than that which is ordinarily considered harmless. In such cases adequate ventilation should be provided. Ruth Berggren 10

Plastic molding. Leo Gusman and Murray H. Reich. *City Coll. Vertor* (N. Y.) 5, 49-1, 52(1942).—Descriptive. The high first cost of molds and dies in both the compression and the injection processes is one of the largest items of expense in plastic molding. The use of plastic materials, as polystyrene, and synthetic rubbers, as the molds, opens new possibilities and new economies in the field of plastic molding. Leopold Scheflan 11

Synthetic-resin molding materials. E. Matuschek. *Fördertechnik* 32, 261, 385(1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 235(1940).—A detailed article on the compn., manuf. and working up of molding materials and their many forms of use. Ruth Berggren 12

The thermal and electrical properties of bitumastic compounds containing quartz sand. Willis Jackson. *Phil. Mag.* 33, 81-9(1942).—An increase in the thermal cond. without appreciable detriment to the elec. properties is obtained by incorporating sand into compns. of the bitumastic type used as insulators. Data are reported for expts. made on 3 types of bitumastic compn. The addn. of 80% sand by wt. reduces the thermal resistance to less than one sixth of its normal value for any particular bitumastic. The effect of the sand grain size on the thermal resistivity is small. The dropping and pouring temps. begin to rise rapidly when the sand content reaches 70%. Quartz sand decreases the dielec. strength, but not by an objectionable amt. The power factor is increased, owing probably to moisture adsorption. S. Tolansky 13

Properties of heat-insulating materials. E. A. Allcut and D. H. Hamly. *Eng. J.* 24, 514-24(1941).—A discussion of the character of heat-insulating materials, the difficulties in detg. their relative value experimentally, the effect of air spaces and surface resistance and the possibility of saving fuel by taking advantage of solar radiation and heat stored in the structure of the building itself. J. M. Noy 14

Production of dermatine on calenders. P. M. Bogatyrev and G. G. Petrzhik. *Nauch.-Issledovatel. Rukaty Lab. Glavlekhkani* 1939, 105–12; *Khim. Referat. Zhur.* 1940, No. 4, 121.—Dermatine was prepd. on differential 3- and 4-roller calenders, with moleskin, duck, canvas and cambric as foundation. Best results were obtained by using 100 parts of colloxylin, 80 parts of dibutyl phthalate, 40 parts of castor oil, 100 parts of ale. and 125 parts of pigments. The mass, mixed in Werner-Pfleiderer

many diseased states it remains substantially the same as in normal serum. L. E. G.

Chemiluminescence of alcaptonuric urines. Lynn D. Abbott, Jr. *Proc. Soc. Exptl. Biol. Med.* 49, 14–15 (1942).—Alcaptonuric urines, as well as solns. of homogentisic acid and Pb homogentisate, give off light when made alk. with NaOH and shaken with air. L. E. G.

Intravenous administration of bovine serum albumin as a blood substitute in experimental secondary shock. Harry A. Davis and A. G. Eaton. *Proc. Soc. Exptl. Biol. Med.* 49, 20–2(1942).—Bovine serum and plasma and bovine serum globulin are very toxic when injected intravenously into dogs. The toxicity of the whole serum or plasma seems to be due to the globulin or one of its related fractions. Bovine serum albumin is harmless when injected and is effective in raising and maintaining the blood pressure of dogs after severe hemorrhage. L. E. G. 2

Effect of renal and systemic bloods from normotensive and renal hypertensive dogs on arterial rings. M. R. Salk and G. E. Wakerlin. *Proc. Soc. Exptl. Biol. Med.* 49, 22–4(1942).—The vasoconstricting effects of heparinized renal vein and femoral artery bloods from 3 dogs before and after production of renal (Goldblatt) hypertension were studied on arterial segments from mesenteric arteries of beeves. No significant differences were found. L. E. Gilson 3

Changes in antitryptic power of the blood associated with anaphylaxis in guinea pigs. Kenneth L. Burdon. *Proc. Soc. Exptl. Biol. Med.* 49, 24–7(1942).—Preliminary. L. E. Gilson 4

Encephalitis virus antibody in serums of experimentally infected animals by agglutination of virus-coated cells. E. C. Roberts and L. R. Jones. *Proc. Soc. Exptl. Biol. Med.* 49, 52–4(1942); cf. *C. A.* 35, 4831[8], 5177[9].—Preliminary. L. E. Gilson 5

Experimental necrotizing arteritis. II. Mercuric chloride as effective as uranium nitrate in its production. Russell L. Holman and Willard C. Hewitt. *Proc. Soc. Exptl. Biol. Med.* 49, 58–62(1942); cf. *C. A.* 35, 8089[9].—HgCl$_2$ produced the same effects as U nitrate when used as previously described. L. E. Gilson

Experimental atherosclerosis and soybean lecithin. Homer D. Kesten and Ruth Silbowitz. *Proc. Soc. Exptl. Biol. Med.* 49, 71–3(1942).—Feeding soybean lecithin to rabbits receiving cholesterol restricts hypercholesterolemia and diminishes arteriosclerosis. L. E. Gilson 6

Electrophoretic identification of antibody to tuberculin protein. Florence B. Seibert and J. Walter Nelson. *Proc. Soc. Exptl. Biol. Med.* 49, 77–80(1942).—Antibody to tuberculin protein was identified in serum as a component with an electrophoretic motility close to α-globulin. This component increases in serums following sensitization to the protein, and is removed in part with the specific ppt. produced by adding antigen to the immune serum. L. E. Gilson 7

Characterization of milk influence in spontaneous mammary carcinoma [in mice]. Maurice B. Visscher, Robert G. Green, John J. Bittner, Zelda B. Ball and Heinz A. Siedentopf. *Proc. Soc. Exptl. Biol. Med.* 49, 91–6(1942); cf. *C. A.* 36, 150[8].—Preliminary. The active carcinogenic agent or agents in the lactating breast from high-cancer mice appear to be concd. in a fraction obtained by ultracentrifugation of homogenized tissue. This fraction is virtually free of matter above colloidal dimensions and contains a large share of the sol. material of high mol. wt. L. E. Gilson 8

Pancreatic calculi. Mangaldas J. Shah. *Indian Med. Gaz.* 76, 518–19(1941).—A clinical report is given of 2 cases. There were no symptoms typical of this disease alone, except the radiological findings. Glucosuria and hyperglucemia were present as well as increased and undigested fat in the stools. Helen Lee Gruehl 9

The effect of chlorination on the production of immunity and the immunobiological stability of the organism. G. A. Ionkin and M. N. Khanin. *Vestnik Mikrobiol. Epidemiol. Parazitol.* 18, No. 3–4, 251–65(in French, 265)(1939).—The method of sp. immunization of an organism and the production of immune bodies (agglutinins, precipitins, hemolysins) under the influence of Cl were investigated. Therapeutic doses of Cl were used for the expts. (1:200,000). Chlorine-treated rabbits immunized with antidiphtheria toxin produced a higher titer of agglutinins and precipitins than did the control rabbits; in rabbits immunized with sheep erythrocytes considerably smaller differences between the control and chlorine-treated animals were obtained. Chlorine treatment had no appreciable effect on the production of hemolysins. The absence of any changes in the titer of the hemolysins during chlorine treatment indicates the probable existence of a different reactivity of individual physiol. systems of an organism to the same action. The immunobiol. stability of guinea pigs against diphtheria toxin under the influence of chlorine changed very little during immunization with anatoxin and without immunization. Fourteen references. W. R. Henn

The content of bromine in blood during the various phases of tuberculosis in children. E. M. Mondini. *Pediatria (Riv.)* 48, No. 5, 320–31(1940).—The blood content of bromine was found to be normal in the initial stages of bone and pulmonary tuberculosis. However, in tuberculosis of the large serous, pleural and peritoneal membranes the amt. of Br is always high when the process is of an exudative type. It is normal in the active type. To judge from the detn. of excess of Br in exudative tuberculosis of the pleura and peritoneum it is believed that concomitant disturbances are related to the chlorine metabolism. R. P. E. Hopf

Lung cancer due to asbestos dust in animal experiments. Martin Nordmann and Adolf Sorge. *Z. Krebsforsch.* 51, 168–82(1941).—When 100 white mice were exposed to asbestos dust for a total of 67–80 hrs. over a 6-week period or for a total of 72 hrs. over a 13-week period, 61 survived for examn. 29 weeks later. Of these 61, 26% showed a keratinized multicentric squamous epithelial lung carcinoma and 42–57% showed epithelial lung neoplasms in all stages. This finding supports the authors' view that asbestos dust may cause primary lung carcinoma in workers. Marion Horn

Observations on the blood of rats with implanted Jensen sarcoma. Hans v. Euler and Inga Pettersson. *Z. Krebsforsch.* 51, 193–8(1941).—The abnormally high pyruvic acid content of the blood of rats with implanted Jensen sarcoma (av. 50 γ/cc. as contrasted with the normal 12 γ/cc.) is considerably reduced (to 20 γ/cc.) within a few hrs. after injection of 1 mg. nicotinamide. The pyruvic acid content, however, does not drop completely to normal even if as much as 4 mg. nicotinamide is given. An action similar to that of nicotinamide is exhibited by cozymase, insulin and adenosinetriphosphoric acid. Marion Horn

Cleavage of *d*-leucylglycine by serums, blood and organ extracts. H. Hans v. Euler, L. Ahlström, B. Högberg and Ann Marie Lilja. *Z. Krebsforsch.* 51, 248–72(1941).—Ability to cleave *d*-leucylglycine appears more often in the serum of cancer patients than in that of normal human subjects, but the difference is not sharp enough for use in diagnosis of cancer. Serum of rabbits with metastatic Brown-Pearce carcinoma showed regular ability to cleave *d*-leucylglycine. In the serum of a rabbit refractory to transplantation of Brown-Pearce carcinoma, ultraviolet irradiation elicited ability to cleave *d*-leucylglycine. Marion Horn

Complement fixation in rickettsial diseases. Ida A. Bengtson and Norman H. Topping. *Am. J. Pub. Health* 32, 48–58(1942); cf. *C. A.* 35, 7517[8].—The complement-fixation test for endemic typhus is of value in the detection of active or past infection. Titers of 1:128 and 1:256 may be reached on the 9th or 10th day of illness and 1:4,096 and 1:8,192 on the 14th or 15th day. The complement-fixation reaction is a better criterion of past infection with endemic typhus than is the Weil-Felix test as complement-fixing antibodies may be present in significant dilns. up to 5 or more years after the illness. The complement-fixation test may probably be used to differentiate between endemic typhus and Rocky Mountain spotted fevers. Spotted fever serums tested against a

ica). U. S. 2,156,987, May 2. Al foil is rendered resistant to corrosion by ingredients in foodstuffs by coating with a plasticized polymerized vinyl ester compn. such as one contg. polymerized vinyl resin comprising vinyl chloride and vinyl acetate, which may be mixed with a smaller proportion of a nitrocellulose lacquer, a solvent and a plasticizer such as dibutyl phthalate.

Cheese. Georg Friesleben, Ger. 671,662, Feb. 11, 1939 (Cl. 53c, 6.01). Cheese is treated with salt, soda, coloring or aromatizing materials, etc., dissolved in methylcellulose. 2

Extrusion apparatus for making sausage casings. Naturin-Werk Becker & Co. Ger. 676,319, June 1, 1939 (Cl. 66b, 16). Addn. to 672,633 (*C. A.* 33, 3944).

Continuous apparatus for drying sausage casings and like tubular articles. Naturin-Werk Becker & Co. (Oskar Walter Becker, inventor). Ger. 676,329, June 1, 1939 (Cl. 66b, 10).

Residues from castor-oil extraction. F. Thörls Vereinigte Harburger Oelfabriken A.-G. Ger. 671,716, Feb. 13, 1939 (Cl. 53f, 1.01). Residues obtained by extg. castor oil, e. g., from ricinus chips, are treated with solns. of alkali of at least 0.8% strength reckoned as NaOH, to remove poisons. The extd. residue may be neutralized by acid and used as fodder for cattle.

Fruit-juice beverages and fruit wines. Abraham Schapiro. U. S. 2,157,662, May 9. Materials such as freshly pressed orange, grape or apple juice are treated (for maturation, improvement of flavor and preservation) by adding a small proportion of monochloroacetic acid. The products may be pasteurized or fermented to form wines. Similar treatment of syrups and vinegar is also mentioned. U. S. 2,157,633 relates to a like treatment of worts and beers. 4

Apparatus (with a tapered screw and screen) for expressing juices such as those of fruits and vegetables. Herman B. Carlson (to Sargent & Co.). U. S. 2,157,161, May 9. Various structural and mech. details. 5

Dehydrating potatoes and sugar beets. Karl Maus. Fr. 837,804, Feb. 22, 1939. The vegetables are reduced to pieces and superposed in layers in compression chambers, the surfaces of which are pervd. with absorbent products having an emulgent action (hay flour or small straw). The residue after compression is reduced to pieces and mixed with ground foodstuffs to form a food for animals.

Improving soybeans, etc. Soya Products, Inc. Ger. 670,679, Jan. 21, 1939 (Cl. 53k, 2.02). Husked seeds such as soybeans are improved as food by grinding, satg. with an aq. soln. of SO_2 and driving off the SO_2 by heating.

Decaffeinating coffee. Walter C. Hasselhorn and Joseph J. Thompson (to Kellogg Co.). U. S. 2,157,950, May 9. An arrangement of app. is described, and a method of extg. caffeine from coffee which may involve subjecting the coffee beans to the action of cold water at a temp. of approx. 20° until the beans have a water content of approx. 21–22%, withdrawing the water and subjecting the beans to steam at a temp. of approx. 93° for about 4 hrs. thereby evenly distributing the water content throughout the beans, draining off the moisture from the beans, subjecting the beans to extn. with a hot solvent, withdrawing all of the solvent except that contained in the beans and subjecting the coffee beans again to the action of steam to remove the remaining solvent. Trichlorethylene may be used as a solvent. 3

Vitamin animal and poultry feed. Chastain G. Harrel and Albert W. Lindert (to Pillsbury Flour Mills Co.). U. S. 2,157,755, May 9. A minute quantity of an oil-sol. and water-insol. dye such as "22 Yellow A B" is added to a high vitamin concentrate such as one of vitamin D and facilitates observation of the degree of uniformity of admixt. of the concentrate when it is mixed with other feed materials, as by spraying and agitation.

15—CHEMICAL INDUSTRY AND MISCELLANEOUS INDUSTRIAL PRODUCTS

(PLASTICS, RESINOIDS, INSULATORS, ADHESIVES, ETC.)

HERMAN A. BRUSON

Technical advances of Polish chemical industry in the last five years. E. Trepka. *Roczniki Chem.* 19, 47–67 (1939).—Review. M. Wojciechowski

Selected information on manufacturers of chemicals and fertilizers having assets over $10,000,000 each registered under the Securities Exchange Act of 1934 at June 30, 1938. *Works Progress Admin. Rept.* No. 16, 60 pp. (1939).—Financial. E. J. C.

More important artificial raw materials. E. Berger. *Roczniki Chem.* 19, 81–108(1939).—Review, principally on the synthesis of rubber and the production of artificial resins and fibers. M. Wojciechowski 7

The functions of a chemical engineer in the industrial antiaircraft defense. K. Šandera. *Chem. Obzor* 13, 208–11(1939).—Besides nonchem. duties S. discusses means for detecting gases in factories, removing residual gases from app. and goods, protecting goods from an ignition, preventing fires, and extinguishing fires in stores of chem. materials or goods. Frank Maresh 8

Carbon monoxide as poison gas in time of war. B. Vyazovykh. *Khimiya i Oborona* 1938, No. 1, 15; *Khim. Referat. Zhur.* 1, No. 7, 82(1938).—The CO affinity for hemoglobin is about 200 times greater than its affinity for O_2. Since only 0.16% of CO is dangerous to life it may be widely used in a future war. The gas masks absorbing CO contain: activated charcoal satd. with $CuSO_4$ 400, pure activated charcoal 200, pumice satd. with Na_2CO_3 200, $CaCl_2$ 200, "hotscalite" (contg. the oxides of Mn 60, Co 15 and Ag 5%) 280 cc. In its dry state "hotscalite" completely transforms CO into CO_2. W. R. Henn 9

Regeneration of the air of confined spaces by means of soda. M. L. Jean. *Arch. méd. et pharm. Nav.* 128, 81–128(1938).—The efficient use of NaOH for absorbing CO_2 is discussed with particular reference to submarines and air-raid shelters. B. C. P. A.

Occupational disease legislation in France, Great Britain and Germany. G. Hausser and P. Bernard. *Arch. maladies professionnelles* 1, 504–15(1938).—A statistical summary of reported occupational diseases in France and Germany for 1936 and Great Britain for 1937. The no. of cases produced by specific chemicals is shown. *William C. Fredrick*

Present air pollution survey in the Chicago area. I. A. Deutch. *J. Western Soc. Engrs.* 44, 124–7(1939).—This survey consists of interrelated studies of various phases of air pollution. No definite conclusions are yet available. W. H. Boynton

Progress in dust protection. Heinz Eisenbarth. *Gasmaske* 11, 31–34(1939).—The construction and uses of the new Auer-Kollix dust mask is described. Cf. *C. A.* 32, 5956. A. L. Kibler

Nitrous fumes. Anon. *Dept. Sci. Ind. Research (Brit.), Methods for the detection of toxic gases in industry, Leaflet* No. 5, 9 pp.(1939).—The occurrence in industry and the poisonous effects of nitrous fumes along with first-aid treatment of exposed workers are briefly discussed. A max. *permissible concn.* of 10 p. p. m. or 0.03 mg./l. is proposed for the air of workrooms. A portable *app.* consisting of a hand pump capable of drawing a definite vol. of air through the Greiss-Ilosvay reagent is described. The pump is operated until the color of the reagent matches a prepd. standard. A table is included correlating pump strokes with concn. W. G. F.

Diagnosis and therapy of chronic benzene poisoning. G. Hormann. *Arch. Gewerbepath. Gewerbehyg.* 8, 194–205(1937).—No decrease in vitamin C content was observed in the 24-hr. urine of CaH_6 workers. Those show-

ing symptoms of C_2H_4 poisoning had a decreased vitamin C content in the blood, which was more pronounced the more definite were the symptoms. Treatment with vitamin C preps. greatly improved the condition of an affected worker. Rabbits treated with vitamin C showed greater resistance to C_2H_4 vapor than did normally fed animals. B. C. P. A. 1

The effects of benzine and benzene on the human organism. W. Kreischner. *Umschau* **43**, [illegible] (1939). A brief description of the patho-biological significance of these common industrial chemicals and discussion of the manner in which they interfere with body chemical functions. H. Kwart 2

Toxicology of dinitrotoluene and pathology in exposed workers. Courtois-Suffit. *Arch. maladies professionnelles* **1**, 294–7(1939).—The principal toxic effect of dinitrotoluene results from the inhalation of its vapors. The rate of absorption in workers who are chronic alcoholics is greatly increased. The principal effect is on the nervous system and the blood. The author reviews his experience with this chemical in powder mills. William G. Fredrick 3

Affections due to organic mercury compounds. F. Koelsch. *Arch. Gewerbepath. Gewerbehyg.* **8**, 113–16 (1937).—Org. Hg compounds such as are used for seed-dressings may, by const. handling, produce (*a*) affections of skin and upper respiratory tract due to the mech. action of the dust, (*b*) affections of the central nervous system due to absorption, coupled with local damage to the organs in which the compds. are decompd. and Hg is deposited. B. C. P. A. 4

The significance of chemical data in the pathology of minerals producing pneumoconioses. A. Policard. *Arch. maladies professionnelles* **1**, 473–88(1938).—A discussion of the significance of analytical data in the study of pneumoconiosis. 26 references. William G. Fredrick 5

A study of asbestosis in the asbestos textile industry. Waldemar C. Dreessen, J. M. Dallavalle, Thomas J. Edwards, J. W. Miller, R. R. Sayers, H. F. Easom and M. F. Trice. *U. S. Pub. Health Bull.* No. 241, 126 pp. (1938).—Medical examn. of 447 workers in 3 plants exposed to appreciable amts. of asbestos dust showed an estd. asbestosis incidence of 27.5%. Asbestosis rarely appears in workers exposed to less than 5 million particles per cu. ft. of asbestos dust (light field count). Above this value the incidence and severity of the disease is a function of dust concn. and exposure time. Symptoms, case histories, autopsy data, examng. procedures and many illustrations are given. 70 references. William G. Fredrick 6

A simple respiratory protective device for industrial purposes. E. Eigenberger. *Chem.-Ztg.* **63**, 248(1939).—A simple supplied-air type respirator with a fully transparent face piece is described and illustrated along with an electrically operated device for supplying it with fresh filtered air at a rate of 1–2 l./sec. William G. Fredrick 7

Personalized protection. Edward R. Geaniss. *Ind. Eng. Chem.* **31**, 694–702(1939).—A crit. discussion of personal protective equipment suitable for use in the chem. industry. Methods for using, maintaining and storing such devices as respirators, goggles, canister gas masks, protective clothing as well as indications for their use are given. William G. Fredrick 8

Plastic and synthetic materials. J. Jacobs. *Rev. gén. caoutchouc* **16**, 131–6(1939).—A review and discussion dealing with the present-day meaning of plastics and some of the important derivs. of cellulose. C. C. Davis 9

Pigments, lakes and other coloring materials in plastics. J. H. Clewell and H. W. Paine. *Paint Varnish Production Mgr.* **18**, 312–15(1938).—Methods of pigmentation of cellulose ester plastics and the choice of pigments therefor are discussed. B. C. P. A. 10

The investigation of the thermohydrolysis process of plant materials. M. N. Plungyanskaya and M. G. Gon. *Trudy Nauch.-Issledovatel. Lab. i Op. Stantsii Barkalaitu* 1937, 33–47; *Khim. Referat. Zhur.* **1**, No. 7, 85(1938).—The dependence of the physicochem. properties of Barkalite on the autoclave conditions (with a pressure of 14, 12, 10, 8 and 6 atm.; the max. pressure kept for 1 hr.) and on the amt. and manner of the water added (with a 5 and 7 atm. pressure the added water for each variant was 50, 100, 150% of the abs. dry wt. of the raw material) was investigated. Analyses of the vapor phases and of the resulting products were performed for each case. All substances contained in the steam-gas mixt. obtained during the thermohydrolysis, in the dry powder obtained after the autoclave reaction, and in the steam-gas mixt. obtained after the pressure reaction were detd. Conclusions: CO_2 is the main gas component of both phases; no traces of CO, CH_4 or of any unsatd. hydrocarbons were found in the gas phase; the main component of the condensate was AcOH whose content was increased with an increase of the temp. and pressure; the amt. of lignin in the powder is increased; and the cellulose in the autoclave reaction process is only slightly decompd. W. R. Henn

The investigation of the physical factors in the pressure reaction of Barkalite powder. A. G. Natradze. *Trudy Nauch.-Issledovatel. Lab. i Op. Stantsii Barkalaitu* 1937, 61–79; *Khim. Referat. Zhur.* **1**, No. 7, 85–6(1938).—Pine sawdust was used in most cases to investigate the influence of the size of the particles in the raw material and of the temp. and pressure on the plasticization process. The sawdust was treated thermohydrolytically at 7 atm. for 2 hrs. with an amt. of water equal to 150% of the abs. dry wt. The powder obtained was dried to a 0.93% moisture content, and was sifted through sieves having 289, 110, 72 and 48 meshes/sq. cm. The final distribution of the particles depends more on the properties of the initial material than on the applied pressure. The heat phenomena occurring during the compressing were studied in a specially constructed app. The substances investigated were either raw or autoclave-treated sawdust (pine, birch) and other materials (straw, rice husks, corn cobs). The autoclave conditions were: temp. 180°, pressure 10 atm., time 2 hrs. A specific pressure of 300 kg./sq. cm. was used. The raw sawdust was pressed at a temp. below or near the critical point of the exothermic reaction. The temp.-time diagrams for different places of the samples are represented in 8 diagrams. Two pictures of the app. used are given. W. R. H.

The influence of plasticizers and of softeners on the plastic properties of Barkalite. A. M. Bogdanov. *Trudy Nauch.-Issledovatel. Lab. i Op. Stantsii Barkalaitu* 1937, 119–35; *Khim. Referat. Zhur.* **1**, No. 7, 83(1938).—A series of expts. was performed with pine sawdust to obtain Barkalite powder and to investigate the action on this powder of phenol, furfural, a mixt. of phenol and glucose, hexamethylenetetramine, H_2SO_4, H_3PO_4 and of wood and artificial resins. Powders which were acted upon under pressure and plasticized with phenol and with furfural showed less water and acid resistance in the final product. The phenol and glucose mixt. greatly increases the viscosity, permitting the manuf. of figured articles with fewer defects. A 0.3% H_2SO_4 soln. or a 0.9% H_3PO_4 soln. improves the mech. properties, and has a smaller water and acid resistance. Samples of articles made from the Barkalite powder prepd. in the presence of sedimental resin were compared with those made of the pure Barkalite powder. They showed worse mech. properties and a greater stability to water, to acids and to alkalies. The addn. of different resins produced products with different compns., some of which were suitable for insulating purposes. W. R. Henn

Mechanism of drying technical casein. V. D. Sarkov. *Colloid J.* (U. S. S. R.) **4**, 705–9(1938).—The rate of evapn. of H_2O from casein and of contraction of casein grains was detd. It is slightly increased by an air current. J. J. Bikerman

Silica aerogel—effect of variables on its thermal conductivity. J. F. White. *Ind. Eng. Chem.* **31**, 827–31 (1939).—The structure, prepn. and previous data on the cond. of silica aerogel are reviewed. At higher temps. the material transmits radiation. The addn. of opacifying agents was investigated. Red transparent admixts., opaque nonreflective substances and materials exhibiting

det. quartz. After the minerals and other constituents of a dust sample have been identified, it is usually possible to choose suitable procedure. Sixteen references. J. A. Kennedy

Study of dust-control methods in an asbestos-fabricating plant. Richard T. Page and J. J. Bloomfield. *U. S. Pub. Health Repts.* 52, 1713–27(1937).—The study is presented as an example of engineering control of an industrial hazard. Adequate data have not yet been published to justify the detn. of threshold limits of dustiness which will produce asbestosis in any definite period of time. In their absence, it is not possible to det. permissible limits of dustiness on a medical basis. Any appreciable decrease in the amt. of asbestos dust will cause a decrease in the incidence and severity of the resulting asbestosis. Elimination of all dust in an industrial workroom is rarely necessary from a physiol. standpoint and is usually economically impracticable. Consequently, actual atm. conditions in an industry resulting from the application of practical methods of dust control can be used as temporary standards by that industry. Seven references. J. A. Kennedy

New domestic and foreign patents in the field of the production and application of synthetic (plastic) materials. Oskar Kausch. *Kunststoffe* 27, 149–51, 273–6 (1937).—Over 100 patents issued during the latter part of 1936 are reviewed. J. W. Perry

Phenol and cresol resins. Fritz Seybach. *Kunststoffe* 27, 287–90(1937); cf. *C. A.* 31, 6370⁹.—The type of intermediate cryst. product obtained on reaction of PhOH with CH_2O is detd. to a large degree by the type of condensation catalyst. Thus with acid catalyst, *4,4-dihydroxydiphenylmethane* (I) predominates, while basic catalysts, e. g., MgO or NH_3, favor formation of *2,4-dihydroxydiphenylmethane*. Other catalysts, e. g., $AlCl_3$, produce large amts. of both isomers. Similar results were obtained with cresols, the following products being isolated and their cryst. structure characterized with photomicrographs: *4,4'-dihydroxy-3,3'-dimethyldiphenylmethane*, m. 125°, and *4,2'-dihydroxy-3,3'-dimethyldiphenylmethane*, m. 121°, from *o*-cresol; *6,6'-dihydroxy-3,3'-dimethyldiphenylmethane* (II), m. 126°, and small amts. of *2,6-di-(3-methyl-6-hydroxybenzyl)-4-methylphenol*, m. 215°, from *p*-cresol; *4,4'-dihydroxy-2,2'-dimethyldiphenylmethane*, m. 162°, and *4,2'-dihydroxy-4'-2-dimethyldiphenylmethane*, m. 147°, from *m*-cresol. These cryst. reaction products, which probably exist in phenolic resins in solid soln., were isolated by distn. or by ppta. from an alk. soln. with dil. acid. The above-mentioned diphenylmethane derivs. were converted into readily sol. Na phenolates with the exception of II, while with I unexplained phenomena were observed, which are being investigated further. J. W. Perry

Patentability and artificial resin emulsions. Johannes Cömöry. *Farben-Chem.* 8, 310, 317(1937).—Safeguarding the welfare of the nation when passing on questions of patentability, e. g., of alkyd resin emulsions, is emphasized. J. W. Perry

Rayon, artificial resins and artificial substances. F. Ohl. *Monatsh. Seide Kunstseide* 42, 427–31(1937).—The treatment of rayons with phenol-formaldehyde or urea-formaldehyde resins (e. g., Kaurit KF) renders them resistant to creasing and water and increases their strength. The resistance to creasing can also be heightened by means of polymers of unsatd. aliphatic acids. Commercial waterproofing agents are listed. Synthofil, a polyvinyl alc. deriv., is used in place of catgut. As textile sizes are used polymerized vinyl derivs. and cellulose ethers. Rubber substitutes, synthetic materials suitable for elec. insulation and numerous synthetic resins, with their uses, are mentioned. Leopold Schefian

Molds for phenol resinoids. T. E. Casey. *J. Am. Soc. Naval Engrs.* 49, No. 3, 393–415(1937).—A discussion of mold types, operation and problems in their use and maintenance. W. H. Bruckner

Insulation material and applications. E. L. Doty. *Elec. J.* 34, 445–9(1937).—A review. C. G. F.

Insulation power factor. H. W. Bousman. *Gen. Elec. Rev.* 40, 522–5(1937).—A review. C. G. F.

The testing and properties of heat-insulating materials. A. H. Jay and L. Lee. *Brit. Clayworker* 46, 318–23 (1937).—The max. safe temp. is defined as the highest temp. a brick can withstand for a prolonged period without changing more than 1% linearly. The more important tests are: crushing, porosity, permeability, spalling resistance, max. safe temp. and thermal cond. E. C. Petrie

Electrical impregnation processes. E. E. Hall. *Ice and Cold Storage* 40, 163–4(1937).—The impregnation of elec. equipment such as condensers with wax or other nonconducting substances is discussed. Paper condensers consisting of 2 or more electrodes sepd. by paper insulation are first heated to remove moisture. Preliminary drying is effected by passing a current of hot air through the system. A vacuum is applied to complete the drying at the end of which treatment the impregnant (usually hot wax) is introduced without breaking the vacuum. At the end of the impregnation period, excess wax is withdrawn and the charge being processed is cooled. In order to accelerate cooling, temp. as low as −8° to −12° is used. A. H. Johnson

Adhesives and other products (used when laying) linoleum. F. Ohl. *Kunstdünger u. Leim* 34, 257–63(1937).—Various compns. and their advantages and disadvantages are reviewed. J. W. Perry

Which synthetic plastics are used as adhesives, cements, putty and (paint) vehicles? F. Ohl. *Kunstdünger u. Leim* 34, 283–90(1937).—A review of recently developed German products. J. W. Perry

Recent developments in the field of glue for wood and strength tests. Edgar Mörath. *Kunstdünger u. Leim* 34, 224–7(1937).—Adhesives made from artificial resins (PhOH-CH_2O, urea and thiourea condensation products and polyvinyl and polyacrylic derivs.) are emphasized. J. W. Perry

Replacing rubber for certain uses with glycerol-glue (compositions). Walter Obst. *Kunstdünger u. Leim* 34, 90–8(1937).—Possibilities and limitations are discussed. J. W. Perry

The drop diameter. (A method for) determining the utility of foaming, wetting, washing, cleaning and similar agents. J. Hetzer. *Fette u. Seifen* 44, 425–6(1937); cf. *C. A.* 31, 5059⁴.—A method is described for using a glass cell with a tight-fitting cover to det. the max. diam. of a liquid drop which will adhere to the underside of a horizontal glass surface. Expts. with aq. solns. contg. varying concns. of "Nekal A trocken" show that the max. drop diam. becomes smaller as the drop no. (detd. in a stalagmometer) increases. The drop diam. method is the quicker and easier to carry out. J. W. Perry

Addenda on emulsifiers. Francis Chilson. *Drug Cosmetic Ind.* 41, 774–5, 779(1937).—Emulsifying equipment is discussed. H. M. Burlage

The newer detergents. Charles E. Mullin. *Soap* 13, No. 12, 27–30, 73–4(1937); cf. *C. A.* 32, 265⁷.—The properties, advantages and manuf. of compds. of the higher alcs. are discussed. E. Scherubel

The structure and electrical properties of protective films. L. Hartshorn, N. J. L. Megson and E. Rushton. *J. Soc. Chem. Ind.* 56, 266–70T(1937).—Films of PhOH-CH_2O resin, prepd. by dipping copper foil into alc. solns. of resin, were placed between Hg electrodes and the dielec. const. and cond. was measured with a Schering bridge (*C. A.* 27, 2099). Within the limits of exptl. error, the dielec. const. and power factor of films of the same resin do not vary appreciably with thickness. The material may be regarded as homogeneous and films of varying thickness can be said to have a similar phys. structure. The dielec. const. and power factor (cond.) of synthetic resin and cellulose acetate films are reduced considerably by intensive drying at 100° at low pressure. From the decrease in dielec. const. on drying the water absorbed can be estd. The water absorption of phenolic resin films was detd. gravimetrically and found to be independent of the thickness up to 0.0165 cm. The measured amts. correspond

with ether seems to give the most satisfactory results. The size of the dose must vary with the antigen employed. It should be kept sufficiently low to avoid a violent systemic reaction. The dosing should be spaced so as to avoid (*a*) coalescing of the doses and (*b*) the return of sensitization. Less than 5 or more than 10 days are undesirable. H. J. CORPER

Lysozyme and tuberculosis. H. J. CORPER. *Am. Rev. Tubere.* 25, 59–66(1932).—Lysozyme (the lytic substance first described by Fleming (*C. A.* 16, 4200) found in tissues and secretions of the body) prepd. from the dog liver or spleen, or the guinea-pigs liver or spleen, did not possess an appreciable inhibitory or bactericidal effect upon tubercle bacilli *in vitro*. The action of lysozyme does not appear to be a factor in accounting for org. susceptibility to tuberculosis in these animals. These expts. also make it appear unlikely that lysozyme plays a significant part in the susceptibility or resistance to tuberculosis in man. H. J. CORPER

The formation of the asbestosis body in the lung. S. ROOMHOUSE GLOYNE. *Tubercle* 12, 399–401(1931).—The absence of asbestosis bodies in crude asbestos makes it practically certain that they are produced in living tissues from inhaled asbestos fibers. G. believes that they are formed in the lung by deposition of certain materials which tend to thicken the fiber and cause the fissure or cracking of the deposited material, giving rise to the segments. There is evidence that Fe is a component of this material. H. J. CORPER

Desensitization in tuberculous guinea pigs as measured by the systemic test. JOHN WEINZIRL AND J. DURWARD THAYER. *Tubercle* 12, 488–505(1931).—As indicated by the systemic test, considerable desensitization was secured in tuberculous guinea pigs treated with certain antigens. Desensitization spared the lives of the animals to a considerable extent against the administration of a 25 mg. dose of old tuberculin. Heat-killed tubercle bacilli, I-killed tubercle bacilli and old tuberculin are unsuitable antigens for desensitization of tuberculous guinea pigs. Ether-killed and -treated antigens of both virulent and non-virulent tubercle bacilli and of *Mycobacterium smegmatis* caused desensitization to about the same degree in tuberculous guinea pigs when injected in suitable doses. Tuberculo-proteins are promising antigens for desensitization of tuberculous guinea pigs. A dose of 1 mg. of bacillary antigen generally gave greater desensitization than smaller doses; larger doses tended to kill the animals. The systemic test, as used in this investigation, was found to be unsatisfactory, because of the toxic properties of old tuberculin. H. J. CORPER

Glucolability and its clinical manifestations. G. FANCONI. *Klin. Wochschr.* 10, 2002–5(1931).—A preliminary report. Among more than 100 blood sugar curves were found many abnormalities that could not be explained. HARRY EAGLE

Phosphatide and cholesterol contents of normal and malignant human tissues. MAURICE JOWETT. *Biochem. J.* 25, 1991–8(1931).—Pure malignant tissues are higher in phosphatide and cholesterol than are malignant tissues admixed with normal tissue. Malignant tissues show a high proportion of bound cholesterol. BENJAMIN HARROW

Application of physiological chemistry to pancreatitis. ADOLPH M. HANSON. *Military Surgeon* 70, 244–9(1932). J. A. KENNEDY

Early alimentary hypoglucemia. MARCEL LABBÉ, R. BOULIN AND M. PETRESCO. *Compt. rend. soc. biol.* 109, 419–20(1932).—Alimentary hypoglucemia following the administration of glucose precedes the appearance of hyperglucemia and can be demonstrated best when blood sugar tests are started early and made at time intervals as frequent as 2–5 min. The hypoglucemia is ordinarily a moderate one. B. S. L.

Phosphorus metabolism during diphtheria angina. E. LESNÉ, P. ZISINÉ AND S. B. BRISKAS. *Compt. rend. soc. biol.* 109, 430–3(1932).—Prep. phosphomolybdic reagent from equal pts. of 10% c. p. NH_4 molybdate and c. p. H_2SO_4; prep. tin chloride reagent from tin foil 0.1 g., HCl (c. p.) 2 cc. and 1% $CuSO_4$ 1 drop, bringing the total vol. to 100 cc.; standard P soln. contains 1.383 g. of K_2HPO_4 per l., corresponding to 1 g. of H_3PO_4. Two % trichloroacetic acid is used to ppt. the coagulable proteins as follows: serum 2 cc., distd. water 6 cc., reagent 2 cc.; 2.5 cc. of the filtrate is used for one detn. In malignant hypertoxic angina the P is lowered from 60 to 57 mg. of H_3PO_4, corresponding to 18–19 mg. of P. In a favorable course of the disease the value gradually rises. In grave local angina the value of 100 is obtained. The P rises or falls depending upon the favorable or unfavorable course. In common diphtheria angina the values differ imperceptibly from the normal. B. S. LEVINE

Changes in the coagulable proteins of the blood in obesity. MARCEL LABBÉ AND R. BOULIN. *Compt. rend. soc. biol.* 109, 432–3(1932).—The following were taken as normals: total coagulable proteins 70–80 g., serum albumin 42–56 g., serum globulin 23–33 g. and the ratio of serum albumin to serum globulin 1.5–2. In the cases studied

guinea pigs when tested by the old tuberculin intracutaneous skin reaction. Killed tubercle bacilli are effective sensitizers under certain conditions. Light-killed tubercle bacilli were found to be less efficient than heat-killed bacilli, while bacilli killed by certain chemicals, such as carbolfuchsin or ether, were the most efficient. H. J. CORPER

The colloidal theory of silicosis. PATRICK HEFFERNAN. *Tubercle* 11, 61–2 (1929).—A restatement of the "colloidal" theory of the pathol. action of inhaled silica dust is briefly: the silica dust particles, cryst. cryptocryst., or amorphous, are engulfed by phagocytes (macrophages) in the wall of the pulmonary alveoli, and conveyed into the pulmonary lymphatic channels, where they come to an arrest. The silica particle, within the phagocyte, is "hydrated" at its surface into colloidal silica hydrosol, the production of a "sol," alkaline silicate being a temporary intermediate stage in the process of hydration. The hydration occurs at the expense of the protoplasmic fluid of the phagocyte, which becomes vacuolated and dies, leaving a "ghost," of cell wall and stroma, behind. The foregoing processes are retarded if the silica particle has a protective coating, *e. g.*, of C, clay, etc., and are accelerated by the presence of alkali, *e. g.*, if the silica particle has a coating of alk. soap. After the death of the phagocyte the action spreads to the surrounding tissue cells, which are similarly influenced. So far the facts are capable of verification and the net result is destruction of tissue cells, and in due time replacement. Further is deduction or "extrapolation." Whether the action is one of simple dehydration of tissue cells or whether certain constituents of the cell protoplasm are selectively absorbed by the silica hydrosol, or whether reactions such as coagulation of cell colloids and the formation of silico-org. compds., stoichiometric or adsorptive, occur, is still unknown. The process may continue until all the silica particle is dissolved, when equil. is attained by some such means as the formation of relatively stable silico-org. substances (*e. g.*, cholesterol silicate in bird feathers) or adsorption compds.; or by the coagulation of the silica hydrosol into an irreversible gel or by the elimination of the silica, in its "sol." state, in the urine. On the other hand the hydration of the silica particle may cease, temporarily or permanently, before the particle is completely "dissolved." In this case there would be a central core of undissolved silica surrounded by silica hydrosol or gel, next to this a zone of the "ghosts" of dead cells, outside of which would be a zone of small-celled infiltration or fibrosis. Such a system would constitute a typical "silicotic" nodule. Such a dormant silica next could be reactivated should the protective barrier break down and alk. tissue juices again come into contact with the silica particles. "Silicotosis" is believed to be a true silicosis, possibly modified by the Ca, Fe, Mg, Al, etc., from which the colloidal silica has been set free. The question of the elimination of silica from the body urgently needs investigation. H. J. CORPER

The reaction of tissues to the asbestos fiber, with reference to pulmonary asbestosis. S. ROCHHOUSE GLOYNE. *Tubercle* 11, 151–3(1930).—Asbestos fibers, when injected into the body, act as a benign irritant, producing granulation tissue. This granulation tissue contains many asbestosis giant cells, presumably an attempt to destroy the asbestos fibers by phagocytosis. Connective tissue is formed in due course, but the giant cells persist. The asbestosis giant cell is readily distinguished from the true tuberculosis giant cell. Asbestosis bodies are not found. Asbestosis injected repeatedly intravenously appeared to have no toxic effects on distant tissues. H. J. C.

A case of osteitis fibrosa cystica (osteomalacia) with evidence of hyperactivity of the parathyroid bodies. Metabolic study I. R. R. HANNON, E. SHORR, W. S. MCCLELLAN AND E. F. DU BOIS. *J. Clin. Investigation* 8, 215–27(1930).—II. W. BAUER, F. ALBRIGHT AND J. C. AUB. *Ibid* 229–48. III. W. S. MCCLELLAN AND R. R. HANNON. *Ibid* 249–58.—A series of studies of the Ca and P metabolism of a patient showing evidence of hyperactivity of the parathyroids, before and after parathyroidectomy. ARTHUR GROLLMAN

Calcification in arteriosclerosis and in dental disease. BERNARD B. BADANES. *Dental Cosmos* 71, 1088–97(1929).—A review with bibliography. J. S. H.

Blood chemistry in ununited fractures. MILTON J. WILSON. *J. Am. Inst. Homeopathy* 23, 334–5(1930).—In a series of fracture cases, union was defective in 16 cases with normal blood Ca and P and in 10 cases with low blood Ca and P, while normal union occurred in 7 cases with low blood Ca and P. JOSEPH S. HEPBURN

Composition of diphtheria toxin-antitoxin floccules. J. R. MARRACK AND F. CAMPBELL SMITH. *Proc. Roy. Soc.* (London) B105, 1–19(1930).—The floccules formed by diphtheria toxin and antitoxin closely resemble serum pseudoglobulin, have ultraviolet absorption curves identical with those of that protein, and contain only a very small fraction of lipoids. The amt. of ppt. obtained from a balanced mixt. of a given toxin and antitoxin is to a large extent independent of the conditions under which

13—CHEMICAL INDUSTRY AND MISCELLANEOUS INDUSTRIAL PRODUCTS

(PLASTICS, RESINOIDS, INSULATORS, ADHESIVES, ETC.)

HERMAN A. BRUSON

Mines safety and accident prevention. X. Suggestions for reducing accidents. Robert Boone. *Miner Mag.* (Colo. School of Mines) 31, 122, 134, 136, 141 (1941); cf. *C. A.* 35, 3092⁷.—Descriptive. L. S. 2

Adequate medical facilities for control of lead absorption. Elston L. Belknap. *Natl. Battery Mfrs. Assoc., Rept. Ind. Hyg. Sessions* 15, Pt. 2, 65–70(1939); cf. *C. A.* 35, 221⁸.—*Potentially dangerous industrial exposure* to lead develops when inhalation of finely divided lead compds. occurs in excess of 1.5 to 3 mg. of lead per 10 cu. m. of air. The commonest signs of lead absorption are a lead line, stippled cells in the blood and lead in the urine (0.1–0.2 mg. per liter). Very frequent medical examination of lead workers is recommended. A. L. Elder 3

Growths in the respiratory tract. (Preliminary notice.) A. J. Amor. *Ber. 8 intern. Kongr. Unfallmed. u. Berufskrankh.* 2, 941(1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 33(1940).—Five regions of the respiratory tract are especially sensitive to the action of inhaled vapors and dust: (1) the anterior end of the middle turbinated bone, (2) the portion of the septum opposite (1), (3) the nasopharynx, (4) the larynx and (5) the carina and the entrance to the principal bronchi. The mucous membrane of the respiratory tract is frequently irritated by dust, Cl and SO_2, which cause an epithelial metaplasia. The harmful action of chromic acid and As and Cu salts on the nose causes chronic inflammatory changes, and ulcerations and perforations of the septum. The perforations usually appear in region (2). Each of these substances is an etiological factor in the development of growths of the respiratory tract. Two types of occupational cancer of the lungs are described in the literature: (*a*) The Schneeberg miners, who suffer from tumors, work with ores contg. Ag, Ni, Co, Bi, As and Ra, which renders the air highly radioactive; As is a known cancerigenic agent and Ra is often considered one. Carcinoma can be produced experimentally with K arsenide. (*b*) Those who work with chromates, especially with their purification, are also subject to malignant growths of the lungs. The tumors particularly considered in this work are those found in workers engaged in the prepn. of $CuSO_4$ and in Ni refining. The ore contains Cu, Ni, Co, S and noble metals of the Pt group. The Cu is extd. with H_2SO_4 contg. As. The metallic residues which contain Cu and up to 4% As are ground and calcined. The dust contains Cu arsenide which is continuously inhaled. The air also contains definite amts. of SO_2 and SO_3. The tumors in these workers were all in the ethmoid region. Only 1 case of carcinoma of the nasopharynx and none of the larynx were found. The age of the patients, the period of exposure to the danger and the av. age at death were similar to those in the Schneeberg lung carcinoma and in cancer of the bladder in workers on aniline dyes. Suitable changes with the elimination of As were undertaken; it is assumed that these diseases will disappear in the future. Ruth Berggren 4 5 6

Occupational lung cancer. L. Teleky. *Acta Unio Intern. contra Cancrum* (Paris) 3, 253(1938); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 33(1940).—A very detailed and crit. work on occupational injuries which can lead to lung carcinoma. Diagnosis has changed during the last decades: silicosis is found today where formerly pulmonary tuberculosis would have been the diagnosis; approx. three-fourths of the miners in Joachimsthal now die of lung cancer where earlier, the existence of lung cancer was denied. Scepticism is urged concerning the assertion that lung cancer is increasing. A crit. evaluation of numerous studies on silicosis and cancer reveals no frequent coincidence of lung cancer and severe pneumoconiosis; i. e., there is no evidence that pneumoconiosis predisposes to lung cancer. Although it is theoretically possible that cancer can develop from the scar produced by dust induration in the bronchial mucous membrane, there is no practical basis for the development of lung cancer from pneumoconiosis in general or silicosis in particular. It is highly probably, however, that asbestosis predisposes to the development of cancer (6 cases of lung carcinoma in 39 published autopsies on asbestosis). The irritant action of asbestos dust may be purely mech. in contrast to the chem. action of quartz dust. Chromate dust also appears to stimulate the development of cancer of the lungs and perhaps also of other organs. The inhalation of producer gas (contains 0.7% tar vapor) has caused several cases of lung cancer in Japan. The no. of observations is yet too small to permit any conclusions. Skin cancer is frequently found in workers exposed to tar dust, pitch dust and tar vapors, but no lung carcinoma has yet been found in such workers. Exhaust gases from motor vehicles contain no substance which has yet been shown to favor the development of cancer. Isolated observations on lung cancer in the As, Ni and Fe oxide industries stimulate further work but do not yet permit any conclusions. However, the cancerogenic action of radioactive substances, especially the *Ra emanation* (Schneeberg, Joachimsthal) is certain. This injurious action requires years, usually decades, before lung cancer occurs; the cancer often does not develop until years after removal of the harmful action. A true cancer always develops. Ruth Berggren 7

Lung cancer and occupation. Koelsch. *Acta Unio Intern. contra Cancrum* (Paris) 3, 243(1938); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 32–3(1940).—Practically, dust inhalation alone cannot be recognized as a significant cause of lung carcinoma, in spite of the assumed anatomical possibility. The acute and chronic action of irritants (acid industry) and war gases might in very rare cases cause bronchial cancer. The occurrence of lung cancer in asbestos workers (12 cases to date) must be studied further. Chromate workers are in specific danger of lung cancer. The question of the harmful effects of tar and the action of tobacco smoke has not yet been fully investigated. In England 14 cases of lung cancer and 16 of cancer of the accessory nasal cavities have been observed among workers on Ni ores. The action of Ra emanation is the cause of lung cancer in the miners of Joachimsthal and Schneeberg. Prophylactic measures are briefly discussed. Ruth Berggren 8

Chromate lung cancer. W. Alwens and W. Jonas. *Acta Unio Intern. contra Cancrum* (Paris) 3, 103(1938); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 32(1940).—A report on recently established cases of lung cancer in chromate workers, most of whom had long since left the industry. The latency period was very long (about 30 years). Chem. investigation revealed a distinct storage of chromates in the lung tissue. The chronic injury of the nasopharynx (almost all had perforations of the septum) through the continuous irritation of the chromates and other industrial products was a particularly marked factor. The hilus glands were always enlarged. Prophylaxis is of prime importance in the control of chromate lung cancer. Ruth Berggren 9

Chemistry in national defense. Edward R. Weidlein. *News Ed.* (*Am. Chem. Soc.*) 19, 453–6(1941).—National problems and the program of the Chemicals, Drugs and Allied Products Section of the Office of Production Management are presented. Defense calls for trained men in the chem. industries and in universities, so they should not be withdrawn from their present positions except when such action is necessary for chem. work in the military service. Civilian as well as military needs are given consideration, but the latter take precedence. Problems confronting us now are minor as compared with conditions in 1917. Coöperation with the Army and Navy Munitions Boards, Council of National Defense, the Office of Administrator of Export Control and the Office of Production Management is stressed. As illustrations of the work done

TWORT AND J. D. FULTON. *J. Path. Bact.* 32, 149–61(1929).—In fractional distn. of the carcinogenic oils the active agent is sometimes concd. in the higher, sometimes in the lower fraction. The active agent is concd. in exts. made with methyl sulfite or methyl sulfate and picric acid, and the process is useful in testing oils for industrial use. There is no evidence that carcinogenic substances are made by such fractional distn. or by extn. The carcinogenic activity of an oil is much reduced or completely removed by extn. with H_2SO_4, oxidation, and by reduction. JOHN T. MYERS

Demonstration of the peculiar bodies of pulmonary asbestosis ("asbestosis bodies") in material obtained by lung puncture and in the sputum. M. J. STEWART AND A. C. HADDOW. *J. Path. Bact.* 32, 172(1929).—The peculiar characteristic golden yellow bodies were found in two cases of pulmonary disease in individual persons who had worked with asbestos for several years. JOHN T. MYERS

Improvement of diabetes in a pregnant woman due to fetal insulin. R. D. LAWRENCE. King's Coll. Hosp. *Quart. J. Med.* 22, 191–202(1929).—The course of a twin pregnancy in a diabetic woman was studied. Up to the twenty-seventh week of pregnancy the sugar tolerance deteriorated. From the twenty-eighth week to the end of pregnancy it improved to the extent of 100 g. of carbohydrate per day. This tolerance was not maintained after labor and must be ascribed to fetal insulin aiding the mother. The renal threshhold was lowered at the sixteenth week and returned to normal at the thirty-fourth week. There was no increase in ketosis or change in the fatty acid : glucose ratio tolerated. The pregnancy was complicated in the later months by a salt retention edema and a parenchymatous nephritis. JOHN T. MYERS

Febrile albuminuria with special reference to pneumonia. L. C. HILL. *Quart. J. Med.* 22, 305–19(1929).—Albumin is present in considerable quantities in every case of pneumonia at some time during its course. The presence of a trace may be of diagnostic value in a doubtful case. The degree of albuminuria corresponds broadly with the height of the temp., but persists for some time after the temp. has dropped. There is no correlation between albuminuria and temp. during such complications as empyema or mastoid suppuration. There is no definite relationship between the quantity of urine secreted and the degree of albuminuria, though they tend to be inverse. On the whole the intensity of the albuminuria is proportional to the severity of the case. Large numbers of casts indicate an unusually severe attack. There is an increase in the intensity of the albuminuria just prior to death. The temp. is not the cause of the albuminuria. It is probable that febrile albuminuria in the strict sense of the word does not exist, but that there is always some renal damage. The kidney in such albuminurias shows degenerative changes but not inflammation. JOHN T. MYERS

Biocatalyzer in carbohydrate metabolism of cancer. H. v. EULER AND HUGO JOHANSSON. *Svensk Kem. Tids.* 40, 209–18(1928). (In German); cf. *C. A.* 23, 398.—The cozymase technic developed in v. Euler's lab. (*C. A.* 21, 2138, 1820, 3065, etc.), was applied to carcinomatous human liver tissues and compared with results from normal tissues of the same organ. The inhibiting factors of the pathol. cells have gained on the "A-Z," (activator zymase units, *i. e.*, cc. CO_2 per hour per g. dry matter of tissue). Tests with exts. from cancer liver gave A-Z value under 300 whereas the normal liver exts. exceeded this no. A-Z nos. were also obtained from hashed and desiccated organs; for the former the normal came to 39 and over and the pathol. 20, and for the latter 27 and 13, resp. The A.-Z. units could be concd. sevenfold by a procedure previously described (*C. A.* 22, 2384, 3671). A. R. ROSE

Histochemical researches on pulmonary anthracosis. A. POLICARD, S. DOUBROW AND D. PILLET. *Compt. rend.* 188, 278–9(1929); cf. *C. A.* 22, 2982.—The 2 varieties of pulmonary pigments, namely, the ferruginous one derived from the blood and the one consisting of exogenous C may be distinguished by micro-incineration or by microscopical examn. The C deposits contain also particles of minerals like carbonates, silicates, feldspars, etc. The residue obtained by igniting the C particles has a greater double refraction than had the original particles on account of the heat causing the silicates to crystallize and thus to become anisotropic. The pigments are isolated by destroying the pulmonary tissue with a strongly alk. soln. of NaOCl. The ferruginous particles, which may be dissolved by strong hot acids, sometimes include crystals of hematoidin or cholesterol esters; in order to distinguish them from inorg. crystals they are heated, by which process the org. crystals are destroyed. G. SCHWOCH

The total proteins (serum albumin and serum globulin) in sera of guinea pigs afflicted with scurvy. The presence of albumin and hemoglobin in the urine of these animals in the last stage of the disease. (MLLE.) A. MICHAUX. *Compt. rend.* 188, 582–4(1929).—In guinea pigs suffering from scurvy (I) the total protein of the serum was detd. from the 16th to the 32nd day after starting them on a scurvy-producing diet.

burgh, Pa.). *Ibid.* 434–42. Abatement of dust from power-plant stacks. Gilbert Craig (Riley Stoker Corp., Worcester, Mass.). *Ibid.* 443–7. Short-range exposure to high concentrations of air pollutants. J. G. Townsend (U.S. Pub. Health Service, Washington, D.C.). *Ibid.* 451–4. Acute effects of air pollution in Donora, Pennsylvania. William F. Ashe (Univ. of Cincinnati, Cincinnati, O.). *Ibid.* 455–61. Skin effect of air pollutants. Marion B. Sulzberger (N.Y. Univ., New York, N.Y.). *Ibid.* 462–7.—Constant and repeated exposure of the skin to certain dusts and suspended particles and droplets in the air can, either directly or indirectly, cause a variety of important skin diseases. Chemically active air pollutants. Irving R. Tabershaw (Liberty Mutual Insurance Co., New York, N.Y.). *Ibid.* 468–73.—The possibility of the initiation or the aggravation of diseases by air pollutants is pointed out. Specific reference is made to Be poisoning. Effect of prolonged exposure to air pollutants. Robert A. Kehoe (Univ. of Cincinnati, Cincinnati, O.). *Ibid.* 474–8.—Up to the present, except in rare instances, direct and reliable evidence is lacking of the occurrence of injurious effects of a chronic or insidious nature in our population as the result of the pollution of the general atm. of our towns and cities. Environmental cancer hazards caused by industrial air pollution. W. C. Hueper (Natl. Cancer Inst., Bethesda, Md.). *Ibid.* 479–84.—Cancer can be caused by a variety of materials, especially combustion products and certain fractions from coal and oil, aromatic amines, arsenicals, Cr and Be dusts, and radioactive materials. Carcinogenic agents polluting the air can enter the human body by inhalation, skin contact, or ingestion. Cancers caused by carcinogenic air pollutants can affect parts of the respiratory tract, skin, bones, bone marrow, and bladder. Effects of "inert" dusts in air pollution. Arthur J. Vorwald (Trudeau Foundation, Saranac Lake, N.Y.). *Ibid.* 485–8.—The effect of the inert dusts can be varied by particle size, presence of other contaminants which may render the dust more or less active, etc. Effects of ionizing radiations in air pollution. Abel Wolman (Johns Hopkins Univ., Baltimore, Md.). *Ibid.* 489–92. A review is given of precautions taken by the Atomic Energy Commission to avoid discharges of dangerous material, the max. concn. of certain radioactive isotopes for 24-hr. continuous exposure, and the best est. of safe body accumulation. Neglected areas of investigation in the problem of chemically contaminated fogs. L. P. Herrington (Yale Univ.). *Ibid.* 493–8.—Information is lacking as to the effects of low-intensity exposure for long periods to a variety of chem. agents. Effect of loss of sunlight on human health. Harold F. Blum (Natl. Cancer Inst., Bethesda, Md.). *Ibid.* 499–502.—Small amts. of smoke or dust in the atm. eliminate the lower part of the sun's spectrum between about 0.32 and 0.29 μ, amounting to not more than about 0.2% of the total. However, there is no evidence that this is injurious to the average individual. Effects on oral structures from air pollution. James M. Dunning (Harvard School of Dental Med., Boston, Mass.). *Ibid.* 503–06.—A variety of chem. agents may cause further damage to diseased teeth. Local air pollution assocd. with close contact is more dangerous than any general pollution. The carbohydrate dust in bakeries is a great hazard. The effect of F is briefly discussed. Statistical study of the acute effects of air pollution. Harold F. Dorn (Natl. Cancer Inst., Bethesda, Md.). *Ibid.* 507–11. Effect of chronic exposure of air pollutants on acute infectious respiratory diseases. Anna M. Baetjer (Johns Hopkins Univ., Baltimore, Md.). *Ibid.* 512–19.—See *C.A.* 45, 787*k*. Respiratory-tract allergic effects from chemical air pollution. Fred W. Wittich (Am. Coll. of Allergists, Minneapolis, Minn.). *Ibid.* 520–8.—See *C.A.* 44, 10213*f*. Instruments used for the measurement of atmospheric pollution in Great Britain. A. Parker and S. H. Richards (Fuel Research Sta., Dept. Sci. Ind. Research, London). *Ibid.* 531–48.—Reports are given of the construction and use of the deposit gage, surveys of deposited matter in Petri dishes, measurement of suspended impurity, measurement of SO_2, and instruments for the sampling and examn. of suspended matter. Atmospheric sampling by electrostatic precipitation. Edgar C. Barnes (Westinghouse Elec. Corp., Pittsburgh, Pa.). *Ibid.* 547–55. A description is given of portable a.-c. and d.-c. precipitators for use in dust sampling, and factors are outlined which must be observed in their use. Problems in the recording of sulfur dioxide in polluted atmospheres. G. A. Perley and Benjamin F. T. Langsdorf (Leeds & Northrup Co., Philadelphia, Pa.). *Ibid.* 556–66.—A description is given of the modified Thomas Autometer for recording concns. of SO_2 in the atm. The conductivity is measured of a H_2O_2 soln. through which the atm. is drawn in comparison with the conductivity of the absorbing soln. alone. Precautions in the use of this instrument and possible simplifications are discussed. Automatic apparatus for the determination of small concentrations of sulfur dioxide and other contaminants in the atmosphere. Meyer D. Thomas and James Ivie (American Smelting & Refining Co., Salt Lake City, Utah). *Ibid.* 567–79.—A review is given of automatic and portable app. for the detn. of small concns. of SO_2 and of other gases and aerosols in the atm. The accumulation SO_2 analyzers are useful when 30 min. av. concns. are adequate, though short-time fluctuations can be approximated. The instantaneous-type SO_2 analyzers show the short-time fluctuations more clearly but require an accumulating feature for ease in summarizing records. Modifications of the app. for detn. of H_2S and other S compds., organic Cl compds., and HF are suggested. An automatic H_2SO_4 aerosol analyzer is described. Photoelectric determination of atmospheric sulfur dioxide by dilute starch-iodine solutions. Morris Katz (Defense Research Chem. Labs., Ottawa, Can.). *Ibid.* 580–95.—See *C.A.* 44, 8822*e*. Continuous measurement of sulfur dioxide and hydrogen sulfide concentrations by automatic titration. Harold W. Washburn and Robert R. Austin (Consolidated Eng. Corp., Pasadena, Calif.). *Ibid.* 596–602; cf. *C.A.* 44, 5565*h*. Direct photography of aerosol suspensions. Albert L. Chaney. *Ibid.* 603–6.—An app. is described for the direct dark-field photography of atm. particles at a magnification of about 2.5 times on 35-mm. film, with an electronic flash for illumination. The particle size can be estd. from these measurements. Preparation, collection, and measurement of aerosols. Victor K. La Mer (Columbia Univ.). *Ibid.* 607–16. Instrumental methods of measuring mass concentration and particulate concentration in aerosols. Frank T. Gucker, Jr. (Indiana Univ., Bloomington). *Ibid.* 617–33.—The electrostatic particle counter seems to offer a promising method of counting aerosol particles and of detg. particle-size distribution in a range larger than that in which the photoelectric counter will operate. A sonic method of determining particle size in aerosols. Hans M. Cassell and Harold Schultz (U.S. Bur. of Mines, Pittsburgh, Pa.). *Ibid.* 634–42.—The atm. in an illuminated microscope cell is subjected to harmonic oscillations free from overtones, as detd. by a condenser microphone and a cathode-ray oscillograph. The tracks of the particles appear on the photomicrographs as sinusoidal curves whose amplitudes depend on particle size and frequency. This method has the advantage of eliminating changes in the state of dispersion of the suspended matter and of permitting direct evaluation of Stokes' diams., or of sedimentation velocities, when particle ds. are not known. Disadvantages are the limitation to certain particle-size ranges, preventing the measure of very fine particles, as well as the time consumed in evaluating the large no. of photographic records for polydisperse suspensions. New developments in instrumentation for air pollution studies. Cledo Brunetti, P. L. Magill, and F. G. Sawyer (Stanford Research Inst., Stanford, Calif.). *Ibid.* 643–55.—Descriptions are given of a small electrostatic precipitator, designed to collect samples on a single flat plate the size of a microscope slide, the Sonkin cascade impactor, the thermal precipitator, a modified portable Venturi scrubber, and the Chaney dust camera. Methods are presented for the collection and detn. of gases. The modified cascade impactor. Sidney Laskin (Univ. of Rochester, Rochester, N.Y.). *Ibid.* 656–71.—The modified cascade impactor avoids breakup of larger dust particles by using a series of jets of decreasing size. This impactor has been used for the detn. of the size distribution of U and Be compds., and can be used for the size-distribution analysis of a mixt. of dusts encountered in many industrial atms. Automatic determination of size distribution of heterogeneous liquid sprays. R. L. Pigford (Univ. of Delaware, Newark). *Ibid.* 672–8.—A photomicrograph of the microscope field is scanned with a photoelectric cell to give the particle count. A recording visibility meter. Albert L. Chaney. *Ibid.* 679–82.—Meteorological aspects of atmospheric pollution. E. Wendell Hewson (Massachusetts Inst. of Technol., Cambridge). *Ibid.* 775–86. Some recent British work on the problem of diffusion in the lower atmosphere. K. L. Calder (Army Chem. Corps, Camp Detrick, Md.). *Ibid.*

787-92. **The problem of dispersion of hot gases in the atmosphere.** O. G. Sutton (Military Coll. Sci., Shrivenham, Engl.). *Ibid.* 793-801. **Stack meterology as related to power plants.** Ward F. Davidson (Consolidated Edison Co. of N.Y., New York, N.Y.). *Ibid.* 802-06. **Air pollution and fog properties.** Hans Neuberger (State College, Pa.). *Ibid.* 807-11.—The role of particles of combustion products as nuclei for fog formation was detd. experimentally. **The micrometeorological installation of the University of Washington.** Phil E. Church (Univ. of Washington, Seattle). *Ibid.* 812-14. **The diffusion problem in hilly terrain.** Joshua Z. Holland (U.S. Weather Bur., Oak Ridge, Tenn.). *Ibid.* 815-21. **The application of meteorological control to atmospheric pollution problems.** Maynard E. Smith (Brookhaven Natl. Lab., Upton, N.Y.). *Ibid.* 822-4. Discussion. *Ibid.* 824-39. R. W. Ryun

Atmospheric pollution. A group of contributions. *Meteral. Monographs* No. 4, 55 pp.(1951). **Enforcement principles and standards.** J. H. Carter. *Ibid.* 1-3.—A discussion of various American cities. **Meteorology applied to air-pollution abatement.** C. A. Gosline. *Ibid.* 4-8.—Meterological control is not usually economical, is applicable only to single plants in isolated areas, cannot be applied to continuous operations, and is subject to forecast errors. **Meteorological influences and their application to control at the source.** E. Wendell Hewson (Massachusetts Inst. of Technol., Cambridge). *Ibid.* 8-6.—A brief summary is given of methods used at Trail, British Columbia, for control of smelter fumes. **Climatology and its part in pollution.** Helmut E. Landsberg (Air Force Cambridge Research Center, Boston, Mass.). *Ibid.* 7-8.—A discussion. **Diffusion of stack gases in very stable atmospheres.** Morton L. Barad (New York Univ., New York, N.Y.). *Ibid.* 9-14.—Dispersion is nonisotropic, in that the vertical dispersion is not as extensive as the horizontal and that there is a rapid initial dilu. of effluents in the first few meters after leaving the stack, followed by a slower dispersion (with a const. exchange coeff. only during stable atm. conditions). The source must be treated as an area source of finite concn., instead of the classical treatment as a point source of infinite concn., if concns. within 1 or 2 km. are to be detd. **Statistical theory of diffusion by turbulent eddies.** Glenn W. Brier (U.S. Weather Bur., Washington, D.C.). *Ibid.* 15-19. **Instruments for air-pollution measurement.** W. C. L. Hemeon (Ind. Hyg. Foundation, Pittsburgh, Pa.). *Ibid.* 20-3.—Included are instruments for measurement of particle size, light-obscuring effect, soiling effect, and acid-corrosion effect on materials. **Microclimate factors in smoke pollution from tall stacks.** Philip H. Lowry (Brookhaven Natl. Lab., Upton, N.Y.). *Ibid.* 24-9.—An analysis of the no. of smoke hrs. by wind direction, speed, and gustiness. **Ground-level measurements of oil-fog emitted from a hundred-meter chimney.** P. H. Lowry, D. A. Mazarella, and M. R. Smith (Brookhaven Natl. Lab., Upton, N.Y.). *Ibid.* 30-5. **Gustiness profiles in the lower layers of the atmosphere.** H. F. Poppendiek (Univ. of California, Los Angeles). *Ibid.* 36-8. **Air-tunnel studies of diffusion in urban areas.** Hunter Rouse (State Univ. of Iowa, Iowa City). *Ibid.* 39-41.—Results are given of diffusion studies over model cities and buildings. **Analyzing winds for frequency and duration.** R. H. Sherlock (Univ. of Michigan, Ann Arbor). *Ibid.* 42-9. **The forecasting of micrometeorological variables.** Maynard E. Smith (Brookhaven Natl. Lab., Upton, N.Y.). *Ibid.* 50-5. Malcolm Rigby

Stacks for pollution control. R. S. Steinbock. *Chem. Eng.* 59, No. 5, 298(1952).—Corrections and revisions are presented for an article, *C.A.* 46, 415*h*. J. C. Tallman

Carcinoma and asbestosis of the lung: report of a case. T. K. Owen (Roy. Victoria Hosp., Bournemouth, Engl.). *Brit. J. Cancer* 5, 382-3(1951).—Asbestosis of the lung was found 20 years after the patient had worked in an asbestos factory for 1 year. E. K. Weisburger

Some notes on testing industrial solvents. C. Marsden. *Chem. Products* 15, 92-5(1952).—A discussion of the problems assocd. with analytical testing. Allen Kent

Protein denaturation in soybean meal during processing. Paul A. Belter and Allan K. Smith (Northern Regional Research Lab., Peoria, Ill.). *J. Am. Oil Chemists' Soc.* 29, 170-4(1952).—The effect of various steps in com. processing of soybeans on the denaturation of the meal proteins was detd. Dehulling, conditioning, flaking, and solvent (hydrocarbon) extn. did not significantly affect dispersibility of the protein. Major denaturation occurred in the final meal-treating steps, deodorization and toasting, or in "Schnecken" type desolventizing. The data is pertinent to production of proteins for industrial uses, such as for adhesives, fiber spinning, etc., where water dispersibility is important. M. M. Piskur

The storage and handling of acids and cyanides. H. Saenger. *J. Electrodepositors' Tech. Soc.* 27, 23-33(1951). Robert Seegmiller

Compound helix as a catalyst carrier. N. Z. Kotelkov (Suratov Agr. Inst.). *J. Applied Chem. U.S.S.R.* 24, 221-6(1951)(Engl. translation).—Compd. helixes of Cu, Fe, Al, and nichrome were coated with Pt, Pd, Al_2O_3, and various clays in an effort to increase the active area of the catalyst per unit mass. The efficiency of catalysis with this technique in the tested processes (dehydrogenation of cyclohexane, oxidation of H, dehydration of isopropyl alc.) is increased many fold over the same catalyst in pelleted form or deposited on asbestos. It is quite advantageous to use the nichrome helix, especially in research studies, since it can be heated by passing an elec. current through the wire itself. James C. Eubanks

Nonyellowing triethanolamine and its applications. W. Wolff (Anorgana U.S. Admin., Gendorf/Obb., Ger.). *Fette u. Seifen* 54, 142-3(1952).—The addn. of 1-2% H_2SO_4 to triethanolamine prevents discoloration on storage. Edward H. Sheers

Key to savings in painting costs. Robert R. Pierce (Pennsylvania Salt Manufg. Co., Philadelphia). *Chem. Eng.* 59, No. 5, 149-53(1952).—A comprehensive evaluation of costs for protective coatings in industrial plants is presented. It is concluded that a three-coat painting system resulting in a 5-mil minimum total thickness gives the required corrosion protection most economically. (Cf. *C.A.* 46, 1265*d*.) J. C. Tallman

Economic aspects of glycerol purification by ion-exchange methods. E. Schlenker. *Fette u. Seifen* 54, 165-7(1952).—A review. Edward H. Sheers

Magnetic and electric properties of ferroxcube materials. J. J. Went and E. W. Gorter (N. V. Philips' Gloeilampenfabrieken, Eindhoven, Netherlands). *Philips Tech. Rev.* 13, 181-93(1952).—Ferroxcube materials are ferromagnetic oxidic materials specially developed for use at high frequencies. Their suitability for such applications lies in the fact that owing to their high resistivity eddy-current losses do not as a rule occur. As regards the chem. compn. these materials belong to the group of ferrites crystg. with the spinel structure. The satn. magnetization of ferrites is closely related to their crystallographic structure. Values of the satn. magnetization found experimentally can be explained by assuming that an interaction exists between magnetic moments on crystallographically nonequiv. lattice sites, which tends to give those moments an antiparallel orientation. Although eddy-current losses do not usually occur in ferroxcube, residual losses, given by the expression $\tan \delta/\mu$, may under certain conditions be considerable. It is, therefore, highly important to know the behavior of μ' and $\tan \delta$, or of the real and the imaginary parts of the complex permeability $\mu = \mu' - j\mu''$, for all possible values of induction and of frequency. In this paper the behavior of these quantities as a function of frequency is considered both for very small and for somewhat larger values of the induction. Further, the temp. dependence of the initial permeability is discussed. The behavior of the imaginary part of the initial permeability at high frequencies is shown to bear a relationship to the ferromagnetic resonance absorption; this relationship and the behavior of the permeability in the presence of stronger fields leads to the conclusion that the magnetization process in ferrites differs from that taking place in metallic ferromagnetic materials. Finally attention is drawn to the remarkable dielec. properties of ferrites and the extra losses apt to arise therefrom (dimensional resonance). A. George Stern

Ferroxdure, a class of permanent magnetic materials. J. J. Went, G. W. Rathenau, E. W. Gorter, and G. W. van Oosterhout (N.V. Philips' Gloeilampenfabrieken, Eindhoven, Netherlands). *Philips Tech. Rev.* 13, 194-208(1952).—The material manufd. at present under the name of Ferroxdure is an oxidic ceramic material of the approx. compn. $BaFe_{12}O_{19}$. It is a magnetically hard material which does not contain any Co or Ni and which thus offers great economic advantages. It is characterized by possessing an extremely high value of the coercive force and rather low remanence and satn. magnetization. The extremely

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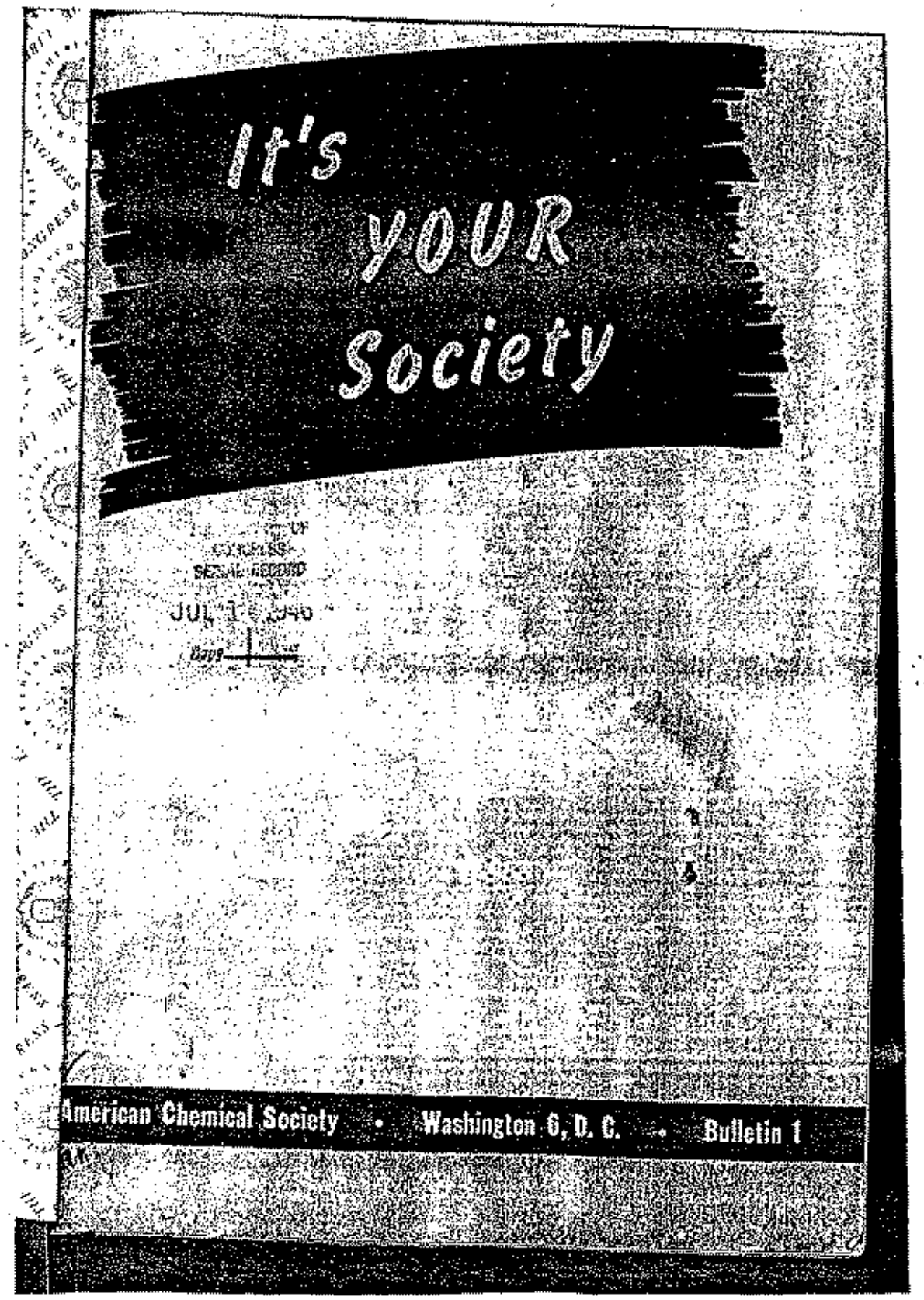
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Preface

This brief description of the American Chemical Society has been prepared for the information of new members and others who are interested. It describes the organization, its publications, and the privileges and services available to members.

Contents

The American Chemical Society

In April, 1876 thirty-five chemists met in New York City to form an American chemical society. The first published list of members included 133 names. The initial national meeting at Newport, R. I., on August 6 and 7, 1890, had 43 chemists in attendance. From these beginnings the American Chemical Society today has become the world's largest body devoted to a single science. Its membership numbers more than 44,000 and registration at its September, 1944 meeting was 9,701. Originally the Society was incorporated in New York State. By Act No. 358, 75th Congress, 1st Session, it was given a national charter with the approval and aid of five of the U. S. Government Departments.

Some of the history of the Society is given in a Supplement to the Journal of the American Chemical Society, Vol. 23, 168 pages, 1901, and Vol. 48, No. 8-A, 254 pages, 1926, published, respectively, on the twenty-fifth and fiftieth anniversaries of the Society's organization.

The National Charter of the American Chemical Society and its Constitution read as follows:*

The objects of the American Chemical Society shall be

(1) to encourage in the broadest and most liberal manner the advancement of chemistry in all its branches;
(2) the promotion of research in chemical science and industry;
(3) the improvement of the qualifications and usefulness of chemists through high standards of professional ethics, education, and attainments;
(4) the increase and diffusion of chemical knowledge; and
(5) by its meetings, professional contacts, reports, papers, discussions, and publications, to promote scientific interests and inquiry,

Thereby

(1) fostering public welfare and education,
(2) aiding the development of our country's industries, and
(3) adding to the material prosperity and happiness of our people.

* Wording is exact; tabular arrangement and numbering not in original.

BRADLEY DEWEY
President

W. ALBERT NOYES, Jr.
President-Elect

ROGER ADAMS
Chairman of the Board

ROBERT T. BALDWIN
Treasurer

ALDEN H. EMERY
Secretary

GOVERNMENT

The officers of the Society for 1946 are as follows:

President	Bradley Dewey,
President-Elect	W. Albert Noyes, Jr.
Chairman of the Board of Directors	Roger Adams
Secretary	Alden H. Emery
Treasurer	Robert T. Baldwin

Each local section of the Society is asked annually to propose a person for President-Elect. On or about November 1, the Secretary sends to each member a list of these names and a ballot on which to record his choice for that office. The four persons receiving the greatest number of votes are the nominees. These names are sent to all Councilors, who select therefrom the President-Elect. He serves in that post for one year and then succeeds to the Presidency. The President-Elect functions as Vice President and is a member of the Board of Directors, Council, and Council Policy Committee. By the time he becomes President, he has an intimate knowledge of the Society program, problems, and methods of operation.

The Chairman of the Board of Directors is elected annually by the Directors from the Board membership. The Secretary and Treasurer are elected annually by the Directors.

The Board of Directors is the legal representative of the Society. It consists of fifteen members—five ex-officiis, six selected from geographical regions, and four elected at large and chosen for their business experience and ability. The ex-officio members are the President, President-Elect, the most recent Past President, the Secretary, and the Treasurer. Incumbents of these posts are named above except for the immediate Past President, C. S. Marvel.

For the purpose of equitable representation of various parts of the country on the Board, six geographic districts are outlined in Bylaw 12. Two Regional Directors are elected annually for a term of three years each. On or before October 1, each local section in each geographic district from which a Regional Director is to be selected, is asked to nominate a candidate for the post. From the names so submitted, the Councilors elect the Regional Directors. Incumbents are Roger Adams (1944–46); C. A. Kraus and E. R. Weidlein (1945–47); and S. C. Lind and Charles L. Parsons (1946–48).

With the selection of Doctor Noyes as President-Elect, which makes him ex-officio a Director, his position as representative of District 2 on the Board is vacant. This will be filled by vote of the Council at its meeting on April 6–8.

One Director-at-Large is chosen annually by the Councilors for a four year term. Nominations are made in two ways. The Council Policy Committee annually appoints a committee of six persons which is charged with the responsibility of nominating two members for Director-at-Large. In addition, any twenty-five members in good standing can nominate a candidate by petition. Incumbents are Walter A. Schmidt (1943–46), E. H. Volwiler (1944–47), Willard H. Dow (1945–48), and Charles A. Thomas (1946–49).

No Director may be reelected more than twice until a period of two years has elapsed after his last term.

The Council of the Society is an advisory body in matters pertaining to the general management or policy of the organization. In addition, by mail ballot it elects the President-Elect (from persons nominated by the members), Regional Directors (from those nominated by local sections), Directors-at-Large (from members nominated by committee or petition), and Councilors-at-Large (from individuals nominated by the members). At its meetings it elects editors and editorial boards for Society publications. It chartters local sections and selects sites for national meetings. The membership of the Council can be divided into three groups—Ex-Officiis, Local Section Representatives, and Councilors-at-Large. A complete list is published in CHEMICAL AND ENGINEERING NEWS three times a year, usually February 10, May 10, and October 10.

Ex-officio members are the President, President-Elect, all Past Presidents (13 not otherwise included), the Secretary, the Treasurer, Directors (11 not otherwise included), the Editor of JACS, the Editor of CA, the Editor of I&EC, and the chairmen of all divisions (18), 49 in all.

Each local section annually elects one Councilor for each 100 members, or fraction thereof, in good standing as of December 1 of the year preceding. There are 441 local section councilors as of January 1, 1946.

Each local section of the Society is asked annually to suggest as many as four members qualified to serve as Councilors-at-Large. On or about November 1, the Secretary sends to each member a list of the names proposed by two or more sections and a ballot on which to record his choice of four individuals. The eight persons receiving the greatest number of votes are the nominees. These names are sent to all Councilors, who elect therefrom four members to serve as Councilors-at-Large for three years. No person may be reelected to a third consecutive term.

Ideas for expansion of Society activities clear through various committees to the Council. The Committee on New Activities, the Com-

mittee on New Publications, and the Committee on Professional and Economic Status, all appointed by the President, function in this manner.

Other groups are responsible for the prosecution of some part of the Society's program. Thus, the Committee on the Professional Training of Chemists examines departments of chemistry and accredits those which are considered qualified to offer adequate professional training. The Membership Committee considers all applications and admits to membership those who meet the requirements of Bylaw 19. The Committee on Nomenclature, Spelling, and Pronunciation makes recommendations within the field of its assignment. One committee is responsible for obtaining nominations for the ACS Award in Pure Chemistry (sponsored by Alpha Chi Sigma), and another for selecting the recipient. A similar pair of committees exists for each award.

Other committees deal with technical problems. Typical are the Committees on Analytical Reagents, Hazardous Chemicals and Explosives, and Soap and Soap Products.

A complete list of committees and committee personnel is published three times a year in CHEMICAL AND ENGINEERING NEWS, usually the issues of February 10, May 10, and October 10.

General administration of Society activities centers in the ACS building at 1155 Sixteenth Street, N.W., Washington 6, D. C. The staff is headed by the Secretary and Business Manager. He is aided by general assistants and by junior executives in charge of specific activities. The latter includes change of address, dues and member subscriptions, employment, new members, non-member subscriptions, occupational files, records, sale of back numbers, and speakers' tours. All business connected with the publications is handled at this office, including subscriptions, claims for missing numbers, change of address, etc. The editors have full responsibility for editorial content. All manuscripts and correspondence on such subjects must be sent directly to the appropriate editor.

(*Note.* Amendments to the Constitution which would alter the foregoing, if passed, will be considered by the Council on April 6–8, 1946.)

MEMBERSHIP

The various classes of membership in the American Chemical Society and requirements for each are as follows:

Member — An adequate collegiate training in chemistry or chemical engineering, or its equivalent, *and* five years of graduate training or experience in some form of chemical work. Only two years of postgraduate study or experience are required from those who have studied in a department of chemistry or chemical engineering accredited by the ACS and who have been certified by the head of the department as having completed the course recommended by the Society.

Junior Member — Adequate basic training but insufficient graduate study and experience for member, senior grade, or inadequate training but engaged in chemical work.

Life Member — Payment at one time of five hundred dollars by a member, not in arrears, as commutation for dues.

Emeritus Member — Members for thirty-five continuous years or over who are retired from active business, teaching, or professional activity or who are over seventy years of age.

Honorary Member — Achievements warranting special recognition as an authority in theoretical or applied chemistry.

Corporation Member—Interest in the objects of the Society.

Privileges of all classes of members are identical except that corporation members and junior members may not hold office.

Applicants for membership, senior grade and junior grade, must be nominated by two members of the Society. Election of members, senior and junior grade, and of corporation members is by a Membership Committee, appointed by the President. Life membership is obtained by any individual member through a financial transaction. Emeritus status is granted on certification by the Secretary. Candidates for honorary membership are nominated by ten members. This nomination must be endorsed in writing by a majority of the Council. Election is by the members at a general meeting of the Society.

The cost of membership is shown in the following table:

Class	*Annual Dues*	*Publications Sent Without Extra Charge**
Member	$7.50	CHEMICAL AND ENGINEERING NEWS
Junior Member	$7.50 **	CHEMICAL AND ENGINEERING NEWS
Life Member	None	CHEMICAL ABSTRACTS, CHEMICAL AND ENGINEERING NEWS, INDUSTRIAL AND ENGINEERING CHEMISTRY, JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
Emeritus Member	None	CHEMICAL AND ENGINEERING NEWS
Honorary Member	None	CHEMICAL ABSTRACTS, CHEMICAL AND ENGINEERING NEWS, INDUSTRIAL AND ENGINEERING CHEMISTRY, JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
Corporation Member	$25.00	CHEMICAL ABSTRACTS, CHEMICAL AND ENGINEERING NEWS, INDUSTRIAL AND ENGINEERING CHEMISTRY, JOURNAL OF THE AMERICAN CHEMICAL SOCIETY

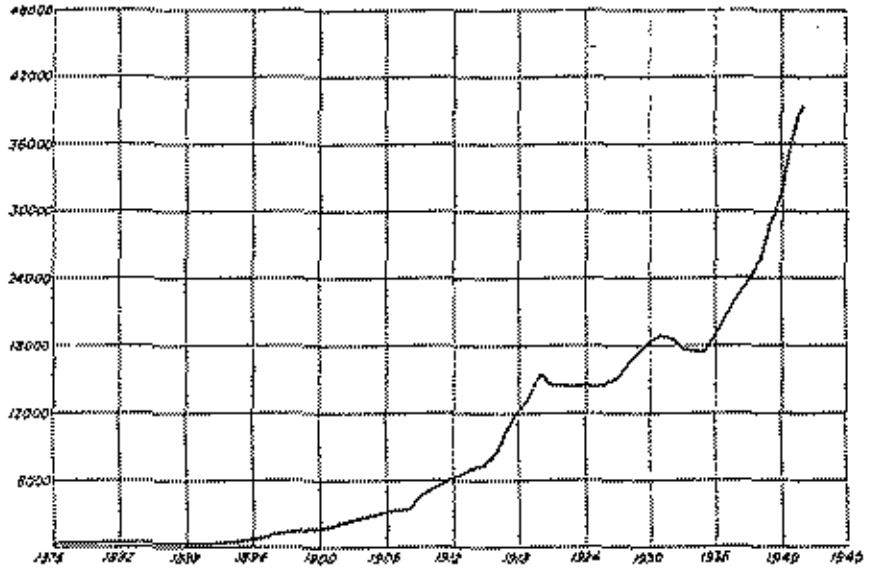
The members of the Society hold the following types of positions:

	Per cent (Approximate)
Manufacturers	
Companies and executives	6.7
Works executives	4.4
Foremen and supervisors	3.4
Engineers	11.1
Research directors, chief chemists, etc.	8.8
Research and control chemists	28.0
Sales and advertising	1.4
All others	.7
Consultants and employees of utilities and government	13.7
Teachers (of whom 23.1% consult)	11.5
Students	1.9
In military service	5.2
Others	3.2

* For information concerning subscription rates, see pages 24–31.

** Discount of 33-1/3 per cent to any regularly matriculated student, graduate or undergraduate, who subscribes to *Chemical Abstracts, Industrial and Engineering Chemistry* or *Journal of American Chemical Society*.

The growth in Society membership is shown in the following chart:



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SERVICES TO THE PROFESSION

In the pages which follow, some of the services which the ACS renders to each member are described. Major attention has been given to those parts of the program which demand that the member take the initiative if he is to benefit. No attempt has been made to discuss group activities dealing with intangibles such as advising on legislation affecting science, increasing the prestige of the chemist and chemical engineer in the eyes of the public, improving educational standards and, far from the least, obtaining the kind of recognition for the profession which is expressed in better working conditions and larger salary checks. These will be pursued diligently without the active participation of the individual, but we hope with his support. A description of the News Service has been included because its activities contribute so greatly to the success of all parts of the ACS program.

Naturally, general services of this kind benefit both members and non-members but the former have the mental satisfaction that comes from a realization that they have a part in the accomplishments.

Every member who reads an ACS journal knows something about the publication program of the Society. Every member who obtains a position through the Employment Clearing House realizes its immediate and tangible value. But those employees whose salaries were raised because of the studies and reports of the Society probably did not know that some of the credit belonged to the ACS. In general, individuals have no way in which to evaluate results from activities which benefit the profession as a whole. Yet work of this kind constitutes an important part of the Society program and its benefits often can be more far-reaching than some tangible service.

LOCAL SECTIONS

Local sections of the Society may be established by the Council on receipt of a written request signed by twenty members of the Society in good standing, residing within the territory within which the Section is desired. As of January 1, 1946, the following sections were active, with headquarters at the cities named:

State	*Headquarters*	*Name*	*Established*	*Members*
Alabama	Birmingham	Alabama	1913	178
	Wilson Dam	Wilson Dam	1937	85
California	Los Angeles	Southern California	1911	1,268
	Sacramento	Sacramento	1922	72
	San Diego	San Diego	1941	60
	San Francisco	California	1901	1,442
Colorado	Denver	Colorado	1920	182
Connecticut	Hartford	Connecticut Valley	1911	490
	New Haven	New Haven	1912	153
	Stamford	Western Connecticut	1936	431
Delaware	Wilmington	Delaware	1917	1,034
District of Columbia	Washington	Washington	1893	1,210
Florida	Gainesville	Florida	1924	227
Georgia	Atlanta	Georgia	1904	194
	Part of Georgia in Chattanooga Section (see Tennessee)			
Idaho	Part of Idaho in Washington-Idaho Border Section (see Washington)			
Illinois	Chicago	Chicago	1895	2,627
	Joliet	Joliet	1945	67
	Peoria	Peoria	1939	157
	Urbana	University of Illinois	1906	242
	Part of Illinois in Illinois-Iowa, St. Louis, and Wabash Valley Sections (see Iowa, Missouri, and Indiana)			
Indiana	Indianapolis	Indiana	1906	437
	Lafayette	Purdue	1922	141
	South Bend	St. Joseph Valley	1922	121
	Terre Haute	Wabash Valley	1944	104
	Part of Indiana in Chicago and Louisville Sections (see Illinois and Kentucky)			
Iowa	Ames	Ames	1915	120
	Davenport	Illinois-Iowa	1923	50
	Iowa City	Iowa	1905	89
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1930 - Aluminum Goods Manufacturing Co., Manitowoc, Wis.
1920 - American Agricultural Chemical Co., 50 Church St., New York, N.Y.
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1937 - American Cyanamid Co., 30 Rockefeller Plaza, New York, N.Y.
1937 - American Cyanamid & Chemical Corp., Bridgeville, Pa.
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1929 - American Enka Corp., Enka, N.C.
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1936 - American Gas & Electric Service Corp., 30 Church St., New York, N.Y.
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1927 - American Lime & Stone Co., Bellefonte, Pa.
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1939 - American Manufacturing Co., Noble & West Sts., Brooklyn, N.Y.
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1939 - American Pigment Corp., Hiwassee, Va.
1925 - American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark, N.J.
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1937 - American Smelting & Refining Co., Highland & Eastbourne Aves., Baltimore, Md.

1921 - American Woolen Co., Box 100, Shawsheen Village Sta., Andover, Mass.
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1910 - Anaconda Copper Mining Co., Anaconda, Mont.
1935 - Anaconda Wire & Cable Co., Hastings-on-Hudson, N.Y.
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1927 - Applied Sugar Laboratories, Inc., 111 Wall St., New York, N.Y.
1934 - Arabol Manufacturing Co., The, 110 E. 42nd St., New York, N.Y.
1939 - Archer-Daniels-Midland Co., 600 Roanoke Bldg., Minneapolis, Minn.
1936 - Arkansas Co., Inc., Box 220, Newark, N.J.
1935 - Arkansas Fuel Oil Co., Shreveport, La.
1921 - Arlington Mills, 78 Chauncey St., Boston, Mass.
1913 - Armour Glue Works, 1355 W. 31st St., Chicago, Ill.
1931 - Armour Soap Works, Foot of 35th St., North Bergen, N.J.
1921 - Armstrong Cork Co., Lancaster, Pa.
1936 - Armstrong Paint & Varnish Works, 1360 S. Kilbourne Ave., Hawthorne Sta., Chicago, Ill.
1935 - Arnold Print Works, North Adams, Mass.
1937 - A-S Dalen Portland Cementfabrik, Brevik, Norway.
1940 - Ashland Oil & Refining Co., Catlettsburg, Ky.
1931 - Astra, Ltd., Soedertaelje, Sweden.
1927 - Atlantic Refining Co., 3144 Passyunk Ave., Philadelphia, Pa.
1924 - Atlas Powder Co., Wilmington, Del.
1940 - Attapulgus Clay Co., 260 S. Broad St., Philadelphia, Pa.
1938 - B. B. Chemical Co., Kendall Sq., East Cambridge, Mass.
1928 - Babcock & Wilcox Tube Co., Beaver Falls, Pa.
1924 - Bakelite Corp., 247 Park Ave., New York, N.Y.
1927 - Bakelite Limited, Redfern Rd., 11, Tyseley, Birmingham, England.
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1927 - Baker Chemical Co., J. T., Phillipsburg, N. J.
1925 - Baker Perkins Co., Inc., Ross & Williamson Sts., Saginaw, Mich.
1930 - Bancroft, Joseph & Sons Co., Wilmington, Del.
1924 - Barnsco Oil Co., Barnsdall, Okla.
1909 - Barrett Co., The, 40 Rector St., New York, N. Y.
1928 - Baugh Chemical Co., 25 S. Calvert St., Baltimore, Md.
1919 - Bausch & Lomb Optical Co., Rochester, N. Y.
1938 - Baxter, Don, 1015 Grandview Ave., Glendale, Calif.
1925 - Bay Chemical Co., Inc., 1045 Constance St., New Orleans, La.
1937 - Beattie Gold Mines Limited, Duparquet, Que., Canada.
1928 - Beech-Nut Packing Co., Canajoharie, N. Y.
1925 - Belden Manufacturing Co., 4647 W. Van Buren St., Austin Sta., Chicago, Ill.
1928 - Bell Telephone Laboratories, 463 West St., New York, N. Y.
1937 - Ben Bark, Inc., 1010 Massachusetts Ave., Boston, Mass.
1936 - Bergstrom Trading Co., Inc., Woolworth Bldg., New York, N. Y.
1940 - Berk, & Co., F. W., Box 67, Carlstadt, N. J.
1928 - Bethlehem Steel Co., Bethlehem, Pa.
1934 - Bird & Son, Inc., East Walpole, Mass.
1911 - Bishop & Co., Platinum Works, J., Malvern, Pa.
1936 - Blatz Brewing Co., 1120 N. Broadway, Milwaukee, Wis.
1937 - Blue Line Chemical Co., The, 202 S. Broadway, St. Louis, Mo.
1921 - Borden Co., The, 350 Madison Ave., New York, N. Y.
1932 - Bower Chemical Manufacturing Co., Henry, 2315 Grays Ferry Rd., Philadelphia, Pa.
1938 - Bowman Dairy Co., 140 W. Ontario St., Chicago, Ill.
1925 - Braden Copper Co., Rancagua, Chile.
1925 - Braun-Knecht-Heimann Co., 1400 - 16th St., San Francisco, Calif.
1937 - Breon & Co., Inc., George A., Box 528, G.P.O., Kansas City, Mo.
1923 - British American Oil Co., Montreal East, Que., Canada.
1937 - Bruce, Inc., Lawrence Richard, 126 W. 46th St., New York, N. Y.
1940 - Buffalo Electro-Chemical Co., Inc., Sta. B, Buffalo, N. Y.
1929 - Buffalo Foundry & Machine Co., Buffalo, N. Y.
1928 - Burroughs Wellcome & Co., Tuckahoe, N. Y.
1931 - Cabot, Godfrey L., Inc., 77 Franklin St., Boston, Mass.
1910 - Calco Chemical Div., American Cyanamid Co., Bound Brook, N. J.
1916 - California & Hawaiian Sugar Refining Co., Crockett, Calif.
1936 - California Fruit Growers Exchange, 616 E. Grove St., Ontario, Calif.
1938 - Campbell-Taggart Research Corp., 4049 Pennsylvania Ave., Kansas City, Mo.
1920 - Canada Starch Co., Ltd., Cardinal, Ont., Canada.
1925 - Canadian Celanese, Ltd., Drummondville, Que., Canada.
1929 - Canadian General Electric Co., 1025 Lansdowne Ave., Toronto 4, Ont., Canada.
1918 - Canadian International Paper Co., Hawkesbury, Ont., Canada.
1925 - Carbide & Carbon Chemicals Corp., 30 E. 42nd St., New York, N. Y.
1924 - Carleton & Hovey Co., Lowell, Mass.

1938 - Carter Coal Co., Coalwood, W. Va.
1929 - Casein Company of America, Raindridge, N. Y.
1920 - Celanese Corporation of America, Cumberland, Md.
1927 - Celluloid Corp., 290 Ferry St., Newark, N. J.
1940 - Celon Co., The, 2034 Pennsylvania Ave., Madison, Wis.
1927 - Celotex Corp., Marrero, La.
1926 - Central Soya Co., Inc., Decatur, Ind.
1929 - Centrale Proefvendienst Der Nederlandsche Handel- Maatschappij, Tegal, Java, N.E.I.
1932 - Champion Paper & Fibre Co., Hamilton, Ohio.
1932 - Champion Spark Plug Co., 8525 Butler Ave., Detroit, Mich.
1927 - Chemical Department of Cairo, M. P. W. Gardens, Cairo, Egypt.
1936 - Cheney Brothers, Manchester, Conn.
1926 - Cheesbrough Manufacturing Co., Cons'd., 17 State St., New York, N.Y.
1925 - Chile Exploration Co., Chuquicamata, Via Antofagasta, Chile.
1929 - Chrysler Corp., Highland Park, Mich.
1921 - Church & Dwight Co., P. O. Drawer 761, Syracuse, N. Y.
1930 - Ciba Co., Inc., Box 994, City Hall Sta., New York, N. Y.
1927 - Ciba Pharmaceutical Products, Inc., Summit, N. J.
1925 - Cincinnati Chemical Works, Inc., Evanston Sta., Box 80, Cincinnati, Ohio.
1928 - Cincinnati Scientific Co., 284 Main St., Cincinnati, Ohio.
1921 - Coca Cola Co., 1216 E. Fort Ave., Baltimore, Md.
1911 - Colgate-Palmolive-Peet Co., Jersey City, N. J.
1925 - Colgate-Palmolive-Peet Co., The, Berkeley, Calif.
1939 - Colloids, Inc., 16 Delancy St., Newark, N. J.
1938 - Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn.
1932 - Columbia Alkali Corp., The, Technical Service Dept., Barberton, Ohio.
1937 - Columbian Carbon Co., 41 E. 42nd St., New York, N. Y.
1931 - Columbian Gasoline Corp., Monroe, La.
1936 - Combustion Engineering Co., Inc., 1519 N. Branch St., Chicago, Ill.
1922 - Commercial Solvents Corp., Box 774, Terre Haute, Ind.
1929 - Conewango Refining Co., Warren, Pa.
1935 - Congoleum-Nairn, Inc., 195 Belgrove Dr., Kearny, N. J.
1936 - Consolidated Chemical Industries, Inc., 111 Sutter St., San Francisco, Calif.
1927 - Consolidated Edison Company of New York, 4 Irving Pl., New York, N. Y.
1928 - Consolidated Mining and Smelting Company of Canada, Ltd., Trail, B.C., Canada.
1929 - Consumers Union of U. S., Inc., 17 Union Sq., West, New York, N. Y.
1928 - Continental Can Co., Inc., 4645 W. Grand Ave., Chicago, Ill.
1925 - Continental Rubber Works, Erie, Pa.
1924 - Cook Paint & Varnish Co., Box 389, Kansas City, Mo.
1937 - Cooper & Co., Chas., 246 Van Beuren St., Newark, N. J.
1933 - Cooperative Superphosphate Works, Vlaardingen, Holland.
1924 - Coors Porcelain Co., Golden, Colo.
1927 - Corn Products Refining Co., Edgewater, N. J.
1923 - Corning Glass Works, Corning, N. Y.
1921 - Crane Co., 836 S. Michigan Ave., Chicago, Ill.
1937 - Crown Central Petroleum Corp., Box 1760, Houston, Texas.
1933 - Crown Cork & Seal Co., Baltimore, Md.
1927 - Cudahy Brothers Co., Cudahy, Wis.
1934 - Darco Corporation, Wilmington, Del.
1928 - Davies Rose & Co., Ltd., 22 Thayer St., Boston, Mass.
1919 - Deep Rock Oil Corp., 155 N. Clark St., Box 1, Chicago, Ill.
1925 - Dennis Co., The Martin, 869 Sumner Ave., Newark, N. J.
1919 - Detroit Edison Co., The, 2000 Second Ave., Detroit, Mich.
1939 - Dewey and Almy Chemical Co., 62 Whittemore Ave., Cambridge, Mass.
1915 - Diamond Alkali Co., 2427 Oliver Bldg., Pittsburgh, 22, Pa.
1935 - Dicalite Co., The, 120 Wall St., New York, N. Y.
1940 - Difco Laboratories, Inc., 920 Henry St., Detroit, Mich.
1937 - Dixon Crucible Co., Joseph, Jersey City, N. J.
1925 - Dorr Co., The, 570 Lexington Ave., New York, N. Y.
1926 - Dow Chemical Co., Midland, Mich.
1930 - Dunlop Tire & Rubber Corp., Buffalo, N. Y.
1921 - Du Pont de Nemours & Co., Inc., E. I., Newport, Del.
1909 - Du Pont de Nemours & Co., Inc., E. I., Wilmington, Del.
1936 - Du Pont de Nemours & Co., Inc., E. I., 511 Lancaster St., Leominster, Mass.
1928 - Du Pont de Nemours & Co., Inc., E. I., Flint, Mich.
1928 - Du Pont de Nemours & Co., Inc., E. I., Station B, Buffalo, N. Y.
1909 - Du Pont de Nemours & Co., Inc., E. I., Niagara Falls, N. Y.
1935 - Dupont Film Manufacturing Corp., Parlin, N. J.
1935 - Dupont Rayon Co., Inc., Old Hickory, Tenn.
1921 - Durion Co., Inc., The, Dayton Ohio.
1940 - Durkee Famous Foods, 6900 5th St., Berkeley, Calif.
1936 - Eagle Pencil Co., 710 E. 14th St., New York, N. Y.
1925 - Eastman Kodak Co., Rochester, N. Y.
1921 - Eaton Company, Ltd., T., The, Res. & Systems Office, Toronto 2, Ont., Canada.
1940 - Electric Reduction Company of Canada, Ltd., Buckingham, Que., Canada.

1939 - Ellis-Foster Co., 4 Cherry St., Montclair, N. J.
1927 - Emerson Drug Co., Bromo-Seltzer Tower Bldg., Baltimore, Md.
1940 - Endicott Johnson Corp., Endicott, N. Y.
1929 - Engelhard Inc., Charles, 30 Chestnut St., Newark, N. J.
1938 - Erie Forge Co., Erie, Pa.
1937 - Ethyl-Dow Chemical Co., Wilmington, N. C.
1937 - Exelon Co., The, Blandell, N. Y.
1924 - Fairchild Brothers & Foster, 75 Laight St., New York, N. Y.
1923 - Fansteel Metallurgical Corp., North Chicago, Ill.
1926 - Farwell Bleachery, S. Canal St., Lawrence, Mass.
1924 - Faultless Rubber Co., Ashland, Ohio.
1925 - Federal Color Laboratories, Inc., Norwood, Ohio.
1910 - Fels & Co., 73rd St. & Woodlawn Ave., Philadelphia, Pa.
1940 - Felton Chemical Co., Inc., 599 Johnson Ave., Brooklyn, N. Y.
1928 - Fezandie & Sperrle, Inc., 205 Fulton St., New York, N. Y.
1922 - Firestone Tire & Rubber Co., Firestone Park, Akron, Ohio.
1928 - Firth-Sterling Steel Co., McKeesport, Pa.
1935 - Fish-Schurman Corp., 250 E. 43rd St., New York, N. Y.
1927 - Fleischmann Laboratories, 810 Grand Concourse, New York, N. Y.
1935 - Flint Ink Co., Howard, 2545 Scotten Ave., Detroit, Mich.
1939 - Ford Sales Co., J. R., Wyandotte, Mich.
1936 - Forest Products Chemical Co., Memphis, Tenn.
1930 - Foxboro Co., The, Foxboro, Mass.
1930 - Franco-American Chemical Works, Carlstadt, N. J.
1937 - Frankfort Distilleries, Inc., Columbia Bldg., Louisville, Ky.
1927 - Franklin Research Co., 5134 Lancaster Ave., Philadelphia, Pa.
1932 - Froehling & Robertson, Inc., Box 787, Richmond, Va.
1921 - Gallun & Sons Co., A. F., Milwaukee, Wis.
1934 - Gane's Chemical Works, Inc., Broad & Garden Sts., Carlstadt, N. J.
1931 - Gaylord Container Corp., Bogalusa, La.
1922 - Geigy, J. R., S. A., Basle, 16, Switzerland.
1929 - General Aniline Works Div. of General Aniline & Film Corp., 435 Hudson St., New York, N. Y.
1936 - General Atlas Carbon Co., Pampa, Texas.
1919 - General Chemical Co., 40 Rector St., New York, N. Y.
1932 - General Dyestuff Corp., 435 Hudson St., New York, N.Y.
1925 - General Electric Co., 1 River Rd., Schenectady, N. Y.
1929 - General Foods Corporation, 250 Park Ave., New York, N. Y.
1935 - General Mills, Inc., 2010 E. Hennepin, Minneapolis, Minn.
1928 - General Motors Corp., Detroit, Mich.
1926 - General Petroleum Corp., 2525 E. 37th St., Los Angeles, Calif.
1926 - General Printing Ink Corp., 100 - 6th Ave., New York, N. Y.
1936 - General Railway Signal Co., Box 600, Rochester, N. Y.
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1921 - Goodrich Co., The B. F., Akron, Ohio.
1924 - Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, Ohio.
1924 - Gorton-Pew Fisheries Co., Ltd., Gloucester, Mass.
1921 - Great Atlantic & Pacific Tea Co., Graybar Bldg., 420 Lexington Ave., New York, N. Y.
1938 - Great Lakes Varnish Works, Inc., 2807 - 2835 N. Crawford Ave., Chicago, Ill.
1929 - Great Western Division, The Dow Chemical Co., 9 Main St., San Francisco, Calif.
1924 - Great Western Sugar Co., Box 5508, Terminal Annex, Denver, Colo.
1940 - Griner Co., J. J., 417 E. 18th St., Kansas City, Mo.
1928 - Guggenheim Brothers Laboratories, 3771 - 10th Ave., New York, N. Y.
1928 - Gulf Oil Corp., Box 7409, Philadelphia, Pa.
1937 - Gulf Research & Development Co., Box 2038, Pittsburgh, Pa.
1934 - Gulf States Paper Corp., Tuscaloosa, Ala.
1929 - Hackensack Water Co., New Milford, N. J.
1921 - Hammermill Paper Co., Erie, Pa.
1939 - Hansen's Laboratory, Inc., Chr., Little Falls, N. Y.
1936 - Hardesty Co., Inc., W. C., Box 250, Dover, Ohio.
1927 - Harrower Laboratory, Inc., Box 791, Glendale, Calif.
1930 - Harshaw Chemical Co., The, 1945 E. 97th St., Cleveland, Ohio.
1928 - H-B Instrument Co., 2516 N. Broad St., Philadelphia, Pa.
1921 - Heinz Co., H. J., Quality Control Dept., Pittsburgh, Pa.
1924 - Hercules Powder Co., Delaware Trust Bldg., Wilmington, Del.
1929 - Heyden Chemical Corp., Garfield, N. J.
1921 - Higgins & Co., Chas. M., 271 - 9th St., Brooklyn, N. Y.
1939 - Hitati Engineering Works, The, Hikagawa, Ibaraki-ken, Japan.
1929 - Hoberg Paper & Fibre Co., Green Bay, Wis.
1927 - Hodgman Rubber Co., Framingham, Mass.
1928 - Holland Aniline Dye Co., Holland, Mich.
1938 - Hollingsworth & Vose Co., 112 Washington St., East Walpole, Mass.
1921 - Homsel Co., The O., Box 475, Pittsburgh, Pa.
1924 - Hood Rubber Co., Watertown, Mass.

1933 - Humble Oil & Refining Co., Baytown, Texas.
1928 - Hunt Co., Robert W., 2200 Insurance Exchange, Chicago, Ill.
1925 - Hynson Westcott & Dunning, Charles & Chase Sts., Baltimore, Md.
1940 - Illinois Powder Manufacturing Co., Grafton, Ill.
1929 - Imperial Paper and Color Corp., Glens Falls, N. Y.
1921 - Imperial Varnish & Color Co., Ltd., 8-20 Morse St., Toronto, Ont., Canada.
1938 - Independent Refining Co., Laurel, Mont.
1937 - Industrial Dyestuff Co., Massasoit Ave., East Providence, R. I.
1923 - Industrial Rayon Corp., West 98th St. & Walford Ave., Cleveland, Ohio.
1929 - Inland Steel Co., Coke Plant, East Chicago, Ind.
1934 - Interchemical Corp., 452 W. 45th St., New York, N. Y.
1925 - Interlake Iron Corp., 118th & Torrence Ave., Chicago, Ill.
1928 - International Agricultural Corp., Box 1725, Atlanta, Ga.
1931 - International Equipment Co., 268 Western Ave., Boston, Mass.
1923 - International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.
1919 - International Harvester Co., 106th St. and Torrence Ave., S.Chicago, Ill.
1921 - International Milling Co., Box 68, Commerce Sta., Minneapolis, Minn.
1925 - International Nickel Co., 67 Wall St., New York, N. Y.
1929 - International Nickel Company of Canada, Ltd., The, Copper Cliff, Ont., Canada.
1931 - International Paint Co., Inc., Union, N. J.
1928 - International Paper Co., Glens Falls, N. Y.
1925 - International Silver Co., Meriden, Conn.
1932 - Interstate Cotton Oil Refining Co., Sherman, Texas.
1928 - Irvington Smelting & Refining Works, Irvington, N. J.
1925 - Irvington Varnish & Insulator Co., 10 Argyle Terrace, Irvington, N. J.
1933 - Johns-Manville, Inc., Manville, N. J.
1927 - Johnson & Johnson, 4949 W. 65th St., Chicago, Ill.
1927 - Jenkins Bros., 510 Main St., Bridgeport, Conn.
1926 - Kandos Cement Co., Ltd., 64 Pitt St., Sydney, Australia.
1940 - Katakura Corp., 230 Madison Ave., New York, N.Y.
1929 - Kay-Fries Chemicals, Inc., West Haverstraw, N. Y.
1925 - Kellogg Co., The, Battle Creek, Mich.
1929 - Kellogg Co., The M. W., 225 Broadway, New York, N. Y.
1924 - Kelly-Springfield Tire Co., Cumberland, Md.
1928 - Kendall Refining Co., Bradford, Pa.
1939 - Kessler Chemical Co., Inc., The, Delaware Ave. & Mifflin St., Philadelphia, Pa.
1920 - Kimberly-Clark Corp., Neenah, Wis.
1921 - Kimble Glass Co., Vineland, N. J.
1931 - King Powder Co., The, King's Mills, Ohio.
1939 - Kohler Co., Kohler, Wis.
1939 - Kohnstamm, Ltd., R. & A., Randak Tannery, Croydon Rd., Beckenham, Kent, England.
1921 - Koppers Co., Pittsburgh, Pa.
1934 - Kroger Grocery & Baking Co., The, 125 Government Sq., Cincinnati, Ohio.
1938 - Laboratorium Pieter Schoen & Zoon, N. V., Coatzilde 41, Zaandam, Holland.
1930 - Labour Co., Inc., The, Elkhart, Ind.
1937 - La Citrique Belge, Tirlemont, Belgium.
1927 - Laclede Gas Light Co., The, 1017 Olive St., St. Louis, Mo.
1935 - Lacquer Specialties, Inc., Allegheny Ave. & Ave. P, Newark, N. J.
1926 - Lambert Pharmacal Co., 2117 Franklin Ave., St. Louis, Mo.
1934 - La Motte Chemical Products Co., Towson Branch, Baltimore, Md.
1940 - Lederle Laboratories, Inc., Pearl River, N. Y.
1930 - Ledoux & Co., Inc., 155 - 6th Ave., New York, N.Y.
1931 - Lee Rubber & Tire Co., Conshohocken, Pa.
1924 - Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia, Pa.
1921 - Lever Brothers Co., Cambridge, 39, Mass.
1930 - Lewis, John D., Inc., 66 Traverse St., Providence, R. I.
1931 - Libbey Glass Manufacturing Co., The, Box 919, Toledo, Ohio.
1937 - Libbey-Owens, Ford Glass Co., Toledo, Ohio.
1910 - Lilly & Co., Eli, Indianapolis, Ind.
1937 - Limited Co., Plzen, Czechoslovakia.
1918 - Lindsay Light & Chemical Co., West Chicago, Ill.
1940 - Linen Industry Research Assoc., The Research Institute, Lambeg, Co. Antrim, Ireland.
1934 - Lion Oil Refining Co., El Dorado, Ark.
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1928 - Lucto Co., Hampden Ave. & Charles St., St. Paul, Minn.
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1928 - Lowe Bros. Co., The, 452 E. 3rd St., Dayton, Ohio.
1924 - Maas & Waldstein Co., 437 Riverside Ave., Newark, N. J.
1940 - Magee Carpet Co., Bloomsburg, Pa.
1929 - Magnetic Pigment Co., 801 Case St., Trenton, N. J.
1930 - Magnolia Petroleum Co., Magnolia Bldg., Dallas, Texas.
1914 - Mallinckrodt Chemical Works, St. Louis, Mo.
1928 - Marathon Paper Mills Co., Menasha, Wis.
1928 - Marinello Corp., 33 W. 46th St., New York, N. Y.
1933 - Mars, Inc., 2019 N. Oak Park Ave., Chicago, Ill.
1934 - Marshall & Son, Wm. F., Lincoln Terminal, South Keasey, N. J.

1940 - Mathieson Alkali Works, The, Saltville, Va.
1924 - Mathieson Alkali Works, Inc., Niagara Falls, N. Y.
1924 - Maywood Chemical Works, Maywood, N. J.
1924 - McCloskey Varnish Co., Holmesburg, Philadelphia, Pa.
1935 - McGean Chemical Co., The, 1106 Medical Arts Bldg., 25 Prospect Ave., N.W., Cleveland, Ohio.
1927 - McKesson & Robbins, Inc., Bridgeport, Conn.
1928 - Mead Johnson & Co., Evansville, Ind.
1925 - Mennen Co., The, 345 Central Ave., Newark, N.J.
1909 - Merck & Co., Rahway, N. J.
1921 - Merrell Company, Wm. S., The, Cincinnati, Ohio.
1918 - Metal & Thermit Corp., 120 Broadway, New York, N. Y.
1926 - Mica Insulator Co., Schenectady, N. Y.
1928 - Michigan Alkali Co., Wyandotte, Mich.
1927 - Mid-Continent Petroleum Corp., Box 861, Tulsa, Okla.
1937 - Mine Safety Appliances Co., Braddock & Meade Sts., Pittsburgh, Pa.
1934 - Minerals Separation North American Corp., 220 Battery St., San Francisco, Calif.
1936 - Minerec Corp., 3508 Fairfield Rd., Baltimore, Md.
1929 - Minnesota Mining & Manufacturing Co., Forest & Fauquier Sts., St. Paul, Minn.
1940 - Mission Dry Corp., 1801 - 16th St., Los Angeles, Calif.
1929 - Mitchell & Smith Inc., 6900 Hampton Blvd., Norfolk, Va.
1937 - Mixing Equipment Co., Inc., 1024 Carson Ave., Rochester, N. Y.
1927 - Monsanto Chemical Co., Fiberloid Div., Indian Orchard, Mass.
1921 - Monsanto Chemical Co., Merrimac Div., Everett, Mass.
1924 - Monsanto Chemical Works, 1700 - 2nd St., St. Louis, Mo.
1927 - Montgomery Ward & Co., Inc., 618 W. Chicago Ave., Chicago, Ill.
1928 - Moore & Co., Benjamin, 511 Canal St., New York, N. Y.
1938 - Morton Salt Co., Manistee, Mich.
1921 - Muralo Co., New Brighton, S. I., N. Y.
1933 - Murphy Chemical Co., Ltd., The, Wheathampstead, Herts., England.
1932 - Mutual Chemical Co. of America, 1348 Block St., Baltimore, Md.
1934 - National Aluminate Corp., 6216 W. 66th Pl., Chicago, Ill.
1919 - National Aniline & Chemical Co., Inc., Box 975, Buffalo, N.Y.
1926 - National Cash Register Co., Dayton, Ohio.
1936 - National Drug Co., The, 4670-88 Stenton Ave., Philadelphia, Pa.
1935 - National Electric Products Corp., Ambridge, Pa.
1932 - National Fertilizer Association, The, 616 Investment Bldg., Washington, D.C.
1932 - National Filter Cloth & Weaving Co., The, 1717 Dixwell Ave., New Haven, Conn.
1937 - National Gypsum Co., 190 Delaware Ave., Buffalo, N. Y.
1928 - National Oil Products Co., The, Harrison, N. J.
1926 - Natural Products Refining Co., 908-910 Garfield Ave., Jersey City, N.J.
1940 - Naugatuck Chemical Division, U. S. Rubber Co., Elm St., Naugatuck, Conn.
1930 - Nekoosa-Edwards Paper Co., Port Edwards, Wis.
1915 - New Jersey Zinc Company of Pennsylvania, Palmerton, Pa.
1926 - New York Color & Chemical Co., Belleville, N.J.
1912 - Niagara Alkali Co., Niagara Falls, N. Y.
1932 - North American Rayon Corp., Box 5, Elizabethton, Tenn.
1929 - North Shore Coke & Chemical Co., Waukegan, Ill.
1940 - Northwood Chemical Co., Phelps, Wis.
1926 - Norton Co., Worcester, Mass.
1939 - Norwich Pharmacal Co., The 17 Eaton Ave., Norwich, N. Y.
1937 - N.V.W.A. Scholten's Chemische Fabrieken, Box 18, Groningen, Holland.
1934 - Nyanza Color & Chemical Co., 215 Water St., New York, N. Y.
1921 - Oakite Products, Inc., 22 Thames St., New York, N. Y.
1909 - Oakland Chemical Co., 59 - 4th Ave., New York, N. Y.
1934 - Ohio Chemical & Manufacturing Co., The, 1177 Marquette St., Cleveland, Ohio.
1929 - Ohio Power Co., The, Philo, Ohio.
1928 - Okonite Co., Passaic, N. J.
1936 - Olympic Tyre & Rubber Co., Ltd., The, Cross St., West Footscray, Victoria, Australia.
1921 - Onyx Oil & Chemical Co., 15 Exchange Pl., Jersey City, N. J.
1928 - Orford Soap Co., Manchester, Conn.
1936 - Osborn Co., C. J., 136 Nassau St., New York, N.Y.
1939 - Overseas-Chinese Industrial Corp., Ltd., Box 196, Hongkong, China.
1926 - Oxford Paper Co., 230 Park Ave., New York, N. Y.
1921 - Pacific Coast Borax Co., 51 Madison Ave., New York, N. Y.
1925 - Pacific Guano & Fertilizer Co., The, Box 46, Honolulu, Hawaii.
1927 - Pan American Petroleum Corp., Destrahan, La.
1921 - Parke Davis & Co., Detroit, Mich.
1935 - Parker Rust-Proof Co., 2177 E. Milwaukee Ave., Detroit, Mich.
1931 - Pennsylvania Coal Products Co., Box 157, Petrolia, Pa.
1925 - Pennsylvania Salt Manufacturing Co., 1012 Widener Bldg., Philadelphia, Pa.
1928 - Pennsylvania Sugar Co., 1337 N. Delaware Ave., Philadelphia, Pa.
1919 - Peoples Gas Light & Coke Co., 3921 S. Wabash Ave., Chicago, Ill.
1928 - Pet Milk Co., Greenville, Ill.
1936 - Petrol Corp., The, Metropolitan Box 6899, Los Angeles, Calif.
1931 - Pfaltz & Bauer, Inc., Empire State Bldg., New York, N. Y.

1916 - Pfaudler Co., The, 89 East Ave., Rochester, N. Y.
1921 - Pfizer & Co., Inc., Chas., 81 Maiden Lane, New York, N. Y.
1929 - Phelps Dodge Corp., United Verde Branch, Clarkdale, Arizona.
1909 - Phelps Dodge Refining Corp., Laurel Hill, L. I., N. Y.
1910 - Philadelphia Quartz Co., 121 S. 3rd St., Philadelphia, Pa.
1931 - Phosphate Recovery Corp., Mulberry, Fla.
1939 - Pilkington Brothers, Ltd., St. Helens, Lancs., England.
1929 - Pillsbury Flour Mills Co., Minneapolis, Minn.
1930 - Pitman-Moore Co., Indianapolis, Ind.
1912 - Pittsburgh Plate Glass Co., Pittsburgh, Pa.
1934 - Plaskon Co., Inc., Box 216, Sta. B., Toledo, Ohio
1927 - Plymouth Cordage Co., North Plymouth, Mass.
1929 - Potash Company of America, Carlsbad, N. Mex.
1939 - Poythress & Co., Inc., Wm. P., Box 95, 18 N. 22nd St., Richmond, Va.
1922 - Premier Oil Extracting Mills, Ltd., Ann Watson St., Stoneferry, Hull, England.
1924 - Preservaline Manufacturing Co., 654-664 Lorimer St., Brooklyn, N. Y.
1906 - Procter & Gamble Co., The, M. A. & R. Bldg., Ivorydale, Ohio.
1929 - Pulverizing Machinery Co., Roselle Park, N. J.
1925 - Pyrene Manufacturing Co., 560 Belmont Ave., Newark, N. J.
1929 - Pyridium Corp., 21 Gray Oaks Ave., Nepera Park, N. Y.
1924 - Pyrites Co., Inc., Box 1188, Wilmington, Del.
1935 - Quaker Chemical Products Corp., Conshohocken, Pa.
1928 - Quaker Rubber Corp., Frankford, Philadelphia, Pa.
1934 - R-S-H Dispersions, Inc., Bound Brook, N. J.
1936 - RCA Manufacturing Co., Inc., Camden, N. J.
1934 - Raffineris Tirlemontoise, Service De Documentation, Tirlemont, Belgium.
1938 - Red Star Yeast & Products Co., 825 N. 27th St., Milwaukee, Wis.
1937 - Reichhold Chemicals, Inc., 601 Woodward Heights Blvd., Ferndale Sta., Detroit, Mich.
1921 - Reinhold Publishing Corp., McGraw-Hill Bldg., 330 W. 42nd St., New York, N.Y.
1925 - Republic Rubber Co., Youngstown, Ohio.
1929 - Research Corp., Chrysler Bldg., 405 Lexington Ave., New York, N. Y.
1928 - Rex-Hide Rubber Manufacturing Co., East Brady, Pa.
1935 - Reynolds Tobacco Co., R. J., Winston-Salem, N. C.
1931 - Rhinelander Paper Co., Rhinelander, Wis.
1939 - Richards Chemical Works, Ltd., The, St. Johns, Que., Canada.
1940 - Richfield Oil Corp., Box 7787, Wilmington, Calif.
1925 - Riverside Cement Co., Riverside, Calif.
1938 - Riverside Manufacturing Co., 4919 Connecticut St., St. Louis, Mo.
1921 - Robeson Process Co., 500 - 5th Ave., New York, N. Y.
1927 - Rochester Gas & Electric Corp., Dept. 60, East Ave., Rochester, N. Y.
1926 - Rockwood & Co., 68 Washington Ave., Brooklyn, N. Y.
1938 - Rodessa Oil & Refining Corp., Box 1467, Shreveport, La.
1911 - Rohm & Haas, 222 W. Washington Sq., Philadelphia, Pa.
1911 - Rome Soap Manufacturing Co., Rome, N. Y.
1939 - Royce Chemical Co., Carlton Hill, N. J.
1940 - Rumford Chemical Works, 9 Newman Ave., Rumford, R. I.
1922 - Russell-Miller Milling Co., 422 Security Bldg., Minneapolis, Minn.
1937 - Russia Cement Co., Gloucester, Mass.
1935 - S. A. Des Etablissements Roure Bertrand Fils & Justin DuPont, 43 Rue Vole Des Bancs, Angeteuil (S. & O.), France.
1924 - Savannah Sugar Refining Corp., Savannah, Ga.
1934 - Schaefer Brewing Co., The F. & M., 480 Kent Ave., Brooklyn, N. Y.
1929 - Schering-Kahlbaum, A. G., Mullerstrasse 170-171, Berlin, N. 65, Germany.
1924 - Schluderberg-T. J. Kurdle Co., The Wm., Baltimore & 5th Sts., Baltimore, Md.
1929 - Scholler Brothers, Inc., Collins & Westmoreland Sts., Philadelphia, Pa.
1936 - Schuylkill Chemical Co., 2346 Sedgley Ave., Philadelphia, Pa.
1936 - Scientific Glass Apparatus Co., Box 151, Bloomfield, N. J.
1921 - Scott & Co., Henry L., Box 962, G.P.O., Providence, R. I.
1935 - Seamless Rubber Co., The, 258 Hallock Ave., New Haven, Conn.
1936 - Searle & Co., G. D., 4737 Ravenswood Ave., Chicago, Ill.
1919 - Sears, Roebuck & Co., Insurance Bldg., Spaulding & Arthington, Chicago, Ill.
1939 - Seaver, S. R. & Co., 715 Armour Rd., North Kansas City, Mo.
1927 - Seidlitz Paint & Varnish Co., 18th & Garfield Ave., Kansas City, Mo.
1921 - Semet-Solvay Co., 40 Rector St., New York, N. Y.
1928 - Sharp & Dohme, Broad & Wallace Sts., Philadelphia, Pa.
1921 - Sharples Corporation, The, 23rd & Westmoreland Sts., Philadelphia, Pa.
1930 - Sharples Solvents Corp., Wyandotte, Mich.
1929 - Shell Development Co., 82nd & Horton Sts., Emeryville, Calif.
1920 - Shell Oil Co., 100 Bush St., San Francisco, Calif.
1921 - Sherwin-Williams Co., 116th & Stephanson Ave., Chicago, Ill.
1922 - Sleck & Brucker, Inc., 9 S. Clinton St., Chicago, Ill.
1925 - Simplex Wire & Cable Co., 79 Sidney St., Cambridge A, Boston, Mass.
1925 - Sinclair Prairie Oil Co., Box 521, Tulsa, Okla.
1926 - Sinclair & Valentine Co., 611 W. 129th St., New York, N. Y.
1921 - Singer Manufacturing Co., The, Elizabethport, N. J.
1926 - Skelly Oil Co., El Dorado, Kans.

1930 - Smith-Alsop Paint & Varnish Co., 3rd St. & Big Four R.R., Terre Haute, Ind.
1940 - Smith Brothers Refinery Co., Inc., McLean, Texas.
1931 - Société Anonyme des Usines Remy, Hygmael, Brabant, Belgium.
1922 - Société d'Eclairage Chauffage et Force Motrice, 22 Rue de Calais, Paris (9eme), France.
1930 - Société d'Electro-Chimie d'Electro-Metallurgie et des Acieries Electriques d'Ugine, Usines de Pomblière Saint Marcel, Savoie, France.
1929 - Société d'Elecro Chimie d'Electro-Metallurgie et des Acieries Electriques d'Ugine, 10 Rue du General-Foy, Paris, France.
1936 - Societa Ferrania, Ferrania, Savona, Italy.
1928 - Société Generale Industrielle, et Chimique du Katanga, "Gogechim", Rue Montagne du Parc 6, Bruxelles, Belgium.
1924 - Socony-Vacuum Oil Co., Inc., Paulsboro, N. J.
1937 - Solar Compounds Corp., W. Blancke St., Linden, N. J.
1913 - Solvay Process Co., Syracuse, N. Y.
1935 - South Penn Oil Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
1938 - Southern Acid & Sulphur Co., Inc., 902 Rialto Bldg., St. Louis, Mo.
1910 - Southern Cotton Oil Co., Savannah, Ga.
1936 - Southern Oil Co., Ltd., The, Westinghouse Road., Trafford Park, Manchester 17, England.
1921 - Sowers Manufacturing Co., Buffalo, N. Y.
1925 - Squibb & Sons, E. R., 17-27 Columbia Heights, Brooklyn, N. Y.
1930 - Staatsmijnen, Afd. "Hoofdkas," Heerlen, Limburg, Holland.
1924 - Staley Manufacturing Co., A. E., Decatur, Ill.
1932 - Standard Brands, Inc., 65 - 9th St., Brooklyn, N. Y.
1927 - Standard Oil Company of Calif., Richmond, Calif.
1927 - Standard Oil Company of Indiana, Whiting, Ind.
1930 - Standard Oil Company of Ohio, Midland Bank Bldg., Cleveland, Ohio.
1924 - Standard Oil Development Co., Box 243, Elizabeth, N. J.
1921 - Standard Ultramarine Co., Huntington, W. Va.
1925 - Stange Company, Wm. J., 2538 W. Monroe St., Chicago, Ill.
1911 - Stanley Co., John T., 662 W. 30th St., New York, N. Y.
1929 - Stearns & Co., Frederick, Box 2256, Detroit, Mich.
1920 - Steel Brothers & Co., Ltd., 6 Fenchurch Ave., London, E. C. 3, England.
1940 - Steen Varnish Co., John A., 327 W. 27th St., Chicago, Ill.
1935 - Sterling Products Co., Box 544, Easton, Pa.
1940 - Stone & Webster Engineering Corp., 49 Federal St., Boston, Mass.
1934 - Strathmore Paper Co., Woronoco, Mass.
1928 - Sun Oil Co., Marcus Hook, Pa.
1909 - Swift & Co., Union Stock Yards, Chicago, Ill.
1935 - Sylvania Industrial Corp., 122 E. 42nd St., New York, N. Y.
1936 - Syndicato *Dos Chimicos* do Rio De Janeiro, Edificio Cinelandia, - Rua Senador Dantas 19, Salas 105, Rio De Janeiro, Brazil, S. A.
1928 - Takamine Laboratory, Inc., Clifton, N. J.
1939 - Tam Products, Inc., 260 West St., New York, N. Y.
1940 - Tampax Incorporated, 401 Codwise Ave., New Brunswick, N. J.
1940 - Taylor & Co., Inc., W. A., 872 Linden Ave., Baltimore, Md.
1929 - Tecnica Industrial, S. A., Apartado 106, Monterrey, N. L., Mexico.
1939 - Tennant Co., G. H., 2530 - 2nd St., N., Minneapolis, Minn.
1925 - Tennessee Coal Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
1928 - Tennessee Eastman Corp., Kingsport, Tenn.
1933 - Ternstedt Manufacturing Co., 6307 W. Fort, Detroit, Mich.
1928 - Texas Co., The, 135 E. 42nd St., New York, N. Y.
1921 - Texas Gulf Sulphur Co., 31st Floor, New York Central Bldg., 75 E. 45th St. New York, N. Y.
1921 - Thomas Co., Arthur H., W. Washington Sq., Philadelphia, Pa.
1929 - Thomas & Hochwalt Laboratories, Inc., Research Div. of Monsanto Chem. Co., Dayton, Ohio.
1936 - Tide Water Oil Co., Bayonne, N. J.
1940 - Titanium Alloy Manufacturing Co., Hyde Park Blvd., Niagara Falls, N. Y.
1938 - Tivoli Brewing Co., 10205 Mack Ave., Detroit, Mich.
1931 - Trinidad Leaseholds, Ltd., Pointe-a-Pierre, Trinidad, B.W.I.
1938 - Trubek Labs., Inc., East Rutherford, N. J.
1928 - Ufficio Tecnico, Ammonia Casale, S. A., 73 Piazza S. S. Apostoli, Rome, 1, Italy.
1940 - Ultra Chemical Works, Inc., Wood & Shady Sts., Paterson, N. J.
1934 - Union Bag & Paper Co., Hudson Falls, N. Y.
1914 - Union Oil Company of California, Box 756, Wilmington, Calif.
1940 - Union Potash & Chemical Co., Carlsbad, N. Mex.
1926 - Union Switch & Signal Co., Swissvale, Pa.
1936 - United Carbon Co., Inc., Box 1476, Charleston, W. Va.
1929 - United Refining Co., Warren, Pa.
1925 - United States Gutta Percha Paint Co., Box 1365, Providence, R. I.
1924 - United States Gypsum Co., 300 W. Adams St., Chicago, Ill.
1936 - United States Industrial Chemical Co., Box 1966, Baltimore, Md.
1932 - United States Phosphoric Products Corp., 61 Broadway, New York, N. Y.
1934 - United States Potash Co., Inc., 30 Rockefeller Plaza, Rm. 3517, RCA Bldg.,

35 - United States Rubber Products, Inc., 6600 E. Jefferson, Detroit, Mich.
37 - United States Rubber Reclaiming Co., Inc., 724 Babcock St., Buffalo, N.Y.
38 - U. S. S. Lead Refinery, Inc., East Chicago, Ind.
28 - United States Smelting, Refining & Mining Co., 75 Federal St., Box 2137, Boston, Mass.
17 - Universal Atlas Cement Co., 135 E. 42nd St., New York, N. Y.
21 - Universal Oil Products Co., Drawer C, Riverside, Ill.
27 - Upjohn Co., The, 301 E. Lovell St., Kalamazoo, Mich.
23 - Utah Copper Co., The Arthur Plant, Garfield, Utah.
30 - Vanadium Corporation of America, 420 Lexington Ave., New York, N. Y.
29 - Van Amerigen-Haebler, Inc., 417 Rosehill Pl., Elizabeth, N. J.
34 - Vanderbilt Co., Inc., R. T., 230 Park Ave., New York, N. Y.
38 - Vereeniging Van Directeuren Van Electriciteitsbedrijven in Nederland. Utrechtscheweg 210, Arnhem, Holland.
21 - Victor Chemical Works, 141 W. Jackson Blvd., Chicago, Ill.
34 - Virginia Chemical Corp., Piney River, Va.
26 - Vitro Manufacturing Co., 60 Cliffe St., Corliss Sta., Pittsburgh, Pa.
23 - Vulcan Detinning Co., Sewaren, N. J.
28 - Vulcanized Rubber Co., Morrisville, Pa.
37 - Waldorf Paper Products Co., 2250 Myrtle Ave., St. Paul, Minn.
35 - Ward Baking Co., 367 Southern Blvd., New York, N. Y.
27 - Warner & Co., Inc., William R., 113 W. 18th St., New York, N. Y.
28 - Watson Co., John Warren, Bridge St. & P. R. R., Philadelphia, Pa.
34 - Westermann Co., Inc., H., 26 W. 48th St., New York, N. Y.
35 - Western Electric Co., Inc., Hawthorne Sta., Chicago, Ill.
28 - Western Sugar Refinery, Foot of 22rd St., San Francisco, Calif.
25 - Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.
21 - Westinghouse Lamp Division, Westinghouse Electric & Manufacturing Co. Bloomfield, N. J.
30 - West Point Manufacturing Co., Shawmut, Ala.
26 - Wheeling Steel Corp., Rm. 622, Wheeling Steel Corp. Bldg., Wheeling, W.Va.
37 - White Laboratories, Inc., 115 N. 12th St., Newark, N. J.
38 - Wilson & Bennett Manufacturing Co., 6632 S. Menard Ave., Chicago, Ill.
33 - Wintershall Aktiengesellschaft, Hohenzollernstrasse 129, Kassel, Germany.
34 - Wolf & Co., Jacques, 256 Lexington Ave., Passaic, N. J.
30 - Worcester Salt Co., Silver Springs, N. Y.
35 - Zenner Co., The, 5943-47 Sennott St., Oakland Sta., Pittsburgh, Pa.

MEMBERS OF THE AMERICAN CHEMICAL SOCIETY

* Junior Member. Life Members in Italics.
(1) National Director.
(2) Councilor-at-Large.
(3) Divisional Chairman.
(4) Divisional Secretary.
(5) Local Section Chairman.
(6) Local Section Secretary.
(7) Local Section Councilor.

Note: Information covering offices held, as indicated by the above key numbers, is furnished by the individuals and the 1940 incumbents.

Connection of member, if not a part of address, is given in parentheses where available.

A

AARONSON, HENRY A. (1938), Picatinny Arsenal, Dover, N. J.

ABBE, PAUL D. (1916), Little Falls, N.Y. (Paul O. Abbe, Inc.)

ABBIATI, FURIO ALEXANDER (1938), 151 Crescent Rd., Long Meadow, Mass. (Hydraulic Chem. Co.)

ABBOTT, GARDNER B. (1930), 2148 Kenilworth Ave., Wilmette, Ill. (Dearborn Chem. Co.)

ABBOTT, HAROLD E. (1938), 701 S. Ellwood Ave., Baltimore, Md. (American Smelting & Refg. Co.)

ABBOTT, JULIA E. (1936), National Park College, Forest Glen, Md.

ABBOTT, J. S. (1937), 839 Munsey Bldg., Washington, D. C. (National Assoc. of Margarine Mfgrs.)

ABBOTT, O. C. (1940), Bristol Co., 5535 White Bldg., Seattle, Wash.

*ABBOTT, RUTH (1939), 8 Parkview Ave., Lowell, Mass. (Wellesley College.)

ABBOTT, ROSCOE C. (1917), Agr. College, Lincoln, Nebr. (Univ. of Nebraska.)

ABBOTT, TALBERT M. (1923), 1525 S. Thompson St., Carbondale, Ill. (Southern Illinois State Teachers College.)

ABBOTT, WILLIAM G., JR. (1910), Hillsboro Mills, Wilton, N. H.

ABE, RYUNOSUKE (1923), Central Lab., South Manchuria Railway Co., Fushimi-Dai, Dairen, Manchuria.

ABEL, ALBERT B. (1930), Harrisville Margarine, Ltd., Harrisville, N.S.W., Australia.

ABELEDO, CARLOS A. (1929), Casilla De Correo 1031, Buenos Aires, Argentina, (Oficina Quimica Nacional.)

*ABERNETHY, JOHN LEO (1939), Chem. Dept., Northwestern Univ., Evanston, Ill.

ABERNETHY, ROY F. (1924), 4800 Forbes St., Pittsburgh, Pa. (U. S. Bur. of Mines.)

ABERNETHY, RAYMOND J. (1920), 2048 Armstrong Ave., Los Angeles, Calif. (Los Angeles County Health Dept.) (7)

*ABERS, ELLIOTT L. (1940), 567 Cedar Pl., Glendale, Calif. (Univ. of California at Los Angeles.)

ABLARD, JAMES E. (1938), 512 S. Beau St., Washington, Pa. (H. P. Dragenfold Co., Inc.)

*ABLEMAN, S. BERNARD (1940), 3500 Brook St., Wilmington, Del. (Univ. of Delaware.)

ABRAHAM, HERBERT (1906), 500 - 5th Ave., New York, N. Y. (Nuperoid Co.)

ABRAHAMS, M. B. (1938), 58 St. John St., Smithfield, London, E. C. 1, England. (Excel Co., Ltd.)

ABRAHAM, RICHARD (1938), 55 Elmwood Ave.,

ABRAMOWITZ, WILLIAM L. (1939), National Oil Products Co., 1st & Essex Sts., Harrison, N. J.

ABRAMS, ALLEN (1917), Marathon Paper Mills Co., Rothschild, Wis.

ABRAMS, EDMUND J. (1940), Magnolia Petroleum Co., 1920 McKinney Ave., Dallas, Texas.

ABRAMSON, HAROLD A. (1928), 515 E. 66th St., New York, N. Y. (Columbia Univ.)

ABRAMSON, HELMER A. (1936), 15867 Indiana, Detroit, Mich. (Ethyl Gasoline Corp.)

ARSON, GENE (1923), 534 Lake Shore Dr., Chicago, Ill. (Chicago Testing Lab., Inc.)

ACASTER, HORACE D. (1940), Box 131, Witbank, Transvaal, Union of South Africa. (South African Cyanamid Pty., Ltd.)

ACHESON, ROBERT ANDROS (1930), 307 School St., Belmont, Mass. (J. C. Whitten Co.)

ACHELIS, HAROLD E. (1940), 320 S. Union Ave., Cranford, N. J. (Tidewater Associated Oil Co.)

ACHTERHOF, MARVIN (1928), 14 Brown St., Willoughby, Ohio. (Ohio Rubber Co.)

ACKEN, MARSHALL F. (1918), 319 S. Jackson St., Woodbury, N. J. (du Pont Co.) (5)

ACKER, JOHN THEODORE (1927), 7468 West St., New York, N. Y. (Bell Telephone Labs.)

*ACKERMAN, ARNOLD WILLIAM (1940), 1117 Broadway, Brooklyn, N.Y. (Fales Chem. Co.)

ACKERMAN, F. M. (1939), 1405 Hunt St., Eau Claire, Wis. (State Teachers College.)

ACKERMAN, JOSEPH, JR. (1940), 307 E. Forest Ave., Neenah, Wis. (Kimberly-Clark Co.)

ACKERMAN, J. A. (1929), 471 Summit Ave., Union City, N. J. (Bencatner & Schlesinger.)

ACKERMAN, JOHN WRIGHT (1929), 89 McBride Ave., Paterson, N. J. (Fine Colors Co.)

ACKERMANN, EDWARD A. (1939), 200 W. 58th St., New York, N. Y. (American Druggists Syndicate.)

ACKERSON, CLIFTON M. (1923), College of Agr., Lincoln, Nebr. (Univ. of Nebraska.) (6)

ACKLEY, ROBERT R. (1926), 144 Virginia Ave., Jersey City, N.J. (Stellon Institute.)

ACKOFF, ALBERT H. (1928), 608 E. Wesley St., Philadelphia, Pa. (Westvaco Chlorine Products Corp.)

ACOSTA, ANGEL F. (1932), Standard Oil Co., Via Trinidad, B.W.I., Caripito Estado Monagas, Venezuela.

ACREE, S. F. (1928), 1941 Summit Pl., N. W., Washington, D.C. (National Bur. of Standards.) (7)

ADAIR, JAMES THOMAS, JR. (1938), 254 Woodland Ave., Decatur, Ga. (Dept. of Natural Resources.)

ADAM, NEIL K. (1920), 95 Highfield Lane, Southampton, England. (Univ. College.)