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E. B. Hugi..., *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, 2692-4(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 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.* 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. Braginskiĭ (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 Siegmund, 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 Hird

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Beryllium in industry (Manley) 9. Elec. resistance of insulating board (Mory) 23. Limestone deposit [manuf. of rock wool] (Messervey) 8. *Patent:* 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).

Gilard, P.: 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. 806,836 (*C.A.* **36,** 4857⁵). 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 Szegfi. **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.), 7.9% 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. Macla (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 deësterification 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 deësterification (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-