

operations for a few days; the danger was reduced by this alternation. If the workshop develops into a factory, however, one group of workers is continually kept at glassing operations; the exposure to the lead hazard is thus continuous, and the danger is very great. In England in 1900 the danger in the pottery industry was at its maximum, 210 cases being reported in that year. In 1937 only 5 cases were reported. K.R.

Noise and vibration control. G. H. FERGUSON. *Can. Pub. Health Jour.*, 31, 613-18 (Dec., 1940).—F. discusses noise and vibration in industry, their effects on health, and various methods of control. Legislation and the extension of compensation to include diseases caused by noise are believed to be efficient ways of eliminating avoidable industrial noises. Workers should be carefully selected in cases where noise is unavoidable. The protection of hearing by the application of prophylactic measures, rest pauses, etc., is discussed. F.S.M.

Progress in ceramics since 1926. W. FUNK. *Angew. Chem.*, 53 [21-22] 221-27 (1940).—Clay research in the last decade has developed accurate methods of determining particle sizes of clays that will allow systematic classification of clay types. The chief clay minerals are kaolinite, $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$, and montmorillonite, $\text{Al}_2\text{O}_3 \cdot 4\text{SiO}_2 \cdot \text{H}_2\text{O} \cdot n\text{H}_2\text{O}$, with air-dry montmorillonite (m) lying between 4 and 5. Valuable results have been obtained in regard to the adsorptive properties of clays and base exchange. American research work on pH values and on Na_2CO_3 as a means of changing the pH has resulted in greater density and higher fired strength of ceramic goods. Bentonite in ceramic masses has been found to be a suitable substitute for highly plastic clays. The castability of clay slips is favorably influenced by alkali-soluble humic substances. In clay preparation, improvements have been achieved with regard to the magnetic separation of iron particles by means of rapidly vibrating fine-mesh screens. In Germany, filter cloth has lately been replaced by a new type of filter tile, the filtration speed of which is two to three times higher than that of cloth. The desiring of clay masses, originally applied to heavy-clay products only, is now being applied to fine ceramic ware. Much study has been devoted to the firing process, i.e., firing temperatures, firing period, and kiln atmosphere; the ratio of the vitrifying and crystal substance to the volume of the pores determines the properties of the goods. Results of tests show the possibility of firing chinaware and steatite at lower temperatures without increasing the firing period over a certain limit. Electrically heated kilns have been used in the ceramic industry since 1934; their advantage lies in the fact that the firing process can be regulated at will. The high-frequency technique uses dielectric masses containing titanium dioxide for insulators and condensers; formerly steatite was used exclusively. In the refractory industry, important developments have been achieved in the field of special high-quality refractories. Magnesite brick resisting thermal shock are manufactured without loss of other properties. Zircon refractories are widely used for furnace linings. Sillimanite, silicon carbide, and corundum are used where resistance to extreme temperatures is required. An extensive bibliography is included. F.E.S.

Pumping of granular solids in fluid suspension. HERRBERT CHATLEY. *Engineering*, 149, 230-31 (1940).—The low efficiency usually obtained is attributed largely to bends and inlets or to the incorrect proportioning of fluid and solid. When solids are not sustained in the stream, they can be propelled horizontally only by rolling, requiring a much greater expenditure of energy. B.C.R.

Rachitogenic effect of beryllium carbonate. L. BUSINCO. *Rass. Med. Applicata Lavoro*, 11, 417-42 (1940).—Doses of beryllium carbonate varying from 0.150 to 0.037 gm. were given daily to rats for periods up to 48 days. The animals lost weight and were less active, and changes in the vertebra, ribs, and the epiphyses of the tibia and femur were observed by means of the roentgenograph. Histological examination showed typical rachitic changes in many epiphyses; these were not improved by the administration of cod-liver oil and other antirachitic substances.

A similar effect was seen in the fetus. Beryllium and its salts are made in Italian factories, and the beryllium carbonate used in the experiments came from two factories. That from one source was noticeably more toxic than that from the other. Illustrated by roentgenograms and photomicrographs. F.S.M.

Response of peritoneal tissue to industrial dusts. J. W. MILLER AND R. R. SAYERS. *U. S. Pub. Health Repts.*, 56 [7] 264-72 (1941).—Several previous reports upon the reaction of peritoneal tissue to injected dusts are referred to. Such biological response is produced for the purpose of predicting the pneumoconiosis-producing potentialities of industrial dust. The experimental procedure upon guinea pigs as now practiced is given briefly. No cases of pneumoconiosis have been reported and confirmed among workers exposed solely to dusts of the absorptive group; all the dusts in the proliferative group, however, are known to produce a nodular, pulmonary fibrosis (silicosis). Pneumoconioses caused by dusts of the inert group (asbestos, anthracite mine, bisque ware, mica, pyrophyllite, and talc dust) have been reported, following X-ray examinations of industrial workers. The interpretation of the response of a dust injected into the peritoneal tissue of animals can be used as an index to determine the potential harmfulness of an industrial dust. Ten industrial dusts causing an absorptive reaction examined by this method are listed, together with their chemical composition and other pertinent identifying data. Among the more familiar substances in this list are calcite, gypsum, various limestones, and Portland cement. Thirteen dusts causing a proliferative reaction, among which are five kinds of quartz, quartz-sericite, and tripoli, were also examined. Of this group, those of special ceramic interest include (1) bisque ware, a ground semivitreous pottery bisque fired at a relatively low temperature, which shows on chemical analysis 72% silica and on petrographic examination 40 to 50% quartz, the remainder being semifused clay and feldspar; (2) green ware, a ground semivitreous pottery ware, which shows on chemical examination 60% silica and on petrographic examination about 50% quartz, about 15% feldspar, and about 35% clay; another sample of greenware showed higher quartz and less feldspar and clay in about the same amount; (3) porcelain enamel frit which shows on chemical analysis 35 to 50% silica, the remainder being oxides of antimony, zinc, aluminum, and calcium. Twenty-seven dusts causing an inert reaction include aluminum, three types of asbestos, two types of anthracite coal, two types of bituminous coal, calcium phosphate, chromite, diamond dust, feldspar, four types of fuller's earth, glass wool, hematite, kaolin, mica, sericite, two soapstones, shale, and talc. Another bisque ware in the group, fired at a relatively high temperature, has about 30 to 40% quartz; the particles are wholly or partly covered by the glass phase, absent in the semivitreous; kaolin of this group shows, petrographically, predominantly china clay and hydromica, with traces only of quartz and feldspar. See "Relative . . ." *Ceram. Abs.*, 20 [2] 59 (1941). K.R.

Significance of chemical findings in the pathology of mineral pneumoconioses. A. POLICARD. *Arch. Malad. Profess.*, 1 [6] 473-88 (1938).—With dust increases, calcified parts have also increased, but the silica percentages fall proportionately. In tubercular lungs there is a high dust content but a low silica content. Unfortunately, chemical findings show only total silica and not the respective totals of free silica and that occurring as silicates. Free silica is highly toxic, while the silicates are relatively innocuous. It is desirable to know the quantity of free silica, whether it exists as quartz or chalcedony. No relation has been established between the amount of fibrosis and the amount of silica present in the lungs of silicotics. The lungs of nonsilicotics may have as much or more silica than lungs freely conceded to be silicotic. The length of time the worker has spent in the dust seems to be more important than his ascertained lesions. P. emphasizes the vagueness and the mere approximation of such findings in a pathogenic study toward ascertaining the mechanisms of the pneumoconioses. Regional analyses of parts of lungs exposed to dusts have also little actual value. Chemical

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