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where there are signs and symptoms they are due to superimposed infection.

"Chronicity of infection and slow progression of uncomplicated silicosis are the

rule in iron ore workers." In his experience simple silicosis is not inevitably fatal.

The paper is ably discussed by Dr. L. U. Gardner.—*W. I. Clark.*

DUST, SMOKE, FUMES AND VAPORS: THEIR DETERMINATION AND ELIMINATION

PROTECTION AGAINST ASBESTOSIS. *F. Prockat and T. Windel. Staub. no. 10, pp. 284-285 (Nov. 1939).*

Brief reference is made to a previously published paper in which it is pointed out that the asbestosis hazard depends not only on the chemical nature of the asbestos but also on the fineness of the individual fibers. H. T. Barnes showed that in American and Russian asbestos fibers of 0.75 μ diameter were demonstrable. Roentgenographic investigations of asbestosis lungs using the Debye-Scherrer technic showed particles with diameters between 0.017 μ and 0.081 μ in large numbers. Recent investigation of finely ground Cape asbestos with a microscope magnification of 27,000 showed that the fibrous structure of the asbestos is maintained down to the finest particles of only 0.02 μ to 0.12 μ thickness. From these findings the authors take the view that chemical and colloidal reactions must play a greater part in the genesis of asbestosis than some investigators hold to be the case. Investigations of the industrial problem in Germany have led to the conclusion that almost every operation with danger from asbestos dust can be rendered dustfree. Recommendations have been submitted to the relevant Ministry and the authors proceed in the present paper to present and amplify them. [Nineteen of the chief recommendations are listed in *Bulletin of Hygiene* abstract. They cover exhaust ventilation, care of apparatus, good house-keeping, dust counts, etc.]—*M. W. Goldblatt, Bull. Hyg., (p. 348, June, 1940).*

DUST CONTROL IN THE GRANITE INDUSTRY.

W. C. L. Hemeon. Heating and Ventilating, vol. 37, pp. 41-45 (Aug. 1940).

Cloth filter dust collectors are employed almost exclusively in the granite cutting sheds. It has been common practice to specify a filter of such size that the filtration velocity (air flow in c.f.m. divided by

the cloth area in square feet) will be about 3 ft. per min. The author presents the results of a study of the operating characteristics of commercial size filters handling granite dust. He concludes that if certain precautions of design are observed, together with the elementary ones of shaking bags at least twice a day and emptying hoppers before they are full, there appears to be no good mechanical reason why filters of the cloth tube type should always be limited to the size commonly fixed by the 3 f.p.m. rule. These principles are applicable to the filtration of all kinds of dust from air.—*F. S. Mallette.*

SILICA DUST CONTROL AT HIWASSEE DAM.

L. P. Hatch and D. F. Shaw. Civil Eng., vol. 10, pp. 582-585 (Sept. 1940).

Crushed stone aggregate was produced on the job for the concrete employed at the Hiwassee Dam. Since the rock contained 60-80% free silica, adequate control methods were required in the crushing operation. A wet method, using 9 gals. of water per ton of rock, and an exhaust method used at strategic points were both necessary, although the wet method was more effective.

An interesting table shows dust concentrations at various points in the operation with and without control.—*George M. Reece.*

FLOW PATTERN AND PRESSURE DROP IN CYCLONE DUST COLLECTORS—CYCLONE WITHOUT INLET VANE. *C. B. Shepherd and C. E. Lapple. Ind. & Eng. Chem., vol. 32, pp. 1246-1248 (Sept., 1940).*

The authors in this second paper show experimentally that the friction loss is doubled when the inlet vane is omitted. Spiral velocities also increase. The mechanism by which the pressure drop is increased is, in their opinion, one of velocity distribution and not entrance impact. The corrections to be used for a typical example are shown.—*Leslie Silverman.*

systoles, preponderance of the left ventricle. Disappearance of these changes after 2 months. In the cases where poisoning took place years ago, and in the chronic poisoning cases, there was a three-phase initial complex in D₂ and D₁.

In view of this last change, the author believes that simple anoxemia cannot produce changes which last such a long time—only transient changes are produced by the anoxemia. The prolonged changes compel us to believe that there is a specific effect of the poison on the endothelium of the coronary vessels.—*L. Teleky.*

TREATMENT OF TWO SEVERE CASES OF CARBON MONOXIDE POISONING BY BLOOD TRANSFUSION. *K. G. Koch. Samm. v. Vergiftungsfall., vol. 10, A, pp. 33-38 (1939) and Münch. med. Wchnschr., p. 126 (1939).*

Description of 2 extremely severe cases which were treated by artificial respiration, cardiac remedies, injection of glucose and blood transfusions. In the first case a transfusion of 500 cc. was given twice; in the second case one transfusion of 440 cc. was given. Consciousness returned after 2 hrs.—*L. Teleky.*

CHRONIC CARBON MONOXIDE POISONING. *H. Fühner. Samm. v. Vergiftungsfall., vol. 10 (Gutachten), pp. 13-16 (1939).*

An employe worked in the offices of a gas plant where the lamps often failed to work during the periods of gas lack in Germany (1915); she fell ill in November, 1915, with cardiac tightness, after complaining along with her colleagues, during preceding days of headaches, nausea and coughing. She said that some months later, even, she was unable to think clearly and was afraid of going insane. Excitation of the heart and small hemorrhages in the skin could be seen. The author diagnosed the condition as chronic CO poisoning.—*L. Teleky.*

A CASE OF ACUTE LEUCEMIA IN A MAN EXPOSED TO BENZENE. *P. E. Weil and S. Perles. Sang, vol. 14, pp. 270-272 (1940).*

A man working for 15 yrs. in making rain coats was exposed to benzene vapors some hours daily. In November he showed 3.7

million red blood corpuscles, 2400 white blood corpuscles of which 61% were polynuclears. On January 31st, he fell ill with "grippe" and the blood count showed 3 million r.b.c. and 32,000 w.b.c. of which 18% were polynuclears. Sternal puncture confirmed the diagnosis of myelogenic leucemia. He died 5 days later.—*L. Teleky.*

CARDIOVASCULAR SYSTEM IN ACUTE EXPERIMENTAL BENZENE POISONING. *S. Caccuri. Rass. Med. ind., vol. 11, pp. 403-416 (1940).*

After reviewing the literature, the author reports upon his experiments with rabbits. A brady-arrhythmia appears shortly after beginning inhalation of vapors; this is followed by alternating left and right ventricular extra systoles and then tachycardia. If the vagi are cut or adrenalin is given, the bradycardia is of shorter duration and the extrasystoles not so frequent. During the bradycardia, the QRST complex is shorter, the TP longer, and the blood pressure rises.—*L. Teleky.*

ATYPICAL HEMOPATHY CAUSED BY BENZENE: REPEATED ANGINA WITHOUT NEUTROPENIA. *C. Aubertin and M. Durhovsky. Presse méd., p. 580, 1940.*

A man who had worked with benzene for 17 yrs. suffered with complaints of angina with hemorrhage several times over a period of 5 months. A diagnosis was made of relapsing agranulocytosis. During the fever there was a leucocytosis. Slight neutropenia was present during the period without fever. This patient was one with hypoplastic bone marrow who was able to react to infections by means of leucocytosis.—*L. Teleky.*

OCCUPATIONAL BENZENE POISONING. ROLE OF INDIVIDUAL PREDISPOSITION AND LACK OF VITAMIN C. PROPHYLACTIC MEASURES AND IMPORTANCE OF ITS DISCOVERY. *R. Roubinet. Thèse de Paris. Peyronnet et Cie., Paris, 1939.*

In the first part the author discusses thoroughly the chemistry and toxicology of benzene, clinical manifestations of the poisoning, value of the myelogram and blood changes.

In the second part the influence of pre-

NON-FERROUS METAL SMELTERS IN UTAH. *Div. Indust. Hyg., Nat. Inst. Health, U. S. Pub. Health Service, and the Utah State Board of Health, November, 1940. Pp. 310. (Available from Div. Indust. Hyg., Utah State Board of Health, Salt Lake City.)*

In three representative soft coal mines 545 men were given full examinations and a study was made of their jobs. The highest free silica content of the dust breathed was 11% and the highest dust count was 38 million, with the exception of car loading, where it ran over 100 million. Perhaps these facts account for a very low silicosis incidence—15 men or 3% with first stage, 1 man with second stage and none with third stage silicosis.

In three metal mines the dust exposures of 830 persons were studied. Less than 1% had dust exposures over 30 million particles and 86% were exposed to 6 to 30 million. Quartz concentrations averaged $30 \pm 10\%$, varying actually from quartz-free rock to pure quartzite.

Physical examinations with detailed analysis were made of 727 mine workers. The silicosis problem was most severe among men at the working face where dust counts were highest. Silicosis was found in 9.1% and 5.8% were considered as borderline cases.

As in other studies, men with long exposures were those most affected. There was considerable tuberculosis and some lead poisoning among the silicotics.

In the smelting industry, 1511 men were examined from 1 lead and 1 copper smelter, of which 120 men were ruled out for statistical analysis because of previous exposures. Of the 1391 left, 2.7% showed evidence of silicosis and 4.5% had borderline cases.

There were only 3 cases of second stage and no third stage cases.

Pulmonary tuberculosis was higher than among the coal and metal miners, men over 30 being most affected. There were 41 cases or 2.9%, showing clinical manifestations of lead absorption, mostly men handling the raw ore and in the roasting process. There were 14 cases (1%) of acute disabling lead poisoning over the last 5 yrs. with an average disability of 1 month. Other possible hazards such as dermatitis, or other forms of arsenical poisoning are mentioned but were not important.

These data are tabulated and charted in detail, as well as in summary form. The conclusions and recommendations introduce nothing new but are, of course, important for administrative purposes.

All in all, if this is the sort of report Utah plans making in the future, with or without the help of the Public Health Service, their further efforts will be welcomed eagerly.—*Philip Drinker.*

ASBESTOSIS. A. Bohns. *Dtsch. med. Wchnschr.*, vol. 66, pp. 1084-1085 (1940).

Short description of the clinical picture in the early diagnosis, evaluation of the extent of illness and disability produced by it.—*L. Teleky.*

REDUCTION OF BODILY EFFICIENCY IN ASBESTOSIS. L. Rosmheld. *Dtsch. med. Wchnschr.*, vol. 66, pp. 688-689 (1940).

Together with Kempf and Wedler, the author has published earlier papers on this subject (these abstracts, p. 149, 1940); here he presents a condensation of the material, in table form, and adds a twentieth case. Reduction of efficiency is due directly to lung changes, not to the heart.—*L. Teleky.*

DUST, SMOKE, FUMES AND VAPORS: DETERMINATION AND ELIMINATION

PREDICTING DUST CONCENTRATION—FACTORS AFFECTING DUST CONCENTRATION LEVELS IN ENCLOSED SPACES. F. B. Rowley and R. C. Jordan. *Heating, Piping and Air Conditioning*, vol. 12, pp. 699-702 (Dec. 1940).

The dust concentration within a ventilated building, in relation to the dust level in the outside atmosphere is not dependent

alone upon the efficiency of air cleaning provided in the ventilating system. To a greater degree it depends upon the rate of air change in the enclosed space, amount of leakage of untreated air into the building, rate of dust generation in the enclosed space, size of the dust particles in the air before and after cleaning, settling velocities of particles of different size, amount of air

movement within the building, and actual dust concentration in the outside air. Thus, two filters having the same cleaning efficiency will not give the same performance when measured by the resulting dust concentration in the confined space if one or more of the other factors vary. The authors' purpose is to develop quantitative relationships between these several factors to permit a more complete basis for designing and predicting performance of air cleaning equipment.

In the present paper, the first of a series, the settling behavior of suspended dust is considered and a general equation formulated for determining the rate at which dust settles out of the air. The practical limitations of the equation are also pointed out.

The factor of dustiness is assuming increasing importance in practical operation of air conditioning equipment and the evaluation of the air-cleaning problem on a more complete basis is therefore welcome at this time.—*Theodore Hatch.*

DUST CONTROL. II. EXHAUST FOR SURFACING MACHINES AND ABRASIVE BLASTING. *W. C. L. Hemeon. Heating and Ventilating, vol. 37, pp. 54-58 (July, 1940).*

The possibilities of improved control of dust with economical volumes of air by modification of the conventional hood design to provide a partial enclosure of the cutting tool are discussed. Variations of this idea are shown in accompanying diagrams and photographs. Baffle discs for the deflection of air leakage from the pneumatic head are of value in reducing dispersion of dust from the working surface. It has been found that an air flow of 600 c.f.m. is sufficient to control dust when the encircling hood and baffle disc are employed. Even lower velocities may be used but are not satisfactory for the removal of small chips. For the ventilation of blasting rooms, only small volumes of air are needed to prevent outward escape of dust—150 c.f.m. per foot of length being considered adequate. The exhaust outlet should be so arranged as to withdraw as little as possible of the abrasive, since the material is both expensive and useful. Shape carving may be done inside a ventilated room by a workman wearing a supplied air helmet

or a curtain with armholes and glass top may be lowered over the work. Very small volumes of air are sufficient to provide satisfactory visibility for this operation—probably 100-200 c.f.m. if the enclosure is reasonably tight.—*F. S. Mallette.*

GRINDING AND SANDING CASTINGS WITHOUT DUST. *Iron Age, vol. 148, p. 51, (Sept. 12, 1940).*

Facilities which eliminate the worst features of the work of grinding and sanding castings and which make it possible to perform this work within a few feet of precision machining operations are described. By means of downdraft ventilation, castings are ground, spray painted and sanded at one end of the machining building without partitions to separate the departments. The top of each working station is a large grating, through which air is exhausted to pull away the cloud of rust, sand and other fine particles, such as paint. The total amount of air removed is 50,000 c.f.m. at an average velocity of 200 f.p.m. The piping system for the entire installation, including exhaust, compressed air and paint lines, is entirely under the floor.—*F. S. Mallette.*

THE VENTURI EJECTOR FOR HANDLING AIR. II. ANALYSIS AND PERFORMANCE FORMULAE. *F. F. Kravath. Heating and Ventilating, vol. 37, pp. 48-49 (Aug. 1940).*

A detailed explanation of the working principle of the ejector is given with diagrams. Formulas are derived for calculating the performance of the ejector. This apparatus is best suited for eliminating any material which is extremely corrosive, explosive, hot, or sticky. It may also be used for abrasive materials or for nuisances or hazards which are created only infrequently. The ejector may also be operated by using steam, water, or exhaust gases, the latter when available under a few inches of water gage pressure, proving especially economical.—*F. S. Mallette.*

INVESTIGATION OF ATMOSPHERIC POLLUTION. REPORT ON OBSERVATIONS IN THE YEAR ENDED 31ST MARCH 1939. TWENTY-FIFTH REPORT. *Dept. Sci. and Indust. Res., H. M. Stationery Office, London, 1940 (2s. 6d.).*

shops are some of the typical results. To avoid such hazardous conditions, the Division of Industrial Hygiene writes letters to all plants in the State receiving defense contracts. Medical, engineering and

chemical aid is offered, and enclosed with the letter is a list of articles from the Division dealing with industrial hazards. Plants are visited to discover possible dangerous conditions.—*Helen Lawson.*

DUST HAZARDS AND THEIR EFFECTS

THE SILICOTIC NODULE IN HUMAN AND EXPERIMENTAL SILICOSIS: A COMPARATIVE STUDY. *T. H. Bell, A. A. Ferris and E. J. King. J. Path. and Bacteriol., vol. 51, pp. 263-267 (Sept. 1940).*

The authors report on a comparative study of silicotic lesions in man and those produced in rats after a single intra-tracheal injection of silicon dioxide, ranging from 0.8 to 5 μ . They stress the zone of fibrous tissue with practically no silica particles ("redundant fibrous encapsulation") as an important difference between silicosis as seen in man and that in experimental animals, where they found such was lacking. They also point out some differences in the character of the fibers and their pattern. They speculate as to the possibility that in man the lesion may be complicated by infection. Evidence as to the development of the "redundant capsule" with an outer halo of dust is not submitted in this report. A subsequent report is promised, and this point may then be clarified.—*R. Z. Schulz.*

INVESTIGATIONS COMPARING THE DANGER TO THE LUNGS FROM NATURAL AND ARTIFICIAL GRINDSTONES IN GRINDING SHOPS. *Gärtner. Arbeitsschutz, pp. 245-248 (1940).*

There is a short report of investigations made by Jötten in order to give an expert opinion, by order of the German ministry of labor. The complete report will appear as number 15 of "Arbeitsmedizin," published by I. A. Barth, Leipzig. Experiments were made in which rabbits inhaled dust produced by crushing two natural grindstones and two artificial ones. Of the latter, one was compounded of minerals, the other of ceramic compounds, containing 25% insoluble silicic acid. The dust of natural grindstones, containing 93.2 and 74.2% quartz, produced in the rabbits typical silicotic nodules. With the artificial

grindstone dust no silicotic changes were produced, only slight connective tissue and capillary proliferation.—*L. Teleky.*

PREVENTION OF SILICOSIS BY METALLIC ALUMINUM. *Jötten. Arbeitsschutz, pp. 252-254 (1940).*

The author reports results of his experiments on animals in which he used quartz with 0.75% aluminum. (The Canadian workers now employ greater amounts of aluminum.) Dust was inhaled by rabbits for 6 hrs. daily and more or less typical silicotic changes were found in animals surviving for a year. The positive findings occurred earlier than in the control animals, although the daily period of exposure was shorter [?]. The author mentions briefly that he experimented with 25 and 50% mixtures of aluminum silicate and found this material to diminish remarkably the effect of the quartz.—*L. Teleky.*

SILICOSIS FROM PORPHYRY WITH A NOTE ON "ACUTE SILICOSIS." *Symanski. Arbeitsschutz, pp. 272-274 (1940).*

Porphyry contains from 30 to 50% free silica. The author saw a man who had worked for 7 years as a quarryman but was endangered only during his 9 months' experience as a driller. He acquired a serious silicosis; 20 additional cases of silicosis from porphyry were seen, most of slight or medium degree.—*L. Teleky.*

ASBESTOSIS IN GRINDERS AND DRILLERS OF BRAKE BANDS. *Brachmann. Arbeitsschutz, pp. 172-174 (1940).*

Since 1937 workers in all asbestos manufacturing plants must be examined annually by the medical factory inspector in Saxony. The brakebands are made of sheets of asbestos, or are pressed out of asbestos

waste products and a filler, impregnated by artificial resin. Afterwards the bands and plates are ground and drilled. Clinical and roentgen examination of the grinders and drillers and men who file individual pieces showed a few light cases of asbestosis after they had worked 2 yrs. Such cases of asbestosis are found in nearly all workers after 5 yrs. employment.—*L. Teleky.*

THE STRUGGLE AGAINST ASBESTOSIS TODAY. *Ehrhardt. Arbeitsschutz, pp. 191-193 (1940).*

A short description of asbestosis, not the struggle to prevent it, which is a technical, not a medical problem. The only unusual statement in the paper is that no relationship between the nasal dust filtering ability and degree of asbestosis was found.—*L. Teleky.*

DUST, SMOKE, FUMES AND VAPORS: DETERMINATION AND ELIMINATION

NOTES ON THE HOW TECHNIQUE FOR THE MICROESTIMATION OF ARSENIC. *T. Wilkinson and C. G. Greenham. Australian J. Exp. Biol. and Med. Sci., vol. 18, pp. 341-348 (Dec. 1940).*

The authors suggest slight modifications in preparing reagents and in using the How technic (*Ind. & Eng. Chem., Anal. Ed., 10: 226, 1938*), to eliminate difficulties they have encountered. The How technic is a modification of Gutzeit's method. They were able to reproduce observations with amounts of arsenic as low as 0.1 μ gm.—*B. D. Tebbens.*

ESTIMATION OF HALOGENATED HYDROCARBON VAPORS IN AIR. *S. Moskowitz and W. J. Burke. N. Y. Dept. Labor, Indust. Bull., vol. 19, p. 332 (Dec. 1940).*

The authors have modified the apparatus described by Tebbens (*This J., 19: 204, 1937*). The 9½ x 11½ x 19" box contains a rheostat, absorber, drying tube and flow-meter, with space for a combustion tube. It is operated at 0.75 l.p.m. and the authors claim that they obtain approximately 100% efficiency for chlorinated aliphatic hydrocarbons but only 80-85% for alpha chlor-naphthalene. Sampling time is 10 min. to 1 hr., depending upon the concentration expected.—*Helen Lawson.*

DETERMINATION OF CARBON MONOXIDE HEMOGLOBIN IN THE BLOOD BY MEANS OF THE PHOTOELECTRIC COLORIMETER. *R. Havemann. Klin. Wchnschr., vol. 19, pp. 1183-1185 (1940).*

A method is described which takes only a short time. The photoelectric colorimeter used was constructed by the author and is made by W. Kauhausen, Berlin-Dahlem. 1 cc. of blood, or even as little

as 0.1 cc. is necessary. The error is said to be 0.5%.—*L. Teleky.*

DUST IN THE STONE AND EARTH INDUSTRY. *Arbeitsschutz, pp. 226-229 (1940).*

A short review of the importance of the dust problem in the ceramic industry is presented and is followed by a report by Hass on the technical aspect of the problem, especially regarding dust sampling and counting. He mentions only a gravimetric procedure, the konimeter and tyndallimeter. Use of portable vacuum cleaners is recommended for keeping workshops clean. H. Buckup in reporting on medical aspects of the problem, said that the Saxon ministry of labor had installed an x-ray car with which 13,428 examinations have been made in 9 months. This apparatus employs a "screen method" which is cheap, but gives only small pictures in which the first stage silicosis cannot always be positively diagnosed and beginning silicosis can not be detected. In this way it was found that in one factory 12.6% of the workers suffered from silicosis (1.6% serious, 4.2% medium). In a clay pit, 12.2% were found to be silicotic.—*L. Teleky.*

X-RAY EXAMINATION OF THE STRUCTURE OF INDUSTRIAL DUST AS A METHOD OF MEDICAL EXAMINATION. *Gärtner. Arbeitsschutz, pp. 193-195 (1940).*

The author presents a short description of the method as employed in examining airborne dust and dust in the lung. It is remarkable that the author found no quartz in silicotic lungs of china-clay workers who used kaolin and sillimanite. He concludes that these substances are also able to produce silicosis, and he adds that we now know that other silicates, such as asbestos, produce silicosis. (See these abstracts, 21, 199, 1939.)—*L. Teleky.*

METHODS OF AVOIDING THE DUST DANGER IN ASBESTOS PLANTS, VALID FROM AUGUST 1, 1940. *Arbeitsschutz*, pp. 293-295 (1940).

The methods were worked out by the association of insurance corporations, together with the corporation most interested

and the German factory inspectors. They contain prescriptions regarding exhaust systems, the efficiency of which must be tested by the insurance corporations and the office for controlling dust, founded by their association.—*L. Teleky*.

OCCUPATIONAL DISEASES OF THE SKIN AND SPECIAL SENSES

A NEW INDUSTRIAL CHEMICAL DERMATITIS. *K. O. Stingily. South. Med. J.*, vol. 33, pp. 1968-1971 (Dec. 1941).

A fungicide, sodium tetrachlorophenoxide, is employed to rid lumber of a fungus that causes injury and discoloration. This chemical has been observed to cause a fairly characteristic dermatitis. Those afflicted come in direct contact with the material in solution and the exposed parts of the body show the lesions.

First knowledge of the contact is a sensation of burning which soon subsides, leaving an erythematous patch. In a few hours this vesiculates, and after 24-48 hrs. it ruptures, leaving an ulcer. Conjunctivitis is frequent, and burning on urination has been noted. The ulcers may persist for months or years. The material from the ulcer apparently is capable of local auto-inoculation.

Histologically there is epithelial hyperplasia on the edges and a central exudative reaction characterized by collections of polynuclear leucocytes, lymphocytes and endothelial leucocytes.

Because of the property of auto-inoculation of the ulcerative lesion, it is suggested that a second degree fungus infection may be present. No pathogenic organisms have been grown from the wood.

The treatment is not highly satisfactory; the author believes that curettage and acetic acid wash has beneficial effects.—*Louis G. Well*.

DERRIS ROOT DERMATITIS. *M. Dorne and T. B. Friedman. J. A. M. A.*, vol. 115, pp. 1268-1270 (Oct. 12, 1940).

A case of dermatitis in a florist's helper was traced to derris root with which he had worked. Derris root rarely causes dermatitis and it is not a contact irritant. The disease was probably caused either by inhalation or by absorption through lacer-

ated skin. The substance produces dermatitis by a true antigen-antibody reaction, as indicated by positive intracutaneous tests and by positive passive transfer reaction. Avoidance of exposure is recommended to sensitive individuals.—*F. F. Rupert*.

OCCUPATIONAL DERMATITIS FROM HANDLING RESIN-LINED TIN CANS. *L. Schwartz and J. P. Russell. J. A. M. A.*, vol. 115, pp. 443-449 (Aug. 10, 1940).

Workers unloading and storing new tin cans complained of a dermatitis principally in the cubital spaces and axillae. Dust from the cans was said to be the irritant. Cans were lined with a vinylite resin but the manufacturer would not divulge what plasticizers and driers were used. The men complaining of the dermatitis had all worked for some time before they were affected. Patch tests were performed and 2 of the 3 tests were positive. Other affected workers did not suffer after they were removed from exposure.

The plasticizer is considered to be the cause of the trouble but this could not be determined with certainty.—*Helen Lawson*.

OCCUPATIONAL DERMATITIS (OIL). *C. G. Lane. Arch. Dermatol. & Syphil. (Soc. trans.)*, vol. 43, p. 184 (Jan. 1941).

Dr. Lane describes the case of a 68 yr. old machinist who for 3 yrs. had a dermatitis of the face, arms, axillae and lower abdomen. There were scattered areas of tan-brown hyperkeratotic follicles and follicular plugs. Keratosis were present on the scrotum and there were keratotic areas on the arms. Autopsy revealed carcinoma of the esophagus. Dr. Lane believes the skin changes to be due to oil to which the man was exposed in his 40 yrs. as a machinist, and that the condition is that described by White among machin-

DUST HAZARDS AND THEIR EFFECTS

CLINICAL EVALUATION OF DISABILITY IN PULMONARY DISEASES OF INDUSTRY. E. Mayer. *J. A. M. A.*, vol. 116, pp. 97-100 (Jan. 11, 1941).

The author gives his experiences as a member of the New York State Department of Labor board of impartial consultants, which reviews controversial claims for compensation due to disability acquired in industry. Apparently two types of problems present themselves: where pulmonary disease is obviously related to a definite industrial hazard and disability is claimed—it must be decided whether the disease which is present is disabling; the other type of problem is that in which the patient is obviously disabled, but the difficulty is to determine whether or not the disability is related directly to his occupation.

The author attacks these problems under the headings of etiology; the production of lung injury and the anatomic results of such injury; the recognition of pulmonary illnesses; and how such illnesses produce pulmonary incapacity, particularly with respect to reliable clinical and laboratory procedures for determining such disability.

Two case reports are given as illustrative of the procedures used.

Three different types of tests of pulmonary function are cited and discussed in detail: ventilation, or the ability of the lung to inflate and deflate with air; gas exchange tests which measure the oxygen debt, the oxygen deficit, and the oxygen unsaturation of the hemoglobin of the arterial blood; finally, by measurement of the efficiency of the pulmonary circulation.

In conclusion, the author submits a classification of disability grading for the consideration of specific application to pulmonary diseases of industry: in the so-called "phase of compensation," pulmonary fibrosis and emphysema are present to a considerable degree (however in this stage the emphysema is still compensatory in character and does not restrict the functional capacity for moderate exercise); in "latent decompensation," fibrosis and emphysema are of extensive degree and there is marked

restriction of exercise capacity with dyspnea occurring readily on moderate exercise; in so-called "manifest decompensation," the fibrosis and emphysema are of such marked degree as to be associated with more or less constant dyspnea even while patient is at rest.—C. O. Sappington.

SILICOSIS FROM PORPHYRY. CONTRIBUTION TO THE KNOWLEDGE OF SUBACUTE SILICOSIS. E. Gaubatz. *Fortschr. a.d. Geb. der Röntgenstr.*, vol. 62, pp. 395-404 (1940).

In the district mentioned by the author, the quartz porphyry contains quartz and orthoclase in equal parts. 10 yrs. ago a 220 m. tunnel was built in a period of 9 mos. The drilling was done dry. Of the 6 drillers employed, 3 died of silicosis and two are suffering from medium to serious silicosis. 2 workers employed to carry the material away are still free of symptoms. Drilling and crushing results in silicosis over a period of 1-3 yrs. The author presents case histories and pictures. In the introduction he discusses at length observations on the dangerous effects of granites, porphyries, basalts, etc. but without realizing the difference between quartz and silicates.—L. Teleky.

THE DUST RETAINING ABILITY OF THE NOSE IN ASBESTOSIS. W. Ehrhardt. *Arch. f. Gewerbepath.*, vol. 10, pp. 309-325 (1940).

The author examined the dust-retaining ability of the nose in 238 asbestos workers, following Lehmann's directions carefully. No constant relation between this ability and disposition to asbestosis could be discovered. There was a decreased dust-retention capacity (below 40%) in several men who showed asbestotic lung changes, but many workers remained healthy in spite of a low capacity. Both men with really severe asbestosis had a good dust retaining capacity (more than 40%). The author concludes that this test has no essential value and may be abandoned in the pre-employment examination of asbestos workers.—L. Teleky.

not less than 100 f.p.m. at the face should be provided. In general, good housekeeping and removal of the dust at its source are essentials.—*F. F. Rupert.*

POSSIBLE RESPIRATORY IRRITANT FROM COTTON DUST OR COTTON DYES. *J. A. M. A. (Queries and minor notes), vol. 116, p. 2449 (May 24, 1941).*

The inquirer asks what dyes or other substance might be present in khaki-colored cotton now being made up into coveralls, etc. for army personnel. Women cutting and handling this material complain of sore throats and nasal irritation, and one girl has a severe epistaxis.

Ordinarily dyes cause a dermatitis but respiratory irritation might possibly develop from them. In this case sulfur brown might be the offender. Chromates (usually used only on tent and tarpaulin material) would irritate the nose, and catechu (from acacia catechu) is another possible source of trouble.

It may be that the cotton dust itself is to blame and in this connection reference is made to the English work on the subject. Histamine, if present in the cotton, must also be considered.—*Helen Lawson.*

THE QUESTION OF SERIAL EXAMINATIONS OF WORKERS EXPOSED TO DUST, BY MEANS OF MINIATURE ROENTGENOGRAMS. *E. Saupe. Arch. f. Gewerbepath., vol. 10, pp. 83-86 (1940).*

Miniature pictures make it possible at low cost and in a short time to examine many men, and the method has been used in making serial examinations of different groups. The size most frequently used is 24 sq. mm. (0.95 sq. in.). Silicosis of the second stage is easily seen with certainty and the first stage can as a rule be recognized, but only if the technic is faultless. The miniature method must be improved, as it is only in its infancy, and must be followed by reports and by taking normal films in all suspicious cases.—*L. Teleky.*

SILICIUM, SILICATES, SILICOSIS. *W. Giese. Klin. Wchnschr., vol. 19, pp. 558-560 (1940).*

Very interesting experiments are described on animals in ages up to 3 yr., 7

mos. or 4 yrs. Rabbits were injected intravenously with finely ground silicate dusts: clay, feldspar, sericite. Deposits of the dust were found in the spleen, liver and lymph glands but nowhere was there found an increase of fibrous tissue—this kind of dust does not produce fibrosis. Opal (amorphous silicic acid) was also injected. It was then found that large deposits of dust were present with many giant cells, but no new formation of fibrous tissue. Opal is more soluble than quartz; therefore, the conclusion must be made that the dissolved silicic acid is not the fibrous-producing substance alone. Quartz is the only substance producing silicosis. The author also injected dust taken from markedly silicotic lung tissue, and this dust again produced silicosis. A diminution of the quantity of injected dust could not be found.

The author was able to show the formation of a covering, characteristic of asbestosis bodies, by feldspar, sericite and also opal, but in the smallest particles only, in the cellules. He concludes that dissolved silicic acid but not the quartz may produce this covering. He concludes: The quartz shows no morphologically demonstrable appearance of dissolution; in the tissue the dust deposited in callosities retains its fibrous producing effect. Although the silicates and opal deliver dissolved silicic acid, no fibrosis is produced, therefore dissolved silicic acid cannot be the cause of callosities. It was not possible to produce fibrosis or silicosis by some silicates, and it may be impossible to do so by other silicates also.—*L. Teleky.*

PULMONARY CANCER PRODUCED BY ASBESTOS DUST IN EXPERIMENTAL ANIMALS. *M. Nordmann and A. Sorge. Ztschr. f. Krebsforsch., vol. 51, pp. 168-182 (1941).*

The authors first quote the interesting research on pulmonary cancer in asbestos workers by the senior author (see *This J.*, abstracts, p. 184, 1938). They caused 150 mice to inhale asbestos dust, but the last 50 of them died in an epidemic. The first 50 inhaled asbestos dust for 47-54 days, 3½ to 5 hrs. a day; the second 50 inhaled it for 79-90 days. A small number of asbestosis bodies were found after the 20th experimental week, as well as pronounced degrees

of diffuse fibrosis. Proliferation of the bronchial epithelium was found after some weeks, such hyperplasias encroaching on neighboring alveoli. That was followed by a metaplasia to pavement epithelium with cornification, which later seemed to be a transition to malignant neoplasm. It is very difficult to draw a line between the two.

The first well-developed carcinoma was found after 240 days. By this time only 10 of the mice had survived and 2 carcinomas were found among them. In the first series, 33 of 50 mice lived longer than 6 wks.; 14 showed abnormal growth of the epithelium, 5 metaplasias and cancer. In the second series, 28 lived more than 6 wks., 16 showed abnormal growth, 5 metaplasias and cornifying cancer.—*L. Teleky.*

A CASE OF PULMONARY ASBESTOSIS ACCOMPANIED BY TUBERCULOSIS. *H. Hannesson. Tubercle, vol. 22, pp. 40-44 (Feb. 1941).*

From 1933-1939 inclusive, there were 90 known deaths from asbestosis in Great Britain, of which 32 were associated with tuberculosis. The case described here is that of a 44 yr. old man who had been an asbestos blower, in which occupation he

supplied asbestosis to a cleaning machine. Although he had been given a respirator, and the dust was heavy, he never wore it.

On admission he was very thin, had a high temperature, an emphysematous chest and bilateral crepitations over wide areas. Clubbing of the fingers was marked and the sputum contained both asbestosis bodies and tubercle bacilli. The roentgenogram showed "widespread progressive nodular tuberculous infiltration with cavitation in all zones of the right lung fields and in the upper and mid zones of the left lung fields. . . . The right dome of the diaphragm was elevated. There was no radiographic evidence of pneumoconiosis." A diagnosis of asbestosis and tuberculosis was made. The patient died within a month of spontaneous pneumothorax. Pulmonary findings of the lungs showed both to have extensive fibro-caseous tuberculosis with cavitation; macroscopically they were like those of pure tuberculosis. The microscopic examination, performed by Dr. Gloyne, disclosed caseous tuberculosis with many tubercle bacilli and typical reticular fibrosis of asbestosis with thickened pleura.

Diagnosis of the pure and complicated disease is discussed.—*Helen Lawson.*

DUST, SMOKE, FUMES AND VAPORS: THEIR DETERMINATION AND ELIMINATION

MINERALOGICAL EXAMINATION OF THE SILICOSIS QUESTION (DETERMINATION OF THE SOLUTION OF QUARTZ IN THE HUMAN BODY). *H. J. Helmers and H. Udluft. Jahrbuch d. Preuss. Geol. Landesanstalt, Berlin., vol. 59, pp. 727-754 (1939); Abst. in Zbl. f. d. ges. Hyg., vol. 47, p. 698 (1941).*

Parts of the lungs of a silicotic miner were examined. Sericite, kaolin and feldspar were the most important substances found; there was no quartz. But upon examining the wash liquor, an important quantity of colloidal silicic acid was found. This silicic acid must have been derived from silica dissolved in the lung. The authors think that the pH is most important in this procedure, and that correspondingly, it plays an important part in determining the course of the disease. The dissolved substances correspond to the physico-chemical reaction of the dust particles and the fluids

of the body, either eliminated without harm or producing callosities by precipitating out from silicic acid.—*L. Teleky.*

STRUCTURAL EXAMINATION BY ROENTGEN RAYS OF PNEUMOCONIOTIC LUNGS OF PORCELAIN WORKERS. Pt. 4. *H. Gärtner. Arch. f. Gewerbepath., vol. 10, pp. 151-163 (1940).*

The author describes dust seen in the lungs of 10 porcelain workers and 1 fluorite worker. Both roentgen and chemical findings are presented. Those on the porcelain workers are very interesting: In the first 2 lungs he could find no quartz lines in the roentgen picture, although by chemical analysis of the first, he found "18 mg. as crystalline silicic acid quartz," and in the second "similar values." However, he writes in his discussion of these lungs: "Silicic acid has been found neither in the

Experiments in vitro. The admixture of fine SiO_2 dust in tiny doses to blood (0.25 mg./cc. blood) slowly diminishes phagocytosis. 0.75 mg. increases it by 130-140% but higher doses have only a slight effect. SiO_2 dissolved in the blood increases phagocytosis up to 130%.—*L. Teleky.*

EFFECT OF SILICIC ACID ON PHAGOCYTOSIS.

E. Zanetti and L. Piccioli. Med. del lavoro, vol. 32, pp. 39-45 (1941).

The authors performed experiments in vitro and concluded that SiO_2 in a suspension of 1.5/1000 and in a filtrate increases phagocytosis. This increase is brought about by stimulation of the leucocytes which increases either the number of phagocytosed bacilli or the number of phagocytosing leucocytes.—*L. Teleky.*

ULTRAMICROSCOPIC EXAMINATION OF ASBESTOS DUST AND ASBESTOTIC LUNGS.

J. Kühn. Arch. f. Gewerbepath., vol. 10, pp. 473-485 (1941).

With the ultramicroscope the author examined different kinds of asbestos and asbestos dust from lung tissue, and presents many interesting pictures magnified from 10,800 to 29,000 times. Very small needle-shaped particles up to 6 μ in diameter and 400 μ in length have been found in the lungs. By use of the ordinary microscope

in determination of the refractive index, the author found that the particles in the lungs are hornblende; serpentine particles could not be found. But this does not apply to the smallest ultramicroscopic needles, as ultramicroscopic methods and the method of determining refractive index cannot be combined. The author concludes that these tiny particles are also hornblende, and that, since serpentine could not be found in the lungs, it must be dissolved. The hornblende shows no signs of decomposition. Kühn believes, therefore, that hornblende is harmless and that only serpentine produces asbestosis [the opposite conclusion would be tenable also. *L. T.*]. As the filters of respirators do not exclude particles less than 0.2 μ they cannot prevent the finest particles from reaching the lungs.—*L. Teleky.*

PULMONARY ASBESTOSIS. *P. Ellman. Proc. Roy. Soc. Med., vol. 34, p. 557 (July 1941).*

Ellman presents very briefly the history of a woman, now 45 yrs. of age, who worked for a year in 1910 sewing asbestos mattresses. Her sputum contains asbestosis bodies even now. In 1933 she noticed dyspnea, lassitude, cough and loss of weight. There was impairment at the base of both lungs, crackling râles and diffuse basal fibrosis, with some mid-zone involvement.—*Helen Lawson.*

DUST, SMOKE, FUMES AND VAPORS: THEIR DETERMINATION AND ELIMINATION

DETERMINATION OF LEAD IN BIOLOGICAL MATERIAL. A MIXED COLOR DITHIZONE METHOD. *F. L. Kozelka and E. F. Kluchesky. Ind. Eng. Chem. (Anal. Ed.), vol. 13, pp. 492-494 (July 15, 1941).*

The authors describe a simplified mixed-color dithizone method for the determination of lead in urine, blood, the soft tissues and bone. The material is acid ashed and treated with sulfuric acid, the purpose of which is to reduce the iron and to oxidize the tin which would otherwise cause interference in the procedure. The method eliminates the necessity of removing the excess dithizone or preparing standard dithizone solutions. Consistent recoveries of $\pm 1\mu$ gm. of lead are obtainable.—*L. T. Fairhall.*

ELECTROLYTIC DEPOSITION OF LEAD FROM BIOLOGICAL MATERIAL. *K. Bambach and J. Cholak. Ind. Eng. Chem. (Anal. Ed.), vol. 13, pp. 504-505 (July 15, 1941).*

In a new method for the electrolytic deposition of traces of lead from biological material, the solution of the ashed sample is electrolysed directly, without previous separation of the lead. The electrodes can be washed and other metals can be complexed, so that the lead deposit on the cathode is often almost entirely free from other substances. The lead can then be determined by the use of dithizone, the polarograph, or by other methods.—*Authors' summary.*

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