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the 17 patients suffered from anorexia, all but 1 from marked loss of weight, and all but 2 from intense dyspnœa on exertion. Cough, weakness, insomnia, and tachycardia were prominent. Examination of the chest by *x* rays showed various abnormalities in most cases. In stage 1 there was a fine diffuse granularity; in stage 2, a diffuse reticular pattern on the granular background; and in stage 3, distinct nodules appearing uniformly throughout the lungs. Pathological examination showed focal and diffuse chronic granulomatous inflammation of all lobes of both lungs, and subacute progressive focal and diffuse hepatic necrosis. Many kinds of treatment were tried, with no effect. *H. M. Vernon.*

A Histological Basis for the Reticulation to be Seen in X-Ray Photographs in Pneumoconiosis. (Les bases histologiques des images radiologiques de reticulation observées dans les pneumoconioses.) POLICARD, A. (1946). *Arch. Mal. Prof.*, 7, 35.

The author describes the various stages of reticulation in pneumoconiosis. Silica and coal dust can be demonstrated histologically along the peribronchial ducts, and the distribution seems to correspond with the radiological picture; but the dust is practically transparent to *x* rays, and it is necessary to show up the calcium deposit by micro-incineration *L. Roche.*

Silicosis in Workmen in the Alzo Granite Quarries. (La silicosi negli operai delle cave di 'granito di Alzo.) ZANETTI, E. (1947). *Med. d. Lavoro*, 38, 173.

Patients from the granite quarries of Alzo were studied. It is concluded that the pessimistic views of American authors concerning the inevitability of silicosis after a few years' exposure are unreasonable.

The rocks worked at Alzo are volcanic in origin, and the essential constituents are quartz, orthoclase, orthose, and mica, but other minerals also occur. The total silica content is fairly high and only a little below that found in the Bavarian forest district. Free silica (quartz) represents 40 to 45% of the total silica. Quarrying is carried on in three processes. In the first the stone is cut away from the hillside, in the second the block is cut into smaller parts, and in the third it is finished to shape. The first process is dangerous and the miners often work on a steep slope suspended from ropes. Holes drilled to take explosive charges may be 20 metres long, and the drills are turned by hand while being struck so as to provide a perfectly circular cross-section. At intervals the dust accumulated in the holes is blown out by a mechanical pump. Black powder is the only explosive used, as dynamite shatters the stone too easily. The stone is stratified in three planes, but only experts can detect these with ease. The cuts made in the stone must be aligned with these factors in mind. The division of the stone is partly carried out with wedges. The surfaces of the stones which have been roughly cut to shape are finished with hammers and small cutting tools. Polishing is generally performed by machinery in which are the abrasive materials and water. Some dry polishing is done.

Of 37 examined, 9 had reticular changes, 14 had silicotic nodules, 1 massive silicotic changes, 4 associated tuberculosis, and 5 tuberculosis without silicosis. The periods spent in the quarry varied from 20 to 52 years. The average age exceeded 60 years, and the diagnoses described were made exclusively on the radiological evidence. The figures showed that the dust hazard was greatest for those who worked with chisel and hammer. These men had generally worked for 20 to 25 years before they developed any reticulation, and nodular changes were not observed under 30 to 52 years. The dust hazard was also great in men working in the final stages, such as the polishers. Nodules in the lungs were generally peripheral in distribution. The author observed 6 cases of lymphoglandular calcification of egg-shell outline.

It is suggested that the final processes should not be carried out in closed spaces. A shed with open sides is better than one with walls, and machines which create much dust should be fitted with appropriate removal systems. It may prove more effective to give men filtered air under pressure rather than masks with filters. *G. C. Pether.*

Lung Retention of Quartz Dust Smaller than One-half Micron. HATCH, T. F., and KINDSVATTER, V. H. (1947). *J. industr. Hyg.*, 29, 342.

It is well known that when quartz particles of less than 1 μ in diameter are inhaled they are much more active than larger particles; the object of the present investigation was to determine if experimental animals would retain a sufficient amount of sub-microscopical crystalline silica in their lungs to produce evidence of damage. The experimental dust was obtained from commercial pulverized quartz by settlement in water, the particles which remained in suspension to a depth of 1 cm. after settling for 24 hours being collected. The median size of the particles, as determined from electron microscope photographs, was 0·18 μ. The test material was kept in water suspension and was atomized by means of a high-velocity ejector. An air current of 1 c. ft. per minute—heated on its way—carried the dust into the exposure chamber, and it escaped through a high-voltage electric precipitator, whereby the mass concentration of the dust in the chamber was determined. It amounted to 35 mg. per cubic metre. Guinea-pigs were exposed daily for periods of up to 4½ months. Lung sections from the animals showed that in every case after 20 weeks' exposure the bronchial lymph nodes were enlarged to more than three times the normal diameter. The following progressive pathological changes were observed with increasing exposure: (1) An accumulation of mononuclear and reticular cells in the septa and alveoli; areas were discrete at first, but became confluent and finally involved large portions of the parenchyma. (2) The lung changes were followed by similar changes in the bronchial lymph nodes, till finally the enlarged node was almost filled with altered tissue. *H. M. Vernon.*

Some Remarks on Asbestosis. (Quelques considérations sur l'amiantose.) ROUSSEAU, L. (1947). *Sem. Hôp., Paris*, 23, 1811.

Experimental Asbestosis. Pathognomonic Value of the "Asbestos Body." (Amiantose expérimentale. Valeur pathognomonique du "Corps d'Amiante.") GIROUX, M. (1947). *Sem. Hôp., Paris*, 23, 1814.

Asbestosis and Pulmonary Tuberculosis. (Amiantose et tuberculose pulmonaire.) DESMEULLS, R., GIROUX, M., and RICHARD, P. (1947). *Sem. Hôp., Paris*, 23, 1818.

Asbestosis and Cancer of the Lung. (Amiantose et cancers pulmonaires.) DESMEULES, R., ROUSSEAU, L., GIROUX, M., and SIROIS, A. (1947). *Sem. Hôp., Paris*, 23, 1820.

These four papers come from Quebec, Canada, where several workers in the asbestos mines have been studied

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The Quebec school disagrees with the statements of Gardner that pneumoconiosis due to asbestosis is not an important factor in the production and progress of pulmonary tuberculosis, and that the presence of asbestos bodies in the sputum has no value in the diagnosis of asbestosis. Rousseau gives brief descriptions of 4 patients, some of whom are also reported in the following papers. One had worked in the asbestos industry for 18 years, and experienced respiratory symptoms only during the last 3. He complained of cough and an asthma-like dyspnœa. Asbestos bodies were found in his sputum, but no tubercle bacilli. Radiography is said to have shown a ground-glass appearance in his lungs [unfortunately the illustration is too poor to demonstrate this]. This is the only case seen at this hospital in which it has been possible to make a diagnosis of asbestosis during life. Another patient, who had been exposed to asbestos dust for 25 years and who died from some unrelated cause, showed no clinical or radiological signs of any abnormality in his lungs during life.

Giroux exposed guinea-pigs, rabbits, and a dog to crude asbestos dust in a chamber daily for several months. The rabbits, killed after periods of from 3 to 12½ months, had no asbestosis and no asbestos bodies. The dog showed no lesions after 10 months' exposure; only the guinea-pigs showed lesions in the lungs and asbestos bodies. In these animals he traces the stages of formation of asbestos bodies; fibres reaching the alveoli are rapidly covered by phagocytic cells; movement of the fibres results in microscopic bleeding from damaged alveolar walls; the hæmoglobin from the liberated red cells is taken up by the phagocytes which already enclose the asbestos fibres. Subcutaneous or intratesticular injections into guinea-pigs of suspensions of asbestos in olive oil resulted in the production of granulomatous lesions but no asbestos bodies. When, however, the suspension was injected into an area into which 1 ml. of blood had been injected immediately before, asbestos bodies were found after a month. He considers that the presence of asbestos bodies in sputum has significance, since it implies tissue damage in the lungs.

Desmeules, Giroux, and Richard report a patient, aged 44 years, in whose family there was no history of tuberculosis. He had worked as a bagger of asbestos for 20 years; after 10 years he began to experience dyspnœa on effort, accompanied by cough and expectoration. He became more severely ill some 9 months before his death, which was due to tuberculosis and asbestosis. The authors argue that the asbestosis preceded and paved the way for the tuberculosis, but admit that they have no proof of this. [The association of tuberculosis and asbestosis is generally admitted in Britain but is doubted in the United States.]

Desmeules, Rousseau, Giroux, and Sirois record brief details of 2 patients who had asbestosis and cancer of the lung. [The claim that carcinoma of the lung with asbestosis has been recorded before in only 1 case cannot be allowed. Nor will there be general agreement with the statement that silicosis is admitted to play an important part in the pathogenesis of pulmonary carcinoma.] *H. E. Harding.*

Dyspnœa of Effort in Underground Workers in Coal Mines. (Quelques remarques sur la dyspnée d'effort chez les ouvriers du fond employés dans les houillères.) MARTIN, E., and ROCHE, L. (1946). *Arch. Mal. prof.*, 7, 197.

The significance of dyspnœa in groups of coal-miners with and without pulmonary lesions of varying degrees of severity is discussed. The authors examined 1,361 men, of whom 1,090 had apparently normal lungs. Of the 271 men with demonstrable abnormalities he found that 23% of those in stage I of silicosis had dyspnœa of effort. Of the second-stage cases 41% suffered in this way, and in the third stage of silicosis 8 men out of 13 had dyspnœa. About 30% of 57 tuberculous workers had this symptom. Of the men with apparently normal lungs 14% had dyspnœa; it is difficult clinically to detect this symptom or to assess its importance. The authors therefore consider that the importance given to this symptom by the French government, in judging incapacity and compensation rights, is very doubtful, and that tests of the venous tension and the speed of circulation do not help in elucidating the problem. *G. C. Pether.*

The Dust Hazard in Tremolite Talc Mining. GREENBURG, L. (1947). *Yale J. Biol. Med.*, 19, 481.

The literature on talc dust is reviewed. Writers both in Europe and in the U.S.A. have reported the existence of pneumoconiosis, consisting of a diffuse generalized fibrosis, among talc-workers. Summaries of 5 fatal cases in the U.S.A. are given, no necropsy findings being quoted. A study of talc miners and millers in St. Lawrence County, N.Y., is detailed. The talc mined is a fibrous variety called asbestine, accompanied by tremolite in a fibrous state. The free silica content of the dust is stated to be less than 1%. In mines the drilling is dry and little dust control is used. Dust-concentration figures (sampled by midget impinger) are given. At the mills the material is crushed, screened, milled in pebble-mills, air-separated, and bagged; some dust-control measures are used in the last two operations.

An initial radiological survey showed pulmonary fibrosis in 14·5% of 221 men examined, giving a soft hazy "ground-glass" appearance or a granularity of the lung fields, and in some cases a nodulation radiologically of silicotic type. A table shows that of those aged 50 or over fibrosis was found in 4·9% of the controls (carpet-workers) and in 51·5% of the talc-workers. Fibrosis was relatively more prevalent among millers than among miners. Symptoms were those of pneumoconiosis; dyspnœa was greater than the radiographic changes might have suggested. The incidence of active tuberculosis was slightly higher than expected. In 6·3% of the 221 men deposits or plaques of radio-opaque material, often of considerable size and apparently in the visceral pleura, were found. These "talc plaques" have no relation to previous infection, and may not be associated with fibrosis in the adjacent parenchyma or with changes in the corresponding hilar glands; in some cases no other lung changes were found; the plaques are considered to be symptomless. A marked similarity is indicated between tremolite-talc pneumoconiosis and asbestosis. The author concludes that this dust carries a definite risk and that its control is necessary. *L. W. Hale*

Changes in the Pulmonary Vessels in Silicosis. (Le alterazioni dei vasi polmonari nella silicosi.) NUNZIANTE CESARO, A., and PECCHIAI, L. (1947) *Med. d. Lavoro* 38, 307.

Appraising Exposures to Silica Dust. HOLDEN, E. R., HEMEON, W. C. L., and HYATT, E. C. (1947). *J. industr. Hyg.*, 29, 265.

The risk of silicosis depends largely on the size of the silica particles inhaled, and it is considered that particles of less than 5μ, and especially those of 1 to 3μ, are the most active and dangerous. It is well known that the