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*L. U. Gardner. Schenectady, Jan. 20, 1933.*

Asbestos is used in the West Philadelphia plant. Dr. Minor says that he discovered a case of asbestosis and removed the man and that now the one man working wears a positive-pressure air helmet.

There are three men spinning asbestos in Schenectady, and there is an exhaust at the point of dust formation. Dr. Vosburgh has taken X-rays, which are negative.

The other plants in which asbestos is used are Bridgeport, York and Meriden.

L. U. Gardner advises taking X-rays. There is no other way.

The dust collects along the bronchios in animals, not in the lung tissue. There is a gradual growth of fibrous tissue around them, followed by occlusion and collapse.

Phagocytes with quartz particles move rapidly, collect in clumps and then undergo hyaline change, then necrosis. With granite dust the cells remain in the spaces, they do not form nodules. Probably there must be infection to make nodulation from granite dust, but not from quartz. Phagocytes with asbestos are crammed full of dust and hardly move. With carborundum dust they are more active. Quartz inhalations following injection of attenuated tubercle bacilli start a tuberculous process, so does carborundum, which seems to point to the probability that there is free silica in carborundum. The same result occurs if silicosis is first produced by inhalation and then the tubercle bacilli injected. There is more likely to be involvement of the bases of the lungs in silicosis-tuberculosis than in the usual form. Coal dust, iron ore, marble, and asbestos have no such effect.

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Granite cutters show linear markings only, not nodules, unless they have tuberculosis. Perhaps the 70 per cent of combined silica is responsible for the process and when tuberculous infection comes the 30 per cent of quartz in the granite gets into play and nodulation follows.

Gardner says there is no asbestosis in Canadian mines and the suggestion is that iron is still present and that it is protective but by the time it has reached the weaving and spinning departments in the United States the iron has been removed.

He The failure to find tubercule bacilli in cases of silicosis may be due to the fact that silica causes loss of acid-fastness, as has been shown in vitro..

For a quick test, Sayers uses intraperitoneal injections. Gardner uses intracutaneous. He finds a positive reaction with quartz dust, very like that with tuberculin in 24-48 hours. Carborundum is in 8. Granite, similar to quartz, but not so virg vigorous. Silicates cause inflammatory reaction, but no necrosis. The reaction can be prevented by immersing the dust in glycerine broth; if the broth is removed the effect is restored. The reaction is definitely quantitative. Quartz produces an acute exudate with leukocytes in four hours, and after 48 hours there is central necrosis with a cellular periphery lasting several months.

Sayers' results with quartz are the same. Carborundum and coal are inert.

Sericite is present in Barre granite, but it is absent in Picher, Chert, and North Michigan. It is present in Canada quartz, which acts like granite, not like typical quartz. A definite toxicity of silica is shown by the effect on the liver.

of fine particles injected into the veins, which cause progressive destruction of the substance of the liver, lasting over three years. Aluminum oxide, used in this way, is caught by fagocytes and remains in the liver, but causes no injury at all. Carborundum is silicon carbide  $\text{SiC}$ , with about  $1\frac{1}{2}$  per cent  $\text{SiO}_2$ .