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# SAFETY ENGINEERING

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(with which has been combined Protection Engineering, Conservation and Fire Prevention.)

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THIRTY-FOURTH YEAR : THE PIONEER PUBLICATION  
IN ITS FIELD

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mineral and in many cases could be avoided.

One phase of the dust problem that has received little or no attention in the past and may prove to be an important one in the future is the selective action induced as finely divided material settles in air. This action has already been mentioned in the case of sericite and quartz. Because of different physical properties quartz will settle more rapidly than sericite. Rarely will it happen that two substances possess similar physical properties, and thus in any industrial dust various constituents settle faster than others.

In endeavoring to estimate the exposure to free silica in the granite industry in the past, it was determined that free silica or quartz made up a certain per cent by weight of the rock as quarried. This figure was then taken to represent the free silica in the air floated dust. Such a conclusion is entirely erroneous, for the amount of the material in the air depends on the physical nature of the constituent minerals.

A striking example of the selective nature of air

floats mineral particles was shown in the recent examination of dust from an asbestos fabrication plant. Inhaled fibres of asbestos are said to give rise to the disease asbestosis. One would, consequently, expect to find large quantities of asbestos in the air during dusty processing operations. Petrographic examination of dust revealed the startling fact that little or no asbestos is present in the air floated dust; and that the dust is made up of impurities present in the raw material. The fibrous nature of the asbestos apparently causes it to mat, while the smaller particles of extraneous material are contributed to the dust.

Although the application of petrography to the study of silicosis is still in the embryonic state, it has nevertheless already proved its worth. The interest of the petrographer in this subject may be much further extended, for his geologic knowledge would permit him to predict what minerals to expect and the hazards to be encountered in the development and exploitation of a given raw material.

## ASBESTOS DUSTS

**A** POTENTIAL, asbestosis hazard is to be looked for wherever asbestos dust is created. Possible sources are the mining and milling of asbestos and the weaving, machining and milling of asbestos and the compounds. Industries included in the latter group are the manufacture of asbestos textiles and clothing, brake linings, cements and roofing materials.

Asbestosis is less understood than silicosis. It has received attention in the United States only during the last three or four years. Fewer workers are exposed to asbestosis than silicosis, but it is a definitely important occupational disease hazard.

It is established that asbestosis may cause disability and death. Any well defined case of asbestosis is more likely than not to progress to a fatal conclusion. As in silicosis, length of exposure is not by itself a determining factor.

The pathology of asbestosis differs markedly from that of silicosis. The dust particles being larger, the damage is to the bronchioles, rather than to the alveoli, the latter being too small to admit any large proportion of the particles. The fibrosis of asbestosis is characterized by the formation of so-called "asbestos bodies," a phenomenon quite different from any found in silicosis.

The symptoms of asbestosis are generally similar to those of silicosis, particularly as regards a gradually increasing dyspnea (shortness of breath). The cyanosis (bluish discoloration of the skin) characteristic of silicosis is also met with in asbestosis, particularly around the mouth and finger nails. Clubbing of the fingers has also been noted. The shadows seen in asbestosis lung pictures are finer and less dense than those of silicosis. Heart enlargement is more common than in silicosis. X-ray diagnosis is essential.

As far as is now known, the control of asbestosis

should be along lines similar to those recommended for silicosis. Dust control is of prime importance. Physical examinations, both on entry to the industry and periodically thereafter, should be part of the program, with removal of the infected as a minimum requirement. Tuberculosis is probably less common among asbestosis workers than in the silica trades but more serious when it does occur.

Our present knowledge of asbestosis leaves much to be explained. We do not yet know why it is far more common in the fabrication of asbestos than in its mining and milling. Reports indicate that there is far more trouble in some relatively clean plants than in others which are extremely dusty. An explanation of this may lie in the marked difference between various kinds of asbestos. For example, the asbestos mined in Canada varies widely in chemical composition from that coming from South Africa. Studies of the chemical, physical and petrographic characteristics of various kinds of asbestos are now going on. The results of these should be of prime importance.

## MASSACHUSETTS CREATES OCCUPATIONAL HYGIENE DIVISION

**O**N JUNE 26th last, Governor Ely of Massachusetts signed a bill establishing a Division of Occupational Hygiene in the Department of Labor and Industry in that State.

The Commissioner of the Department appointed Manfred Bowditch, formerly Executive Secretary of the Special Industrial Disease Commission to act as Director of the New Division.

The creation of the new Division was recommended by a special legislative commission which made an extensive study of industrial diseases in Massachusetts.