PROCEEDINGS

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MEDICAL AND SURGICAL SECTION

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When this Act was approved a year ago, thousands of pamphlets were printed and distributed throughout the state describing in a fragmentary way the symptoms of various occupational diseases and the kinds of work which may cause them. The only purpose served will be to create a fear complex, and every employee who becomes ill will imagine that he has an occupational disease, or the one discharged or relieved will imagine or malinger many of the symptoms of some occupational disease and a claim will result. I believe this is mere apt to occur under the Act than under the common law.

In the agitation which has led to legislation in the last two years, silicosis has been emphasized almost to the exclusion of other diseases which may have an occupational origin. We may accept as axiomatic that dust from whatever source, if in an excessive amount, is injurious. A recent comment in the Journal of the American Medical Association states that only silica is capable of inducing silicosis, but that other mineral dusts under prolonged and gross exposure may cause some increase in pulmonary fibrosis. If the relative potential harm of silica is rated as 100, then other non-toxic mineral dusts may be rated only on the order of 5 or 10. Dusts in industry are formed by processes of abrasion, grinding, polishing, blasting, and the like. Such dusts are not altered in any way, but maintain the same chemical composition as the material from which they come, the only difference being the particle size. The smaller the particles, the more and less soluble they are, the more apt they are to cause permanent changes in the pulmonary tissue. There are two schools of thought in regard to the method by which silica causes silicosis, one being that the hard particles of silica cause an irritation, producing a defensive fibrosis, and the other that the silica in the body undergoes a chemical change and becomes a cellular process. The evidence appears to favor the first view.

Silica, asbestos, and lead are the principal substances generating toxic dusts in which railway employees may be exposed. To those we may perhaps add coal dust generated in handling coal from cars to coal chute or other enclosed places, because this is excessively dusty work. A recent preliminary report was issued by the U. S. Public Health Service in a study of health conditions, including physical examination of 2711 men, in three representative anthracite coal mines in Pennsylvania. The presence of anthracosilicosis among the group was 23%.

Among a control group of hard-coal mining employees where dust exposure was less than 5 million particles per cu. ft., no cases of anthracosilicosis were found. Among men employed more than 25 years in dust containing 5 million to 90 million particles per cu. ft. with less than 5% silica, 5% developed anthracosilicosis. Where the dust contained 100 million to 180 million particles per cu. ft., 5% of the employees developed anthracosilicosis, and with the dust containing in excess of 300 million particles per cu. ft., 35% of the employees exposed developed anthracosilicosis. Analysis of the data for the purpose of determining safe limits of dust exposure indicates that employment in an atmosphere containing less than 50 million particles per cu. ft. would produce a negligible number of cases of anthracosilicosis when the quartz content of the dust was less than 5%. Where the silica content was about 13%, a safe limit appeared to be 10 million to 15 million particles per cu. ft. It is obvious that avoidance of great exposure to toxic dusts and other poisonous substances