

When, therefore, an award of \$500 was made the Compensation Board immediately set up a prospective reserve for progression of an additional \$11,500, with the result that we had an estimated liability to the end of 1932 of several million dollars, most of which was outstanding.

With the passage of time it also became apparent that the removal of the men from underground employment in the early stages of silicosis did not have the results anticipated. The payment of a lump sum award did not in most cases serve the end expected. As a general rule this money was expended for other things and the men made little effort to rehabilitate themselves. A certain number of men classified as silicotic continued in their underground employment and we found practically no difference in the rate of progression in those who continued as compared with those who were taken out of the mines. Some of this may have been due to the altered economic status, but even if the economic status had remained the same, we were forced to the conclusion that there was little if any benefit to the men by removing them from underground work, unless of course, there was evidence of an onset of tuberculosis.

It should, of course, be understood that during this time active efforts were made by the mines to improve ventilation and to allay dust. Without this the above statement would not hold true. Steps were also taken by the mines to provide that men in the early stages of silicosis were placed where the conditions underground were most favorable.

Our experience also indicated that the early stages of silicosis do not necessarily mean an impairment of working capacity. This is all the more important on account of the difficulty of diagnosing silicosis in its early stages, as there is no sharp line of demarcation between the pre-anteprietary and the anteprietary, or between anteprietary and primary stages, and as a matter of fact, we believe that there is a great deal more uncertainty in the diagnosis of silicosis than the medical men are willing to admit. The determination is largely a matter of personal judgment and therefore subject to error.

A great deal of what may be read into an X-ray film depends upon the technique in taking the film. Certain other diseases and chest conditions will also give in the film an appearance simulating that of silicosis and we believe it is safe to say that without a definite knowledge of occupational history the diagnosis of silicosis in its earlier stages would be practically impossible.

In view of these conditions, it was felt that the industry was carrying an unfair burden and in 1933 the Act was amended. The anteprietary and primary classifications were deleted, compensation was made payable only for disability, which means actual impairment of working capacity, men with a moderate degree of silicosis were allowed to continue underground work and the industry was relieved from unlimited liability in respect to progression by providing that the claimant must make and establish his claim for disability within two years of leaving the employment at which he was exposed to dust, to entitle him to compensation.

As I said before, silicosis is essentially an employer's problem. It is in many places an important item in his cost of production and to a considerable degree it is a controllable item of expense. If the employer simply leaves the matter in the hands of the doctors, he will have no one to blame but himself over what it costs him. The opinion of the ordinary practitioner and even of the roentgenologist and expert chest and lung man may be of little value. Only the opinion of those doctors who have had special training in the diagnosis of silicosis from both clinical and X-ray examinations should be accepted, and even those opinions cannot be accepted in all cases.

We do not say this with any intention of criticizing the members of the medical profession, but where the matter is so important and costly to industry, where so little is actually known about the disease, and where there is still an element of uncertainty in the diagnosis of silicosis in its earlier stages, too much care cannot be exercised, and the closest scrutiny by industry which has to pay the bills is most necessary. The best results can only be obtained by the employers and the doctors working together, but the employer must consider it as one of his particular problems.

I have also stated that in the absence of any cure it is much more important

to know how to reduce the incidence than to know the cause. We believe the chief preventive measures are as follows:

1. Improvement in fundamental working conditions in the matter of ventilation and allaying dust.

2. A rigid initial examination to keep out of the industry those men whose physical condition would indicate a type most susceptible to silicosis and tuberculosis.

3. Control of tuberculosis not only among employees, but also among those with whom they come in contact.

It goes without saying that if silicosis is caused by the inhalation of dust, the removal of dust will remove the cause. This means ventilation and lots of it, and where possible the wetting down of dusty places. In mining operations the chief source of dust is believed to be from blasting, therefore the time interval before men return to a blasted face is important.

Ventilation and water will remove the visible dust from the air, but it is not the visible dust that causes the damage. It is the dust that ranges between one-half and five microns that is dangerous and is so difficult to remove, and the quantity in the air can only be determined by some method of sampling.

We would consider it a mistake to have either the type of sampling apparatus or the permissible dust count defined by law. This may be all right on the Rand in South Africa where conditions are more or less standard, but it is not advisable in the United States or Canada, where conditions vary so greatly. For one thing, we do not know what constitutes harmful dust and there is no standard practice for the treatment of dust sample slides. The untreated slide of a sample taken near a carbide lamp in an otherwise dust-free atmosphere, would show an apparent very high dust count. Dust sampling, however, should be a part of the regular routine, using the type of apparatus best suited to the particular conditions, and this will show whether the atmosphere is good, fair or poor.

Next to ventilation and the laying of dust, the most important measure is to carefully select the type of men to be allowed to work in the industry. This requires a rigid initial examination which should include a complete physical examination and X-ray. By this means men with the type of chest which would indicate their susceptibility to tuberculosis and silicosis can be eliminated. The complete physical examination should also have a beneficial effect on the accident rate.

Uncomplicated silicosis is not a big problem, but silicosis and tuberculosis combined represent a very real problem. The measures for the control of tuberculosis are well known. Particular care should be taken that men with tuberculosis be withdrawn from the industry and given proper care and treatment. Places where the employees live should also be supervised to see that they are not exposed to tubercular contacts.

Some Aspects of the Silicosis Problem

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The speaker said in part: In 1928 the Ontario Mining Act was amended to provide physical examination on employment and yearly thereafter, or twice yearly if indicated, of all underground men. To be employed the workman must hold an official certificate good for twelve months, stating that he is free from disease of the respiratory organs. This certificate must be renewed at each annual examination. In the meantime, an amendment to the Workmen's Compensation Act provided for the appointment of medical officers working under the supervision of the Compensation Board to conduct these examinations. Cases of silicosis arising at these examinations are submitted to the Workmen's Compensation Board if the total exposure to silica of five years in Ontario mines is verified. In addition to this routine with silicotics, there is a close check kept on the possible undue progress in the fibrosis in any case and if necessary steps are taken to remove such a case from harmful contact with silica.