

coverings of a certain type of electrode contain asbestos. The rods are sometimes dipped in a mixture containing powdered asbestos and sodium silicate, or asbestos yarn is wound round the rod and fixed by sodium silicate. In some cases the asbestos completely covers the rods, and in others it is merely a cord which is wound spirally about the rod.

"The composition of the fumes arising from electric welding electrodes has not yet been fully investigated. Mr. L.C. McNair, H.M. Engineering Inspector of Factories, has however had partial analysis made of the fumes evolved from an asbestos-covered electrode and some asbestos fibres were found. When the particulate matter of the fumes was collected in an Owen's dust-counter, it was seen that a large proportion consisted of iron oxide particles, with an occasional asbestos fibre.

"The X-ray appearances in the well-marked cases differ from the usual picture of asbestosis. In none of the positive cases and in only one of the suspicious cases was there any blurring of the diaphragmatic shadow, and in no case was the heart outlined blurred. The line of the interlobar septum (a feature present in a number of films of cases of asbestosis) is seen in only one positive case. The opacities in the films are not accentuated at the bases of the lungs, but on the contrary the upper lung fields appear to be the earliest, and in established cases, most markedly affected. Before asbestosis can be eliminated from the differential diagnosis it must be remembered that the asbestos fibres are being subjected to intense heat and are not in the same physical state as the fibres which are inhaled by workers in an asbestos factory. It is possible that a typical picture of asbestosis might be produced by the inhalation of altered asbestos. Merewether says that - 'the radiographic appearances of the developed or advanced states of asbestosis are distinctive, although they are not specific. While, as is the case with silicosis, certain radiographic appearances may be looked upon as typical of the disease, frequently modifications of and departure from the typical picture occur'. The X-ray appearances in our cases most closely resemble those of a fine silicosis, but the clinical features show two important differences. In the first place, the electric welders whom we examined are all in good health and are fit to work. The only symptoms observed were slight cough and morning expectoration, and in the first case a small haemoptysis occurred. This man has not been away from work even for a day since he was first seen in June, 1933, and his health at the present time is good. None of the men suffers from dyspnoea. Secondly none of them has concomitant pulmonary tuberculosis.

"Miliary tuberculosis can be ruled out of the differential diagnosis for clinical reasons, and to some extent on the radiological appearances. None of the cases shows the dyspnoea, cyanosis, and tachycardia of acute or subacute miliary tuberculosis. Chronic or healed miliary tuberculosis is rare and it is difficult to imagine that a condition of such rarity would be found in 6 out of one group of 16 men. In the X-ray films of the welders' chests the fine opacities are irregular in size and shape, whereas in miliary tuberculosis of the lung the shadows are more uniform.

"A further possible explanation of the X-ray appearances in this series of cases is that the inhalation of small quantities of nitrous fumes together with the superadded effect of fine iron oxide dust might set up small areas of chronic inflammatory change, congestion, or fibrosis in the lungs. Again, the iron oxide particles might be opaque to the X-rays and produce the picture without the associated presence