Report on Effects of Asbestos Dust on the Lungs and Dust Suppression in the Asbestos Industry.

PART I.

THE OCCURRENCE OF PULMONARY FIBROSIS AND OTHER PULMONARY AFFECTIONS IN ASBESTOS WORKERS.

1.—Introduction.

This Report is based upon the data obtained in an extensive investigation during the years 1928 and 1929. The inquiry was initiated by the Factory Department of the Home Office following the discovery in February, 1928, of a case of non-tubercular fibrosis of the lungs in an asbestos worker, of sufficient severity to necessitate treatment in hospital (Seiler's Case[1]).

Prior to this, this Department had knowledge of only two deaths of asbestos workers, about whom there was expert opinion that the inhalation of asbestos dust had at least contributed to, if not caused, the fatal outcome. The first of these, now referred to as the "Montague Murray Case," occurred in 1900, but all that is known concerning it is contained in the evidence given by Dr. Montague Murray in 1906, before the Departmental Committee on Compensation for Industrial Diseases[2]. In this case post mortem examination confirmed the clinical diagnosis of extensive non-tubercular pulmonary fibrosis. The second (Cooke's Case[3]) occurred in 1924. Here, although Cooke[4] and Stuart McDonald[5] were of the opinion that the lungs showed a progressive dust fibrosis together with a chronic tuberculous infection, the etiological relationship between the inhalation of asbestos dust and fibrosis of the lungs would have been strengthened by the absence of a tuberculous infection.

An early survey of the industry in 1910-11 by the Department did not disclose any evidence of the existence of a serious health hazard in the industry, but some experiments on animals conducted in 1912 by Professor J. M. Beattie of Sheffield University for the Department showed that the inhalation of asbestos dust will cause a mild degree of fibrosis.

When, therefore, investigation of Seiler's Case showed that other industrial and infective causes of fibrosis could be definitely excluded, the necessity of deciding whether the supervention of this disease in an asbestos worker was an exceptional occurrence, or evidence of a grave health risk in the industry, was apparent and the investigation referred to was undertaken.

2.—Effects of Irritant Dust Upon the Lungs.

The most important local effects which may follow the inhalation of dust include pulmonary and bronchial catarrh, asthma, bronchitis, fibrosis of the lungs, and secondary changes, such as emphysema, local or diffuse. These changes in the lungs, which may be looked upon as a measure of the efforts of the living tissues to repel or incarcerate the irritant particles of dust, necessarily cause interference with the general efficiency of the lungs. The impairment of functional capacity may be slight or severe, and temporary or permanent, depending on the variety of dust, and on other factors, such as concentration of dust and length of exposure.

Moreover, individuals whose lungs have been affected as the result of the inhalation of some dusts, show an increased susceptibility to the supervention of respiratory infections, such as tuberculosis or pneumonia.

Fibrosis of the lungs is recognised to be the most important lesion caused by the inhalation of dust, and the proneness of workers with a dust fibrosis to be affected with pulmonary tuberculosis has been shown to be the main cause of the increased mortality rate from the latter disease in certain dusty occupations.