Mr. W.W.F. Shepherd,
T. & N. Ltd.

10th July, 1943.

Dr. Leroy U. Gardner's Asbestos Dust Experiments.

In connection with your note of 3rd July, I am now sending you a copy of Dr. Francis's comments on Dr. Gardner's letter, and you may think it would be worth while to forward them to America.

R. G. Soothill.

WF/Cd

8th July, 1943.

COMMENTS ON DR. LEROY U. GARDNER'S LETTER TO MR. VANDIVER BROWN OF THE JOHNS-MANVILLE CORPORATION, DATED 9TH JUNE 1943

The first point is the frequency of the incidence of tuberculosis with asbestosis in England and the relative infrequency of tubercular infection in asbestos workers in the U.S.A.

Dr. Gardner does not appear to appreciate the point that in England post-mortem examinations are carried out in the case of all deaths of former asbestos workers who have been certified as suffering from the complaint, whether they die in institutions or not. Consequently since 1931, when the regulations making asbestosis an industrial disease came into force, the statistics in Rochdale, and presumably throughout the country, are complete and show that a high proportion of deaths of certified asbestosis cases is due to pulmonary tuberculosis, accelerated by asbestosis or with asbestosis as a contributory cause. In no case where post-mortem examination has been made has death been shown to be due to asbestosis alone, but death is usually due to some pulmonary complaint such as bronchitis, pneumonia or tuberculosis associated with asbestosis. There are several cases in which cancer has been shown to be a contributory cause of death.

We do not as yet, in this district, carry out X-ray surveys of large groups of employees, but after the war this may be possible and Dr. Gardner's point will then be cleared up finally. Meanwhile I think we must accept the fact that in this district at least tuberculosis is often associated with fibrosis due to asbestos. From the work done by Drs. King and Belt for us, we can agree that in animal experiments tuberculosis is not usually associated with fibrosis due to asbestos.

The suggestion that Dr. Merewether's cases of tuberculosis in asbestos workers occurred in the same family because five of the subjects had the same name again is probably due to Dr. Gardner's unfamiliarity with conditions in England. In this district, for example, certain surnames occur with great frequency, e.g. Ashworth, Butterworth and Clegg, whilst in Wales surnames such as Jones, Evans, Davies and Owen predominate, so that it cannot be assumed that people with the same name are closely related, at least, in recent generations.

The incidence of tuberculosis in England may, on the other hand, be associated with climatic conditions, since our textile factories are situated in areas previously found favourable for textile processing, e.g. in Lancashire, where the climate is cold and damp. The reverse is the case in America, where most of the asbestos textile factories are situated in the Eastern States, with a dry climate in summer and winter.

With regard to the effect of aluminium and alumina, the chemical work that we have undertaken suggests that aluminium is more effective in suppressing the solubility of asbestos in Ringer's solution than alumina. We have examined several types of activated and colloidal aluminas and powdered aluminium and find that all these products suppress the solubility of silica in varying degree. Aluminium powder is many times more effective in this respect than any of the compounds of alumina that we have examined, e.g. .5% or less of aluminium powder

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on the asbestos completely suppresses the solubility of the silica, whereas the same effect is only observed with the better types of alumina when 4% is present. Consequently, we believe that if any of the fibrosis resulting from the presence of small particles of asbestos in the lungs is due to the chemical effect of silica in solution, then traces of aluminium will be more effective in preventing this than traces of alumina. Dr. King is hoping to examine this point more fully in animal experiments in the near future.

I am in agreement with Dr. Gardner in his suggestion that the formation of asbestosis bodies appears to be an attempt on the part of the lung tissue to overcome the irritating mechanical effects of the mineral fibre and that when the fibres have been coated sufficiently to round them off at the ends, irritation may well cease. We have tried, without success, to produce asbestosis bodies in vitro and I shall be very interested to obtain details of a method for doing this. If Dr. Gardner succeeds in obtaining sufficient asbestosis bodies for tests in animal experiments I feel sure that the results will be very interesting and significant.

W. Francis.