

spray thrown out in the acts of coughing, and under his guidance students have demonstrated not only the presence of the bacillus tuberculosis in these droplets, but also that they are carried for long distances through the air, and cause infection. Others have confirmed and extended his experiments, showing that in the case of the guinea-pig infection takes place more readily from cough-spray than from sputa-dust.

The following experiments have been carried on in Toronto General Hospital as a test of the correctness of the above results, with the assistance of Dr. Sutherland and Mr Young:—

Method.—Patients with clinical history of progressive chronic pulmonary tuberculosis were selected and supplied with carefully cleaned glass plates, which they held six inches from the mouth during the act of coughing.

These plates were subsequently examined for the bacillus tuberculosis by staining with carbol fuchsin, etc., with the following positive results in any one set of plates:—

Results.—(a) Sixty per cent. for those used for twenty-four hours; (b) sixty per cent. for those used for twenty-four hours when cough was accompanied by expectoration; (c) thirty-three and one-third for those used for twenty-four hours when cough was not accompanied by expectoration; (d) twenty-eight per cent. for those used during a single act of coughing in the early morning; (e) fourteen per cent. for those used during a single act of coughing during the evening.

This shows the frequency with which the bacilli might be found in a single day, or in a single act of coughing, in the case of patients in whose sputa the bacillus tuberculosis could be detected. It is to be remembered, however, that the percentages only refer to the sets of plates, not to the patients. All patients in whose sputa the bacillus was found gave positive plates *at one time or another*; so constant was this that, in one, repeated negative plates led to the examination of the sputa for bacilli, with negative results, even when the centrifuge was used.

It is also worthy of note that in the case of coughing without expectoration only those patients gave positive plates in whom the sputa, when present, was thin.

The number of sputa droplets thrown out seems to depend more upon the *character of cough* than upon the consistence of the sputa. The films formed by these droplets are very easy to demonstrate, as they present a granular surface, such as might be formed by any albuminous fluid, and contain only leucocytes without a trace of stranded or thick mucus. Such film vary from 50μ to several mm in diameter. The bacilli occur in varying numbers; with a magnification of 1,000, one film with many leucocytes presented from 125 to 200 in the field.