

confer a relative bacterial immunity, but renders the animal resistant to lethal doses of tuberculin. Old tuberculin, as you know, contains the culture medium and the bodies of the bacilli boiled down, so to speak, by prolonged heating in this way the more sensitive components are destroyed. The filtered bouillon, on the other hand, contains only the secreted products of the bacilli, and is looked upon as an incomplete toxine, since it is well known that the bodies of the tubercle bacilli contain immunising substances. Koch's "Bacillen Emulsion" is merely a ground preparation of the crushed bodies of the washed bacilli in suspension, containing no secreted toxine or cultural product.

Landmann's Tuberkulol (Merck) combines the various features of all the above, and possesses the distinct advantage of rigorous dosage.

Landmann<sup>1</sup> and Frey<sup>2</sup> have both written up this subject in an exhaustive manner, and both are well worth consulting.

The treatment of tuberculosis with the various tuberculins is often called active immunity treatment.

Passive immunity treatment is exemplified by Maragliano's and Marmorek's serums, and possibly also by Behring's Tulase. Maragliano immunises his animals with a watery extract of dead bacilli (bacillary pulp), supplemented by the filtrate of young virulent cultures, and when complete immunity has been established, withdraws the anti-toxic blood serum.

Marmorek<sup>3</sup> on the other hand, claims that none of the various tuberculins represent the true toxine of tuberculosis as it is formed in the body during the progress of the disease. The toxine which he makes use of to immunise his animals is extracted from a rapidly growing culture of tubercle bacilli in a leucotoxic serum, and this he maintains, gives the true toxine of tuberculosis. Latterly he has been using in conjunction with the above a streptococcus toxine, thus producing a bi-valent serum. Marmorek's serum undoubtedly possesses marked anti-toxic properties.

Among the many products now available it is really difficult to make a choice, especially as none can and do claim to be all-effective. As a matter of fact, the tuberculins have their limited field of application, and so have the antitoxic serums.

In 1899, inspired by the results obtained by Dr. Trudeau of Saranac Lake, I commenced using Koch's old tuberculin therapeutically, though I had made use of it at different times since 1895 as a diagnostic agent. The number of cases treated during the first three years was very limited, only eighteen. The results encouraged me to such an extent however, that in 1894 I submitted fifteen, in 1905, thirty-eight, and in 1906, sixty-four patients to the active immunity treatment, using at various