

could be by inhalation and swallowing, and in both these ways the number of bacilli taken at any one time would be comparatively small, and they would be brought into contact with healthy epithelium, in either the lungs or the intestine. Yet these few bacilli were able to overcome the resistance offered by this epithelium, gain a nidus in the body, and ultimately lead to the death of the infected birds. On the other hand, in the author's experimental cases countless numbers of bacilli were injected directly into the blood stream and had therefore no primary resistance to overcome in the form of epithelium, and yet they disappeared from the body of the inoculated animals without leaving any visible trace.

Thinking there might be something in the external condition of these birds which were infected accidentally while running about that made them more liable to infection than those kept in confinement, the author investigated this point by keeping five fowls under the same conditions. Of these, three were treated with five cubic centimetres of a watery suspension of virulent mammalian tubercle injected into the peritoneal cavity, another had the same dose of virulent fowl tubercle introduced into the peritoneal cavity, while the fifth was fed on two occasions food which had a cubic centimetre of the same watery suspension of virulent fowl tubercle mixed with it. At the expiration of ten weeks the birds were killed, when those which had been injected with virulent mammalian tubercle bacilli were found to be free from tuberculosis, while the bird which had been inoculated with the virulent fowl tubercle showed numerous tubercles in the viscera, and the one which had been fed with tuberculous food showed tuberculous nodules of the intestine and a tuberculous ulcer of the gizzard.

If there are two varieties of tubercle, continues Mr. Paterson, and man is susceptible to both, a culture obtained from a patient suffering from fowl tubercle should show the characteristic appearances of that organism, as cultures of fowl

tubercle grow more rapidly and are moister than those of mammalian tubercle.

In injecting the sterilized fowl tubercle directly into the blood stream, says the author, as a means to prevent the extension of tuberculous infection, there is the danger that some of the dead bacilli will be deposited in some part of vital importance and set up an inflammation which may have serious results. On the other hand, he adds, subcutaneous injections produce a caseous mass which, on being discharged, carries with it a large number of the bacilli which had been introduced; consequently the full advantage of the injections is not obtained. On taking into consideration the immunity shown by fowls against infection by mammalian tubercle, Mr. Paterson experimented as to the effect of their serum when modified by the presence or action of the bacterio-proteids of fowl tubercle. Sterilized suspensions of fowl tubercle were injected into the peritoneal cavity of fowls. The injections were begun by giving ten cubic centimetres of a sterilized watery suspension of the bacilli, and in subsequent injections (they were repeated at intervals of three weeks) the quantity was increased at first by five cubic centimetres and afterward by ten cubic centimetres, so that the quantity introduced on the sixth injection was fifty cubic centimetres and the total amount a hundred and sixty-five. After the expiration of three weeks the injection of fifty cubic centimetres of the suspension was repeated every third week. Under this treatment the birds began gradually to be able to stand the action of the injections with no apparent detriment to health. In order to ascertain if the serum of the fowls so treated had any effect on the growth of tubercle bacilli, both fowl and mammalian, the author abstracted some blood from the fowls, after allowing at least a week to intervene between the last injection of sterilized fowl tubercle bacilli and the venesection, and not taking any blood until the sixth injection had been given. The serum was allowed to separate and a quantity of this was drawn into sterilized