

is the acute form and may carry off the patient in a few months or even weeks, and against which all ordinary treatment is unavailable.

Between these two extreme types all grades of the disease may be met with.

This short description will enable us to understand the mode of action of the serum and what we may expect from it.

Anti-tuberculous serum is serum obtained from a horse which has been highly immuned, that is to say rendered refractory to the disease. The horse is extremely sensitive to tuberculous toxine, and the injection of a very small quantity of it ( $\frac{1}{2}$  a cubic centimetre) will at the outset sicken it. Fifteen or twenty days after the first injection the horse will stand a second one without being affected. This is due to an increased resistance to it, owing to the presence in the blood of a special substance called "anti-toxine" and a certain degree of immunisation has begun.

To thoroughly immune a horse it is necessary to inject the animal at regular intervals with toxine in ever increasing doses. Each fresh injection will sicken it, but as the quantity of toxine increases necessitating a constantly greater reaction, its resistance increases in proportion. In this way an immuned horse can be made to stand doses which would kill four or five hundred ordinary ones. Thus the first dose being  $\frac{1}{2}$  a cubic centimetre it becomes possible after a while to inject it with 500 cubic centimetres of the same toxine in a single dose.

The horse at this point is highly immuned, that is to say his blood contains a large quantity of anti-toxine. A certain amount of this blood is then abstracted and the serum obtained from it is called "anti-tuberculous serum."

The object of injecting this substance into the tissues of tuberculous patients is to neutralise the toxine in his blood by reason of the anti-toxine in the serum.

It must not be expected, however, that all the toxine secreted during many months by the tuberculous bacilli, can be neutralised at once. Several successive injections must be made before such a result can be obtained. As a proof of its so neutralising the toxine in the blood, we see the various symptoms due to toxine poisoning disappearing.

The most important of these symptoms is the fever. All physicians are aware how rebellious this is to treatment. Some drugs succeed to a certain extent in lessening it, but it is never completely removed. Moreover the effect of these drugs cease when they are stopped, and if they are continued any length of time, the system becomes used to them and their efficacy ceases.