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Passive Immunity.

(Continued from last issue).

ACTIVE immunity is quite lasting. Passive immunity as a rule, is very short in duration. In one case the body forms the antibodies, and in the other the antibodies are preformed. In passive immunity we transfer the substances, ready made, from one animal to another. Of course, we dilute the protective power of the blood just in proportion as the bulk of the second animal is greater than the amount of fluid taken from the first. If we take one cc. of the blood of an immune animal and put it into 99 cc. of the blood of a non-immune animal, we give only one per cent. of the strength of the actually immunized animal. If we should take the blood of an animal that had a protecting serum and inject it into another animal of the same species, we would have practically the same length of immunity as if the animal receiving the injection had made it.

Passive immunity in man is secured by using the serum of a horse, and for this reason passive immunity is of short duration. A homologous serum will stay, but a heterologous serum is of short effect.

In the experiment shown on the chart I used horses, goats and guinea pigs, and one set received antitoxin made by their own species. Also, there was another lot used to show the effect of giving different amounts of antitoxin. Now here we show the duration of passive immunity made by antitoxin from the same species, as compared with that made by antitoxin from a different species. In guinea pigs receiving horse or goat antitoxin, the immunity ran out in three weeks. Guinea pigs receiving guinea pig serum ran on for nearly nine months. Compared with active immunity, the latter's appearance is only after days or weeks, is persistent, but never very high. The passive immunity runs very high, but diminishes rapidly. At the end of one day the guinea pigs stood 600 fatal doses of toxin; at the end of 5 days they stood 350 fatal doses; at the end of eleven days, 30 fatal doses; at the end of 15 days, five fatal doses, and at the end of three weeks, one-half a fatal dose. Also the immunity varied with the amount of toxin given, and ran out much more quickly with a small dose than with a large dose. It is well seen here that the guinea pig protection by the use of antitoxin from its own species ran much higher and disappeared much more slowly than by the use of horse or goat serum.

There is a point that I want to make very plain in regard to the method of injecting acquired immunity—whether to give it intravenously or subcutaneously. There is nothing new in this, and yet when I began it, doing the work of other men, I wonder that I never appreciated it the way they did.