which protected against the homologous organism had any protective power against the heterologous organism (Type I) with completely negative results.

Two conclusions may be drawn from these experiments: (1) Active and passive immunity of considerable degree may be produced 3 days after injection of a suitable vaccine derived from the intact organism, Type I or Type II. The immunity increases markedly to the 5th day and remains approximately stationary to the 7th. In the case of the filtrates either from the broth culture or the shaken bacteria, the immunity begins on the 4th day, increases on the 5th day and remains stationary to the 7th day. (2) The immunity produced during this period was not due to the elaboration of the common protein antibody but to the development of type-specific protective substances. This was equally true after the injection of an extract of the pneumococcus obtained by simple Berkefeldt filtration as well as after injection of the intact cell.

The study was undertaken primarily with the object of determining whether an active immunity to the pneumococcus could be established in a sufficiently short space of time as to make the injection of vaccine a therapeutic possibility in lobar pneumonia. As far as the time interval is concerned our results support this hypothesis. Whether the patient with lobar pneumonia would react by an earlier initiation of his immunity mechanism is not within the scope of this paper.

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A New Phenomenon of Local Skin Reactivity to B. Typhosus Culture Filtrate.

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A phenomenon of local reactivity to *B. typhosus* culture filtrate is described. The work was done on rabbits. The reactivity was induced by skin injections of the filtrate 24 hours prior to the intravenous injection of the same filtrate. The local reactions appeared at the site of previous skin injections; they were fully developed in 4 to 5 hours after the intravenous injection; they were extremely severe and microscopically showed very pronounced necrosis of tissue with rupture of blood vessels and extensive local hemorrhage. The reactions in different rabbits varied in size from 1x1 cm. to 4x4 cm.

The phenomenon was reproduced in several hundred rabbits. About 78% of animals tested showed locally severe hemorrhagic reactions. The remaining animals were spontaneously resistant to the phenomenon.

When several areas of the skin of the abdomen were prepared by skin injections the intravenous injection produced reactions in each prepared area. The reactions were uniformly severe. The only variation in the response of different areas of the skin of the same animal was in the size of the reactions. The average difference was from 1 to 2 cm.

The skin injections themselves produced an erythema. The intensity of the erythema varied in different animals and in various areas of the skin of the abdomen of the same animal. The intensity and size of local hemorrhagic reactions to the intravenous injections was not related to the intensity of the erythema produced by the preparatory skin injections. Very severe hemorrhagic reactions were also produced by intravenous injection in areas which reacted negatively to the preparatory skin injections.

For the reproduction of the phenomenon there was necessary an interval of a few hours between the skin and intravenous injections. An incubation period of 2 hours was insufficient. An interval of 24 hours was invariably sufficient. The ability to react disappeared in 48 hours after the preliminary skin injection.

Repeated injections of the filtrate into the same area of the skin with an interval of 24 hours between the injections did not result in reactions similar to the above described hemorrhagic necrosis. The second skin injection was followed by reddening, some swelling and migration of polymorphonuclear neutrophile leucocytes which showed no signs of necrobiosis. There was no rupture of blood vessels. Skin injections followed after a suitable interval by intravenous injections were necessary for the reproduction of severe local response.

In several experiments the preparatory skin injection of *B. typhosus* culture filtrate was substituted by local injections of turpentine in various doses and filtrates of culture of various strains of streptococci. No local response followed the intravenous injection of *B. typhosus* culture filtrate into animals prepared in this manner.

Studies on the relation of specific anti-sera to the phenomenon described are under progress.

In a further communication local skin reactivity to filtrates of cultures of microorganisms other than *B. typhosus* will be described.