

with purposeless struggling, the pulse becoming more rapid, then irregular; erythematous patches appeared on the legs, turning to a scarlatiniform rash as it spread on the trunk: the face, chest and hands became evenly suffused, the color at first red, then more and more bluish as the pulse became more irregular and weak, and finally imperceptible in the radials, the evidence of urticarial swelling of the bronchial mucous membranes became more marked and the patient sank into a stupor. Atropine and whiskey were freely administered, and within five minutes the pulse was again to be felt in the radials. In twenty-four hours the patient's condition was good, except for the great swelling of the leg, which was covered with erythematous blotches.

The most frequent of the minor ill-effects following the administration of the antitoxic serum is the rash urticarial or erythematous, which appears in one individual out of eighteen. The interval between the injection and the occurrence of the rash may vary from a few minutes up to fourteen days, the greater number of rashes appearing after the fifth day if one leaves out of account the local disturbances at the site of injection. In certain individuals the rash may remain for three days, but the usual duration is 12 to 24 hours. There are cases on whom the rash appears day after day for as long as eight days.

Those patients who have had the rash appear once are very likely to have it occur after some subsequent injection, and a few will have it appear after every injection.

In these susceptible individuals calcium lactate does not seem to have any effect in preventing the appearance of a rash.

Certain serums produce a greater number of rashes, always in much greater proportion among those who have already had rashes. And I have not been able to satisfy myself that the rash production in the susceptible individuals was lessened by the use of the antitoxic serums prepared by precipitation.

Of the other ill-effects, I have not been able to satisfy myself that there is a temperature directly developed by the serum or at the time of the appearance of the rash, where there has been a temperature, it has usually been found that the injection had been made into a dense tissue or made too rapidly, with much subsequent pain and discomfort.

Arthralgia has been uncommon, except after large curative doses, but when it occurs it persists for many days.

Abscess is uncommon, usually occurring when the serum has been injected too rapidly and forcibly in case of a patient suffer-