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3429

Skin Reacting Substances in Filtrates of Cultures of Eberthellia Typhi

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If we inject 0.1 cc. of the filtrate of a broth culture of typhoid bacilli intracutaneously in the arm of a human being, there appears in from 12 to 24 hours a reaction similar to that produced by the injection of *Streptococcus scarlatinae* toxin. The reaction fades after 24 to 48 hours, but may leave a slight pigmentation. This reaction has been produced with filtrates of 1, 2 and 5-day cultures, being approximately the same with all. The filtrate was obtained by passing the culture through either Berkefeld W, N or V filters, but usually the N filter was used. Several strains of the organism gave similar results.

The filtrates varied in activity, and we have obtained reactions with dilutions of even one to two thousand. Usually a dilution of 1 to 500 was used.

The reactions produced in normal subjects (who neither had had typhoid fever nor were ever immunized against typhoid fever) are very variable, and while reactions can be produced in all, the area and intensity of the response seem to be individual characteristics. In individuals who had been immunized against typhoid fever, either recently or several years previously, the reactions were similar to and quite as varied as those in the normal subjects. The same statement holds true of individuals who had had typhoid fever some years previous to the injections. No evidence of any ability to inhibit the local reaction was noted in persons who had had typhoid fever, or who had been immunized against typhoid fever.

In individuals having typhoid fever, the reaction to the injection

of the filtrate was markedly diminished (as compared with weakly reacting normal individuals) or was negative. During the early period of the disease the reaction might be distinct, in the second or third week the reaction was usually diminished or negative. After convalescence the reaction began again to become positive. The ability of the organism to neutralize the local action of the typhoid filtrate was apparently evanescent, and confined to the actual period of the disease.

At the present time we prefer not to discuss the many possible theories which are suggested by these results, but simply to call attention to the fact that this reaction is apparently not similar or identical with the skin reactions to the so called true toxins, such as diphtheria toxin or scarlet fever toxin.

This is a preliminary report.

3430

Observations on Fat Embolism.

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Fat embolism, occuring as the result of trauma to fat depots, can be demonstrated clinically and experimentally. Trauma is usually considered the sole cause. However, fat embolism has been found in many non-traumatic conditions. Dogs will survive aseptic injections of cotton-seed oil in amounts per kilo body weight that are twice the amount of fat per kilo body weight in the marrow of the human femur.

It is obvious, therefore, that there must be some other etiology than trauma for some cases of fat embolism. The most logical other source for fat embolism is, of course, the normal plasma emulsion of fat.

Experiments are reported showing that certain artificial emulsions can be broken down by the addition of necrotic muscle extract, peptone and histamine, besides other substances. This breakdown varies in speed and degree inversely with the fineness of the emulsion. It has not been demonstrated in the physiological plasma emulsion of a digestive lipemia.

However, the well-known destruction of this emulsion by fat solvents was applied by the intravenous and mask administration of