

capacity of producing antitoxic serum against diphtheria when inoculated for this purpose. Some animals produce serum of very great potency, most of average potency, while a few produce serum of little antitoxic value. While the possibility of delay in onset must be considered yet a repeated negative result will be practically found to negative a typhoid infection. One must keep in mind here the possibility of the disease being in reality a paracolon (para-typhoid or typho-coloid) infection, a form of infection which very commonly accompanies epidemics of true typhoid.

The finding of the Widal reaction apart from typhoid is decidedly not common. Its presence may possibly be due to a previous infection with a persistence of the infecting agent. If not due to such a cause it can only be ascribed to a natural over production of the agglutinative cellular material, or to such a production under a stimulus acting upon the tissue cells in the same manner as the typhoid bacillus. It should be kept in mind that such substances as alcohol, bichloride of mercury, carbolic acid and the like, will in small amount even, lead to a partial reaction so that the accuracy of the method used should always be inquired into in such a case. The finding of a complete reaction when proper dilutions are made and previous typhoid can be excluded are extremely rare. Many of the cases so far recorded have been with serum more concentrated than now generally employed in performing the test. The reaction to be complete requires that in the drop observed under the microscope, there must be loss of motility and grouping of the bacilli into distinct clumps or islands. A reaction should not be considered satisfactory if one finds clumps with numerous roving bacilli between the islands. Such a reaction is very suggestive (when technique is perfect) but it is better in such cases to secure a second specimen one or two days later for further examination before giving a definite opinion. It is mainly on the question of 'what constitutes a positive reaction?' that most difficulty in the interpretation of results has arisen. If one demands the full evidence of complete grouping and loss of motility one will never be wrong in pronouncing a febrile disorder typhoid.