

channels. And while it has been demonstrated beyond doubt that the tetanus antitoxin can neutralize absolutely the tetanus toxin outside the body or in the circulating fluids of the body, yet, unfortunately, it has been as clearly proven that the antitoxin in the blood or lymph stream can only neutralize in a very slight degree the toxin passing along the axis cylinder or in the nerve cell. These facts have a very important bearing on treatment, and undoubtedly go to show that the sooner the serum is given in a suspected case the better. Some claim that when the specific symptoms by which the disease is recognized have appeared it is already too late for the antitoxin to have any good effect, and while all are willing to admit that its efficiency is lessened the more advanced the case, it does not follow that it is of no effect at all. It is impossible to know in any given case whether the amount of toxin taken up by the nerves is sufficient to cause a fatal termination. Even in advanced cases, therefore, we may so limit further absorption by use of the serum that the balance would be turned in the patient's favor, whereas if it were not given sufficient further absorption might take place to cause death.

It is largely to show that even late administration of anti-tetanic serum is not without effect that I thought this case worth reporting. When I saw him on the sixth day after the injury the symptoms of tetanus were well marked and developing rapidly. There being no serum obtainable in town, a further delay of 36 hours was necessary. In the meantime, however, I gave him a 2% solution of carbolic acid hypodermically, which no doubt helped to hold the disease in check. Of this solution I gave him 2 drams hypodermically to start with and  $\frac{1}{2}$  dram every two hours until the serum arrived. It was about  $2\frac{1}{2}$  days, therefore, after the onset of the characteristic symptoms of tetanus before the serum was obtained. I used the serum put up by Parke, Davis & Co., and administered 6,000 units every six hours for the first three doses, then 6,000 units every twelve hours. There was no appreciable change until the fourth day of the serum treatment, when the spasm of the muscles of mastication was certainly considerably relaxed and I could get the end of my thermometer case between his teeth. From the second day after the appearance of the symptoms up to the fourth day of the serum treatment, the temperature ran from 102 to 103°, and the pulse the greater part of the time was in the neighborhood of 120. The temperature on the fourth day of serum treatment came down to 100° and the pulse about 105. I continued the serum treatment for five days, until a very irritating rash appeared and covered the whole body. It was a mixture of the scarlatiniform