

ordinary methods, ten died; in the next following ten cases, which were very severe, the serum treatment was used, and every patient recovered after a single injection. To obtain the best results, experience already accumulated proves that the treatment must be adopted at an early stage of the disease; but at the present time, unfortunately, there is considerable difficulty in obtaining a sufficient supply of serum. In France its preparation on a large scale has been undertaken by the Pasteur Institute, and it is hoped that in a couple of months' time the supply will be sufficient for the needs of France. The British Institute of Preventive Medicine expects shortly to be in a position to supply a considerable quantity. The treatment, however, is rapidly passing out of the experimental stage, and in the case of a disease so murderous as diphtheria, which produces annually so fearful a mortality, especially among children, the public may well look to the State to take steps to secure a constant and adequate supply of the remedy at a reasonable cost. Prof. Behring, in an address before the German Naturalists' Society at Vienna, stated that in Germany and Austria alone the mortality from diphtheria might be estimated to be about 2,000,000 in every ten years. The serum treatment would reduce this high mortality, amounting to over fifty per cent. of the persons attacked, to ten per cent., and, if employed in the early stage, to five per cent. "In other words," he added, "about 1,500,000 lives may be saved every ten years, but, of course the serum must be obtainable in large quantities. This is not now the case, and will not be the case

until the State takes the matter in hand and prepares it at the public cost." The mode in which the serum is obtained at the Pasteur Institute is as follows: The animals which are to furnish the antitoxic serum are rendered immune by the injection, under certain precautions, of the toxine of diphtheria. This toxine is formed when the virulent bacillus is grown in broth, and in practice the rate at which it is produced is increased by drawing a current of air through the culture liquid. After three or four weeks the culture is sufficiently rich in toxine to be used. The animals employed are horses in good health and previously tested by the injection of mallein, to prove that they are free from glanders. The culture, filtered through a porcelain filter, yields a clear liquid, with which the horse is inoculated by injection under the skin. Gradually, by repeated injections over a period of two or three months, the horse is brought into a condition in which its serum possesses very high antitoxic properties. The animal does not suffer in health at all, or only to a very slight degree. The efficacy of its serum having been ascertained by a test experiment on a guinea-pig, the animal is bled. It suffers little from this operation, and it is possible, if necessary, to bleed it again in two or three weeks, but it is advisable in the interval to strengthen its immunity by some further injections of the toxine. The animals used are cab horses, sound in constitution, but broken down in limb, who, after inoculation, live a life of ease and luxury, varied by a periodical phlebotomy such as our grandfathers submitted to voluntarily two or three times a year.