

is parasitotropic, but non-organotropic. In human beings the results have been almost equally good, as there have been only twelve deaths in 12,000 injections of the remedy. Moreover, it is believed that most, if not all of these fatalities, could have been prevented by proper technique and care in the selection of cases.

REMARKS ON THE CHEMISTRY AND METHODS OF ADMINISTRATION OF
THE REMEDY.

Dioxy-paradiamido-arseno-benzol is an unstable solid, insoluble in water. It forms salts with both acids and alkalines, although it is usually described as a base—in this review this custom shall be followed. The salt formed with hydrochloric acid, dioxy-paradiamido-arseno-benzol dihydrochloride is the medicinal remedy ("606"). Recently this has been patented and is sold under the name of "Salvarsan."

Salvarsan is a yellow powder, which, on account of being easily oxidized, is sent out in sealed tubes, from which the air has been replaced by an inert gas. It dissolves slowly but completely in water, forming a solution, strongly acid in reaction. This solution is very irritating and should not be used intravenously, subcutaneously or intramuscularly.

The base is prepared by neutralizing a solution of salvarsan with sodium hydroxide. The neutralization point may be determined by means of litmus paper, a one per cent. alcoholic solution of phenol phthalein. The latter indicator is colorless with acids and red with alkalies, so, if after adding one or two drops of it to a solution of salvarsan, the solution of sodium hydroxide is slowly added, almost drop by drop, the first appearance of reddish color of the whole mixture will indicate that the liquid is neutral. The precipitate is unstable and should not be kept for any length of time. It should not, of course, be given intravenously, but may be administered subcutaneously or intramuscularly. If perfectly neutral it does not as a rule cause pain, but its therapeutical efficiency is questioned on account of slow absorption of the remedy from the area into which it was injected.

A solution of the sodium salt of dioxy-paradiamido-arseno-benzol can be easily prepared by adding a solution of sodium hydroxide to salvarsan dissolved in water, until the precipitate which is first formed is just dissolved. The product is usually described as an alkaline solution of salvarsan. It may be administered intravenously, subcutaneously or intramuscularly.

The intravenous injection, properly administered, is painless, but the subcutaneous and intramuscular may cause severe pain and a good deal of inflammatory swelling of the part.