

followed these injections. In the course of the investigations cocain and eucaïn solutions containing adrenalin the proportion of 1-5000 to 1-20,000 were used. It was found that the anesthetic properties of the cocain and eucaïn were preserved while the adrenalin caused the same blanching of the tissues as previously observed, which extended one to two inches beyond the area infiltrated.

"In performing minor operations under cocain to which 1-5000 to 1-20,000 adrenalin had been added only the larger vessels bled when cut across. The smaller vessels were contracted so tightly that no blood could escape from them and therefore there was no oozing. It was unnecessary to sponge off the wound a single time during an operation. The healing of the wound was not interfered with in any way. Upon theoretical grounds it was expected that secondary hemorrhage would take place in from three to twelve hours as the effect of the drug passed off. This, however, has not been the case in the 30 cases operated upon. Experience with the drug is still small, and what will be the result in operations upon larger wounds remains to be determined.

"For small operations the addition of adrenalin chlorid is of distinct advantage in that it raises the blood pressure and overcomes the depressing effect of cocain, at the same time it entirely does away with the oozing of blood from the wound."

In genito-urinary work the writer has used adrenalin. It checks hemorrhage, but in several cases it was followed by secondary hemorrhage, rather free. Its use is now limited to circumcision in very young infants, and it is there applied in very weak solution when the open method is used.

HOW SERA ARE MADE.

ON account of their importance in materia medica, many articles have appeared in the medical press regarding the therapeutic value of Biologic products, especially the Antitoxic sera, but relatively few giving in detail the process of manufacture. These are however, of interest to the physician.

Of first importance is the scientific skill and care that must, from the very nature of the products, surround every step in their preparation.

As Anti Diphtheritic serum has reached the highest state of perfection, and the results following its use have been so positive and uniformly successful, we will give the methods used at the present time to secure the same.

The first step in the process, is the securing of a pure Toxin producing diphtheria germ. This is done by rubbing a sterile swab over the