

the use of alcohol and aniline oil. The latter is absorbed more slowly, and its effects last longer than the former. The solutions used are 5 to 20 per cent. of cocaine in equal parts of absolute alcohol and aniline oil. Anesthesia is gained in 10-15 minutes. The disadvantage of the solution is that the aniline oil is toxic and obscures the field. The external canal is generally filled to insure osmotic instability and certainty of penetration. The toxicity can in a great measure be prevented by not filling the canal, but by applying to the drum membrane a small wad saturated with the solution and by making only one application. The obscuration of the field by the dark oil will then be less and the solution can be more easily mopped away.

For the last six years I have experimented desultorily with tubal injections of cocaine to desensitize the drum membrane. I have tried fractional experiments, applying the anesthetic to the pharyngeal orifice, to the cartilaginous portion and to the deeper surface of the tube and to the drum cavity, by means of a Weber-Liol catheter or a virgin silver modification. I have come to the conclusion that the Eustachian tube is the only channel through which local anesthesia can be best obtained.

In the embryo $\frac{1}{3}$ of an inch long, the drum membrane is represented by connective tissue, bounded below by the external canal, which forms its skin covering, and bounded above by the Eustachian tube, which forms its mucous covering.

From this embryological formation and from the identity of nerve supply, we find the reason for the fact that anesthesia of the deeper portions of the tube will produce anesthesia of the drum cavity and membrane. It may seem like begging the question to state this, but my trials have forced this home to my mind. I do not believe that the five or six minims I blow into the tube are sprayed by the Politzer bag into the tympanic cavity. I think that absorption of the cocaine by the tubal mucous membrane affects the drum and membrane intermediately and by reason of continuity of structure. The fact that cocaine anesthesia has a field of action of about an inch from the spot to which it is applied, would likewise bring the tympanic membrane within the area of tubal anesthetization.

Unfortunately the lymphatic system of the ear is not well known. If I may be allowed to digress, I think that the production of acute otitis media might be explained more by the theory of absorption from a tubal focus or of continuity of structure than by the mechanical one (sometimes urged) of septic matter blown through the tube into the tympanic cavity.

After having forced the cocaine solution into the tube, I have found that in a short time—a time varying in length according to the amount of vascularity present—probing the different areas of the dermal surface of the membrane would occasion little or no distress.