

DUEL (A. B.)

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of the Eustachian Tube
by Means of the Gal-
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BY

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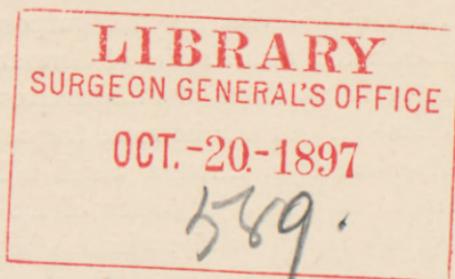
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A PRELIMINARY NOTE
ON A NEW METHOD OF DILATING
STRICTURES OF THE EUSTACHIAN TUBE
BY MEANS OF THE GALVANIC CURRENT.

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It is a well-known fact among otologists that in a large percentage of cases of chronic catarrhal otitis media and tubal catarrh of long standing one of the chief causes of impairment of hearing and tinnitus aurium is the narrowing of the lumen of the Eustachian tube by hypertrophy of the submucous tissues surrounding it, thereby preventing the maintenance of the normal air pressure behind the tympanic membrane. In cases where the tube is still sufficiently patent to allow the passage of air and medicated vapors into the tympanum, by means of the Eustachian catheter, improvement almost invariably follows.

Quite a large number of cases, however, are encountered where there is such a marked narrowing of the tube that attempts at inflation with the catheter fail to give any relief. Improvement is obtained in these cases

only after the constrictions have been overcome. A few years ago Dr. Dench devised for this purpose a specially constructed catheter, with a series of German-silver bougies, ranging from two thirds of a millimetre to two millimetres in diameter. Of late he more frequently uses an ordinary silver catheter, through which a No. 5 piano wire is carried. A pledget of cotton of the desired size is twisted tightly about the tip, which is bent back at a sharp angle to prevent the cotton from slipping. The other end is bent at a right angle, about an inch and a half from the funnel-shaped end of the catheter, in order that the distance which the bougie has entered the tube may be estimated.

This method has proved more satisfactory than the use of metal bougies, from the fact that the cotton pledget has a tendency to expand when moistened, and this exerts pressure on the contracted canal. At the same time, when so desired, by means of the cotton, astringents can be applied directly to the walls of the tube.

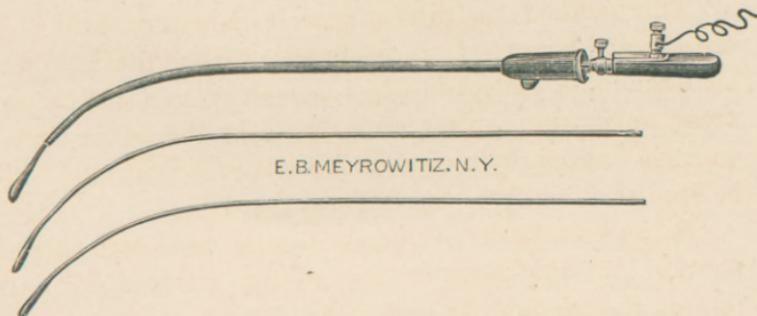
It has been positively demonstrated by electro-therapeutics that the negative pole of the galvanic current retards the excitability and growth of tissue and causes exudates to be reabsorbed. While examples of the truth of this principle have been shown in the cure of a large variety of diseases, none have been more striking than the rapid cure of stricture of the urethra. It occurred to me after studying a number of cases that, with a properly constructed apparatus, the strictures of the Eustachian tube, under consideration, might in a like manner be much more rapidly and satisfactorily dilated, and, at the same time, with better hope of permanent results.

Weber-Liel, of Germany, and Dr. Dean, of Scranton, Pennsylvania, have made use of electricity in the Eu-

stachian tube, but, so far as I know, no one up to the present time has used the negative pole for the purpose of rapidly dilating strictures in this location.

Through the kindness of Dr. Dench, I have used the method on several patients in his clinic at the New York Eye and Ear Infirmary during the past ten weeks.

For the purpose of conducting the current I have had four copper bougies, varying from No. 3 to No. 6 (French scale), securely mounted on No. 5 piano wire. These are passed through small, insulated, pure silver catheters and drawn back until the bulging portion of the bougie fits tightly in the mouth of the catheter.



(The catheters are insulated by drawing their rubber tubing over them or by winding with silk and afterward coating them with shellac. Hard-rubber catheters were used at first, but they are not so readily bent to fit different patients and are not stiff enough.)

The other end of the wire is fastened an inch and a half from the funnel-shaped end of the catheter to the handle which connects it with the negative pole of the battery. The indifferent or positive pole is connected with the hand of the patient by means of an ordinary contact electrode. It is absolutely essential that the

battery with which the current is applied should be supplied with a perfect rheostat and milliampèremeter.

The bougie is passed through the tube in the usual manner, the tip being pushed forward until it is felt to be obstructed by the constriction. The current is then slowly turned on until from two to five milliampères are used. It is never necessary to use more than this, and probably the best results are obtained by a longer contact with a small ampèrage than *vice versa*.

After a contact of from two to five minutes the bougie is felt to pass on through the softened stricture with a slight pressure. In some instances the bougie encounters more than one constriction before it passes into the tympanum.

The bougie is then slowly withdrawn through the constriction, and the current gradually turned off before the catheter is removed. The current should never be opened or closed suddenly.

In the cases which have been thus far dilated by this method the results have been most flattering and seem to indicate that it will be of considerable value in the treatment of stenosis of the Eustachian tubes. In addition to this I am convinced that the negative pole carried in this manner directly into the tympanum will, by its electrolytic action, bring about the resorption of hypertrophic deposits in many instances, and, consequently, relieve the distressing symptoms of which they are the cause.

A detailed report of several cases now under treatment will be given later on.

My thanks are due to Mr. E. B. Meyrowitz for the construction of the apparatus and the cuts.

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FRANK P. FOSTER, M.D.

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