months it consisted in this specimen of two portions, one vertical, 4 mm. long, and one horizontal 1 mm. in length.

By the age of eighteen months it had become altogether vertical, measuring 4 mm., and the measurements after that up to the tenth year in length were: Highest, 10 mm. (in a bone of seven years); lowest, 5 mm. (at three years); average, 8 mm. (seven bones valid). A vertical of as long as 9 mm. was found in a bone of two years.

The projected *Line of Descent* in the infantile bone from the age of eighteen months onwards relative to the outer surface of the bone (Fig. 30) presented little difference from adult conditions, the same general description applying to both, with only two exceptions. In one bone (aged three years) the upper end of the vertical lay as much as 4 mm. below the suprameatal spine, and while the angle to the horizon

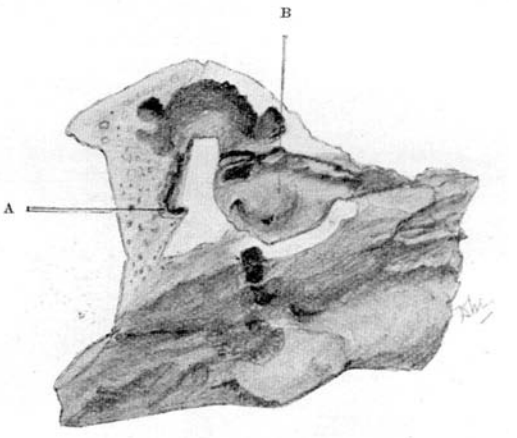


FIG. 31.—Tympanum and Fallopian aqueduct in a temporal at age of eleven months. A. Stylomastoid foramen; note right-angled turn of canal. B. Promontory; above and to its left are oval window, Fallopian aqueduct, and above and to the left of the latter the prominence of the external canal. The antrum is placed above the tympanum. (Bone 14, right temporal, slightly +, male, aged eleven months, viewed from without and from below.)

showed in most a forward inclination (highest, 105°; lowest, 85°; average, 92°) in one (aged seven years) a slight backward inclination was observed.

(*To be continued.*)

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

February 1, 1918.

President: Dr. A. BROWN KELLY.

Demonstration on Rhinoplasty.—H. Delf Gillies.—Of all the plastic operations of the face rhinoplasty is the most difficult, except

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perhaps otoplasty, of which I have had no experience. The reason why these two sections of the work are so difficult is because they deal with the repair of "end-organs."

In approaching the subject of the demonstration, the problem is to be solved from the point of view of the three main elements of the normal nose—that is to say: (1) The outside covering, the skin; (2) bony and cartilaginous framework; and (3) the mucous membrane lining.

Whatever element of the nose has been destroyed has to be replaced. In certain classes of case—for instance, in burns of the nose—it is necessary to provide the skin covering only. In another large class in which the skin covering and the mucous lining are more or less intact, the provision of the supporting element will suffice to restore the organ, whereas in the majority of gunshot injuries there is loss of all three elements. This loss may be partial or complete, and for the purposes of discussion I have divided the "loss of nose" into various groups, according to the portion of nose lost.

In discussing these classes, I am illustrating the various methods employed by myself and my colleagues, whether the results have been satisfactory or indifferent. The first type is that of loss of portion of the tip, or of the alæ.

The photographs of six different methods of repair were shown by means of the epidiascope. For the larger loss of the tip the Keegan-Smith Indian method was preferred. The six cases include an excellent result (by Capt. G. Seccombe Hett, R.A.M.C.) with a "Y"-shaped cheek-flap to form one ala and columella, and one successful case of skin-grafting method to form an ala—by Lieut.-Col. Newland, D.S.O., of the A.A.M.C.

The next category demonstrated the loss of the upper quarter of the nasal bridge. The lining mucous membrane is of no importance in this situation, and both cases illustrated were treated by the same method. An osteo-periosteal flap was turned down from the frontal region to give support to the skin-flap, which was advanced from the forehead.

For the next class of injury, loss of the upper half of the bridge of the nose, with two cases of mine and one of Capt. Hett's, three methods were illustrated. In the first, cheek-flaps were advanced over a septal swing, as a preliminary operation, with the late embedding of a cartilage graft. In the second, the support was supplied by osteo-periosteal graft from the tibia, and was not so satisfactory. The third, Capt. Hett's, had the cartilage support embedded in the flap in the frontal region, the under surface of which was epithelialised before it was brought into position.

Losses of the lower third of the nose were next demonstrated, and two main methods were advocated—one a modification of the Keegan Smith operation, and the other an original design of my own. A series of mechanical supports were also illustrated, showing the methods adopted in the early stages of nasal injuries. Three cases of superior maxilla fractures, with loss of the supporting structure, were treated by implantations of cartilage.

The pug-nose type was the next group defined, and its solution solved in the following manner: Cartilage is embedded under the skin of the upper part of the nose, which is subsequently swung down as a combined skin and cartilage flap, the skin lining the new nose, and the cartilage is tucked in behind the remains of the tip to retain the latter in its correct position. The operation is completed by frontal flap in the usual manner.

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The importance of taking a spare piece of cartilage and embedding it under the skin at the time of the rib operation was illustrated. This method (cartilage carriers) saves a double rib operation in many a case.

When the entire nose has been destroyed the difficulties are correspondingly increased, and several cases of partial failure were shown. The successful ones were those in which provision of a mucous or skin lining to the new nose had been adequately made.

Capt. J. L. Aymard's attempt to make a nose by a long chest flap was illustrated, as well as a case of severe burn of the face, in which I had grafted a large chest-flap on to the face, covering the nose.

The following are Details of a Case of Subtotal Rhinoplasty also demonstrated at this Meeting and that of November 2.

1719 Pte. D——, 17th Royal Fusiliers, aged nineteen. Wounded, France, February 17, 1916; admitted May 10, 1916.

Condition: There was complete loss of all the tissues of the nose, bone, skin and cartilage, except the left nostril, portion of the tip, and a small piece of the anterior end of the septum—about $\frac{3}{4}$ in. triangular.

Methods employed: (1) Building up the bridge and providing a mucous membrane lining for the new nose by turbinate grafts. Operation, June 20, 1916: Left middle turbinate detached from behind and stitched to the remains of the septum. Operation, August 9, 1916: Right inferior turbinate detached from behind, leaving its anterior end attached and superimposed upon the freshened surface of the left middle turbinate (new position). Operation, September 19, 1916 (local anæsthesia): The attached pedicle of the right inferior turbinate was cut through and stitched on to the freshened surface of the anterior portion of septum remaining.

(2) Rhinoplasty (Indian method): Operation, October 11, 1916. Return of pedicle: Operation, October 28, 1916.

(3) Supports used for this frontal flap: (*a*) Celluloid, October 11, 1916: A perforated celluloid plate was stitched into position to form an additional support to the bridge between the turbinate and the frontal flap. Similarly, a small bent celluloid strip was stitched into position to form a support for the right ala. This was unsatisfactory and had to be removed on January 29, 1917. (*b*) April 17, 1917: Implantation of cartilage (heterogeneous). This was unsatisfactory owing to its becoming absorbed. About the third week after the operation the nose became swollen, and about a drachm of pus was evacuated. A few drops only of pus could be squeezed out for the next few days, and the further healing was uninterrupted. On examination, after two months, the cartilage had become absorbed. (*c*) September 18, 1917: Implantation of cartilage (autogenous). This cartilage was taken from the seventh costal on the right side—length about $1\frac{3}{4}$ in.; it was split longitudinally, but not quite through, so that it was, when inserted, straddled as an inverted V.

(4) Small corrections have been made of the right ala, but this part is still incomplete.

Total Loss of Hard Palate and Exposure of the Antral Cavities in the Mouth.[1]—**W. Kelsey Fry and G. S. Hett.**—As a result of an

[1] The cases described on pp. 346–348 were demonstrated at the meeting of the Section held November 2, 1918.

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aeroplane fall this officer, Lieut. W——, R.F.C., was struck in the mouth by the handle of his machine-gun. He was operated on as an emergency case in France, the operation consisting in detaching pieces of the hard palate and alveolar pieces of the jaw, with their contained teeth, which were literally hanging by a thread. On examination it will be seen that the whole floor of the nose is absent, that the outer wall is also gone on the left side, exposing the cavity of the antrum, which is occupied by a single polypus. On the right side there is an opening into the antrum below the inferior turbinal. Both antra are suppurating.

The case is shown from two points of view: (1) As a double traumatic antral suppuration, with the loss of the floor of the nose; (2) from the dental point of view.

Capt. Fry, surgeon-in-charge of the dental department at the Hospital for Facial Injuries, Sidcup, is exhibiting models and diagrams showing the method of fitting a denture, and making use of the floor of the antrum and the remains of a nasal crest as means of attachment for an artificial palate. A pastel drawing of the condition, by Prof. Tonks, F.R.C.S., is also exhibited.

DENTAL NOTES ON LIEUT. W——, R.F.C., BY W. KELSEY FRY, M.C.

This case shows loss of the entire hard palate, together with the alveolus on both sides. The whole of the soft palate is present. It is of interest, as it demonstrates the difficulty of supporting the prosthetic appliance necessary. At present the undercuts to which we look for support are inefficient. It also shows how important it is for the oral and dental surgeons to work in conjunction. The supports to be used are: (1) laterally, floors of the maxillary antrum; (2) anteriorly, a ridge consisting of the anterior nasal spine and upper part of the premaxilla.

The patient is now wearing a hollow box made to fit the cavity, the shape of which has been obtained from a plaster-of-Paris impression. The permanent apparatus is to be made as follows: A mould will be made to fit into the cavity. It will carry three movable processes, one for each opening into the maxillary antra, and one for placing above the anterior ridge. The patient will be able to place the mould in position and then turn the processes outwards, thus preventing the mould dropping. A denture will be attached to the mould by two split pins, which will be received into two slots provided for these pins in the thickened posterior part of the mould.

(For diagrams see *Proc. Roy. Soc. Med.*, Laryng. Sect., February, 1918.)

Case of Total Loss of Nose, illustrating the Method of Advancement of the Turbinals.—G. S. Hett.—Lieut. S——. This is a case of total loss of nose due to gunshot wound. There is a considerable sinking in and added loss of tissue of the left side due to the loss of the nasal process of the left superior maxilla. In this case Major Gillies has placed the costal cartilage graft on the forehead. The forehead flap is to be brought down shortly to form the new nose. The case shows an attempt to build up the inside of the nose, and to make use of the turbinals and septum to diminish the undue size of the cavity and to form a mucous lining to the new nose. All four turbinals have been advanced and the upper septal swing has also been made use of.

Operation, September 1, 1917 (Lieut. Hett): Intra-nasal opera-

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tion preparatory to plastic operation for complete new nose. The left middle turbinal was detached from its connections posteriorly and swung forward, so that its posterior end was brought in contant with and attached to the anterior end of the left inferior turbinal. The right inferior turbinal was similarly treated and its posterior end swung up and attached to the root of the nose. The cartilaginous septum was detached from the floor of the nose and also from the vomer, the ethmoid remaining attached by a pedicle at the root of the nose. It was rotated and placed laterally so that it bridged across the space between the

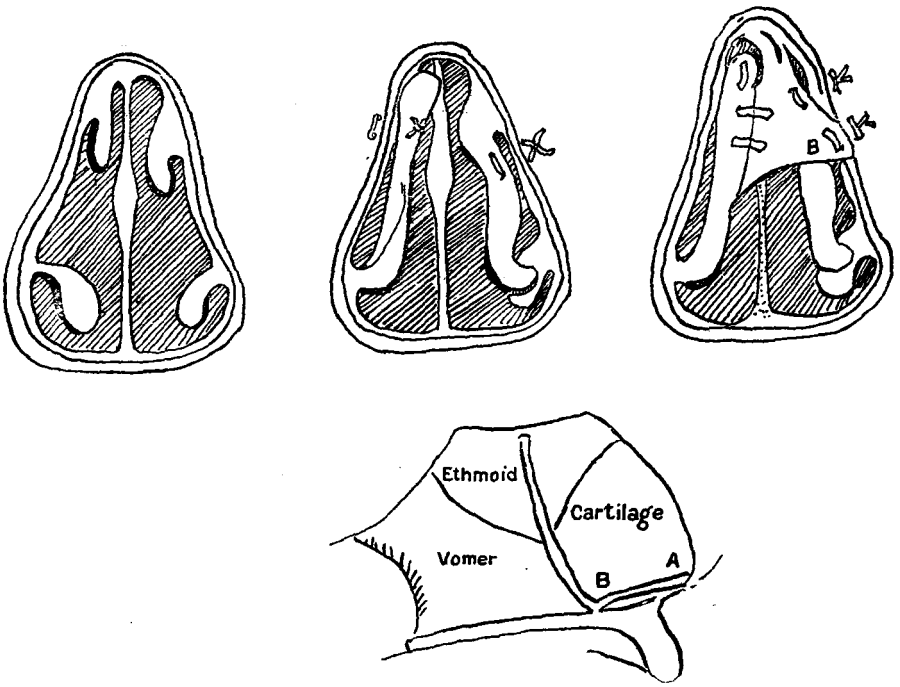


Diagram illustrating turbinal shifts and upper septal swing.

right inferior turbinal and the left middle, to both of which it was attached by catgut suture.

October 2, 1917: Following last operation there is now a mass of tissue filling up the cavity to the left of the middle line.

Operation, October 2, 1917 (Lieut. Hett): The posterior end of the right middle turbinal was found to be firmly attached to the septum. Its anterior attachment was now separated and swung downwards to floor of the nose and attached there.

(*To be continued.*)

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