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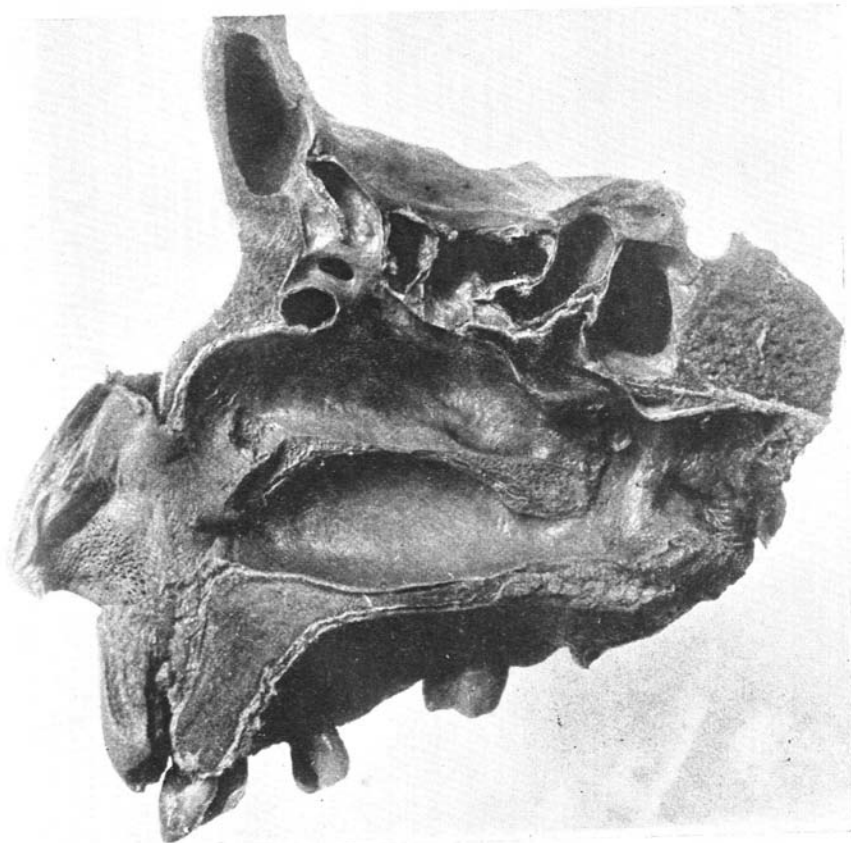
THE ANATOMY OF THE FRONTAL SINUS AND THE ANTERIOR ETHMOIDAL CELLS.

BY DR. ARTHUR HARTMANN (Berlin).

DR. HARTMANN demonstrated to the Congress the results of his investigations into the complicated and various forms of the frontal sinus and the anterior ethmoidal cells. Several lantern photographs of preparations were shown illustrating the anatomy of these regions. The anterior ethmoidal cells he prefers to call frontal cells; and he pointed out that the various arrangements of cells could be traced to a common embryological basis, and the important bearing this has upon the operative treatment of the frontal sinus. In the fœtus the modification of the surface of the outer wall of the nose begins with the formation of several furrows, which eventually become the meatuses, the ridges separating these furrows becoming the conchæ, or turbinated bodies.

The furrows have a knee-like bend, so that a ramus ascendens and a ramus descendens can be distinguished. In the ramus ascendens of the first furrow there is developed an excavation, the recessus frontalis, and from this, by an extension forward between the tables of the frontal bone, the frontal sinus is developed. On the lateral wall of the recessus frontalis there are three secondary furrows, and out of these, in a manner similar to the frontal sinus, are developed three cells—the anterior ethmoidal or frontal cells, an anterior, an external and a posterior frontal cell, which surround and form the ductus naso-frontalis. The many variations in the extensions of these cells give rise to the various forms of the ductus naso-frontalis. The frontal sinus may be formed not only by the pushing forward of the recessus frontalis between the tables of the frontal bone, but also by the pushing forward of a frontal cell (indirect formation of the frontal sinus). The several varieties were shown by means of a large number of lantern-slides:

1. Frontal sinus without frontal cells; (*a*) with a free opening



DISSECTION SHOWING A FRONTAL SINUS WITH ANTERIOR, EXTERNAL, AND POSTERIOR FRONTAL CELLS GIVING RISE TO THE NASO-FRONTAL CANAL.

To illustrate Dr. Hartmann's paper on the Anatomy of the Frontal Sinus.

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to the middle meatus, (*b*) with an opening narrowed by a bulla ethmoidalis.

2. Frontal sinus with frontal cells, from which was formed a naso-frontal canal; (*a*) with regular arrangement of the cells, (*b*) with irregular arrangement of the cells.

3. Hernia-like formation of the frontal sinus.

4. Absence of the frontal sinus.

Other slides showed frontal sections through the ethmoidal cells



FIG. 1.—SHOWING A FRONTAL SINUS WITHOUT FRONTAL CELLS.

and the method of operating. Dr. Hartmann contends that it is not sufficient to remove the floor of the frontal sinus, but that the floor of the frontal cells must also be removed, in order to obtain a free communication between the frontal sinus and the nose. For this reason he advises that an opening be made into the frontal sinus, and another into the frontal cells through the inner wall of the orbit, and that the walls of the frontal cells be removed with forceps.

Through the kindness of Dr. Hartmann we have been able to reproduce two of the photographs of the specimens that were shown; and we are glad to learn that an atlas illustrating the anatomy of the frontal sinus is in the press.