

July 23d. Scraping out of the granulations, and again a considerable quantity of pus emptied out. After removing the lateral part of the inferior bony canal wall an abscess cavity was opened up. Loose tampon. Evening temperature 86.7°. In this cavity the posterior periphery of the capsule of the joint was visible; the movements of the jaw could be seen; also after carefully syringing of the cavity a small amount of pus could be brought out through movement of the jaw. A bent probe pressed on the posterior periphery of the capsule of the joint and pressed in the medial direction apparently far forward, it could be felt clearly through the right tonsil, apparently through a thick tissue layer.

Since the opening of the abscess cavity the pus stopped here as well as in the tympanum; it also completely stopped from the fistula of the operation wound. The temperature remained normal.

The further treatment consisted in syringing the rich pus-producing cavity with boric-acid water and injections of glycerin and iodoform. As no lessening of the discharge followed three weeks after, formalin in increasing strength, 1 to 5 per 1000, was syringed. The result of these injections, which always caused a slight but quickly passing burning sensation, was apparent. The pus stopped about the last of August. Soon the wound of the inferior canal wall closed also.

September 20th. On the inferior canal wall was a small dense scar. Operation wound on the pars mastoidea is completely cicatrized. Drum and hearing normal.

These fistulae occur rather frequently in chronic suppurations, especially with cholesteatoma; rarely fistulae occur in acute cases. Jansen reported 121 cases, which he collected in chronic suppurative cases. He had met with only three cases with caries of the vertical semicircular canal, and these were all cases which showed severe complications (tuberculosis, extensive extradural abscess, and purulent arachnoiditis). The seven cases of Stenger's likewise were chronic cases. Lucæ wrote upon less than thirty-two cases of carious defect of the horizontal semicircular canal, two of which were in subacute suppurations (of three and five months' existence).

In Ephraim's case labyrinthine symptoms failed completely. The flow of lymph was small and could only be observed two days. This is contrary to Lucæ's observations that the flow of the labyrinthine fluid is very plentiful in carious defect, contrasted with traumatic, where it is a small and gradual flow.—VON A. EPHRAIM, in *Arch. f. Ohrenh.*, Breslau, 1902, Bd. liv., Heft 3 und 4, S. 240.

Contribution to the Pathological Anatomy of the Auditory Chain of Ossicles.—1. HAMMERSCHLAG reports a case of synostosis of the malleo-incudal articulation, found in a man thirty-five years of age. No history of the auditory function was obtainable. On examining the right ear the malleus and incus were bound together. The mucous membrane of the middle ear was everywhere quite normal. The incudostapedial joint was detached easily; the stapes was also intact and easily removed from the oval window.

On microscopical examination of the malleo-incudal joint a part of the joint was taken up by a bony bridge, which showed different breadths in the series of preparations, and here and there clearly showed Haversian canals. This bony bridge bound both ossicles together. Otherwise the joint was nor-

mal. Probably this bony bridge slightly, if at all, diminished the hearing power, for we know from the physiology of the sound-conducting apparatus that the large ossicles (malleus and incus) move as a whole in conducting sound. It cannot be decided with certainty that this case was the result of an inflammation, for the tympanic cavity was free from all inflammatory products. It must be supposed that a local disease of the joint had taken place or an inflammation which left this bony bridge as its product.

2. A case of malformation of the stapes accidentally found in the body of a dwarf—a girl about twenty years of age. Hammerschlag subsequently learned from the accompanying history that the patient had been treated in a general hospital for multiple tuberculous caries, and had died from exhaustion. The body clearly showed signs of cretinoid degeneration, and during life the patient, in many respects, gave one the impression of a cretin. It was difficult to understand her, for, on the one hand, her comprehension of speech was wanting, and, on the other hand, her own speech was very poor and indistinct. The patient had the appearance of a hard-hearing person. A correct investigation of the hearing had not been made *intra vitam*.

The right middle ear was wholly normal. On the left side the tympanic cavity, and also the attic and antrum, were diminished in all their dimensions. The dura of the temporal lobe was abnormally low and the superior osseous auditory canal seemed much thinner than normal. The oval window was completely covered over by the horizontal part of the facial nerve. On removing the malleus the stapes was easily detached from the oval window, and remained firmly bound to the malleus. This union was not osseous, but only rigid connective tissue. The incus and malleus were normal as to shape and size. Malformation of the stapes showed both *cruræ* formed for the most part only a rather thick osseous link. From the plate of the stapes there was a failure of differentiation into two *cruræ*, which, however, were bound together by a thin osseous plate, so that a free space did not exist between the *cruræ*. The stapes plate was reduced to about a third of its normal size, and the oval window was in keeping with the plate of the stapes, smaller in all its dimensions than in the normal. The microscopical investigation gave no important information, for the time between death and reception of the preparation was too long. Hammerschlag then cites references to malformations of the stapes.

I might close with the hint that to-day a systematic pathological-anatomical examination of the organ of hearing of cretinoid degenerated individuals should be demanded, for they quite frequently have arrests of development in the sound-conducting apparatus as well as in the labyrinth. It might be well to remember that endemic deaf-mutism forms an integral element of cretinoid degeneration (Bircher: *Endemic Goitre and its Relation to Deaf-mutism and to Cretinism*, Basel, 1882), and that most cretins show more or less high-grade disturbances of hearing, which in all probability can be traced back to arrests in development of the organ of hearing.

An exact knowledge of the organ of hearing in cretins, therefore, might be suitable to enlarge our knowledge of the pathological anatomy of so-called congenital deaf-mutism.—*Beitrag zur pathologischen Anatomie der Gehörknöchelchenkette*, Mit Tafel iv., S. 82-85. *Arch. für Ohrenheilkunde*, Band iv., Heft 1 und 2.