OBSERVATIONS
ON SOME POINTS RELATING TO THE
PHYSIOLOGY AND PATHOLOGY
OF THE
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OF all the comforts enjoyed by man, none is greater than that of perfect hearing; and when we reflect on the numbers that are deprived of it, and of the little good than can be done for diseases of the ear, this question naturally arises, whether it is owing to our ignorance, or to an impossibility, that we cannot cure them?

Insulated facts may at first be apparently trifling, yet when taken into the general account may produce something of the greatest importance. These considerations have induced me to bring this paper before the public, for as I have discovered an ana-

tomical fact, which I cannot find anywhere taken notice of; and as it will account for some part of the physiology of the ear not before generally understood, it may lead to a perseverance in trying to supply some of the defects of that organ, and thereby render a great service to many labouring under its infirmities.

When the ears are stopped, and a watch is brought in contact with any part of the head, face, teeth, or neck; or if a stick, water, &c. be interposed between any of these parts and the watch, the sound will be heard as well as when the ears are open.

It has been supposed that the sound is mechanically conveyed through the flesh and bone in the same way, it is through a macerated bone, piece of wood, &c. but if it were so, it must be heard always when the auditory nerve is perfect, at whatever part of the head, face, &c. the watch is applied, but this is not the case. Where the hearing through the meatus externus has been perfect, and where there has been no apparent alteration in the structure of the head, face, &c. I have seen many who could hear from only one of these parts, and several who could not hear from any of them.

If I stop my ears and rest my chin on the petrous portion of the temporal bone in a macerated

skull, and place my watch in contact with any part of the skull, I can hear the sound perfectly. I saw a boy who was born deaf and dumb, but had been taught to speak, and when a watch touched the left side of his face, he could hear it; but when it touched any part of the right side, he could not in the least.

A man who was recovering from an illness, had become so deaf of the left ear, that he could just hear my watch when put very near it: he heard perfectly of the right ear. I desired he would stop his ears until he could not hear my watch when put nearly in contact with them; I then let it touch the left side of the face, &c. he just heard it; but when I let it touch the right side, he heard it distinctly.

If sound is conveyed mechanically through the flesh and bone, what in these two cases should hinder it from being heard distinctly, when the watch touched either side of the face, any more than in the macerated skull?

If sound is not conveyed mechanically through the head, face, &c. it must be through some other medium, and that I believe to be the porta dura of the seventh pair of nerves, and some other nerves connected with it.

On dissecting the seventh pair of nerves in

man, I find at the bottom of the meatus auditorius internus a communication between the portio mollis and portio dura.

In the sheep I have observed the same communication.

In fishes, several nerves that have a communication with the auditory nerve are spread on the skin over the whole head.

If we consider how the portio dura is connected by nervous substance with the portio mollis, its extraordinary course, its receiving the branch of the vidian nerve and the chorda tympani, and, when it has got out of the foramen stylo-mastoidæum, its great expansion, I think we may conclude, that it was made to serve some greater purpose than has hitherto been ascribed to it.

That this provision of nature has been useful to deaf people, the following case, which may be found in Haller's *Prælectiones Academicæ*, will prove. "*Musicus fuit in aulâ, ex morbo factus surdaster, prehendebat vestibulum mordicûs, et tum omnino chelyn ex arte, pulsabat.*"

That it might be useful to many, could proper instruments be made, to increase the effect of sound, and especially to those who are deaf and dumb, if properly persevered in, is, I think, probable; but

it must be remembered, that where the disease is in the nerve, no good can be derived from it, which may be ascertained after a few trials by the expression of the child, if a sounding body is applied to the head, face, neck, or teeth ; and that many deaf and dumb can hear in this way, I am myself from experiment well convinced.

If from what has been said it should appear probable that sound is conveyed by the portio dura to the portio mollis in man, it will, I think, be reasonable to conclude, that the nerves which are spread on the soft parts of the heads of fishes, answer in a great measure the same purpose the tympanum does in man ; and though in man this provision is not necessary when the tympanum is perfect, yet when that is imperfect, it becomes the means of conveying sound to the portio mollis, and thus answers one of the most important purposes in the animal economy.

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