

Clinical Notes on Some Common Ailments.

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EARACHE.

In the following paper I shall deal with some common affections of the apparatus of hearing, and with the consequences that follow from neglecting the warnings which pain in this region affords; for some reason, which I have never been able to understand, earaches are usually treated by the housewife herself on the lines of the domestic medicine supplement of the cookery book or the "Health in the Home" columns of the Sunday paper, while the occurrence of anything wrong with the eye more often than not is taken as an indication for consulting a doctor; a deaf person, moreover, is apt either to regard his infirmity as incurable or to consult a quack.

Let us first consider what the ear is made of, and how it works. What is required is an apparatus for collecting the waves of sound that are in the air around us, and passing them on to the brain where they are interpreted and made evident to our consciousness.

The ear consists, then, of three parts, the external ear where the sound is collected, the middle ear where it is modified and altered to suit the requirements of the body, and the internal ear where it is introduced to the endings of the nerve which transmits it to the brain.

The external ear consists of the "ear" which we see outside, and which is practically useless in man, though in some of our long-eared ancestors—donkeys for instance—it serves to collect sound which is coming from the particular direction to which the animal's attention is being directed at the time, and to exclude confusing waves from other points. The next part is a tube which is called the external auditory meatus, and which leads to the middle ear.

This is shaped like a drum, and it resembles that instrument in being a hollow rigid box closed at each end by a membrane; the outer—the drum head proper—receives the sound waves from the meatus, and is thrown into vibrations when the sound strikes against it in just the same way as the soldier's drum head vibrates when it is struck with the drumstick. But these vibrations are too coarse for the delicate nerves of hearing, so they are made smaller by a chain of little bony levers—the auditory ossicles—which stretch across inside the drum from the outer membrane to the inner one which is in the partition between the middle and inner ears. In the middle ear are two

openings, one of which is the outlet of a tube—the Eustachian tube—which reaches from the back of the nose to the middle ear and serves to admit air into the drum so that the pressure (of air) may be the same on each side of the outer drum head: were this not so, the drum head would be driven in by each wave of sound and would be unable to recover itself in time to receive the next wave. There is also an opening in the roof of the drum, which leads backwards into some cells in the large mass of bone behind the ear which is called the mastoid process, the largest of these cells being known as the mastoid antrum.

The internal ear is a very complicated structure, but for our purposes it will be sufficient if we recognise it as a series of fine canals filled with fluid in which the ends of the nerve of hearing float; this fluid is in connection with the inner drum head, so that each wave of sound throws it into vibrations, which the nerve picks up and passes on to the brain. The internal ear is really composed of two parts, one of which—the cochlea—is concerned with hearing proper, and the other—the semi-circular canal system—uses the waves of sound to tell the brain the position of the head in space and so assist in the balancing of the body.

We now have to see how the ear may be attacked by disease, and we will clear the ground somewhat by dismissing the affections of the outer and inner ears. The outer ear may be the site of rather painful boils, which obstruct the passage, and in children foreign bodies often find their way there and cause some trouble to the surgeon. Fortunately, affections of the inner ear are uncommon, but when they do occur, they generally result in total deafness or intense giddiness or both.

It is, however, with affections of the middle ear that we are chiefly concerned, for they are of somewhat common occurrence; we will take first inflammation of the middle ear or otitis media as it is called. Now it is obvious that the middle ear can be attacked through either of its openings, from within, via the eustachian tube, or from without through the external meatus, but in any case the real cause of the inflammation is an invasion by micro-organisms of one kind or another along either of these routes, though it often happens that, in addition to the presence of germs, the resistance of the part may be lowered by exposure to cold, which is then often thought to be the sole cause of the trouble. We may thus have otitis arising from an inflammation of the throat as in scarlet fever, the germs finding their way from the back of the nose up the

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