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Abnormal Living Entozoa in the  
Human Ear,

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PATTERSON, N. J.

*presented by the author*

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## ABNORMAL LIVING ENTOZOA IN THE HUMAN EAR.

Written for the Ophthalmic Record by

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PATERSON, N. J.,

A patient, having an old suppurative Otitis Media in the left ear which had not been under observation for some time, applied for treatment at the Infirmary, in consequence of an increased discharge and some peculiar sensations about the middle ear.

He described his symptoms as a feeling of throbbing, and on closer questioning, he complained that the sensation was that of constant movement and running of matter from the ear, entirely out of proportion to the actual amount of the discharge; there were noises of various kinds and of large volume almost constantly present.

These symptoms had been aggravated for about one week, being more noticeable at some times than at others, and being decidedly more constant during the last three days.

He had been able to sleep some, but was frequently disturbed by the throbbing or feeling of discharge, tinnitus, and pain when awakening during the night. He only had a moderate amount of pain, although sharp stitches would come, and the

ear was constantly more uncomfortable than it had been previously to the present attack.

The patient was a strong, well-nourished man, in good health; he had no new pharyngeal inflammation and nothing to indicate the presence of an exciting cause for the recurrent Otitis, as up to the time of the onset of the trouble, he had, as the only symptom, a very slight, but offensive discharge.

On examination, a profuse, muco-purulent discharge of considerable thickness, yellow in color, and excessively odorous, was found in the external auditory canal.

The discharge was dried out very carefully, and when all was entirely clear, the thickened, moderately inflamed drum membrane was examined, and a large perforation, involving the lower inferior posterior quadrant of the tympanum was disclosed.

In re-examining the ear shortly after, there appeared in, and about the opening, a white substance, which was thought to be some of the white exfoliated skin so frequently removed from the ears of such patients.

An effort at its removal, resulted in its complete disappearance (although nothing came away on the cotton used in drying the ear), and a decided increase in the discomfort of the patient, who complained of a severe lancinating pain.

The patient was asked to sit quietly for a time with his head resting on the left hand; he complained of very excessive throbbing, buzzing and movement in the ear for the next fifteen minutes. When he was again examined, the white material was again present in the aperture and being excited by the examination was seen to move through the opening and pass entirely out of sight. It was then concluded that some living organism was present in the ear and after an ineffectual effort to remove by syringing, the patient was directed to assume the same position, resting the ear on the hand, as likely to encourage warmth, and assist in again luring it from the cavity of the middle ear.

The movement and sensations as above described continued, and at the end of half an hour the examination was repeated, the speculum was rapidly introduced and followed by a pair of fine rat-tooth ear forceps. The body was in sight and it was

sized and instantly removed. It held to the mucous membrane with sufficient force to cause some hemorrhage.

On examination this body was considered to be an ordinary maggot, it was of large size fully  $\frac{1}{2}$  inch in length and very fat, it was quite lively.

There was a small red spot in the maggot, which raised the question of the possibility of its having recently eaten some human blood corpuscles, while within the cavity of the middle ear.

My friend Dr. Neil J. Hepburn suggested the advisability of sending the specimen to the Rev. Samuel Lockwood, Ph. D., Secretary of the New Jersey State Microscopical Society, an accomplished Entomologist of Freehold, N. J., who writes:—

“The larva sent was not seen alive by me, but it is in spirits, and its form is well preserved. It is a true dipteran larva, being the grub, or maggot of the flesh fly, or meat-fly, *Sarcophaga carnaria* (Linn). This must not be mistaken for the blue-bottle, or blow fly, *musca vomitoria*, which lays its eggs on flesh, or meat. The *Sarcophaga carnaria* is viviparous. The eggs hatch and live within the oviduct of the female, and these tiny, very white grubs are each about .06 of an inch in length, and are deposited upon meat, which they devour ravenously, growing to the length of  $\frac{1}{2}$  or  $\frac{3}{8}$  of an inch. They then enter the ground, and assume the pupa form. But as the form of the pupa of the fly differs from the pupa of many other insects, the condition at this stage of its life is known as the *puparium*, after this it has but one metamorphosis, when it evolves into the complete and perfect fly.

“I have used the word larva in respect to the specimen. This is not quite systematic, as it has reached a pupal stage; it is in fact a *puparium*, but not quite complete. I should think it is within a day or two of this state. The form of the puparium is figured in my article: ‘A Viviparous Fly,’ in American Naturalist, Vol. vii, 1873, p. 194. My belief is that the specimen when taken from its nidus was about ten days old. I think its peculiar lodging place, the human ear, has lengthened by two or three days the usual time required to reach the stage attained by the specimen. By good fortune you struck the opportune

time for extracting it, as at the time of making the pupal change, the larva is very restless. A day or two later the ability of changing place or position would have been lost and whether it died or evolved into a perfect fly, the condition of your patient would have been pitiable.

“How came this larval insect in the middle ear? We can do little more than conjecture. You say it was seized and extracted from the external canal of the ear, it having returned there by a hole in the tympanic membrane, through which it had before escaped you. It seems to me then that its nidus was the tympanic cavity. If that hole, or rupture was over ten days old, the larva could have entered it from the external canal, the little grub having been deposited there by the parent fly. The carnivorous flies are easily deceived by scent. Sometimes they will deposit their grubs or eggs in an ill-scented flower, mistaking it for tainted meat. In fact upon any malodorous object if it be vegetal or animable. Some ears have an offensive smell. Might not even the diseased tympanum have been attractive?

“Though it may seem strange, I think it more likely that the tiny larva, only the .06 of an inch in length should have found its way from the mouth up the Eustachian tube. I send you two small pamphlets of mine on Abnormal Entozoa in man, reprints from the American Joarnal of Microscopy, Jan. 1881 and May 1881, by which you can see that these parasites have taken possession of the human stomach through the medium of cold boiled cabbage, and meat. Supposing your patient to have eaten cold tainted meat, and when a morsel was in his mouth, to have for some cause coughed, or in some way dislodged a tiny larva of our *Sarcophaga* so that it was thrown upon, or near to, the beginning of the Eustachian tube. To me there is nothing marvellous in the insects travelling up the epithelial walls, somewhat slowly, and feeding on the mucus, until when it had taken possession of the interior of the ear, it attacked and fed upon the pus of the tympanic cavity. The spot of blood mentioned in your letter I think had not much to do with the matter at the time of extracting it, as it seems to me, it had gone so far into the pupa state as to make feeding no longer possible.

The odor of decomposed pus might attract it to ascend the Eustacian tube.

“To make the discussion complete you will have noticed that some questions might be put to your patient with advantage.

“1. Had he been eating suspicious cold meat or cooked vegetables at about seven to ten days previous to the time of the extraction of the larva?

“2. Had he experienced any sensation in the Eustachian tube when it began? when it stopped?

“3. When did the perforation of the tympanum occur?

“4. Was there a malodorous condition of the external ear?”

The questions suggested by Prof. Lockwood were asked, and the answers were such as to point undoubtedly to the parent fly of the species *Sarcophaga carnaria*, having deposited the grub, already born, in the malodorous secretion of the ear, on which it fed until sufficiently developed to become active, when it began its course of constant torment to the patient, by crawling about in the pus, or by being constantly carried out of the cavity of the middle ear by the increasing discharge, and then returning again, giving rise to all the symptoms complained of by the patient.

The extreme activity of the puparium, and its frequent passage from the external auditory canal to the middle ear are very interesting, also the history of the birth, growth and development of the larva, and the suggestion of the probability of the larva having made its way to the middle ear through the Eustachian tube.

The possibility of the puparium passing into the next stage of development, and becoming a winged fly, while it remained in the ear, is very slight, as it would probably have been discharged with the pus, when it entered the stage of rest, or if further development were possible it would have suffocated in the pus and subsequently come away with the discharge either in mass or piece-meal.

