## PATHOLOGICAL RESEARCHES

#### INTO THE

# DISEASES OF THE EAR.

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Received Jan. 9th .--- Read Feb. 13th, 1849.

SINCE the publication in the Medico-Chirurgical Transactions of my two former papers, on the Pathology of the Ear,\* further research has enabled me to arrive at certain results, which it is hoped will not be deemed uninteresting to the profession.

The dissections on which the observations contained in this communication are based, amount to 915; and may be thus classified:

1. Ears of persons known to be deaf.	•	•		184
2. Ears of persons supposed to be deaf		•		70
3. Ears in the stage of incipient deafness			•	358
4. Ears in a healthy state		•	•	303
Total			•	915

The *first class* of cases, though including some instances hereafter specified, where the degree of deafness was but slight, comprises none in which a decided diminution of the power of hearing had not been perceptible during life.

The second class of cases embraces those where, though the information was defective as to the state of hearing in the life-time of the parties, such extensive traces of disease were

\* Volumes XXIV, 1841, and XXVI, 1843. The results of the one hundred and twenty dissections described in these two papers have been included in the subjoined tables. found in essential parts of the auditory organ, as to leave little doubt that deafness had existed. In the absence, however, of positive information, they are classed as cases of supposed or probable deafness.

The *third class* of cases exhibits those wherein there was a decided pathological condition of the organ, though probably not to the extent which would induce a very perceptible degree of deafness. These I have termed cases of incipient deafness.

It will doubtless excite some astonishment that, in so large a number as 915 dissections, so small a proportion as about one third of the ears should have been found in a perfectly natural state. At first view this might seem to arise from the specimens having, many of them, been supplied from hospitals, infirmaries, and other public institutions, and consequently liable to have been affected, as the result of the various diseases under which the parties might have laboured, and also from the circumstance of my having been kindly furnished by some of my professional friends with special cases, whose diseased state had, during life, attracted To those, however, who have given the their attention. subject much consideration, and who are aware of the widespread prevalence of deafness, in its varying degrees, among all classes of society, the dissections will not, perhaps, be thought to exhibit any unusual proportion of diseased to healthy specimens.

In the accompanying Tables it has been my endeavour to give the leading features of the several dissections in as concise a form as possible. In the first and second class of cases, however, it seemed indispensable to set forth, in succinct detail, the relative pathological conditions presented by different parts of the organ, as also the sex and age of the patient, and the cause of death. The third class of cases, those of incipient deafness, admitted of briefer treatment, and only the general result of their pathological state is exhibited; but it will give me great pleasure to afford, to any member of the profession, fuller information from the original notes of the dissections. The last of the tables is an abstract statement, intended to show at a glance the pathological condition of the 612 ears included in the preceding classes.

Although I am fully sensible that it would as yet be premature to attempt to deduce any very extensive general conclusions as to the causes of deafness, and the nature of diseases of the ear, from the dissections now brought under the notice of the profession—and each day's experience leads me to infer that little is but yet known, compared with what future investigation may bring to light—yet there are certain observations, even at the present stage of inquiry into the subject, which are not devoid of professional interest, and which I may venture to make with the more confidence, from the fact that several dissections conducted by me, since the tables were framed, are singularly confirmative of the conclusions arrived at.

#### MEMBRANA TYMPANI.

In the cases of deafness, the membrana tympani will be observed to have been, in nearly one sixth of the dissections, whiter and thicker than is natural. As this appearance depends generally upon a thickened condition of the mucous membrane lining the inner surface of the tympanic membrane, while the external surface remains smooth and shiny, this feature becomes of great importance to the medical practitioner, as it affords him, during life, an indication of the state of the cavity of the tympanum.

Another frequent and highly interesting pathological condition of the membrana tympani is that in which it adheres by its inner surface to the promontory and the ossicula, or establishes a connexion with them through the agency of bands of adhesion. In the former state, the membrana tympani is necessarily very concave externally, and this concavity is readily distinguishable during life; in the latter, the membrane is only occasionally concave. The adhesion in both instances is so firm, as often to equal in strength the fibrous texture of the tympanic membrane itself. The latter membrane is also much more tense than natural, and its power of vibration considerably diminished; in many instances, indeed, the tension is so great as to render it impassive to the loudest sounds.

In the formation of the above conditions, the adhesions are produced in the same way as those which will soon be alluded to as connecting the ossicula; but the adherence of the membrana tympani to the promontory grows out of the inflammation of the former membrane, during and subsequent to which, it and the tensor tympani muscle become very relaxed, the tympanic membrane falls inwards, and comes into contact with the mucous membrane covering the surface of the promontory. The latter also, in some cases, is so thickened as to touch and adhere to the healthy membrana tympani. During life I have seen it thick enough to protrude into the meatus, through an orifice in the tympanic membrane.

The proportion of specimens in those classed as deaf, where the membrana tympani appears to have been partially or completely destroyed, is larger, in my opinion, than among the cases occurring in practice, and may be accounted for from the greater attention which the existence of so very palpable a lesion would naturally excite. Although in these cases the sense of hearing was blunted, in many instances it was not so affected as to cause inconvenience in the ordinary intercourse of life. I may state, indeed, from a careful study of cases, some of which are now under my care, that the entire absence of the membrana tympani, provided no other disease of the organ of hearing coexists, is frequently but a triffing impediment to the perception of sounds.

#### TYMPANIC CAVITY.

A glance at the tables will show that the part of the organ of hearing which is the most frequent seat of disease is the cavity of the tympanum, and that, as described in my former papers, the peculiar pathological condition which characterises by far the greater number of cases, is a thickened state of the mucous membrane lining that cavity. This membrane is found to vary from that natural state of fine expansion, which renders its presence on the surface of the bones scarcely perceptible, to a degree of thickness which nearly fills the cavity, and completely buries the ossicula. It was thicker than natural in not less than 98 out of the 184 dissections of deaf persons. And it is instructive to compare these numbers with the proportion of only 19 out of 184 in which there was a collection of mucus, since the latter affection has hitherto been generally regarded as one of the most fertile sources of deafness.

The most common contents of the tympanic cavity are mucus, purulent discharges, and scrofulous matter, which correspond with the three diseases, colds, scarlet fever, and scrofula, from which deafness so frequently results.

A pathological condition of great frequency in the tympanic cavity is the formation of bands of adhesion connecting the ossicula with each other, and with the walls of the In 42 of the 184 dissections of deaf ears these tympanum. adhesions were traced, and they were present in 123 of the 358 dissections classed as those of incipient deafness, or in the large proportions of  $\frac{1}{4}$  and  $\frac{1}{3}$  respectively. By far the most usual position of these bands of adhesion is between the stapes and the promontory, the former bone being frequently entirely concealed by them. Often their tension and firmness are so great as to prevent any movement of the stapes, while in many instances they press it towards the cavity of the vestibule, as formerly remarked. It would appear highly probable that the pressure exerted on the membranous labyrinth by these adhesions may be one cause of the singing and other sounds so commonly complained of by deaf persons.

The bands of adhesion sometimes arise from the effusion of lymph, which is occasionally observed; but more frequently, perhaps, from the circumstance that, when the membrane is much thickened, the portions of it which are in contact become adherent, so that when the body of the membrane subsides to its natural state, the points of contact remain in cohesion, and the neighbouring parts are drawn into bands. The structure of the bands is firm, and very similar to that of the mucous membrane itself.

One of the most interesting conditions in the pathology of deafness is presented by the anchylosis of the base of the stapes to the margin of the fenestra ovalis, of which the specimens afford 16 complete and 10 partial instances. Sometimes this change consists of simple ossification of the membrane connecting the stapes with the margin of the fenestra ovalis; occasionally the base is considerably enlarged, and projects into the cavity of the vestibule : while in other instances it is surrounded by a deposit of osseous My attention has also been very recently drawn particles. to another condition of the stapes, which consists in its attachment to the circumference of the fenestra ovalis more firmly than is natural, a circumstance which is owing to the solidification of the membrane surrounding its base. Its occurrence is by no means infrequent.

The result of the examination of the Eustachian tube is deserving of particular attention. Of the whole 612 dissections of diseased ears, only 21 cases disclosed any traces of disease of this portion of the ear, a result, however, which agrees with my experience in cases of deafness.\* Rarely indeed has it happened, when examining the ear with the otoscope,<sup>†</sup> during a forcible expiration with closed nostrils, that the air could not be distinctly heard to enter the tympanic cavitics, though the nature of the sounds were modified by the internal condition of the cavity. While, to say the least, little or no good generally results from the use of

\* It is right I should here state, that the trumpet-shaped extremity of the Eustachian tube was frequently not included in the parts removed for dissection. I am, therefore, unable to speak decidedly respecting its condition. It is, however, probable that, when the narrow portion of the tube was healthy and free from obstruction, the largely-dilated orifice which is acted upon so continually by the muscles of the palate, was also healthy.

<sup>†</sup> An elastic tube, about eighteen inches in length, tipped with ivory at both ends, one extremity of which is inserted into the external meatus of the patient, and the other into that of the medical man. the Eustachian catheter, the failure of the operation for puncturing the membrana tympani affords a striking proof, from daily practice, that deafness seldom depends upon obstruction of the Eustachian tubes.

It is singular that another theory of the cause of deafness, which made it to depend upon disease of the internal ear, receives no countenance from these dissections. Even in the few cases, 21 in number, where the labyrinth exhibited disease, that disease was, in nearly every instance, found to be propagated from the middle ear. It may indeed be added, that disease originating in the cavities which contain the expansion of the auditory nerve, or in their contents, is a phenomenon of very rare occurrence.\*

The fact of a thickened or otherwise deranged state of the mucous membrane lining the tympanic cavity being one of the most common pathological conditions of the organ of hearing, is the broadest general result of the dissections ; and as cases carefully examined, noted and studied as they have arisen in practice, lead to the same conclusion, I have little hesitation in stating disease of that membrane to be the most usual cause of deafness. What are the history and symptoms of the great majority of cases of deafness unattended by discharge? Cold has been caught, uneasiness has been felt, renewed attacks of cold+ have added to the severity of the symptoms; advice is at length sought, and examination shows the external meatus deprived of cerumen. and frequently deficient in natural sensibility, while, towards the membrana tympani, its appearance is red and smooth; the membrana tympani is entire, its surface shines, but it is

\* In some dissections, especially those from deaf persons where adequate causes of deafness were found in the tympanic cavity, for the sake of preserving the diseased parts, the internal ear was not examined.

† Disease once commenced is modified by many slight and, commonly, little regarded circumstances,—as going from a warm room into the cold air, indulgence even in a glass or two of wine, after a meal, &c.; perspiration from active exercise gives temporary relief; distension of the tympanum with air either relieves or aggravates it; and the sounds so often complained of become louder under the influence of some of these circumstances. hazy, opaque, or as white as parchment, and consequently the handle of the malleus may be discerned with varying degrees of distinctness, or cease to be visible at all. Upon a forcible expiration, with closed nostrils, the air, by means of the otoscope, can almost always be heard to enter the tympanum, not gradually, however, as when the organ is healthy, but with a puffing, bubbling, or cracking sound, as though impeded in its progress.

It is not my intention, in the present communication, to enter into the detail of the curative measures which the various affections resulting in deafness might seem to indicate, but there are two considerations to which I would direct the attention of the profession. The first is, the large number of cases of incipient disease, and their slow and imperceptible progress, which would reasonably lead us to hope that, by judicious treatment at an early period, the disease might be arrested in its progress, and a permanent The other, that my own experience has cure effected. shown me, that a careful perseverance in the course of remedial measures, which the pathological condition seemed to prescribe, has been attended with an almost unhoped-for success, and would amply justify the expectation, that if a rational mode of treatment, based on careful examination and under intelligent medical guidance, be pursued, the beneficial results in the relief of a disease, in which the moral suffering far exceeds the physical, will be abundantly manifest, and the profession itself be ultimately rescued from the opprobrium which justly attaches to imperfect diagnosis, and consequent empirical measures.

In conclusion, I cannot refrain from subjoining a few remarks on the intimate and important relation which the pathological condition of the ear bears to derangements in other organs. In one third of the dissections, for instance, the upper wall of the tympanum was so attenuated, that the mucous membrane was only separated from the dura mater by a perfectly translucent layer of bone. The upper wall of the tympanum, in 54 other dissections, was imperfect, and its mucous membrane was actually in contact with the dura In 22 dissections, the lower wall of the tympanum mater. was defective, and the mucous membrane was impinging on the internal jugular vein. The osseous lamina, separating the carotid canal from the tympanic cavity, is not unfrequently so thin as to be diaphanous; and the canal of the portio dura nerve, in its passage through the tympanic cavity, is often imperfect enough to allow of the mucous The mastoid membrane coming in contact with that nerve. cells, again, are frequently found separated from the lateral sinus by a layer of bone of translucent thinness. Sometimes the osseous floor of the external meatus is deficient, being completed by the jugular vein; while its anterior wall is in many cases thin, and in parts so defective, as to bring the membranous meatus in close contiguity with the articulation of the lower jaw.

Numerous cases of disease, propagated from the ear to the brain and the other important organs alluded to, have fallen under my notice, and no very long time will, I trust, elapse before they are prepared, with the dissections, for submission to the profession. For the present I shall confine myself to stating that among these dissections there are instances in which disease has spread,-from the tympanum, upwards, causing inflammation and suppuration of the dura mater, with abscess in the middle lobe of the cerebrum: from the tympanum, below, producing disease of the jugular vein; from the mastoid cells, posteriorly, giving rise to suppuration of the lateral sinus, and diseases of the cerebellum; from the tympanum anteriorly, causing contraction, and almost entire obliteration of the carotid canal, and disease of the internal carotid artery. There are other instances where paralysis of the portio dura nerve has ensued from the pressure upon it of the thick mucous membrane of the cavity of the tympanum; and lastly, where inflammation of the articulation of the lower jaw proceeded to the extent of causing the mouth to remain for some time closed, in consequence of disease being continued to it from the anterior wall of the meatus.

It will readily be conceived that I must be greatly indebted to many medical friends for valuable assistance in procuring specimens. To Mr. Crosse of Norwich, Mr. Ceeley of Aylesbury, Mr. Napper of Guildford, Mr. Greig of Bristol, for contributions from the country ;---and to my colleague, Dr. Blakely Brown; Mr. Hewitt, assistant-surgeon of St. George's Hospital; Mr. Henry James Johnson, formerly assistant-surgeon to the same institution; Mr. Avery, surgeon to the Charing Cross Hospital; Dr. Boyd, formerly resident physician to the St. Marylebone Infirmary, and to Dr. Allen, his successor; to Dr. Goodfellow, formerly resident physician to the London Fever Hospital, and to Dr. Sankey his successor; to Mr. Marston, resident medical officer of the Smallpox Hospital, Dr. Merriman jun., Dr. Edward Ormerod, Mr. Farish and Mr. Obre, of London, my sincere thanks are due; and I beg to assure those gentlemen and other members of the profession, that for any opportunities they may afford me of further investigation I shall feel most grateful.

	Internal Ear.						
	Eustachian IJ Tube.			Mucous memb. thick			
LEFT EAR.		Muc. memb. thick ; anchylosisof stapes to the fenestra ovalis	Muc. memb. thick; bloodeffused on its surface; adhesions between the ossi- cula; stapes con- cealed		Adhesions between stapes and pro-	Adhesions between the ossicula	Thick; ad- Muc. memb. thick herent to and vascular; con- promon- tains caseous mat- tory by a ter
	Meatus Membrana Externus. Tympani.		Thick and white	Presents an ulcer- ated ori-	:	:	Thick; ad- herent to promon- tory by a band
	Meatus Externus.	Dry; ce-Opales- rumen cent absent	:	:	:	:	Full of thick epithe- lium
	Internal Ear.	:	•	:	•	• • •	:
	Eustachian Tube.		•	Mucous memb. thick	•	•	:
BIGHT FAR	Cavitas Tympani.	Mucous membrane thick; anchylosis of stapes to the	Muc. memb. thick	Muc. memb. thick; Mucous covered with pus; memb. stapes concealed; thick	malleus absent Muc. memb. soft, and covered with	Contains Presents Muc. memb. thick a mass large and ulcerated; in- of hard orifice cus disjointed from eeriment	between malleus between malleus and internal wallof tympanum enve- loping the stapes Muc. memb. thick and vascular; con- tains much mucus
	Membrana Tympani.	Opales- cent	Destroy- ed by ul- ceration		:	tains Presents a mass large hard orifice	:
	Meatus Externus.	Pneumo- Dry. Ce- Opales- nia rumen cent absent	Contains Destroy- pus. Ce- ed by ul- rumen ceration absent	Contains thick pus	:	Contains a mass of hard	
	Cause of Death.	Pneumo- nia	Dropsy	: : :	107, 108 Old man Gangrena senilis	• • •	Malig- nant dis- ease of cervical glands
	Sex, Age, &c.	Man, æt. 55	Woman, æt. 36	Man, 50	Old man	134, 135 Man, 40 very deaf)	Boy, 16
	No. of the Dissections.	40, 41	47, 48	72, 73	107, 108	134, 135	150, 151 Boy, 16

TABLE I.—CASES OF DEAFNESS (184).

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## DISEASES OF THE EAR.

	Internal Ear.							
	Eustachian Tube.							
LEFT EAR.	Cavitas Tympani.	Muc. memb. thick and vascular; con- tains pus	Adhesions between stapes and pro- montory	<b>A</b>	canal contracted ; adhesions between stapes and fenestra ovalis by anchylo- sis ; stapedius mus-	cle atrophied Muc. memb. thick; containsviscid mu- cus	Muc. memb. soft and thick; nearly detached from the bone; covered with	91
	Membrana Tympani.	:	:	4	ed by ul- ceration	:	Sontains Nearly a thick destroy- white ed by ul- ecretion; ceration	
	Meatus. Externus.	•	:	Almost oblite- rated;	contains pus;bone carious, dark,and rough		Contains Nearly a thick destro white ed by secretion; cerati	memb. soft and detached
	Internal Ear.	•	:	:		:	• *	
	Eustachian Tube.		•	:		:	Quite healthy	
RIGHT EAR.	Cavitas Tympani.	Muc. memb. ulcera- ted ; contains pus ; malleus disjointed from incus; tendon	of tensor tympani muscle destroyed Very con-Muc. memb. thicker cave; ad- herent to herent to promon-	Muc. memb. in con- tact with dura ma- ter; upper wall of	tympanum absoro- ed; carotid canal contracted	Thick and Muc. memb. thick; white;an containsscrofulous orifice at matter	Destroy- Muc. memb. thick Quite ed by ul- and ulcerated; ad- healthy ceration hesions between mallers and pro-	
	Membrana Tympani.	White	Very con- cave; ad- herent to promon-			Thick and Muc. m. white; an contair orifice at matter itscentre		
	Meatus Externus.	:	:	Osseous walls thicken-	60	:	Lining memb. thick & soft ; full	3. 5
	Cause of Death.	Enteritis	•	:		Man, 18 Consump- tion	Fever; ill Lining seven memb weeks thick soft; f	
	Sex, Age, &c.	Child (only slightly deaf)	171, 172 Man, 50	Woman, æt. 80		Man, 18	Woman, æt. 16 (slightly deaffrom	mence- ment of attack)
	No. of the Dissections.	156, 157	171, 172	207, 208		217, 218	227, 228	, , , , , , , , , , , , , , , , , , ,

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Muc. memb. thick; incus and malleus removed by ab- sorption; cerumen projects through an orifice in the memb. tymp. into cavity of tympanum	Adhesions between mallens and pro- montory	Muc. memb. thick; covered with pus	Nearly all Muc. memb. ulcer- gone ated; incus par- tially absorbed	Vascular Muc. memb. vascu- lar	Muc. memb. thick; adhesions between stapes and fenestra ovalis by partial anchylosis
Sontains Has an cerumen; orifice; lining is thick memb. & white; atrophied concave ly; ad- herernto	More concave than na- tural tural	Almost effaced	Nearly all gone	Vascular	:
Contains Has an cerumen; orrifice lining is thic memb. & whit memb. & whit atrophied concav ly; ad	:	•	Contains pus	:	:
:	:	•	•	:	Memb. lining vestibule thicken- ed
•		:	:	:	:
Contains Thick and Muc. memb. thick ; a mass white adhesions between of ceru- men internal wall of tympanum	Destroy- Muc. memb. nearly ed by ul- destroyed by ulcer- ceration ation; osseous walls caroius; internal caroid artery ex- posed; stapes near- ly disconnected from incus and fe-	nestra ovalis Muc. memb. thick ; covered with pus ; carotid artery con-	tracted Muc. memb. thick and ulcerated; os- sicula absent	Muc. memb. red and vascular	Adhesions between stapes and fenestra ovalis by anchy- losis
Thick and white		Almost effaced	Destroy- ed by ul- ceration	Red, and vessels distend- ed with	
Contains a mass of ceru- men	Contains Destroy- pus, in ed by ul- which is ceration the incus	:	:	•	
	• • •	Pneumo- nia	Fever; ill 9 days	Typhus fever ; ill 7 days	Injury to spine
Man, 50 (many years deaf, particu- larly in left ear)	Woman, æt. 68 (rather deaf)			Man, 47	319, 320 Man, 30 Injury to (partially spine deaf all his life)
229, 230 Man, 50 (many years dear perticu- left ear)	255, 256	273, 274 Man, 59	281, 282 Man, 17	283, 284	319, 320 9

## DISEASES OF THE EAR.

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	Internal Ear.	Membra- nous atrophied	,	
	Eustachian Tube.	:		
LEFT EAR.	Cavitas Tympani.	artially Muc. memb. thick; destroy- base of stapes ab- ed; ad- sorbed; its place herent occupied by a to the membrane stapes and pro- montory Thick and Muc. memb. thick; opaque; malleus and incus upper have disappeared; half de- stapes adheres to stroyed; memb. tympani adherent	to pro- montory Connect- Adhesions between ed by ad. stapes and pro- hesions montory, so as to with in- conceal the stapes ner wall of tym- of tym- panum hazy soft, and vascular	
	Membrana Tympani.	Partially destroy- ed; ad- herent to the stapes and pro- montory Thick and romotory upper to opaque; tupper stroyed; stroyed;	to pro- montory connect- ed by ad- hesions with in- ner wall of tym- panum Concave; hazy	
	Meatus Externus.			
	Internal Ear.	Mem- branous labyrinth atrophied	÷	
	Eustachian Tube.		Healthy	
RIGHT EAR.	Cavitas Tympani.	Thick; Muc. memb. thick; white; contains a caseous firmly secretion; adhe- adherent sions between mal- to pro- montory tory so as to con- nontory tory so as to con- ceal the stapes ceal the stapes contains secretulous white; contains secretulous adherent matter; the incus, to pro- part of malleus have disappeared	4 ° ° 2 ° C	
	Membrana Tympani.	Thick; white; firmly adherent to pro- montory Concave; white; to pro- to pro- montory	Calcare- A ous; pre- sents pre- sents adheres adheres to pro- montery white at its centre, white at its connect- ed with the pro- montery	
	Meatus Externus.		: :	
	Cause of Death.	Pneumo-	Dropsy	
	oex, Age, &c.	Man, 41 (deaf in right ear only) Woman, æt. 64	Woman, æt. 76 Woman, æt. 38	
	Dissections.	341, 342 343, 344	349, 350 Woman, æt. 76 373, 374 Woman, æt. 38	

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Muc. memb. thick and soft; adhesions between stapes and fenestra ovalis by anchvlosis			Contains Soft and Muc. memb. thick; thick pus vascular; portions of smooth connected bone lying on its with pro- montory by adhe- sions	Muc. memb. thick, contains thick mu- cus	
•	Contains Destroy- 1 pus and ed by ui- epithe- ceration, band at band at anterior margin; the band bound by adhesion to pro- motory		Soft and vascular; connected with pro- montory by adhe- sions	White	
•	Contains pus and epithe- lium		Contains thick pus	Cerumen	
•	:		:	:	
•	:			:	
Muc. memb. thick; adhesions between stapes and pro- montory by an- chylosis		Nearly ef. Muc. memb. thick; faced contains scrofulous matter ; malleus removed	Muc. memb. thick and vascular; ad- hestions between the mastoid cells and stapes by a band of adhesion half an inch long	White & Muc. memb. thick,	sort, and ulcerated
	Destroy- 1 ed by ul- ceration, except a band at anterior margin; the band bound by adhesion to pro- montory	Nearly ef- faced	Opaque; internal layer thicker than na- tural		sont; pre- sented an ulcerated orifice
enbedo	Contains Destroy- pus and ed by ul- epithe- ccration lium band at anterior margin; the band bound by adhesion to pro- montory		:	Contains a collec- tion of cerumen	
Dropay	Pneumo- nia	50 Diseased in liver ear	Man, 26 Syphilitic (especi- disease ally dear of the in right cranial ear) bones	Accident- Contains al a collection of cerumen	IIVET
385, 386 Man, 52 Dropsy	Man, 53 Pneumo- (became nia deafafter deafafter when young)	Man, 50 Diseas (deaf in liver right ear only)	Man, 26 Syphiliti (especi- disease ally deaf of th in right cranial ear) bones	Man, 37 Woman,	zy (dear hver in right ear only)
85, 386	391, 392	395	403, 404	413, 414 419	

## DISEASES OF THE BAR.

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	Internal Ear.				
	Eustachian Tube.				
LEFT EAR.	Cavitas Tympani.	Upper Muc. memb. thick; part gone, malleus and incus lower part pushed into the fallen in- mastoid cells; ad- mards, & hesions between firmly ad- stapes and pro- herent to montory	Muc. memb. thick; adhesions between stapes and pro- montory	paque Muc. memb. thick, and con- soft, and vascular; cave contains pus and mucus	
	Membrana Tympani.	Upper part gone, lower part fallen in- wards, & firmly ad- herent to	stapes	Opaque and con- cave	Contains calcare- ous de- posit
	Meatus Externus.	•	:		
	Internal Ear.		Mem- brane atrophi- ed; fluid deficient	:	÷
	Eustachian Tube.	•	:	•	:
RIGHT EAR.	Cavitas Tympani.	Muc. memb. thick	Partly de-Muc. memb. thick; stroyed ; adhesions between the re- stapes and fenestra mainder ovalis by anchy- calcareous losis	Concave & Muc. memb. thick; opaque; the long process anorifice of incus has dis- at its appeared posterior part, the	Pneumo- Dia dark pus nia dark pus stapes admenter and Muc. memb. very stapes adherent to pro- montory stapes
	Membrana Tympani.		Partly de-Muc. stroyed ; adhe the re- stape mainder ovali calcareous losis	Concave & opaque; an orifice at its posterior part, the	of which are at- tached to stapes ontains Soft and Muc. concave; thick adherent to pro- montory and stapes
	Meatus Externus.	•	•	•	Contains dark pus
	Cause of Death.	Mortifica- tion of lungs	Consump- tion	Consump- tion	Pneumo-
	sex, Age, &c.	Man, 46	Woman, woman, act. 36 (especially deaf in right	Girl, 11	Woman, æt. 70
N	No. of the Dissections.	423, 424	429, 430	435, 436	441, 442 Woman, æt. 70

		Membra- nous la- byrinth much	ed; fluid deficient Humours of laby-	ficient		
		•	• • •			
	Adherent Muc. memb. thick; to mal- contains oily mat- leus by a ter	-	Adhesion between stapes and fenestra ovalis hy complete	anchylosis	Muc. memb. thick and red; contains a large quantity of thick mucus: ten-	sor tympani muscle atrophied
Connect- ed with promon- tory by adhesions	Adherent to mal- leus by a	firm band Thick and opaque ; upper part firmly ad- herent to	promon- tory and stapes		White, concave; inner laver	thick
• • •	:	• • •	•		•	
• •	•		Laby- rinthine humors	deficient	:	Laby- rinthine fluids dis- appeared
More vas- cular than natural	:	:	:		• • •	:
	Mucous membrane vascular	small Muc. memb. very rtion thick; malleus uly re- gone; stapes con- sins, cealed bich is	Muc. memb. thick; adhesions between stanes and fenestra	ovalis by partial anchylosis between the ossicula; the stares concealed	by them Muc. men adhesion the ossic buried	cealed Muc. memb. thick, red, and vascular; ossicula have dis- appeared
Connect- ed with inner wall of tym- panum by		A small portion only re- mains, which is	attached to pro- montory	Dull	Very con- cave and opaque	d
:	:	:	•	:	• • •	Contains epithe- lium and pus
Asthma	Fever	Apoplexy	Fever; ill six weeks	Dropsy	Gangrene	Consump-Contains Entirely tion epithe-destroye lium and pus
445, 446 Man, 80 Asthma	Man, 25, Fever (especi- ally deaf	in left ear) Woman, æt. 94	Woman, æt. 34	Woman, 41 (deaf in right	ear only) Woman, 60 (es- pecially deaf in	left ear) Woman, Consi 40 (deaf tion in right ear only)
445, 446	457, 458	465, 466	477, 478 Woman, et. 34	483	499, 500	505

DISEASES OF THE EAR.

90			MR. TOYNBEE ON							
	Internal Ear.					Laby- rinthine fluid hazy				
	Eustachian Tube.					:				
LEFT EAR.	Cavitas Tympani.	Muc. memb. very thick	Muc. memb. very thick	Muc. memb. thick and vascular	Muc. memb. thick and white	Muc. memb. thick and red; adhesions between incus and	inner wall of tym- panum Muc. memb. thick and soft; malleus, incus, stapes, and promontory con-			
ILE		Muc. thick	Muc. thick	Muc. and	Muc.	Muc. and r betw				
	Membrana Tympani.	Nearly entirely destroy- ed by ul- ceration	• :	Opaque	White and flat		White; connect- ed with promon-			
	Meatus Externus.	:	• • •	•	:	•	Contains White; a collec- connec tion of ed wit cerumen promo			
	Internal Ear.		Membra- nous la- byrinth	tnick	:	:	÷	:		
	Eustachian Tube.	:	:	•	:	:	:	:		
RIGHT EAR.	Cavitas Tympani.		montory by bands Whiteand Muc. memb. so thicker thick as nearly to than fill tympanic cavity	Muc. memb. thick and vascular; ten-	atrophied atrophied Muc. memb. thick and white	Muc. memb. thick and red; adhesions hetween incus and	and inner wall of tympanum; stapes concealed Muc. memb. thick; contains mucus			
R	-	4 ab	- ( )	Muc.	<u> </u>	4	and tyn con Muc.			
	Membrana Tympani.	Contains patches of calcareous matter; connected	montory by bands Whiteand thicker than	White White and vas-	White and flat		Dull	Partially calca- reous		
	Meatus Externus.	•	•	:	:		Contains a collec- tion of cerumen			
	Cause of Death.	22 Consump- ci-tion eaf	Consump- tion	Consump- tion		Commit- ted sui- cide	Consump- tion	Apoplexy		
	Sex, Age, &cc.	Man, 22 ( (especi- ally deaf in left ear)	Man, 56	Man, 50	Man, 40	Woman, æt. 50	547, 548 Man, 44 Consump-Contains Dull tion a collec- tion of cerumen	Man, 41 (slightly deaf)		
No 26 412	Dissections.	509, 510	517, 518	521, 522	531, 532 Man, 40	535, 536	547, 548	555, 556 Man, 41 Apoplexy (slightly deaf)		

	Membra- nous la- byrinth thickened				
	• • •				
Adhesions between stapes and fenestra ovalis by partial anchylosis	Muc. memb. very thick ; adhesions between stapes and fenestra ovalis very firm	Muc. memb. thicker than natural		Muc. memb. thick and vascular ; ad- hesions between stapes,promontory, and pyramid	Adhesions between malleus, tensor tympani muscle, and stapes
:	Destroy- ed by ul- ceration	•			:
•	:	•		:	:
Labyrin- thine fluids much di- minished	•	:		: : :	:
•	:	•		:	:
Adhesions between stapes and fenestra ovalis by firm an- chylosis	Destroy- Muc. memb. exceed- ed by ul- Angly thick; stapes ceration entirely concealed; adhesions between stapes and fenestra ovalis more firm	Muc. memb. thick and red		Muc. memb. much congested and thickened; contains mucus; adhesions between stapes, promontory and	
:	Destroy- ed by ul- ceration	Thicker than na- tural;red at its cir- cumfer-	Very con- cave and flabby ; adherent to pro-	montory	Opaque & thicker than na- tural
:	•	•	• • •	•	•
Consump- tion	Asthma	Apoplexy	•	: :	Paralysis
565, 566 Man, 36 Consump- (especial- tion ly deaf in rightear)	569, 570 Man, 60 Asthma	Man, 28 (slightly deaf)	Man (deaf in right ear only)	Man, 31 (deaf for many years)	Woman, 65 (deaf many years, especially rightear)
565, 566	569, 570	571, 572	575	589, 590 Man, 31 (deaf fc many years)	599, 600

#### DISEASES OF THE EAR.

			2200 202		•		
	Internal Ear.						
	Eustachian Tube.		Contains mucus				
LEFT EAR.	Cavitas Tympani.		frenestra ovalus more firm than natural; partial anchylosis Muc. memb. thick Contains and red; stapes mucus nearly concealed; contains mucus; adhesions between	stapes and pro- montory	Muc. memb. thick; malleus and incus partially destroyed by caries; stapes gone	Soft and Muc. memb. thick red and vascular; con- tains mucus and	pus Muc. memb. thick; lymph effused; ad- hesions forming
	Membrana Tympani.	Destroy- ed by ul- ceration	Opaque		:	Soft and red	:
	Meatus Externus.	:	:	Contains a collec-	cerumen		:
	Internal Ear.		:	•	÷		•
	Eustachian Tube.	:	Contains mucus	• • •	•		
RIGHT EAR.	Cavitas Tympani.		Muc. memb. thick Contains and red; stapes mucus nearly concealed; contains mucus; adhesions between	stapes and pro- montory		Muc. memb. thick and vascular; con- tains mucus and	pus Muc. memb. thick and vascular; ca- vity full of pus
	Membrana Tympani.	:	Opaque	•	Nearly all destroy- ed by ul- ceration; margin	attached to pro- montory White	:
	Meatus Externus.	:	:	Contains a collec- tion of	cerumen	:	
_	Death.	Inflam- mation of lungs	÷	:	:	Scrofula	Scarlatina
Sav Are	oca, Age, &c.	Man, 64	Man, 40 (deaf in bothears during a cold)	Man, 45	Woman, 50 (deaf during many years)	Child, æt. Scrofula 6 months	
No of the	Dissections.	602	605, 606	609, 610	617, 618	623, 624	625, 626 Boy, 5

Whiteand Muc. memb. thick thick; and vascular orifice at the upper part	Contains Whiteand Muc. memb. thick; a collec- concave; adhesions between tion of connect- the ossicula and cerumen ed with membranatympani promon- tory	Connect- Adhesions between ed by the ossicula large bands with pro- montory	Muc. memb. thick; a false membrane covers the fenestra ovalis; adhesions between stapes and promontory	Opaque & Muc. memb. thick ; thicker adhesions between than na- stapes, incus, and tural inner wall of tym- panum ; partial an- chylosis
•	Contains a collec- tion of cerumen	:	:	:
:	:	:	•	:
• • •	:	•		:
Whiteand Muc. memb. thick thick; an and vascular; mu- orifice at cus and pus theupper	Contains Whiteand Muc. memb. thick; a collec- concave; adhesions between tion of small pro- the ossicula and cerumen cess of membrana tympani projects adherent to pro-		Muc. memb. thick, white, soft and ul- cerated ; bones dis- connected	Muc. memb. thick; containsscrofulous matter; adhesions between stapes, in- cus, and inner wall of tympanum; par- tial anchylosis
Whiteand thick; an orifice at the upper part	Whiteand concave; small pro- cess of malleus projects adherent to pro-		Destroy- ed by ul- ceration	Opåque; inner layer thick
:	Contains V a collec- tion of cerumen	•	: : :	:
Erysipe- las	Bronchi- tis	Consump- tion	Child- birth	Apoplexy
Woman, Erysipe- æt. 21 las (deafness came on after scar- let fever)		Man, 27 Consu (slightly tion deaf in left ear)	Woman, 26 (very deaf in rightear; slightly soinleft; scarletfe- ver when	Man, 60
653, 664	659, 660	673	675, 676	677, 678

90		М	IR. TOYNBEE	ON		
	Internal Ear.		Fluid in vestibule deficient in quan- tity			
	Eustachian Tube.		÷			
LEFT EAR.	Cavitas Tympani.	Adhesions between all the ossicula	Whiteand Adhesions between thick; all the ossicula adherent to pro- montory	Muc. memb. very thick and red, and contains scrofulous matter	Muc. memb. thick and white; adhe- sions between mal- leus, and tympanum	Muc. memb. thick; adhesions between stapes and pro- montory; partial anchylosis
	Membrana Tympani.	Thick, concave, & tense; adherent to pro- montory	Whiteand thick; adherent to pro- montory	Thick, white, and soft	White, thick, & concave	
	Meatus. Externus.	:	:	÷	:	
	Internal Ear.		Fluid in vestibule deficient in quan- tity	•	÷	:
	Eustachian Tube.	•	:		:	:
RIGHT EAR.	Cavitas Tympani.	Adhesions between all the ossicula	White & Adhesions between White & Adhesions between thick;up- all the ossicula per part gone;ad- herentto promon-	<b>F F</b>	of the tympanum Muc. memb. thick and white; con- tains mucus	Muc. memb. thick ; adhesions between stapes and pro- montory ; partial anchylosis
	Membrana Tympani.		panum White & thick; up- per part gone; ad- herent to promon-	fory Destroy- ed by ul- ceration	White; thicker and more concave than na-	White, White, shining & concave; adherent to incus
	Meatus Externus.	:		:	÷	Contains a collec- tion of cerumen
	Cause of Death.	Consump- tion	Dropsy	Consump- tion	Diseased uterus	fan, 44 Diseased (hadbeen bladder growing deaf du- ing many years)
	Sex, Age, &c.	Woman, æt. 30	687, 688 Man, 40 Dropsy (scrofu- louswhen young)	707, 708 Child, 24 Consump- tion	Woman, æt. 40	Man, 44 Diseased (hadbeen bladder growing deaf du- ring many years)
	No. of the Dissections.	679, 680	687, 688	707, 708	709, 710	713, 714

<u> </u>	Soft and Muc. memb. thick flabby; and red frmly adherent	to pro- montory Muc. memb. very thick; tympanic cavity nearly filled by it	Muc. memb. thick ; full of mucus	ae Muc. memb. thick ter na-	. Muc. memb. very thick	hicker Muc. memb. thick than na-	white contains mucus
:	Soft and flabby; firmly adherent	to • • •	Soft	Opaque and thicker than na- tural	:	Thicker than na	Thick ar white
:	:	:	:		:	:	:
:	:	:	:	:	:	:	:
:	• • •	:	•	• • •	•	•	:
Muc. memb. thick; adhesions between stapes and pro-	montory Muc. memb. thick	Muc. memb. very thick, so as nearly to fill the ca- vity of the tym-	Adherent Muc. memb. very to pro- thick montory	by bands by bands Presents Muc. memb. very a large thick; covered orifice; with pus; adhe- the re- sions between maining stapes and pro- maining stapes and pro- portion montory more firm white	Muc. memb. very thick; stapes con-		Muc. memb. thick; contains mucus
:	Thicker than na- tural	:	Adherent to pro- montory	by bands Presents 1 a large orifice; the re- maining portion thick and white	•	Thick and opaque	Whiter than na- tural
:	:	:	:	•	•	:	•
Cancer of the liver	Consump- tion	Measles	Fever	Fever	Pneumo- nia	Enteritis	Dropsy
Woman, æt. 48	719, 720 Youth, 17 Consump-	Girl, 8 <b>}</b>	•	Woman, 73 (deaf in right ear from child- hood, and latterly in the	left) Man, 60	Man, 74 Enteritis (slightly	Woman, æt. 69
715, 716	719, 720	721, 722	745, 746	753, 754	755, 756	757, 758	761, 762

		Internal Ear.	·.					
		Eustachian Tube.						
	LEFT EAR.	Cavitas Tympani.			Muc. memb. thick and soft	Muc. memb. thick and soft; adhesions between the ossi- cula; so numerous as nearly to fill the		Muc. memb. thick ; stapes concealed ; adhesions between stapes and fenestra ovalis by partial anchylosis
		Membrana Tympani.			Opaque	Thick; 1 white at the cir- cumfe- rence;		:
_		Meatus Externus.		Contains a collec- tion of cerumen	•			:
_		Internal Ear.		:	:	÷		Labyrin- thine memb. red, and contains bloody serum
		Eustachian Tube.		:		•		:
	RIGHT EAR.	Cavitas Tympani.	Muc. memb. very thick; stapes con- cealed	• • •	So white Muc. memb. thick and thick that the malleus is not vrsible thro' it	• • •		Muc. memb. very thick; stapes con- cealed; mem. of fe- nestra rotunda red & pulpy; adhesions between stapes & fenestra ovalis by anchylosis
		Membrana Tympani.	Opaque	:	So white and thick that the malleus is not visible thro' it	:	Presentsa large ul- cerated orifice	:
		Meatus Externus.	•	Contains a collec- tion of cerumen		•	:	÷
_		Death.	Consump- tion	Asthma	Diseased kidneys	45 Dropsy in ear	Man, 70 Consump- (deaf in tion right ear only)	sions
_	Sor And	SCC.	Man, 68 Const (deaf in tion right ear only)	Woman, æt. 70		Man, 45 (deaf in left ear only)	Man, 70 Consump- (deaf in tion right ear only)	Child, æt. Convu 6 (deaf sions from birth)
	No of the	Dissections.	765	769, 770	779, 780 Man, 27	782	789	795, 796

Fluid of vestibule deficient			DISE	ASES O	F THE EAF	Membra- 5 nous la- byrinth	borndo tag	
Very con-Adhesions between cave all the ossicula	Muc. memb. thick and red; contains	Whiteand Muc. memb. thick thick and soft		Muc. memb. very thick in parts ; in- cus disjointed from	very stapes and partial- concave; ly absorbed; ad- adherent hesions between to pro- stapes and pro- montory montory by anchy- hosis.	Muc. mem. healthy; tensor tympani muscles atrophied		Muc. memb. con- tains scrofulous matter
Very con- cave	:	Whiteand thick		pu	very concave; adherent to pro- montory	White Muc. men and very tensor concave muscles	-	Destroy- ed by ul- ceration
:	• • •	•		:		:		•
: : :	:	:		Membra- nous la- byrinth	very thick	Membra- nous la- byrinth atronhied		:
:	• • •	:		÷		:		:
Muc. memb. thick; adhesions between stapes and pro- montory	Muc. memb. thick and red; contains	Muc. memb. thick and soft; contains offensive pus	Destroy- Muc. memb. ulce- d by ul- rated; bone ca- ceration rious	Thick and Muc. memb. thick; very con-incus partly ab- cave;ad-sorbed; adhesions	netenttol betweenstapes and promon- promontory by an- tory chylosis	Vhite Muc. mem. healthy; and very tensor tympani concave muscle atrophied	Muc. memb. very thick; full of te- nacious mucus	•
:	:	Opaque and thicker than	Destroy- ed by ul- ceration	Thick and very con- cave;ad-	nerent to promon- tory	White and very concave	:	•
•	:	:	:	•		•	:	:
:	Pneumo- nia	Rheuma- tism	Diseased bone of the ear	Gangrena senilis		:	Man(deaf Consump- in right tion earonly)	Man, 45 Consump- (deaf in tion left ear only)
Woman, 90 (dea. in left earmany	ycaus) Woman, æt. 26	Woman, æt. 57	Girl, 10	Woman, æt. 79		Man	Man(deaf Consu in right tion ear only)	Man, 45 Const (deaf in tion left ear only)
797, 798 Woman, 90 (dea. in left earmany	807, 808	809, 810	815	816, 817		832, 833	844	847

DISEASES OF THE EAR.

94		N	IR.	TOYNI	BEE O	DN .
	Internal Ear.					
	Eustachian Tube.					
LEFT EAR.	Cavitas Tympani.	Muc. memb. thick and red; stapes partly concealed	Muc. memb. very	Muc memb. thick and soft	Muc. memb. thick	Muc. memb. very thick; covered with mucus; ad- hesions between stapes and pro- montory by partial
	Membrana Tympani.	:	:	:	:	White
	Meatus Externus.	:	:	÷	:	÷
	Internal Ear.		:	:	There is a mem-	branous band be- tween of the stapes and the wall the ves- tibule 
	Eustachian Tube.	•	:	:	:	
RIGHT EAR.	Cavitas Tympani.	Muc. memb. very thick; stapes near- ly concealed; in- cus absorbed	Muc. memb. very	Muc. memb. thick and soft	Dull; in-Muc. memb. thick ner layer and soft; adhesions white hot were	between stapes and promontory Muc. memb. thick ; adhesions between stapes and pro- montory by partial anchylosis
	Membrana Tympani.	r nd ro- ro- ro-		:	Dull; in- ner layer white	
	Meatus Externus.	Full of ce- White, rumen thicke and epi- than 1 thelium turala concas adhery to pi monto	:	:	:	÷
	Cause of Death.	Dropsy	Consump-	Bronchi- tis	Consump- tion	Consump- tion
	Sex, Age, &c.	Man, 60 Dropsy	Man, 73 Consump-	867, 868 Man (deaf Bronchi- for four tis	Woman, æt. 39	Woman, est. 50
;	No. of the Dissections.	855, 856	863, 864	867, 868	877, 878	879, 880

	·			
Muc. memb. thick			Contains White Muc. memb. thick a collec- and part- and white; con- tion of ly ab- tains mucus; nu- cerumen sorbed merous strong ad- hesions between the ossicula	Ulcerat- Muc. memb. thick ed; pre- and dark coloured; sents a stapes nearly con- largeori- cealed and firmly fice tra ovails tra ovails
:			ontains White A a collec- and part- tion of 1y ab- cerumen sorbed	Ulcerat- ed; pre- sents a largeori- fice
:			Contains a collec- tion of cerumen	:
:	Full of pus; au- ditory nerve thick, red, and		:	:
:	• • •		:	
Muc. memb. thick	Destroy- Muc. memb. thick; ed by ul- full of dark pus; ceration stapes gone	Muc. memb. thick ; the ossicula con- nected by very firm adhesions	Contains Thick and Muc. memb. very cerumen white thick; covered with dark mucus; adhesions between ossicula, and con- cealing them	Muc. memb. thick; covered with pus
:	Destroy- ed by ul- ceration	Opaque	Thick and white	:
:	÷	:	Contains 7 cerumen	•
Apoplexy	:	:	:	:
881, 882 Man, 50 Apoplexy	Young man, 17 (deaf in right ear only)	Man, 45 (deaf in rightear)	Man, 40	Man, 30
881, 882	887	206	910, 911 Man, 40	912, 913

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Externus Tympani. Tube Ear.	Muc. memb. thick; adhesions between stapes and pro- montory	Concave Muc. memb. thick Red and and and vascular soft	theedges of which adhere to the promon-	tory Very strong and nu- merous adhesions between the mem- brana tympani and	ossicula Adhesions between memb. tympani, incus, stapes, and promontory	
Tympani. Cavitas Tympani.	Muc. memb. thick; adhesions between stapes and pro- montory	Concave Muc. memb. thick Red and and and vascular soft white:an	theedges of which adhere to the promon-	_ <del></del>	ossicula dhesions between memb. tympani, incus, stapes, and promontory	
Tympani. Cavitas Tympani.	Muc. memb. thick; adhesions between stapes and pro- montory	Concave Muc. memb. thick and and vascular white; an	theedges of which adhere to the promon-	_ <del></del>	ossicula Adhesions between memb. tympani, incus, stapes, and promontory	
Externus. Tympani.	:	Concave and white; an	theedges of which adhere to the promon-	ory • • • •	•	
Externus.	:			÷		
	:	•		:	Full of cerumen	
Ear.	•	•		:	:	
Tube.	Mucous memb. con- gested	•		:	•	
Cavitas Tympani. Mucous membrane covered with thick	pus Muc. memb. very thick; stapes nearly concealed; contains mucus; adhesions between	malleus and pro- montory Muc. memb. red and thick; full of se- rum and lymph		Muc. memb. thick and soft; contains serum	Muc. memb. thick and vascular; ad- hesions between incus and memb. tympani, stapes	and promontory
Tympani. Ulcerat- ed. An	hazy	Concave, shrivel- led and drv ·	stapes projects through it	•		· · ·
Externus. Contains offensive	:	Vascular		:	Full of cerumen	
Delirium tremens	Tubercu- lous dis- ease	Burn over head and face		Effusion on brain	Consump- tion	
&c. Adult	Young woman	Woman, æt. 45		Man, 50		
Uissections.	68, 69	78, 79		109, 110	115, 116	- 2 2 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8
The second in the second is th	Adult         Delirium         Contains         Ulcerat-         Mucous         Ear.           Adult         Delirium         Contains         Ulcerat-         Mucous         Ear.	Adult     Delirium     Aympan.     Auce.     Luce.     Ear.       Adult     Delirium     Contains     Ulcerat-     Mucous membrane       tremens     offensive     ed.     An     covered with thick       Young     Tubercu-     pus     orifice     pus       Young     Tubercu-      Hazy     Muc. memb. very Mucous       woman     lous dis-      thick;     stapes       ease     contains     concealed;     con-       contains     meuus;     gested	Adult         Delirium tremens         Aympann.         Armenus.           Adult         Delirium tremens         Contains         Ulcerat-         Mucous membrane           Young         Tubercu-         pus         orifice         pus         orifice         pus           Young         Tubercu-         pus         orifice         pus         orifice         pus           Young         Tubercu-         pus         orifice         pus         corrected with thick           Woman         lous dis-          Hazy         Muc. memb. very         memb.           woman,         ease          ease         contains         memb.            Woman,         Burn over         Vascular         Concave,         Muc. memb. red and              woman,         Burn over         Vascular         Concave,         Muc. memb. red and	Adult         Delirium tremens         Aympaus         Aunce.         Ear.         Ear.           Adult         Delirium tremens         Contains         Ulcerat-         Mucous membrane         Ear.         Ear.         Ear.           Young         Tubereu-         pus         orfferest-         Aucous membrane         Ear.         Ear.         Ear.           Young         Tubereu-         pus         orifice         pus         corrected with thick         memb.              Ear.         Ear.         Ear.         Ear.  .	Adult         Delirium tremens         Aympaus offensive pus         Aympaus         Luce.         Ear.         Arternus.           Adult         Delirium tremens         Contains         Ulcerat-         Mucous membrane         Ear.         Arternus.           Young         Tubercu- woman         pus         orifice pus         pus         orifice pus         pus         orifice         pus           Young         Tubercu- bus         pus         orifice pus         pus         orifice         pus           Woman,         lous dis- case          Hazy         Muc. memb. very Mucous             Woman,         Burn over Vascular         Concave, stapes         malleus and pro- montory                 Wan, 50         Effusion          farpes         memb. thick </td <th>Adult         Externus         Pynpan.         Parternus         Ear.         <thear.< th=""> <thear.< th="">         Ear.</thear.<></thear.<></th>	Adult         Externus         Pynpan.         Parternus         Ear.         Ear. <thear.< th=""> <thear.< th="">         Ear.</thear.<></thear.<>

TABLE II.-CASES OF DISEASE AND PROBABLE DEAFNESS.

## MR. TOYNBEE ON

Vascular Vascular ; Muc. memb. very presents red; adhesions be- an orfice tween memb. tym- pani and stapes	Muc. memb. thick and vascular; con- tains mucus; ad- hesions between memb. tympani, malleus, and pro- montory.	Thin, Muc. memb. thick; drawn the long process of inwards, incus absorbed and ad- heres to promon-	Destroyed Muc. memb. thick by ulce- and pulpy; adhe- ration sions between stapes and pro- montory	Very con-Adhesions between cave stapes and pro- montory	
Vascular V	:			× •	
:			•		
:	:	•	•	•	
Presents Muc. memb. vascu- an orifice lar: contains pus; adhesions between stapes and pro- montory	Muc. memb. vascu- lar; vessels large and tortuous; ad- hesions between stapes and pro- montory		Destroy- Muc. memb. thick ed by ul- and pulpy; adhe- ceration sions between stapes and pro- montory		Mucous membrane very vascular, and so thick as to bury the stapes in it
Presents an orifice	•	• *	Destroy- ed by ul- ceration	An orifice nearly a lineindi- ameter; adheres to pro- montory	
• • •		:	:	•	:
Epilepsy	Fever	Bright's disease	131, 132 Child, 10 Consump- tion	Paralysis	Cholera
	123ª, 126ª Man, 24	Man, 40	Child, 10	Woman, æt. 60	Child, 6
117, 118 117, 118	125ª, 126ª	130	131, 132	144, 145 Woman, æt. 60	

•••							
	Internal Ear.						
	Eustachian Tube.						
LEFT EAR.	Cavitas Tympani.	Muc. memb. dark and vascular; con- tains thick pus			Muc. memb. thick and ulcerated		
	Membrana Tympani.	: : :			Central portion destroy- ed by ul- ceration		
	Meatus Externus.	Contains cerumen	•		•		
	Internal Ear.	:			•		:
	Eustachian Tube.	:			• • •		
RIGHT EAR.	Cavitas Tympani.	Muc. memb. vascu- lar, thick, full of pus	•		Muc. memb. thick and ulcerated; se- rum and pus ef- fused; incus and stapes rough and	disconnected Muc. memb. very thick; stapes quite	umeaded Muc. memb. very thick; stapes nearly concealed
-	Membrana Tympani.		continu- ous with those of meatus Concave; attached bystrong	to pro- montory Opaque l and con- cave	Central part de- stroyed by ulce- ration	•	:
	Meatus Externus.		:	÷	•	•	
-	Cause of Death.	Fever	:	Fever; ill eleven days	Scarlet fever; ill five weeks	Diseased lungs	Concus- sion of hrain af- ter some days
-	Sex, Age, &c.		Man, 45	Woman, æt. 35		Child, æt. Diseased 9 months lungs	Man, 68
	No. of the Dissections.	163, 164 Boy, 15	167	173	175, 176 Man, 19	181	195

	Muc. memb. very thick and vascular		Presentsa Muc. memb. in con- large ori- tact with dura fice at its mater; tensor tym- centre; pani muscle atro- maleus phied	4	tenestra ovalis by anchylosis	Vascular Soft and Muc. memb. very vascular vascular; pus and lymph effused
	•		Presents a l large ori- fice at its centre ; malleus	absent		Soft and vascular
	:		•	•		Vascular
			:	:		•
	•		•	:		Quite healthy
Man, 63 Consump-Contains Connect- Muc. memb. thick tion cerumen ed with and opaque; ad- stapes hasions between montory	Muc. memb. thick and very vascular; contains serum and	Muc. memb. thick Muc. memb. thick and vascular; con- tains serum and pus	• • •	Adhesions between the base of the stapes and the fe-	nestra ovalis by anchylosis Muc. memb. very chick; stapes con- cealed; adhesions between stands and	Mucous memb. red, Quite soft, and thick
Connect- ed with stapes	Hazy	Dull	•	• • •	Opaque	umefied Thick, and vas- soft, vas- cular cular; very concave
Contains cerumen	• •	fever; ill Contains six weeks hard ce- rumen in contact with		•	:	Tumefied Thick, and vas- soft, cular; cular conce
Consump- tion	209, 210 Man, 28 Fever; ill two days		Inflamma- tion of lungs	Asthma	Consump- tion	Scarlet fever
Man, 63	Man, 28	Man, 63	Woman, æt. 65	275, 276 Man, 64	Man, 23	Woman, æt. 17
197	209, 210	211	272	275, 276	323	359, 360

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10	0		, *	MR. TOYN	BEE O	N			
	Internal Ear.								
	Eustachian Tube.								
LEFT EAR.	Cavitas Tympani.	White, in- Muc. memb. con- ner sur- tains a large quan- facethick tity of mucus	Thick and Muc. memb. thick; opaque; adhesions between connect- stapes and pro-	monvory; stapes firmly fixed Muc. memb. white and ulcerated	Muc. memb. thick; contains pus and	mucus Thick and Muc. memb. thick white ; and vascular adheres to stanes	Muc. memb. very thick	congested Presents a Muc. memb. red large ul- and much swollen; cerated contains mucus	Muc. memb. con- tains scrofulous matter
	Membrana Tympani.	White, in- Muc. ner sur- tains facethick tity c	Thick and ] opaque ; connect-	ed with stapes	•	Thick and white ; adheres to stapes		congested Presents a large ul- cerated	
	Meatus Externus.		•	   	•		•	• • • • • •	
	Internal Ear.	•	÷	•	• 3 • 7 • 7	:	:	• 2	:
	Eustachian Tube.	• • •	:		•	•	:	•	:
RIGHT EAR.	Cavitas Tympani.	Mucous membrane very thick; stapes buried; mucus in		- Z ~ ~ ~	fenestra ovalis	Muc. memb. thick and vascular		tympanic cavity Mucous memb. red and much swollen; contains mucus	Mucous membrane contains scrofulous matter
	Membrana Tympani.	White ; inner layer	thick Thick and opaque ; connect-	eu wiun stapes	• •	Thick, white, concave; adherent	to stapes White; much	congested	Nearly destroy- ed by ul- ceration
	Meatus Externus.	•	•	· • · • · •	• •	•	:	•	•
	Cause of Death.	Diseased brain	Dropsy	Consump- tion	Pneumo- nia	:	:	Hydroce- phalus	Consump- tion
	Sex, Age, &c.	Man, 80	Woman, æt. 53	Woman, æt. 42	Woman, æt. 66	Man, 40	629, 630 Child of 6 months	Child, æt. Hydroce- 1 year phalus	Woman, æt. 64
;	No. of the Dissections.	369, 370	463, 464	485, 486	496	529, 530 Man, 40	629, 630	705, 706	711, 712

Ulcerat- Muc. memb. thick ed; a and ulcerated; in- large ori- ficeat the posterior part	Destroy- Muc. memb. ulce- ed by ul- rated and very ceration thick; contains	scrotulous matter Muc. memb. thick, red, and soft; con- tains muco-puru-	Thick and Muc. memb. very red thick, nearly filling the tympanum			Connect- Muc. memb. thick ed with promon-	Vury Connect- Muc. memb. thick; ed with adhesions between inner stapes and pro- wall of montory tympa- num
t- a a ori- the rior	y- M ul- r on ti	* <u>8 5 5 5</u>				on-th on-th	rt- ith Mi P- of Ba
Ulcerat- ed; a large ori- fice at the posterior part	Destroy- ed by ul- ceration	Red	Thick a red			Connect- ed with promon-	Connect- ed with inner wall of tympa- num
:	:	:	:			÷	:
•	:	:	•				
:	:	:	•			÷	:
White Muc. memb. red, and soft; soft, and pulpy; vessels contains blood and large and mucus; adhesions numerous between malleus, incus, and inner mull of transmum		Muc. memb. thick; contains muco- purulent matter	Thick and Muc. memb. very red thick, so as nearly to fill the cavity of	Muc. memb. con- tains a large quan- tity of mucus	Muc. memb. soft and thick; con-	Connect- Muc. memb. thick promon-	out onnect- Muc. memb. thick; ed with adhesions between inner stapes and pro- wall of montory ympa- num
White and soft; vessels large and numerous	:	Red	Thick and red		:	Connect- ed with promon-	Connect- ed with inner wall of tympa- num
•	• • •	•	:	•	•	:	•
Measles	Diseased hip	Measles	Scarlatina	Pneumo- nia	Consump- tion	Consump- tion	Apoplexy
723, 724   Infant, 9   Measles months	Girl, 9	Child, æt. Measles 18 mths.	Boy, 3	Man, 75	Woman, æt. 35		
723, 724	728	729, 730	745, 746 Boy, 3	122	813	859, 860 Woman, æt. 71	861, 862 Woman, æt. 34

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1	102			1	MR. T	OYNB	EE ON	
		Internal Ear.						
		Eustachian Tube.						
	LEFT EAR.	Cavitas Tympani.	•	•			Very vas-Muc. memb. thick cular and soft; contains mucus	
		Membrana Tympani.					Very vas- cular	
_		Meatus Externus.	•				•	
		Eustachian Internal Tube. Ear.	v			;	•	
	RIGHT EAR.	Eustachian Tube.					• •	
		Cavitas Tympani.	Muc.memb.so thick as to conceal the	. Muc. memb. thick, soft, and ulcer-	A large Adhesions between orifice in the stapes, malleus, ++o con and monotory		stapes stapes Ulcerated Muc. memb. soft; contains mucus	
		Membrana Tympani.		•	A large orifice in	tre; con-	stapes Ulcerated	
_		Meatus Externus.		•	•		•	
-		Cause of Death.	Consump- tion	:	Fistula in ano		Consump- tion	
		No. of the Sex, Age, Cause of Dissections. &c. Death.	Man, 19	Woman, æt. 25	Woman, æt. 53		905, 906 Child, æt. Consump- 2 years tion	Total.
		No. of the Dissections.	889	893	903		905, 906	70 Total.

#### (Having a collection of cerumen 28 and epithelium 5 Meatus Externus . " " 2 and rye seeds ,, " epithelium only 1 ,, 3 Thick and vascular Very concave externally. 4 Thick and whiter than natural 11 Connected with promontory by adhesions 16 Membrana Tympani 5 stapes by adhesions ,, stapes and promontory by adhesions 1 " 1 stapes and chorda tympani " 6 incus ,, all the ossicles and the promontory 3 ,, Mucus: the membrane being healthy 13 Mucus: the membrane being thick 5 4 Serum: the membrane being vascular 2 Blood Contents . Calcareous matter 5 6 Scrofulous matter . Serum and lymph , 1 Purulent matter 1 More vascular than natural 28 71 Thicker than natural . Ulcerated 2 • • State of Mucous 1 Flocculent Membrane Black pigment secreted beneath it 2 8 Effusion of blood beneath it . 1 serum ,, " Cavitas Tympani Malleus and stapes . 1 and promontory 4 Malleus and promontory . 5 1 3 1 66 Stapes and promontory: mucous membrane healthy Adhesions bevascular 6 " " tween . thick 30 Stapes and tensor tympani muscle . 3 Chorda tympani nerve and incus 1 incus, stapes, and promontory 2 " and upper wall of tympanic " ,, cavity 1 5 All the ossicula and the promontory Fenestra Ro- (Bands of adhesion over the fenestra rotunda con-3 tunda . . cealing the membrane . . Eustachian Tube { Containing mucus . Lining membrane thick and vascular 8 3 3 (Bands of adhesion connecting the parietes

## TABLE III.—CASES OF INCIPIENT DEAFNESS, 358.

## TABLE IV.

## TABULAR ABSTRACT OF THE CONDITION OF THE 612 DISEASED EARS.

		Cases of Deafness, 184.	Cases of Probable Deafness, 70.	Cases of Incipient Deafness, 358.
	Containing a collection of cerum		4 or 17	28 or 13
	and epithelium Containing a collection of cerum	1		5
	and rye-seeds	—		2
	Containing a collection of epithe- lium	1	_	1
Meatus Externus $\langle$	Containing a collection of pus	9	1	_
	" " " of pus and epithelium	3		
	Membrane thick	3 2		_
	" atrophied	1	—	
	" vascular		4	-
	Osseous walls carious canal contracted .	2 2	_	
	<i>n</i>	_		
	White, and thicker than natural	30 or į	4 or 1	11 or $\frac{1}{32}$
	Very concave externally . Flat	$7 \text{ or } \frac{1}{25}$	$3 \text{ or } \frac{1}{23}$	4 or m
	Vascular	4		
	Thick and vascular			3
	Contains a deposit of calcareous			
	matter	4 12	—	-
	One half destroyed by ulceration	4	_	
	Three fourths " "	13		
	All " "	12	—	-
	Very concave and adherent to		6	
	Connected with promontory by	15	6	-
Membrana Tympani	bands	11 or 1	9 or 1	16 or 🛔
	Adherent to stapes	- '	3	
	Connected with stapes by bands Has an orifice through which the	2	-	5
	stapes projects		1	_
	Nearly destroyed; the remnant		_	
	adherent to promontory	9 or $\frac{1}{20}$	-	
	Connected with the stapes and promontory by bands	3		1
	Connected with incus by bands	ĭ	_	
	Adherent to incus	—	1	6
	Connected with all the ossicula by bands	1	1	
	Connected with all the ossicula and			
	$\subset$ the promontory by bands .	I	3	3

### DISEASES OF THE EAR.

			9	<u> </u>	0
			Cases of Deafness.	Cases of Probable Deafness.	Cases of Incipient Deafness.
	Contents	A collection of mucus: the mem- brane thick A collection of cerumen . , epithelium . , pus: muc. memb. thick , blood . , lymph . , serum and lymph , serum . , scrofulous matter , oily matter .	$     \begin{array}{c}             1 \\             1 \\         $	11 or <del>]</del>      	5  2 1 1 4 6 
	State of Mucous Membrane .	", calcareous matter (More vascular than natural . Thicker than natural . So thick as almost to bury the whole of the stapes ", ", to fill the tym- panum Ulcerated and thick . Pulpy . Black pigment secreted beneath it Effusion of blood beneath it . ", serum beneath it .	73 or 1 8 5 12 — — —	$ \begin{array}{c}       21 \text{ or } \frac{1}{3} \\       35 \text{ or } \frac{1}{2} \\       14 \\       3 \\       6 \\       4 \\       -$	5 28 or 13 71 or 3  2 1 2 1 2 8 1
anî	Bands of adhesion between	Stapes and promontory : muc. mem. healthy Stapes and promontory : muc. mem. thick Stapes and promontory : muc. mem. vascular Stapes, promontory : muc. mem. vascular Stapes, promontory Incus, stapes, and promontory Malleus and promontory , and stapes , stapes, and promontory All the ossicles , and the promontory Tensor tympani muscle and stapes Chorda tympani nerve and incus Chorda tympani nerve, incus, stapes, and promontory Chorda tympani nerve and upper wall of tympanum .	$     \begin{array}{c}             18 \\             \\             1 \\           $	$ \begin{array}{c} 9 \\ - \\ - \\ 3 \\ 1 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$	$ \begin{array}{c} 66 \\ 30 \\ -1 \\ 1 \\ 3 \\ -1 \\ 4 \\ -5 \\ 3 \\ 1 \\ 2 \\ 1 \end{array} $
Cavitas Tympani	State of the Ossi- cula	Adherent to promontory Removed by absorption ,, ulceration Partly destroyed by caries and incus in mastoid cells	1 1 3 1 1		

#### MR. TOYNBEE ON DISEASES OF THE EAR.

			Cases of Deafness.	Probable	Cases of Incipient Deafness.
Cavitas Tympani (continued)	State of the Ossi- cula (continued)	Removed by absorption "ulceration Partially absorbed Partially removed by caries Disconnected from stapes Disconnected from stapes and malleus	1	$\frac{1}{1}$ $\frac{1}{1}$ $1$	
		The base anchylosed to the fenestra ovalis ,, partially do. do. ,, attached to fenestra ovalis more fenestra	14 10 3	2  1	
C		ovalis more firmly       8       4       5       5       6       7       8       9       10 <td>1</td> <td>-</td> <td></td>	1	-	
		fenestra ovalis Crura absorbed Base projecting into the ves-	1	1	-
		tibule . Disappeared from ulceration	1 2	=	_
		Image: Stress of the stress	2 1 2		
	Osseous Walls of Tympanum	Thickened Carious Upper wall partially deficient Lower wall ,, ,, Carotid canal contracted	1 2 10 5 3		32 13
	Membrane of Fe- nestra rotunda	J F F			
	Tensor tympani Muscle	Atrophied Attached to stapes	6 1	1	_
		Contains mucus	2	-	8
	Eustachian Tube	cular . "lining memb.thick Lining membrane congested . Bands of adhesion connecting the	$\frac{1}{2}$	2	<u></u> 3
		parietes	-	-	3
	Internal Ear	Membranous labyrinth thickened "," atrophied Labyrinthine fluids deficient Vestibule and cochlea contain	4 6 8	_	_
		bloody serum . ,, full of pus A membranous band extending	1	=	_
		across the vestibule , .	1	-	<u> </u>