

PATHOLOGICAL RESEARCHES
INTO
THE DISEASES OF THE EAR.

FIFTH SERIES.

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In the thirty-second volume of the 'Medico-Chirurgical Transactions,' this society published a paper, by myself, containing the results of 915 dissections of the human ear. In the course of the five years since that paper was written, I have continued to prosecute researches into the pathology of the ear; and the additional dissections may be classified as follows:

1. Ears from deaf persons, the history of whose deafness was known, and who had been examined by myself during life 134
2. Ears from deaf persons, but unaccompanied by histories, and not examined during life 41
3. Ears diseased, but without histories 226
4. Healthy ears 207

In reference to the first class of dissections, viz., those
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from deaf persons whom I had seen and examined while living, and the histories of whose cases were then taken, I need scarcely say that, although compared to the other dissections their number is small, they have a much higher value; and they throw more light upon the pathology of deafness than do the other classes of cases the histories of which are unknown. In reality, by means of this class of dissections, the field of pathology may be considered as entered upon; whereas, in the other investigations, only a knowledge of the morbid anatomy of the ear has been acquired.

The course I originally intended to pursue was to give, in a tabular form, the history of each case appertaining to this class; also the result of the examination of the patient during life; the influence of treatment when pursued; and, finally, the details of a careful dissection.

This intention, was, however, soon abandoned; firstly, because its prosecution would have required much too large a space to admit of the paper being brought before this society; and, secondly, because such a plan would not have done justice to the subject, which requires each disease of the ear to be specially studied and illustrated by many cases, and by the aid of anatomical and other investigations.

The course which I have therefore felt it desirable to pursue, is, in the present paper, to give only a tabular view of the morbid appearances found in the 134 diseased ears belonging to this class, and to reserve for separate papers the histories of the cases and other details respecting them.

In a former paper on the pathology of the ear,¹ I stated it to be my conviction "that deafness seldom depends upon obstruction of the Eustachian tube;" I added in a note that the trumpet-shaped extremity of the tube was not often included in the parts removed for dissection, that I was consequently unable to give an opinion respecting it; it nevertheless appeared probable that when the narrow part of the tube was healthy and free from obstruction, the dilated orifice, which is acted upon continually by the muscles of

¹ 'Medico-Chirurgical Transactions,' vol. xxxii, 1849.

the palate, was also healthy. Later researches and further experience have induced me to modify the opinion expressed above. In a paper laid before the Royal Society, I have endeavoured to demonstrate that the faucial orifice of the tube is always shut, except during the momentary act of swallowing, when the tensor and levator palati muscles open the tube and allow mucus to escape from the tympanic cavity, or air to pass in or out. It must be apparent that a thickened condition of the mucous membrane covering the guttural orifice of the tube is liable to cause obstruction, by preventing the muscles from separating the margins of the orifice; and obstruction from this cause does, I believe, not unfrequently take place; at least I am induced to form this opinion from the careful examination of cases, and from the post-mortem inspection of the guttural portion of the tube in many dissections conducted subsequent to my former paper.

Upon examining the subjoined tabular view of the morbid appearances found in the 134 ears, taken from deaf persons whose histories are known, it will be found that diseased conditions of the auditory nerve, or its expansions, are of much greater frequency than in the tables previously published. One reason for this difference is, that in the class under consideration many advanced cases of deafness are to be found.

TABLE I.

Tabular View of the Morbid Appearances found in 134 Ears from Deaf Persons whose histories are known.

MEATUS EXTERNUS.	Containing a collection of cerumen	11
	Distended and dilated by a collection of cerumen	3
	Distended and dilated by a collection of cerumen and epidermis	1
	Distended and dilated by a collection of cerumen and epidermis; the osseous walls partly absorbed	1
	Osseous wall carious	4
	Osseous wall absorbed in parts	2
	Membranous meatus so much atrophied as to expose the bone	1
	Membranous meatus soft	1
	Membranous meatus soft and red	2
	Membranous meatus soft and detached from the bone	2
	Membranous meatus soft and thick; bone carious	1
	Containing a molluscous tumour; the osseous meatus absorbed in parts	2
	Containing a molluscous tumour which projects into the cerebral cavity	1
	Containing polypi	1
	Containing polypi; the osseous wall being carious	1
MEMBRANA TYMPANI.	Opaque	8
	Thick	7
	Thick and unyielding, like cartilage	5
	Thick and white	7
	Thick, white, and soft	2
	Thick, white, and tense	5
	Lax	2
	Tense	4
	Vascular	2
	More concave than natural	10
	More concave than natural, and thick	1
	More concave than natural, and soft	1
	So concave as to touch the promontory	8
	Very concave, and adherent to the promontory by membranous bands	5
	Fallen in, and inner surface in contact with the promontory	7
	Outer surface flat	1
	Inner surface adherent to incus	2
	Inner surface adherent to stapes	1
	Calcareous	8
	Wholly absent, apparently from ulceration	5
	Perforated	10
	Circular cartilage exposed	1
	Epidermoid lamina very thick	4
	Epidermoid lamina absent	5
	Dermoid lamina very vascular	1
	Dermoid lamina very thick	1
	Dermoid and fibrous layers absent in parts, apparently from ulceration	2
Fibrous laminae destroyed by ulceration in parts	6	
Fibrous laminae containing pigment-cells	1	
An aperture in all the laminae closed by cellular tissue	1	
All the laminae absent in one part except epidermis	2	
Mucous layer very thick	1	

TYMPANIC CAVITY.	Contents.	A collection of mucus	4
		A collection of blood	1
		A collection of serum	1
		A collection of lymph	3
		A collection of epithelium and oil	1
		A collection of calcareous matter	1
		A collection of cholesterine	1
	Mucous Membrane.	Congested	2
		Thicker than natural	15
		Thick and congested	3
		So thick as to conceal the stapes	2
		So thick as to conceal the stapes and incus	1
	Membranous Bands.	Ulcerated	4
		Between malleus and incus	1
		Between stapes and tympanic cavity	2
		Between stapes and incus	1
	Malleus.	Between all the ossicles	13
		Partially disconnected from incus	1
		Fixed	3
		Ankylosed to upper wall of tympanum	2
		Long process detached from membrana tympani	1
		Long process in contact with the promontory	3
		Long process adherent to incus	1
		Long process detached from its body	1
		Long process of malleus and incus absent	1
Long process of malleus and incus carious		2	
Incus.	Carious	2	
	Disconnected from stapes	5	
Stapes.	Base adherent to fenestra ovalis more rigidly than natural	13	
	Ankylosed by membrane to the fenestra ovalis	25	
	Ankylosed by membrane to the fenestra ovalis, base expanded	4	
	Ankylosed by bone to the fenestra ovalis	18	
	Ankylosed by bone to the fenestra ovalis, the base being expanded	6	
	Ankylosed by bone to the fenestra ovalis, an exostosis around the fenestra ovalis	2	
Walls.	Base projects into the vestibule	1	
	Partly absorbed	1	
	Carious	4	
EUSTACHIAN TUBE.	Carotid canal contracted	1	
	Tensor tympani muscle atrophied	7	
	Stricture in osseous parts	1	
	Stricture in cartilaginous part	2	

INTERNAL EAR.	Vestibule.	Auditory nerve atrophied	5
		Auditory nerve atrophied and congested	2
		Auditory nerve, vestibular portion atrophied	1
		Auditory nerve in a state of suppuration	1
		Membranous labyrinth thicker than natural	3
		Membranous labyrinth atrophied	14
		Membranous labyrinth congested	2
		Membranous labyrinth containing blood	1
		Membranous labyrinth containing pus	1
		Membranous labyrinth containing red serum	1
	Membranous labyrinth containing an opaque fluid	2	
	Membranous labyrinth, otoconie absent	3	
	Membranous labyrinth, otoconie more abundant than natural	7	
	Membranous labyrinth, fluid deficient in quantity	2	
	An exostosis from the walls of the vestibule.		
	Cochlea.	Blood-vessels distended	2
		Cochlearis muscle? red	1
		Cochlearis muscle hypertrophied	1
		Black pigment very abundant	3
		Fluid opaque	2
		Fluid red	1
	Semicircular Canals.	Nerves atrophied	2
		Obstructed by otoconie	2
		Otoconie more abundant than natural	2
		Containing pus	1
		Containing calcareous matter	2
		Containing blood	1
		Carious orifice from tympanum into the superior canal	1
	Membrane of the fenestra rotunda thick	4	
	Membrane of the fenestra rotunda thick and tense	1	

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PREVIOUS to entering upon the second branch of these researches, viz., that in which the history of the cases, together with the symptoms and appearances ascertained to have existed during the life of the patients, will be presented in juxtaposition with the details of dissections, it has appeared to me desirable to give a summary view of the result of all my investigations into the morbid anatomy of the ear. Before doing so, I may be permitted to say a few words respecting the study of diseases of the ear.

It was formerly a general opinion among medical men, and one even now not unfrequently expressed, that the branch of surgery comprising the study of the diseases of the ear presents difficulties almost insurmountable to its practical cultivation. But surely the difficulties which an inquirer has here to encounter are not more formidable than those which have been successfully surmounted in other departments of medicine. The ear is not more complicated in its structure, nor less accessible, than many other organs respecting whose diseases we are greatly enlightened. Of the heart, lungs, and brain, no portion is open to direct inspection; while at least two of the leading divisions of the ear, viz., the meatus externus and the membrana tympani, are distinctly visible by the aid of a strong light, and the condition of the Eustachian tube, together with that of the tympanic cavity, can easily be explored. As a guide to our diagnosis of the state of the internal ear, we have not only the history of the case and the condition of the patient, but a variety of positive and negative symptoms.

My conviction therefore is, that the difficulties of the subject are not greater, but that the same degree and amount of research which have thrown so much light upon the nature of the diseases of other deep-seated organs, have not yet been sufficiently brought to bear on the study of the diseases of the ear. The most cursory reflection must, indeed, suggest that an accurate knowledge of the structure and morbid anatomy of the ear must be a requisite foundation on which any scientific and practical results should be based; and yet writers have attempted to understand and explain the entire subject, with but a very limited and often incorrect acquaintance with the structure and functions of even the leading parts of the organ, and with scarcely any knowledge of their morbid states. That such attempts cannot fail to be unsuccessful is almost self evident; but I will add a few remarks in illustration.

The ceruminous glands were considered as modifications of the sebaceous, until Kölliker, in some recent observations, showed them to be identical with the perspiratory. The existence of the dermoid layer of the membrana tympani, by which the epidermoid layer is secreted, and which plays so important a part in aural diseases, more especially in two of them, hitherto confused under the useless term otorrhœa, was till lately utterly unknown. Again, the two fibrous laminæ of the same organ, which are really quite distinct in their structure, attachments, and relations, have been confounded together as one membrane, and even been considered as muscular. The ligament, and the mode of its attachment, whereby the membrana tympani is maintained in a quiescent state of gentle tension, and which also performs a very prominent part in some diseased conditions of this organ, have been only recently discovered; neither has the closed condition of the guttural orifice of the Eustachian tube, except during the momentary act of deglutition, until now been pointed out.

A conviction of the exceedingly limited nature of our knowledge of the morbid anatomy of the ear, was forced upon me, when, thirteen years ago, I commenced my dis-

sections, and which have demonstrated, I think, that the existence of some of the most common, and yet most important morbid conditions of the ear had not previously been even suspected. Of these I will merely mention the presence of osseous and molluscous tumours in the external meatus, the various diseased states of the dermoid layer of the membrana tympani; the ulceration of its fibrous laminæ, having among its singular results, obliteration of the tympanic cavity; the existence of membranous bands connecting the ossicles to each other, to the membrana tympani, and to the walls of the tympanum; the various morbid states of the mucous membrane of the tympanum, and lastly ankylosis of the stapes to the fenestra ovalis.

As further proofs of the neglect in which this department has been left, it may be noted, that until now all cases of pain in the ear have been classed under the general term otitis; and all cases of discharge from the ear, whatever their origin or source, have been simply styled cases of otorrhœa. Lastly, the not unfrequent cases of disease extending from the several parts of the ear to the cerebrum, cerebellum, and medulla oblongata, and which exhibit great diversity in their causes, nature, and progress, have been treated merely as instances of caries of the petrous bone involving the brain.

The inference fairly deducible from a consideration of the above-named facts, seems to be, that investigations into the nature and treatment of the diseases of the ear will be fruitful in valuable results if they are steadily pursued in an earnest and patient spirit.

The 1523 dissections, from the descriptions of which the details in the following table have been taken, may be classified as follows:—

136 diseased ears from deaf persons with histories, etc.
 223 diseased ears from deaf persons without histories.
 654 diseased ears from persons without histories.
 510 healthy ears.

1523 total.

TABLE II. *Diseased Ears from Deaf Persons whose histories were unknown (41).*

† This sign indicates that the part was not dissected, for the sake of preserving the pathological specimen.

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.					LEFT EAR.				
		Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
927 928	Woman, æt. 22.	Thicker than natural at the circumference; very concave externally; connected to the inner wall of tympanum by membranous bands.	—	Fibro-mucous membrane much thicker and softer than natural.	—	—	In the same state as the right ear.	In the same state as the right ear.	—	—	—
942 943	Woman, æt. 50; deaf in the left ear only.	—	—	The orbicular process connected from the incus and attached to the stapes.	—	—	—	Very concave externally, thick and white; inner surface adherent to the promontory.	—	—	—
1020	Man, æt. 19, deaf in the left ear only; right ear healthy	—	—	—	—	—	—	The fibro-mucous membrane is so very thick that the stapes is buried in it; its surface is covered by crystals of cholesterine.	—	—	—

1024	Man, æt. 50; deaf in the left ear only; right ear healthy. When young he had caries of the mastoid process of the left ear.	—	—	—	Lower part absent; upper part adherent to the promontory.	Incus and stapes disconnected; an exostosis grows from long process of malleus; at the upper and anterior part of the mastoid process is a fossa from which dead bone had apparently been removed.
1026	Man, æt. 74.	—	Stapes firmly fixed to the border of the fenestra ovalis.	—	More concave than natural; opaque.	Membranous bands connect the ossicles together; base of the stapes expanded and projecting into the cavity of the vestibule.
1038	Man, æt. 79.	—	Stapes completely surrounded by membranous bands.	—	Opaque.	Stapes firmly ankylosed to the incus.
1039	—	—	—	—	—	—
1048	Man, æt. 70.	Dull, and having a leaden hue.	—	Nearly full of blood mixed with lymph and mucus.	—	—
1063	Man, æt. 55; insane; deaf in the left ear only; right ear healthy	—	—	—	Thicker and more flat than natural; it is firmly adherent to the promontory.	—

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.					LEFT EAR.				
		Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
1066 1067	Man, æt. 80; very deaf.	—	—	The base of the stapes is firmly fixed to the fenestra ovalis by ligamentous ankylosis; the crura are much atrophied.	—	—	—	In the same state as the right ear.	—	—	—
1075 1076	Man, æt. 75; hard of hearing only.	—	The fibrous laminae of the posterior and superior third have been destroyed by ulceration; the mucous lamina which alone remains is thick and adherent to the stapes; the posterior and inferior two thirds are thick and white.	—	†	—	In the same state as that of the right ear.	Stapes detached from the incus, and firmly attached to the membrana tympani.	—	†	—
1081 1082	Man, æt. 40; idiotic.	—	Very tense.	Malleus ankylosed to the incus; base of stapes expanded, and adheres more firmly than natural to the fenestra ovalis.	—	Dilated; distended by cerumen.	Tense and atrophied.	In the same state as the right ear.	—	—	—
1083 1084	Woman, æt. 73; dull of hearing.	—	Whiter and thicker than natural.	—	—	—	Whiter and thicker than natural.	—	—	—	—
1253 1254	Man, æt. 80. A molluscous tumour at the superior and posterior part, causing ab-	—	—	—	—	—	—	A molluscous tumour at the posterior part of the meatus which had caused absorption of the bony wall; the	—	—	—

1281	Man, æt. 75.	sorption of the bone, an orifice in the membrana tympani, and an aperture into the mastoid cells.	Contains numerous membranous bands; malleus detached from the membrana tympani.	+	tumour projected through the tympanic cavity and mastoid cells as far as the central cavity, where it was in contact with the dura mater.	—	+
1282							
1290	Man, adult.	Distended by hard cerumen; surface of the posterior osseous wall sorbed at parts.	Opaque; outer surface of the concave and adherent internally to the promontory; an orifice at the superior and posterior part.	+	Very thick and concave externally; inner surface adherent to the promontory; an orifice.	—	—
1291							
1324	Man, æt. 77.	—	Stapes firmly ankylosed to the fenestra ovalis.	—	Stapes firmly ankylosed to the fenestra ovalis.	—	—
1325							
1436	Man, æt. 67;	—	More concave than natural.	—	More concave than natural.	—	—
1437	not very deaf.						

1473 Man, et. 74. 1474	—	The stapes projects in- to the cavi- ty of the	Much larger than na- tural.	—
1500 Man, et. 70; 1501 hard of hearing.	The poste- rior half absent, ex- cepting the epidermis and the long pro- cess of in- cus absent; anterior half thick and white.	The long process of malleus drawn in- wards; the long pro- cess of in- cus absent; the stapes not at- tached to any ossicle.	In the same state as the right ear, excepting that there is a large ori- fice in the membra tympani.	—

TABLE III.

Tabular View of the Condition of the 41 Diseased Ears from Deaf Persons whose histories are unknown.

MEATUS EXTERNUS.	{	Containing a collection of cerumen, the osseous tube being dilated	1		
		Containing a collection of cerumen, the osseous tube being absorbed in parts	1		
		Containing molluscous tumours	2		
MEMBRANA TYMPANI.	{	Surface dull	1		
		Opaque	3		
		More concave externally than natural	2		
		More concave externally than natural, and opaque	2		
		More concave externally than natural, and thick	2		
		More concave externally than natural, and connected by bands to promontory	2		
		Opaque and thick	2		
		Tense and atrophied	1		
		Very tense	1		
		Fibrous laminæ in parts absent, as if destroyed by ulceration	2		
		Thick and concave, and adherent to the promontory	3		
		Perforated and thick	1		
Thick, concave, perforated, and adherent to the promontory	2				
Perforated by molluscous tumours	2				
CAVITAS TYMPANI.	{	Contents.	{	A collection of mucus, blood, and lymph	1
				Cholesterine and mucus	1
				Pus; the mucous membrane ulcerated	1
				Mucus; the mucous membrane very thick	2
		Mucous membrane thick	4		
		Bands of adhesion around the ossicles	6		
		State of Ossicles.	{	Malleus ankylosed to incus	2
				Malleus detached from membrana tympani	1
				Malleus, exostosis from manubrium	1
				Incus disconnected from stapes	2
Incus, long process absent	1				
Stapes disconnected from incus, and attached to membrana tym- pani	1				
Stapes attached to fenestra ovalis more rigidly than natural	7				
Stapes, base expanded and fixed more rigidly than natural	2				
Stapes, base expanded and projecting into vestibule	1				
Stapes, base projecting into vestibule	2				
Stapes, base ankylosed to fenestra ovalis	4				
Stapes ankylosed to incus	2				
Stapes detached from any other bone	2				
EUSTACHIAN TUBE.	}	Very large	2		

TABLE IV. *Diseased Ears, from persons whose histories were unknown (226).*

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.				LEFT EAR.					
		Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
915a 916	Boy, æt. 4.	—	Opaque.	Contained viscid mucus; fibro-mucous membrane vascular and thick.	—	—	—	Opaque.	In the same state as the right ear.	—	—
921 922	Man, æt. 20; died from epilepsy.	—	—	Fibro-mucous membrane very vascular.	An exostosis projects from the upper wall of the meatus internus.	—	—	—	Fibro-mucous membrane more vascular than natural.	—	In the same state as the right ear.
929 930	Man, æt. 75.	—	—	Membranous bands connect the ossicles; the stapes is attached to the margin of the fenestra ovalis much more firmly, and is less movable, than natural.	—	—	—	—	In the same condition as the right ear.	—	—

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.					LEFT EAR.				
		Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
931	Woman, et. 19; died from small-pox; not deaf.	—	—	Full of viscid mucus; fibro-mucous membrane very thick; stapes almost wholly buried.	—	—	—	In the same state as the right ear.	—	—	—
932	Woman, et. 60; died from fever; not deaf.	—	—	Fibro-mucous membrane more red and thick than natural.	—	—	Presents an orifice about a line and a half in diameter.	—	—	—	—
935	Woman, et. 50.	—	Hazy	Canal for the portio dura nerve incomplete.	—	—	Hazy	Contains viscid mucus; fibro-mucous membrane thicker than natural.	—	—	—
941	Boy, et. 3½	—	Much flatter than natural, of a dark leaden hue.	Fibro-mucous membrane very thick; incus disconnected from stapes and nearer to the mastoid cells than natural; the neck of the stapes does not present any articulating surface.	—	—	In the same state as the right ear.	In the same state as the right ear.	—	—	—
942	Woman, et. 57; insane; right ear healthy.	—	—	—	—	—	—	A small membranous band, connects the stapes to the wall of the tympanum.	—	—	—

966	Man, æt. 24; insane; right ear healthy.	—	—	—	—	Contains a small quantity of thick white mucus.	—
998	Woman, æt. 19; died from consumption; right ear healthy.	—	—	—	—	The fibro-mucous membrane thicker than natural; the blood-vessels are distended with blood.	—
1000	Man, æt. 27; died from fever; right ear healthy.	—	—	—	—	The fibro-mucous membrane is more vascular than natural.	—
1001	Woman,	—	—	—	—	A firm band connects the long process of the incus to the malleus.	Otoconic more abundant than usual.
1002	æt. 60; died from pericarditis.	—	—	—	Contains a large quantity of viscid mucus; the fibro-mucous membrane thick; stapes attached to the fenestra ovalis more firmly, and is less moveable than natural.	—	—
1007	Man, æt. 69; insane; left ear healthy.	—	—	—	—	—	—
1015	Man, æt. 57;	—	—	—	—	—	—
1016	right ear healthy.	—	—	—	The membrane of the fenestra rotunda is opaque and thick; a broad vascular membrane divides the vestibule; a soft exostosis projects from its wall.	The long process of the incus is carious, and disconnected from stapes; the stapedius muscle atrophied.	—

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.					LEFT EAR.				
		Mecus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Mecus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
1022 1023	Man, æt. 48.	—	Epidermoid lamina very thick.	Contains mucus connected by bands; ralis of stapes ankylosed to the fenestra ovalis; membrana fenestra rotundæ thick.	—	Lamina spiralis cochlearis thicker than natural.	—	Thick and vascular; connected to the stapes by a membranous band.	The fibromucous membrane thick; stapes ankylosed.	Membranous thicker than natural; cochlearis muscle atrophied.	—
1036 1037	Man, æt. 40.	Very concave externally; its inner surface nearly touches the promontory, to which it is attached by a membranous band.	—	Lower extremity of incus absent.	—	—	—	White and thick; the mucous layer hypertrophied.	Stapes surrounded by membranous bands, and more firmly attached to the fenestra ovalis than is natural.	—	—
1043	Man, æt. 80; right ear healthy.	—	—	—	—	—	—	—	Stapes surrounded by bands of adhesion.	—	—
1054 1055	Man, æt. 70.	An osseous tumour projects from both the anterior and posterior walls.	—	—	—	—	—	—	A portion of the osseous wall between the mastoid cells and lateral sulcus has been absorbed, so that the mucous membrane of the mastoid cells was in contact with the lateral sinus.	—	—

1056 1057	Woman, æt. 64.	—	—	Its guttural portion is red, the vessels being distended; the mucous membrane is soft.	—	—	In the same state as the right ear.
1060 1061	Man, æt. 66.	Thicker than natural.	The stapes is not so moveable as natural.	—	—	Thicker than natural.	In the same state as the right ear.
1064 1065	Woman, æt. 25; died from pleuritis.	More concave than natural externally.	The fibro-mucous membrane is very thick, soft, and red; its vessels being distended.	—	—	More concave externally than natural.	In the same state as the right ear.
1087 1088	Man, æt. 68.	Thicker than natural.	The base of the stapes is expanded and less moveable than natural.	—	—	More white and thick than natural.	In the same state as the right ear.
1091 1092	Man, æt. 72.	Rather thicker than natural.	The base of the stapes is not so moveable as natural.	—	—	Thicker and whiter than natural.	In the same state as the right ear.
1096 1097 1098	Man, æt. 59; right ear healthy. Man, æt. 46.	—	—	There is a slight bulging of the anterior and posterior osseous walls.	—	Thicker than natural; at one part is a cartilaginous spot. Externally, more flat than natural; the inferior third of the handle of the malleus is disconnected from the membrana tympani.	The base of the stapes projects slightly into the vestibule, and it is not so moveable as natural.

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.					LEFT EAR.				
		Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
1099	Man, æt. 79.	—	—	The stapes is so firmly fixed in the fenestra ovalis, that when the tensor tympani muscle is pulled, the stapes does not move.	—	—	—	—	In the same state as the right ear.	—	—
1100											
1103	Man, æt. 65.	—	—	The orbicular process is disconnected from the incus, and ankylosed to the stapes.	—	—	Full of cerumen.	—	—	—	—
1104											
1105	Man, æt. 23; died from smallpox on the eleventh day of the eruption.	Of a dark colour; surface shines.	Of a dark colour; surface shines.	Contains a small quantity of blood mixed with mucus; fibro-mucous membrane congested.	Membranous tube soft; contains a small quantity of mucus.	—	—	Contains mucus.	—	—	—
1106											
1107	Man, æt. 41; Distended	Fibrous la-	Fibrous la-	Long pro-	—	—	—	Mucous membrane congested;	—	—	—
1108	died from bycerumen, smallpox on which had the fourth caused the eruption.	bycerumen, sent at the upper third; the wall of layer adherent to the upper promontory, and inner and formed a septum in the tympanum.	sent at the upper third; the mucous layer anterior part of the tympanum.	cess of incus absent; blood filled the posterior part of the tympanum.							

1109	Man, æt. 41; died sud- denly.	—	†	Only one half its natural size; an osseous tumour grew from the anterior and posterior wall.	—
1110	—	—	—	—	—
1116	Man, æt. 70; right ear healthy.	—	—	—	—
1119	Man, æt. 67.	—	—	—	—
1120	—	—	—	—	—
1121	Man, æt. 80.	—	—	—	—
1122	—	—	—	—	—
1124	Man, æt. 62.	—	—	—	—
1125	—	—	—	—	—
1146	Man, æt. 75.	—	†	—	—
1147	—	—	—	—	—
		All the tissues of each ear distended by blood.		All the laminae destroyed, except the epidermis over a space about a line in diameter.	
		—	—	Thick and white.	The vestibule contained an opaque fluid; fluid of cochlea red.
		—	—	The inferior process of the incus absent; the orbital process is attached to the stapes only; the canal for the portio dura nerve incomplete, and the nerve is in contact with the mucous membrane.	
		—	—	Thicker than natural.	
		—	—	More tense than natural.	Black pigment - cells very abundant in cochlea.
		—	—	Membranous bands connect the malleus, incus, and membrana tympani, and conceal the stapes.	Each carotid canal is slightly contracted. †
		—	—	Epidermoid layer very thick; the part posterior to the malleus, lax and shrivelled; when the tympanum was distended with air this lax part bulged outwards, but it did not regain its natural form when the pressure was removed.	
		—	—	Contained several hairs.	

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.				LEFT EAR.					
		Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
1148 1149	Man, æt. 65.	Distended by cotton wool; lining membrane very vascular.	—	The stapes was so firmly attached to the fenestra ovalis, that when an attempt was made to withdraw it, a portion of the base remained.	—	—	Distended with cerumen.	—	Stapes much smaller than natural; the space between the crura is only two thirds its natural size; the base is also small; the fenestra ovalis partly closed by bony deposit.	—	—
1150 1151	Man, æt. 60.	—	More concave externally than natural; thick, opaque.	—	The carotid canal is so contracted as to be only half its usual size. †	—	—	Thick and opaque; at the anterior part is a patch of calcareous matter; the inner surface connected to promontory by membranous bands.	—	†	
1152 1153	Man, æt. 60.	There is a bulging of the anterior and posterior walls, whereby the calibre of the tube is much diminished.	—	—	—	In the same state as the right ear.	—	—	—	†	
1154 1155	Man, æt. 54.	—	Thicker and more flat than natural; the lower half white, like parchment.	Contains mucus; the fibrous membrane is thicker than natural; the stapes less moveable than usual; the layer of bone between the tympanum and fossa jugularis incomplete.	—	Lining mem. Flat, fibrous and soft; upper osseous wall near the membrana tympani presents an orifice one line and three fourths long, and a line broad.	—	Contains mucus; investing membrane thicker than natural; stapes less moveable than usual.	—	†	

1156 1157	Man, æt. 65.	Central part white and thick, adherent to the incus by membranous bands.	The stapes was so firmly attached to the border of the fenestra ovalis, that upon attempting to withdraw it a portion of the base remained.	The cochlea contains many cells full of black pigment.	Very large, and distended by cerumen and epidermis; anterior wall thin, and near the membrana tympani there is an orifice; posterior wall partly absorbed, and an orifice communicates with the mastoid cells.	—	—	—
1160	Man, æt. 69; right ear healthy.	—	—	The orifice is nearly twice as large as natural; the inferior and posterior part being occupied by a molluscous tumour, which projected backwards into the mastoid cells, through an orifice in the osseous walls of the meatus; a portion of the tumour, as large as a horse-bean, was lodged in the mastoid cells.	—	—	—	—
1163 1164	Man, æt. 70.	At the upper and posterior part is a thick spot like cartilage.	—	—	—	—	—	—
1165	Man, æt. 61; left ear healthy.	The fibrous laminae of the posterior half are absent; the mucous layer has fallen inwards, and is attached to the stapes and the long process of the incus.	—	—	Thicker than usual; this thickness was dependent upon hypertrophy of the dermoid lamina, the other laminae being healthy.	—	—	—

1214	Man, æt. 103; left ear healthy.	A molluscous tumour is attached to the inner and lower part, which has caused absorption of the bone.	—	+	—	—	—	—	—
1216 1217	Man, æt. 69.	Distended by cerumen; lower wall of bone partly absorbed.	Fibro-mucous membrane thick and white; connected to the inner wall of the tympanum by bands of yellow mucus.	+	—	Contains cerumen and epidermis; an orifice as large as a pea exists at the lower part.	Dull; of a yellow colour; connected to the inner wall of the tympanum by membranous bands; the dermoid layer is detached from the radiate fibrous layer.	+	—
1223 1224	Man, æt. 74.	—	Perforated anteriorly by a large orifice; remaining portion thick and yellow; the canalis caroticus is much contracted in size.	+	—	The bone at the upper and inner part is absorbed, and the upper border of the membrana tympani is free.	Very concave externally; yellow colour; anteriorly to the malleus the fibrous laminae have been destroyed; the layer composed of mucous membrane is the only one remaining.	+	—
1227 1228	Man, æt. 85.	—	Extremely thin, excepting around the malleus where it is thick and of a yellow colour.	+	—	—	Very thin and flat; the handle of the malleus is detached from it.	+	—

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.				LEFT EAR.					
		Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
1230	Man, æt. 66; right ear healthy; had a discharge for some time from the left ear, and portions of dead bone had been removed from it.	—	—	—	—	†	—	—	—	—	—
1232	Man, æt. 78; right ear healthy.	—	—	—	—	†	—	—	—	—	—
1234	Man, æt. 57; right ear healthy.	—	—	—	—	†	—	—	—	—	—
1235	Man, æt. 63.	—	—	—	—	—	—	—	—	—	—
1236		—	—	The stapes is not so moveable as natural.	—	—	—	—	—	—	—
1238	Man, æt. 73; right ear healthy.	—	—	—	—	—	—	—	—	—	—
				Dilated; contains a collection of cerumen; posterior bony wall rough, and partly absorbed.				Nearly full of cerumen and epidermis; the bone forming the posterior wall was rough, and partly absorbed.			
				Contains three molluscous tumours; one at the lower part near to the orifice, a second in the substance of the upper wall near to the membrana tympani, and which projected into the tympanum; a third is in the lower part of the posterior wall.							
				A rounded osseous growth at the posterior part.							
				The stapes is not so moveable as natural.							
				Very concave externally; the cartilaginous ring is exposed from the dilated condition of the meatus.							

1239 1240	Man, æt. 67. Distended by ceru- men.	Surface un- even; very concave externally.	—	†	Distended with cerumen; very much dilated; the anterior and posterior walls are partially absorbed, and the cerumen projects into the cavity of the mastoid cells; the lower wall is also absorbed, and the cerumen separated from the jugular vein by membrane only.	—	—	—
1241 1242	Man, æt. 63.	The dermoid and epider- moid layers are much thicker than natural.	—	—	In the same state as the right ear.	—	—	—
1247 1248	Man, æt. 55. At the lower part, near the membrani tympani, the bone is carious.	—	—	—	The dermoid and periosteal layers of the membranous meatus much atro- phied, and the bone is exposed in parts.	—	—	—
1249	Girl, æt. 11 Months; left ear healthy.	—	—	—	—	—	—	—
1259	Man, æt. 64; left ear healthy.	—	—	—	—	—	—	—
1273 1274	Man, æt. 72.	—	The base of the stapes is not so moveable as natural.	—	—	—	The base of the stapes is not so moveable as natural.	—
1275 1276	Man, æt. 75.	—	The base of the stapes is not so moveable as natural.	—	—	—	The base of the stapes is not so moveable as natural.	—
1283	Man, æt. 67; left ear healthy.	Fallen inwards, so that its inner surface is in con- tact with the promon- tory.	—	—	—	—	—	—
1288	Man, æt. 71; left ear healthy.	Very concave externally; the inner surface is attached to the promon- tory.	—	—	—	—	—	—

The upper part of the superior ossaceous semi-circular canal is absent.

1301 Man, æt. 56.	—	Much thicker than natural.	Fibro-mucous membrane very thick; covered by a layer of lymph, which contains blood-vessels.	—	—	In the same state as the right ear.	—
1302	—	—	—	—	—	—	—
1303 Man, æt. 70.	Distended by cerumen.	—	—	Distended by cerumen.	—	—	—
1304	—	—	—	—	—	—	—
1305 Man, æt. 80.	—	—	The stapes is less moveable than natural.	—	Has been destroyed by disease.	Fibro-mucous membrane very thick; stapes less moveable than natural.	—
1306	—	—	—	—	—	—	—
1307 Man, æt. 60.	—	Perforated.	—	—	Perforated.	—	—
1308	—	—	—	—	—	—	—
1309 Man, æt. 68.	—	—	The base of the stapes is ankylosed to the fenestra ovalis.	—	—	Stapes in the same state as the right ear.	—
1310	—	—	—	—	—	—	—
1311 Man, æt. 56.	The osseous posterior wall has a considerable bulging at its lower part.	—	—	—	—	—	—
1312	—	—	—	—	In the same state as the right ear.	—	†
1313 Man, æt. 72.	—	—	The base of the stapes is ankylosed to the fenestra ovalis.	—	—	Stapes in the same state as the right ear.	—
1314	—	—	—	—	—	—	—
1318 Man, æt. 63; right ear healthy.	—	—	—	—	More rigid than natural.	The stapes and the other ossicles are less moveable than natural.	—

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.					LEFT EAR.				
		Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
1319 1320	Man, æt. 68.	—	—	The base of the stapes is not so moveable as natural.	—	Theotoconic more abundant than natural; calcareous matter is mixed with it.	—	—	Stapes in the same state as the right ear.	—	In the same state as the right ear.
1321 1322	Man, æt. 67.	Distended by cerumen and epidermis.	It is so rigid that when the tensor tympani muscle is pulled, it scarcely moves.	Stapes attached to the fenestra ovalis more firmly than natural.	—	—	—	The stapes is in the same state as that of the right ear.	—	—	—
1323	Man, æt. 79.	—	Was perforated in two places.	—	—	—	—	—	—	—	—
1328 1329	Man, æt. 93.	—	—	The fibro-mucous membrane is so thick as to conceal the stapes.	—	—	—	Bands of membrane connect the ossicles to the promontory.	—	—	—
1330 1331	Man, æt. 80.	Distended by cerumen.	—	The base of the stapes is not so	—	—	—	Full of cerumen.	—	—	The base of the stapes is so firmly attached to the fenestra ovalis, that when the tensor tympani muscle

1334 1335	Man, æt. 65.	—	moveable as natural.	The upper osseous wall of the superior semi-circular canal is imperfect.	—	was pulled the stapes did not move; the other bones were not so moveable as natural. The base of the stapes is not ankylosed by bone.
1340 1341	Man, æt. 60.	—	Nearly full of a mass of solid white matter, which is composed of epithelial cells.	Distended by cerumen. concave; pressed upon by the cerumen; connected to the ossicles by membranous bands.	Atrophied; outer surface very moveable than natural; membranous bands connect the ossicles and the membrana tympani.	—
1344 1348	Man, æt. 55; left ear healthy.	Very concave externally; the inner surface is in contact with the promontory.	The base of the stapes is ankylosed to the fenestra ovalis.	—	—	—
1347 1348	Man, æt. 92.	—	The base of the stapes is ankylosed to the fenestra ovalis.	The posterior wall of the posterior semi-circular canal is imperfect.	—	The base of the stapes is not so moveable as natural. The vestibule and cochlea contained a considerable quantity of black pigment.
1358	Man, æt. 72; left ear healthy.	Distended by cerumen.	Lower half of Fibro-mucous membrane very thick; malleus and incus attached to the promontory; neck of stapes disconnected from the incus and free.	—	—	—

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.					LEFT EAR.				
		Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
1363 1364	Man, æt. 64.	—	There is a circular orifice in the fibrous laminae, three quarters of a line in diameter; it is situated between the malleus and posterior part of meatus; its outer surface is covered by epidermis.	—	—	+	—	It is in the same state as the right ear.	—	—	+
1371 1372	Man, æt. 64.	—	Epidermoid layer uneven; dermoid layer at posterior part destroyed by ulceration; radiate and circular fibrous layers also partially destroyed at this part; the mucous layer only remains.	—	—	—	—	Thicker than natural.	—	Fibro-mucous membrane thicker than natural.	—
1377 1378	Man, æt. 66.	—	—	Full of membranous bands of adhesion.	—	—	—	—	—	—	—
1380	Man, æt. 73; right ear healthy.	—	—	—	—	—	—	Contained in its substance a yellow deposit.	—	—	—
1387	Man, æt. 59; right ear healthy.	—	—	—	—	—	—	—	—	—	—

There is a bulging of the lower osseous wall.

1390	Man, æt. 82; right ear healthy.	—	—	—	Wholly ab- sent; appa- rently de- stroyed by ulceration.	Long pro- cess of mal- leus absent.	—
1393	Man, æt. 72; left ear healthy.	Very con- cave ex- ternally.	Bands of membrane con- nect the ossicles; the inferior extremity of malleus fractured.	—	—	—	—
1395	Man, æt. 67.	—	The base of the stapes is not so moveable as natural.	—	—	In the same state as the right ear.	—
1397	Man, æt. 71.	—	Ossicles connected to- gether by membranous bands; the stapes is not so moveable as na- tural.	Distended by ceru- men; the cavity is dilated.	*	The ossicles are con- nected to- gether and to the pro- montory by membranous bands.	—
1398	Man, æt. 71.	Distended with ceru- men.	—	—	—	—	—
1399	Man, æt. 50; left ear healthy.	Absent, with the excep- tion of a small semi- lunar por- tion at the upper part.	Membranous bands con- nect the malleus and stapes to the pro- montory; the mas- toid cells are sepa- rated from the tym- panum by a broad membranous band; the mastoid cells contain cholesterine; the li- ning membrane is very thick.	—	—	—	—

No. of the Dissection.	Sex, Age, &c.	RIGHT EAR.					LEFT EAR.				
		Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.	Meatus Externus.	Membrana Tympani.	Cavitas Tympani.	Eustachian Tube.	Internal Ear.
1404	Man, æt. 60; right ear healthy.	—	—	—	—	—	The anterior half is absent; the posterior half is calcareous.	—	—	—	†
1406	Man, æt. 74; right ear healthy.	—	—	—	—	—	—	Stapes fixed to the fenestra ovalis more firmly than natural.	—	—	—
1409 1410	Man, æt. 68.	—	—	Base of stapes less moveable than natural.	—	—	—	Base of stapes less moveable than natural.	—	—	—
1411 1412	Girl; died from fever.	—	—	Fibro-mucous membrane more thick and red than natural.	—	—	—	Fibro-mucous membrane more thick and red than natural.	—	—	—
1413 1414	Man, æt. 61.	—	—	Delicate membranous bands connect the ossicles.	—	—	—	Delicate membranous bands connect the ossicles.	—	—	—

1419	Man, æt. 54.			Fibro-mucous membrane thicker than natural; membranous bands connect the ossicles; stapes not so moveable as natural.				In the same state as the right ear.
1420								
1421	Man, æt. 60.			Stapes not so moveable as natural.				Stapes not so moveable as natural.
1422								
1430	Man, æt. 60;							
1431	left ear healthy.			Dull; very concave externally; atrophied, except at the anterior part, which is white and thick; connected to promontory by bands.				
1432	Man, æt. 71;							
1433	left ear healthy.			Excepting at the central part, which consists of epidermis only, it is thick and white, like cartilage.				
1434	Man, æt. 68.							
1435				Base of the stapes somewhat expanded; and firmly attached to the fenestra ovalis.				Base of the stapes not so moveable as natural.
1442	Man, æt. 71.							
1443				Stapes not so moveable as natural.				Stapes not so moveable as natural; lower ossicular wall imperfect.

1460 1461	Man, æt. 64.	Very concave externally; thick, white, like parchment.	Fibro-mucous membrane thick; contained a mucous fluid; ossicles connected by bands; mastoid cells hollowed out; contained mucus mixed with crystals of cholesteroline.	The cochlea full of a dark colored blood effused around the auditory nerve.	In the same state as the right ear, in addition to which the stapes was ankylosed.
1465 1466	Man, æt. 68.	More rigid than natural.	Bands of membrane connect the ossicles; stapes fixed more firmly than natural.	—	More rigid than natural.
1468 1469 1470	Man, æt. 71; right ear healthy.	—	—	—	Stapes less moveable than natural.
1471 1472	Man, æt. 63.	—	Base of stapes ankylosed to the fenestra ovalis.	—	Base of stapes ankylosed to the fenestra ovalis.
1477 1478	Man, æt. 80.	—	Stapes less moveable than natural.	—	Stapes less moveable than natural.
1483 1484	—	Thicker than natural.	Ossicles connected together more firmly than natural; stapes partially fixed.	—	Thicker than natural.
		Radiate fibrous layer has been destroyed by ulceration.	Radiate fibrous layer has been destroyed by ulceration.	—	Radiate fibrous layer has been destroyed by ulceration.

TABLE V.

Tabular View of the Morbid Appearances found in 226 Diseased Ears, the histories being unknown.

MEATUS EXTERNUS.	{	Containing a collection of cerumen	12	
		Containing a collection of cerumen and epidermis	1	
		Containing a collection of cerumen and epidermis, the osseous walls being partly absorbed	3	
		Containing a collection of cerumen, the osseous tube being dilated	2	
		Containing a collection of cerumen, the osseous walls absorbed so as to expose the mastoid cells	1	
		Containing a collection of cerumen, the osseous walls being absorbed in parts	3	
		Containing a collection of hairs	1	
		Containing a collection of cotton wool	1	
		Contracted	1	
		Having bulgings from the osseous walls so that the calibre of the tube is much diminished	14	
		Osseous walls rough	1	
		Osseous walls carious	1	
		An orifice in the upper wall	3	
		An orifice in the lower wall	1	
		Depressions in the bony wall as if dead bone had been removed	2	
		Membranous meatus so much atrophied as to leave the bone exposed	1	
		Membranous meatus ulcerated, bone exposed	1	
		Membranous meatus congested	3	
		Molluscous tumour	1	
Molluscous tumour, the bony wall absorbed	1			
Molluscous tumour projecting through the bone into the mastoid cells	1			
EUSTACHIAN	}	TUBE.	Guttural portion red and soft	2
			MEMBRANA TYMPANI.	{
Opaque	4			
Thick	14			
Tense	5			
Lax	2			
Vascular	1			
Very concave externally	8			
So concave externally that its inner surface is in contact with the promontory	2			
Very concave externally and connected to the promontory by membranous bands	6			
Very concave externally and adherent to the promontory	2			
Very concave and thick	1			
Very concave and tense	2			
Thick and opaque	5			
Concave, thick, and opaque	1			
Calcareous	2			
Having a cartilaginous spot	2			
Flat externally	4			
Thick, flat externally, and white	4			
Thick, and attached to incus by membranous bands	1			
Thick and vascular, and connected to promontory by bands of membrane	1			

MEMBRANA TYMPANI.	{	Thick and opaque, and attached to promontory by bands of membrane	4			
		Thick, tense, and congested	2			
		Perforated	8			
		Perforated, the remnant being thick	2			
		The upper part detached from the bone	2			
		Absent, apparently from ulceration	4			
		Epidermoid lamina thick	4			
		Dermoid lamina thick	1			
		Dermoid lamina thick and vascular	3			
		Dermoid lamina detached from fibrous lamina	1			
		Radiate fibrous lamina absent, in parts apparently destroyed by ulceration	3			
		Fibrous laminae thick	2			
		Fibrous laminae containing black pigment-cells	2			
		Fibrous laminae absent, apparently from ulceration	4			
		Fibrous laminae absent, mucous lamina only remaining, and attached to promontory	2			
		Mucous lamina thick	2			
		Perforation of all the laminae excepting the epidermis	1			
		Perforation of all the laminae excepting the mucous lamina	2			
		CAVITAS TYMPANI.	{	Contents.	A collection of mucus	11
					A collection of blood	1
A collection of blood and mucus	1					
A collection of mucus and serum	3					
A collection of cholesterine and mucus	4					
A collection of epithelium, and distended by it	1					
State of Mucous Membrane.	More vascular than natural			7		
	Thicker than natural			13		
	Vascular and thick			13		
	So thick as to bury the stapes			3		
	Vascular and thick, and contains mucus			2		
	Blood effused beneath it			1		
Bands of Adhesion.	Between the ossicles, the mucous membrane being healthy			22		
	Between the stapes and promontory			2		
	Between the stapes, malleus, and promontory			1		
	Between the malleus, incus, and promontory			1		
	Between the malleus and incus			1		
	Between the malleus and promontory			1		
	Between the malleus, membrana tympani, and promontory			1		
Ossicles.	Not so moveable as natural, the stapes not being fixed			4		
	The handle of malleus fractured	1				
	The handle of malleus disconnected from membrana tympani	1				
	Malleus and incus ankylosed together	1				
	Long process of malleus absent	1				
	Incus disconnected from the stapes	5				
	Incus, long process absent	1				
	Incus fixed	2				
	Stapes less moveable than natural	49				
	Stapes, base expanded, and less moveable than natural	5				
	Stapes, base projecting into vestibule and less moveable than natural	1				
	Stapes ankylosed by bone to the fenestra ovalis	11				
Stapes atrophied	1					

CAVITAS TYMPANI.	{ The Walls.	Lower wall incomplete	3
		Canal for portio dura nerve incomplete	2
		Layer of bone between mastoid cells and lateral sinus incomplete	2
		Layer of bone between mastoid cells and cavity of cerebellum incomplete	1
		Canalis caroticus contracted	2
INTERNAL EAR.	{	Exostosis from the upper wall of the meatus internus	2
		A tumour upon the auditory nerve in the meatus internus	1
		Upper part of osseous superior semicircular canal absent	2
		Posterior wall of posterior semicircular canal absent	1
		Exostosis in the vestibule around the fenestra ovalis	2
		Membranous labyrinth thicker than natural	1
		Endolymph opaque	1
		A membranous band dividing the membranous labyrinth	1
		Otoconic more abundant than natural	1
		Membrane of fenestra rotunda opaque and thick	2
		Lamina spiralis cochleæ thick	1
		Lamina spiralis cochleæ, black pigment-cells very abundant	3
		Cochlearis muscle? hypertrophied	1
		Fluid in cochlea red	1
		Distended by a dark-coloured fluid	2
Blood being effused around the auditory nerve	2		
Black pigment in vestibule and cochlea more abundant than natural	1		

TABLE VI.

*Tabular View of the Morbid Appearances found in 1013
Diseased Ears.*

MEATUS EXTERNUS.	{	Containing a collection of cerumen	71
		Containing a collection of cerumen and epidermis	9
		Distended and dilated by a collection of cerumen	5
		Distended and dilated by a collection of cerumen and epidermis	1
		Containing a collection of cerumen and rye-seeds	2
		Containing a collection of cerumen; the osseous walls being absorbed in parts	3
		Containing a collection of cerumen and epidermis; the osseous walls being absorbed in parts	4
		Containing a collection of cerumen; the osseous walls being absorbed in parts so as to expose the cavity of the mastoid cells	1
		Containing a collection of hairs	1
		Containing a collection of cotton wool	1
		Containing a molluscous tumour	5
		Containing a molluscous tumour; the osseous walls being absorbed in parts	3
		Containing a molluscous tumour which projects through the bone into the cerebral cavity	1
		Containing a molluscous tumour which projects into the mastoid cells	1
		Containing a collection of pus	10
		Containing a collection of pus mixed with epidermis	1
		Having polypi growing from its walls	1
		Having polypi growing from its walls, the bone being carious	1
		The dermoid layer so much atrophied as to leave the bone denuded	2
		The dermoid layer hypertrophied	2
		The dermoid layer congested	7
		The dermoid layer soft	1
		The dermoid layer soft and red	2
		The dermoid layer soft and detached from the bone	2
		The dermoid layer soft and thick, the bone being carious	1
		The dermoid layer ulcerated, the bone being carious	1
		Osseous walls rough	1
		Osseous walls carious	7
		Osseous walls absorbed in parts	2
		Osseous walls presented an orifice superiorly	3
		Osseous walls presented an orifice inferiorly	1
		Osseous canal much contracted	3
Having bony growths from the osseous walls; canal much contracted	14		
MEMBRANA TYMPANI.	{	Opaque	15
		Vascular	7
		Vascular and thick	3
		Relaxed	4
		Tense	10
		Tense and atrophied	2
		Inner surface connected to the promontory by bands of membrane	32
		Inner surface adherent to the incus	9
		Inner surface adherent to the stapes	4
		Inner surface adherent to the stapes by membranous bands	11
Inner surface adherent to the incus	1		

MEMBRANA TYMPANI.	Inner surface adherent to all the ossicles	2
	Inner surface adherent to all the ossicles and the promontory by bands	6
	Outer surface more concave than natural	34
	Outer surface more concave than natural, and thick	4
	Outer surface more concave than natural, and opaque	2
	Outer surface more concave than natural, and thick and opaque	1
	Outer surface more concave than natural, and soft	1
	Outer surface more concave than natural, and tense	2
	Very concave externally, and the inner surface in contact with the promontory	10
	Very concave externally, and the inner surface connected to the promontory by bands	13
	Very concave externally, and the whole of the inner surface in contact with the inner wall of the tympanum; the tympanic cavity being obliterated	7
	Very concave externally, and thick, and adherent to the promontory	3
	Thicker than natural	66
	Thick and unyielding	5
	Thick and white	12
	Thick and soft	2
	Thick and tense	5
	Thick, and attached to the incus by membranous bands	1
	Thick and vascular, and connected to the incus by bands	1
	Thick and opaque	4
	Thick, tense, and congested	2
	Containing deposits of calcareous matter	14
	Containing spots of cartilage	2
	Flat externally	6
	Flat, thick, and white	4
	Epidermoid lamina thick	8
	Epidermoid lamina absent	5
	Dermoid lamina very vascular	1
	Dermoid lamina very thick	4
	Dermoid lamina very thick and vascular	3
	Dermoid lamina detached from the fibrous laminae	1
	Radiate fibrous lamina absent, entirely destroyed by ulceration	3
	Radiate fibrous lamina absent in parts	2
	Dermoid and fibrous laminae absent in parts, apparently from ulceration	3
	Radiate and circular fibrous laminae destroyed by ulceration in parts	6
Radiate and circular fibrous laminae entirely destroyed by ulceration	4	
Radiate and circular fibrous laminae entirely destroyed by ulceration; the mucous lamina being attached to the promontory	2	
Radiate and circular fibrous laminae containing pigment-cells	3	
Mucous lamina thick	2	
All the laminae destroyed by ulceration except the epidermoid	3	
All the laminae destroyed by ulceration except the mucous	2	
All the laminae perforated	47	
All the laminae absent apparently from ulceration	21	
All the laminae perforated; the remaining portion of the membrane being adherent to the promontory	9	
All the laminae perforated and very thick	1	
All the laminae perforated, very thick and concave, and adherent internally to the promontory	2	
All the laminae perforated by molluscous tumours	2	
Upper part of all the laminae detached from the bone	2	
The circular cartilage exposed	2	

CAVITAS TYMPANI.		State of the Mucous Membrane.	Contents.	Mucus	65
			Blood	6	
			Blood and mucus	1	
			Blood, mucus, and lymph	1	
			Serum	10	
			Serum and mucus	3	
			Serum and lymph	1	
			Lymph	6	
			Epithelium	2	
			Epithelium and oil	1	
			Scrofulous matter	20	
			Calcareous matter	8	
			Cerumen	1	
			Cholesterine	1	
			Cholesterine and mucus	5	
			Cellular tissue	2	
			Oily matter	1	
			Pus	17	
			More vascular than natural	75	
			Thicker than natural	211	
Thick and very vascular	16				
So thick as to conceal the stapes	27				
So thick as to fill the tympanic cavity	6				
Ulcerated	24				
Pulpy	5				
Containing black pigment-cells	2				
Having serum beneath it	1				
Malleus and promontory	6				
Malleus, incus, and promontory	1				
Malleus and stapes	1				
Malleus, stapes, and promontory	6				
Incus and promontory	5				
Incus, stapes, and promontory	3				
Incus and malleus	1				
Stapes and promontory, the mucous membrane being healthy	79				
Stapes and promontory, the mucous membrane being thick	48				
Stapes and promontory, the mucous membrane being vascular	6				
Stapes, promontory, and pyramid	1				
All the ossicles	30				
All the ossicles and the promontory	9				
Tensor tympani muscle (the tendon) and the stapes	3				
Chorda tympani nerve, incus, stapes, and promontory	2				
Chorda tympani nerve and upper wall of tympanum	1				
Adherent to the promontory	1				
Absent, apparently from caries or ulceration	4				
Partly removed by caries	1				
Malleus and incus lying in the mastoid cells	1				
Fixed by ligamentous ankylosis to the upper wall of the tympanum	3				
Fixed by osseous ankylosis to the upper wall of the tympanum	2				
The body ankylosed to the incus	3				
The long process detached from the membrana tympani	3				
The long process fractured	1				
The long process in contact with the promontory	3				
The long process adherent to the incus	1				
The long process detached from the body	1				
The long process absent	2				
The long process carious	3				
The long process exostosed	1				
Malleus.		Membranous Bands between	State of the Mucous Membrane.	Malleus	65
				Blood	6
				Blood and mucus	1
				Blood, mucus, and lymph	1
				Serum	10
				Serum and mucus	3
				Serum and lymph	1
				Lymph	6
				Epithelium	2
				Epithelium and oil	1
				Scrofulous matter	20
				Calcareous matter	8
				Cerumen	1
				Cholesterine	1
				Cholesterine and mucus	5
				Cellular tissue	2
				Oily matter	1
				Pus	17
				More vascular than natural	75
				Thicker than natural	211
Thick and very vascular	16				
So thick as to conceal the stapes	27				
So thick as to fill the tympanic cavity	6				
Ulcerated	24				
Pulpy	5				
Containing black pigment-cells	2				
Having serum beneath it	1				
Malleus and promontory	6				
Malleus, incus, and promontory	1				
Malleus and stapes	1				
Malleus, stapes, and promontory	6				
Incus and promontory	5				
Incus, stapes, and promontory	3				
Incus and malleus	1				
Stapes and promontory, the mucous membrane being healthy	79				
Stapes and promontory, the mucous membrane being thick	48				
Stapes and promontory, the mucous membrane being vascular	6				
Stapes, promontory, and pyramid	1				
All the ossicles	30				
All the ossicles and the promontory	9				
Tensor tympani muscle (the tendon) and the stapes	3				
Chorda tympani nerve, incus, stapes, and promontory	2				
Chorda tympani nerve and upper wall of tympanum	1				
Adherent to the promontory	1				
Absent, apparently from caries or ulceration	4				
Partly removed by caries	1				
Malleus and incus lying in the mastoid cells	1				
Fixed by ligamentous ankylosis to the upper wall of the tympanum	3				
Fixed by osseous ankylosis to the upper wall of the tympanum	2				
The body ankylosed to the incus	3				
The long process detached from the membrana tympani	3				
The long process fractured	1				
The long process in contact with the promontory	3				
The long process adherent to the incus	1				
The long process detached from the body	1				
The long process absent	2				
The long process carious	3				
The long process exostosed	1				

CAVITAS TYMPANI.	Incus.	Absent	4
		Long process absent	2
		Partly removed by caries	8
		Disconnected from stapes	14
		Disconnected from stapes and malleus	1
	Fixed by membranous ankylosis to the orifice of the mastoid cells	2	
	Stapes.	The base ankylosed by bone to the fenestra ovalis	49
		The base ankylosed by bone to the fenestra ovalis, the base being expanded	6
		The base ankylosed by membrane to the margin of the fenestra ovalis	36
		The base ankylosed by membrane to the margin of the fenestra ovalis, the base being expanded	6
		The base ankylosed by membrane to the margin of the fenestra ovalis, an exostosis surrounding the fenestra	2
		The base of the stapes attached to the fenestra ovalis more rigidly than natural	66
		The base projecting into the cavity of the vestibule	5
		The base expanded and more fixed than natural	7
		The base expanded and projecting into the vestibule	2
		Detached from incus and attached to the membrana tympani	1
		Ankylosed to incus	2
		Detached from the fenestra ovalis and the incus	2
		Disconnected from the fenestra ovalis	1
		Partially absorbed	1
Atrophied		1	
Absent, apparently from ulceration	2		
All the Ossicles	Less moveable than natural	4	
	Absent, apparently from ulceration	2	
	Disconnected from each other	1	
	Carious	2	
Osseous Walls.	Thickened	1	
	Carious	6	
	Upper wall partly deficient	54	
	Lower wall partly deficient	25	
	Osseous lamina between mastoid cells and lateral sinus incomplete	2	
	Osseous lamina between mastoid cells and cavitas cerebelli incomplete	1	
	Canal for portio dura nerve incomplete	2	
Carotid canal contracted	7		
EUSTACHIAN TUBE.	Containing mucus	10	
	Containing mucus, and the lining membrane congested	1	
	Containing mucus, and the lining membrane thick	2	
	Mucous membrane congested	5	
	Mucous membrane of faucial portion red and soft	2	
	The walls connected by bands of adhesion	3	
	A stricture in the osseous part	1	
	A stricture in the cartilaginous part	2	
	Very large	2	
<i>Tensor Tympani Muscle.</i> {			
Atrophied		14	
Attached to stapes by a membranous band		1	

INTERNAL EAR.	Auditory Nerve.	Atrophied	5
		Atrophied and congested	2
		Vestibular portion atrophied	1
		In a state of suppuration	1
		Having a tumour attached to it	1
		Having blood effused around it	2
	Vestibule.	Membranous labyrinth thicker than natural	8
		Membranous labyrinth atrophied	20
		Membranous labyrinth congested	2
		Membranous labyrinth containing blood	1
		Membranous labyrinth containing pus	2
		Membranous labyrinth containing red serum	2
		Membranous labyrinth containing an opaque fluid	3
		Otoconie absent	3
		Otoconie more abundant than natural	8
		Endolymph deficient in quantity	10
	A membranous band dividing the vestibule	2	
	An exostosis growing from its walls	3	
	Black pigment-cells more abundant than natural	1	
	Cochlea.	Blood-vessels distended	2
Cochlearis muscle (Todd and Bowman) red		1	
Cochlearis muscle hypertrophied		4	
Black pigment very abundant		4	
Fluid opaque		2	
Fluid of a dark colour		2	
Fluid of a red colour		3	
Fluid deficient in quantity		8	
Lamina spiralis thick		1	
Containing pus	1		
Semicircular Canals.	Superior osseous wall of the superior semicircular canal incomplete	2	
	Posterior osseous wall of the posterior semicircular canal incomplete	1	
	Obstructed by otoconie	2	
	Otoconie more abundant than natural	2	
	Containing pus	1	
	Containing calcareous matter	2	
	Containing blood	1	
A carious orifice from the tympanum into the superior canal	1		
Membrana Fenestree Rotundæ.	Thick	4	
	Thick and tense	1	
	Thick, tense, and opaque	2	
	Red and pulpy	1	
	Having bands of membrane covering its outer surface	4	