

# The remarkable history of otology

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I found wonderful enlightening stories when I searched the Internet for the history of otology.

Otologists achieved success by thinking, trying, dissecting and sometimes being a part of the experiments themselves.

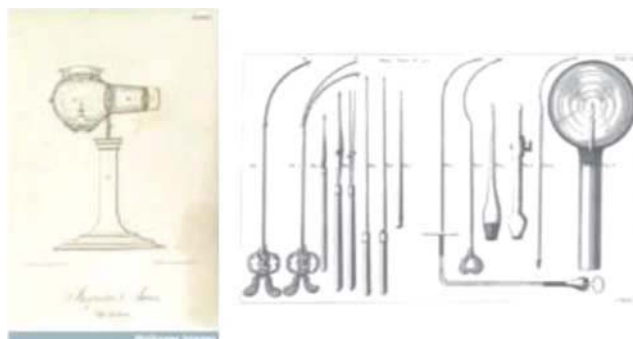
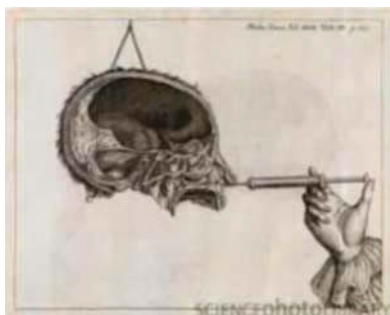
We should study their history in order to develop essential thinking skills and to inspire us for the future; in other words, 'historical knowledge is not to make us cleverer the next time, but wiser for all time'.

One of the first medical writings dating back to 1550 BC was found in an Egyptian tomb at Thebes. The existence of the Eustachian tube was recognized in this writing

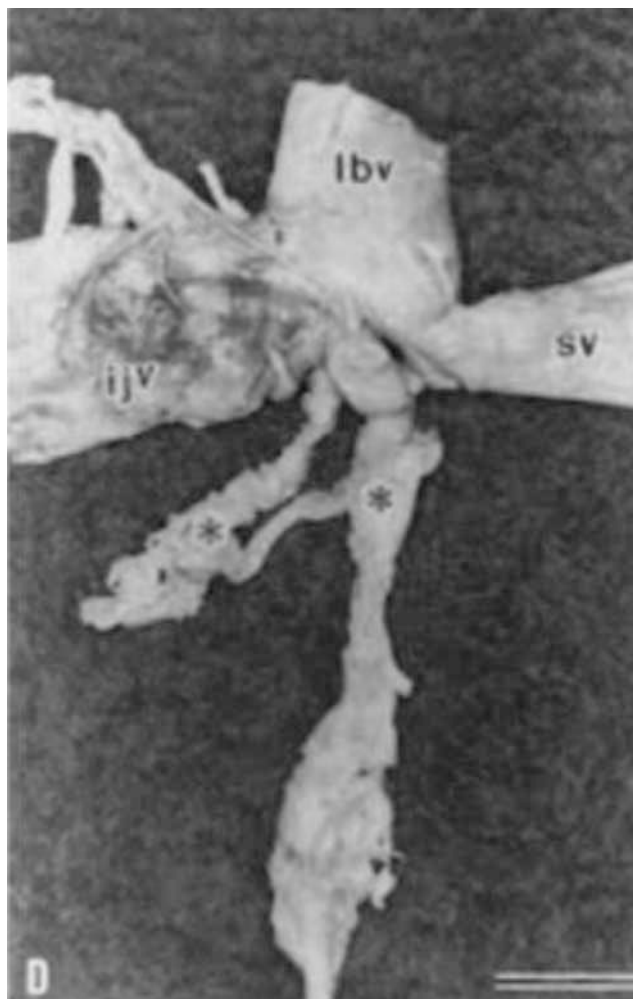


from the following words: 'the breath of life passes by the right ear, the breath of death by the left ear.'

Hippocrates (born 460 BC) was probably the first to examine the tympanic membrane and to recognize it as being a part of the hearing organ.



Claudius Galenus (Galen) in 131 first used the term 'labyrinth' while referring to the inner ear. Galen stated that pitted or perforated bone should be removed after



making an incision behind the ear. With this in mind, Galen may be considered a pioneer of mastoid surgery.

Bartolomeus Eustachius (1520-1574), wrote the earliest book on the ear and was the first to describe the Eustachian tube accurately.



Antonio Valsalva (1665–1723) , dissected more than a thousand human heads and described the ear by dividing it into three parts. He suggested the use of the terms *scala vestibuli* and *scala tympani* for parts of the cochlea. He was the first to demonstrate the presence of ankylosis of the stapes at *postmortem*. He formally suggested blowing out strongly while holding the mouth and nose closed, forcing air to pass into the tympanum by way of the Eustachian tube.



Prosper Meniere (1799–1862) in his original observation showed that vertigo could be due to a disorder of the internal ear. Before Meniere, vertigo was looked upon as an intracranial disorder only.



Guyot in 1724 succeeded in finding relief from his own deafness by using a curved tube passing into the mouth and behind the palate. He used water that he injected into his Eustachian tube.

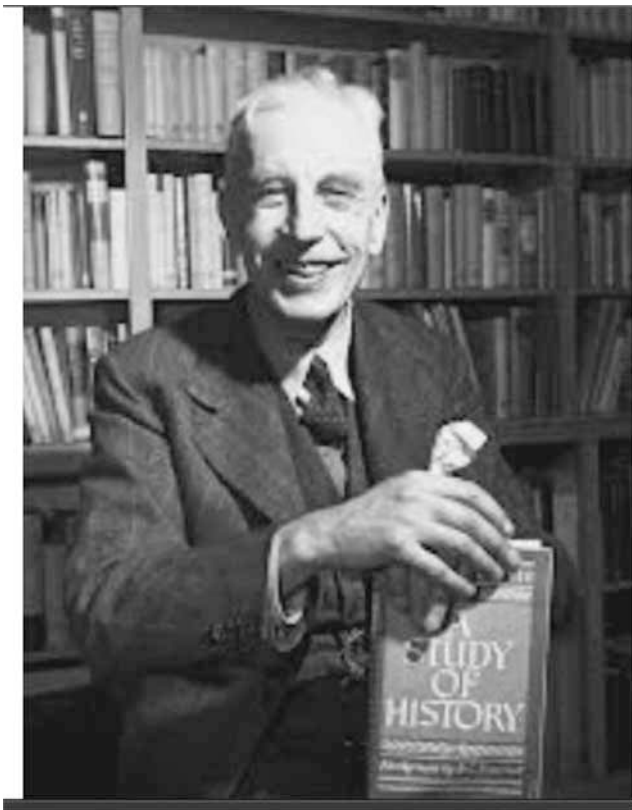
Antonio Scarpa (1747–1832) discovered the membranous labyrinth. He described the sacculle and utricle and distinguished the fluid contents of the bony and membranous labyrinth as perilymph and endolymph. His illustrations were very detailed and accurate.



France was the first country to take otology from surgery and give it a place of its own. The first specialty hospital for diseases of the eye and ear was established in London in 1805 by John Cunningham Saunders.

The first tuning-fork test for hearing was conducted by E.H. Weber of Leipzig in 1834 . Adolf Rinne in 1885 published additional information on tuning-fork tests.

Joseph Toynbee (1815–1866) dissected more than 2000 temporal bones and formed a collection in the Museum of the Royal College of Surgeons. In 1860, he showed that stricture of the Eustachian tube was not a common



affliction as he encountered only one case out of his 1523 dissections. He noted that the Eustachian tube was not permanently open, but was lightly closed, and that it opened up only during such movements as swallowing or yawning. In one of his dissections, Toynbee recognized a fistula of the external (lateral) semicircular canal and pointed out that infection could extend to the brain through the labyrinth. Toynbee was one of the first to describe otosclerosis and he recognized it in 160 cases.

William Wilde (1815–1876) was an oculist (ophthalmologist) and an aurist (otologist). He believed that if the mastoid area became engorged or fluctuant a person should not hesitate to make a free incision of at least an inch in length. He felt the blade of a stout scalpel inserted steadily until the point reached the bone to secure complete division of the periosteum was needed. He explained that immediate relief should follow, even if pus was not discovered.

Adam Politzer in 1835 was the first to demonstrate the innervation of the tensor tympani muscle and the stapedial muscle. In 1861, he published a report on insufflation of the middle ear through the Eustachian tube, which obviated the need for catheterization. This came to be known as politzerization. Furthermore, he developed the first illustrated atlas of the tympanic membrane in health and disease, with color drawings made by himself.

He influenced and trained thousands of otologists worldwide, and his most famous successor was Robert Bárány, who received the Nobel Prize for medicine in 1914.



Mastoid surgery was routinely performed using a mallet and gouge. The facial nerves were severed and hearing destroyed in a high percentage of cases.

Julius Lempert in 1938 decided that it would be better to open the mastoid with a dental drill rather than with a mallet and gouge.

Lempert went on to develop what was known as the one-stage fenestration of the lateral semicircular canal and began seeing exceptionally good results.



Lempert shared his knowledge and trained a whole generation of surgeons.

Samuel Rosen, by the early 1950s, had developed a procedure known as the stapes mobilization.

Then in the late 1950s, John Shea Jr. of Memphis, Tennessee, boldly removed the stapes and replaced it with a plastic strut over a vein covering the open oval window.

Howard House trained with Lempert in 1940. House founded the famous House Ear Clinic and Research Institute. He trained numerous young doctors over the years and his younger brother, William F. House, developed the first cochlear implant.

In this review I have not succeeded in presenting a complete history of ancient and modern otology. I have selected only a few examples of successful researchers. It should be understood that these researchers had to overcome many obstacles to become world renowned. Most of them had no financial backing and were poor. Yet, they continued their research by splitting fees and have in the process, by all measures, become pioneers.

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### **Acknowledgements**

#### **Conflicts of interest**

There are no conflicts of interest.