

Birkett, H.S. (Herbert Stanley)

"THE EARLY HISTORY OF BRITISH OTOLOGY"

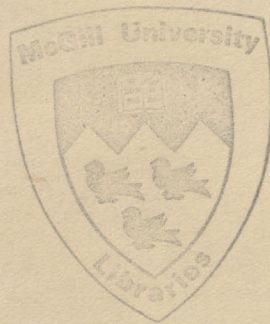
Thomas Haythorn

27 Brunswick Ave. S. Lond.

McGill University Libraries



3 101 746 313 6



Osher
Library

"THE EARLY HISTORY OF BRITISH OTOLOGY"

by

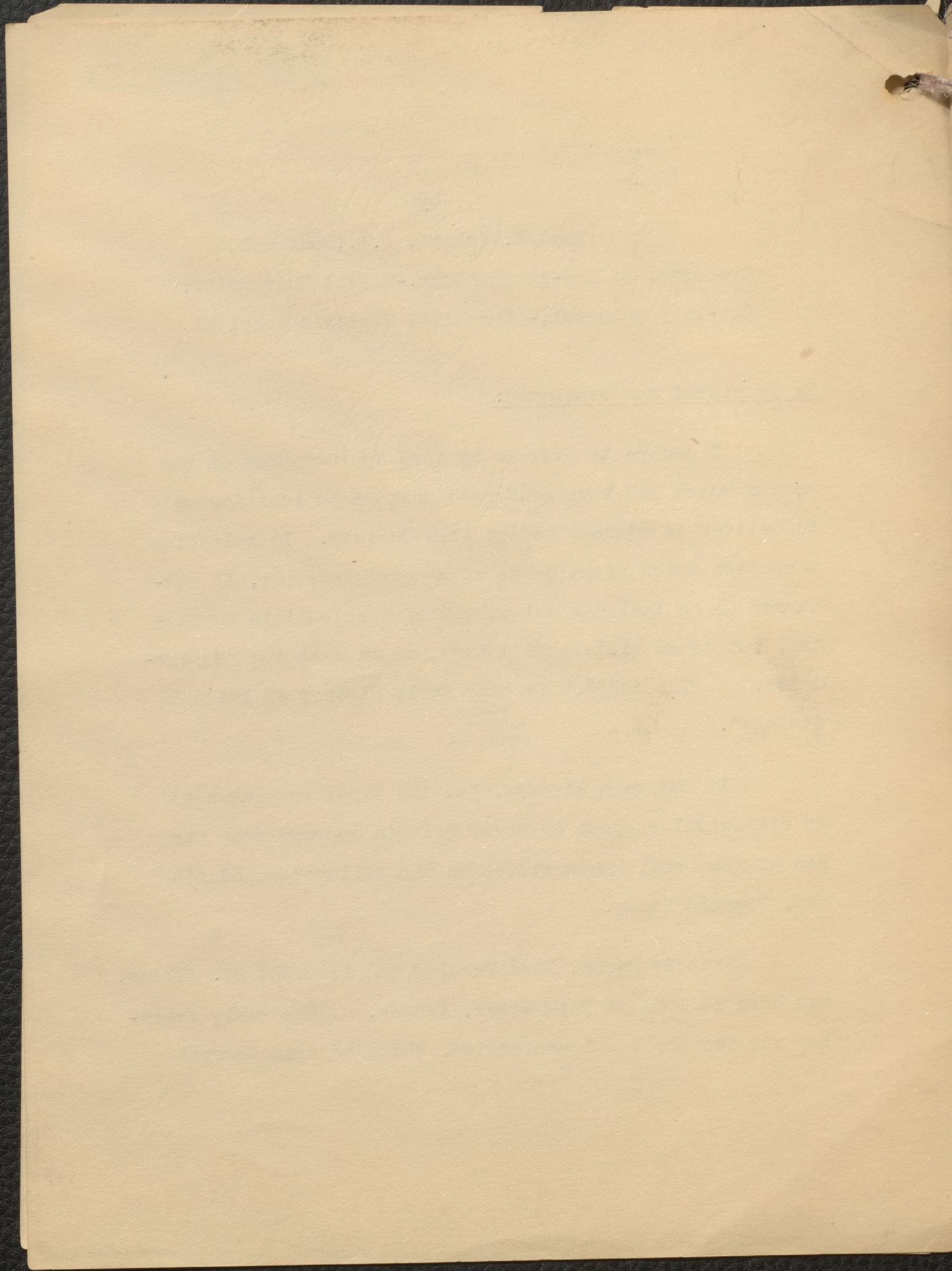
Herbert S. Birkett, M.D., Montreal,
Professor of Oto-laryngology, - McGill University,
Oto-laryngologist, - The Royal Victoria Hospital.

Mr President and Gentlemen:

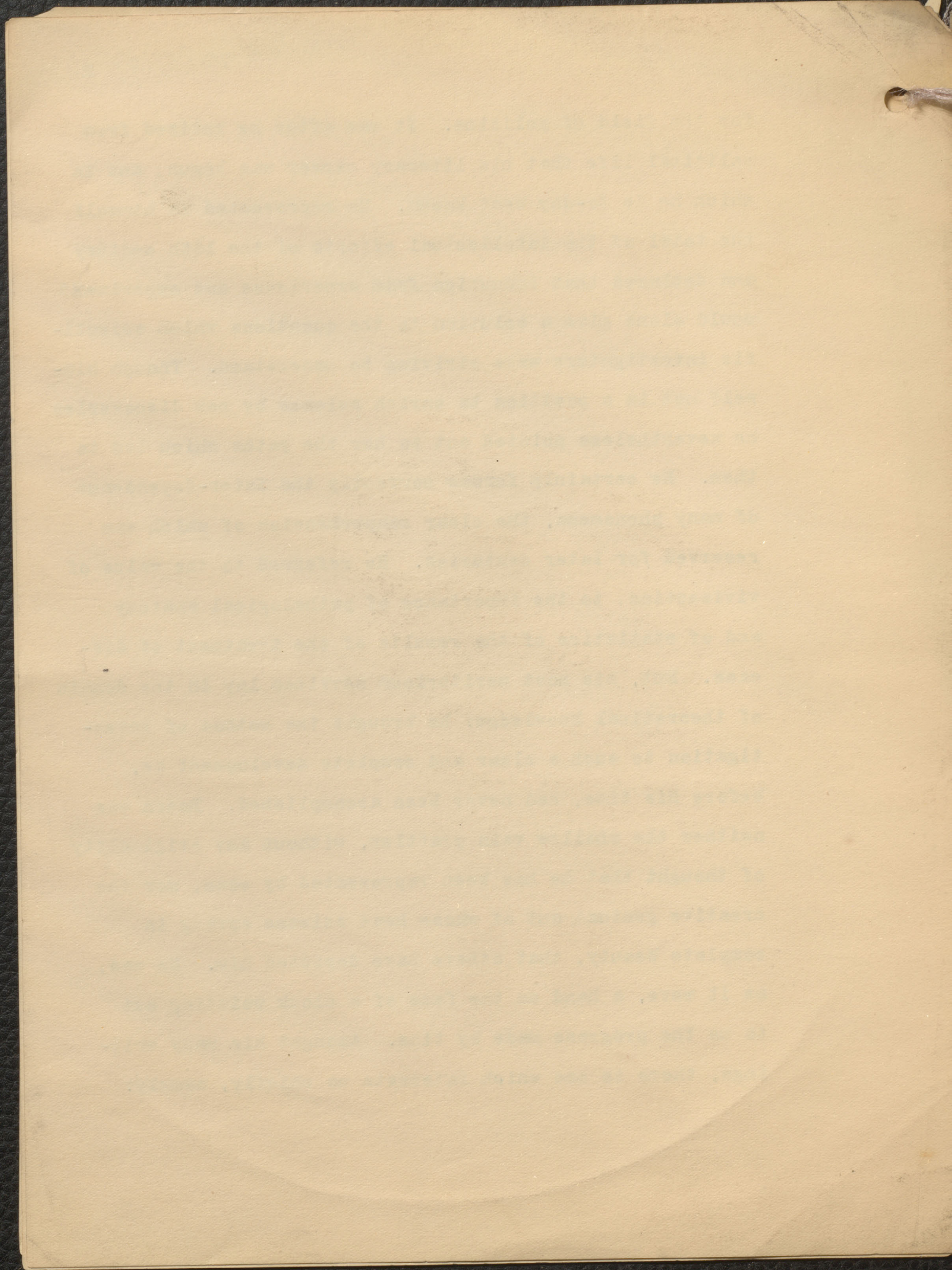
I desire to express my deep appreciation of the honour which you have conferred upon me in inviting me to deliver an address before this Society. In selecting a subject which might prove of general interest, it occurred to me that one not purely of a scientific character, but of an historical nature, might meet the requirements. The subject is "The Early History of British Otology".

It may seem strange, but the first reference to an otological subject in Great Britain appears from the pen of that well known statesman and philosopher of his day, Francis Bacon.

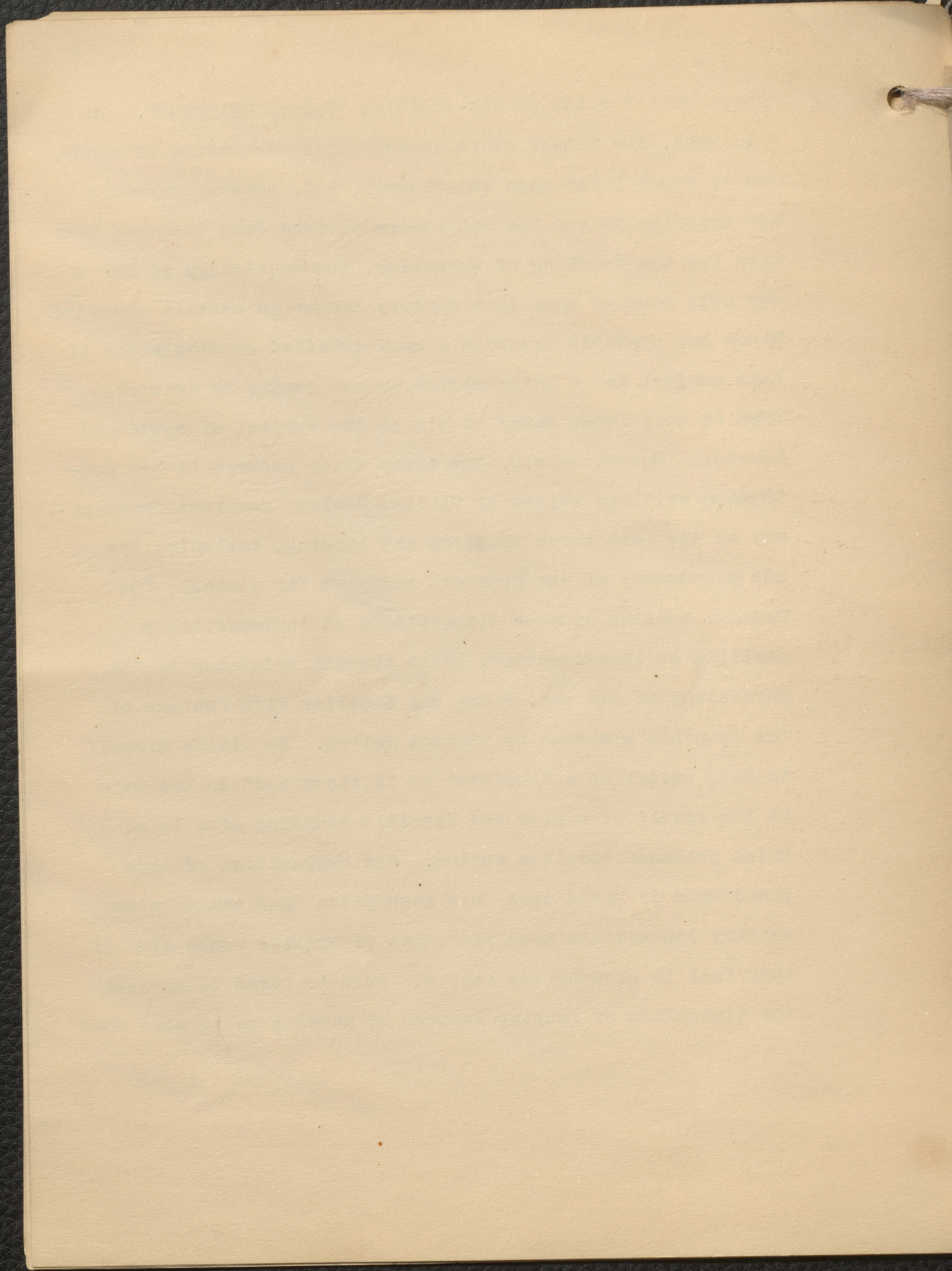
Francis Bacon, Lord Verulam and Viscount St. Albans, was born in 1561 at York House, London. His early training was for the legal profession, which he soon forsook



for the field of politics. It was after he retired from political life that his literary career was begun, and in which he is to-day best known. He represented in himself the total of the intellectual efforts of the 16th century and declared that induction from experience and experiment could alone give a solution to the questions which scientific investigators were striving to understand. Though himself not in a position to enrich science by new discoveries he nevertheless pointed out to her the paths which led to them. He certainly foresaw correctly the inter-dependence of many phenomena, the clear comprehension of which was reserved for later centuries. He referred to the value of vivisection, to the importance of pathological anatomy, and of statistics of the results of the treatment of disease. But, his most meritorious services lay in the domain of theoretical knowledge: he brought the method of investigation to such a clear and complete development as, before his time, had never been accomplished. Bacon was neither the shallow vain prattler, without any originality of thought that he has been represented by some, nor the creative genius out of whose head science sprang in complete beauty, that others have depicted him. He was, as it were, a hand on the face of a clock pointing out to us the progress made by time. Amongst his many writings, there is one which interests us chiefly, namely:



"Opera Omnia" which is sub-entitled "Sylvia Sylvarum". In this work, the author gives an extensive discussion of music, and of sound based upon experiments, but, however valuable his experiments and the conclusions derived from them may have been for the teaching of acoustics, the physiology of the ear was only touched upon in a cursory manner in certain passages. Bacon had probably reserved a more detailed consideration of this subject for a later period, as may justly be assumed, from an unfinished essay of his on the subject of sound and hearing. Unfortunately, the essay which occurs in his posthumous writings edited by William Rawley, remained fragmentary as the last three chapters are lacking, including the one presumably of the greatest interest for otology, "De Organo auditûs, ejusque dispositione et indispositione auxiliis et impedimentis". With special reference to the physiology of the ear, Bacon was familiar with rupture of the tympanic membrane by violent noises. He claims himself to have perceived a "rupture" or "dislocation" in his ears as the result of a high and forcible sounding of a lute, which produced tinnitus aurium. His explanation of this phenomenon is based upon his assumption that exaggerated sensory impressions harm the organ of special sense even if they fail to produce any lesion. Bacon's ideas concerning the diminution of hearing induced by yawning go to show what



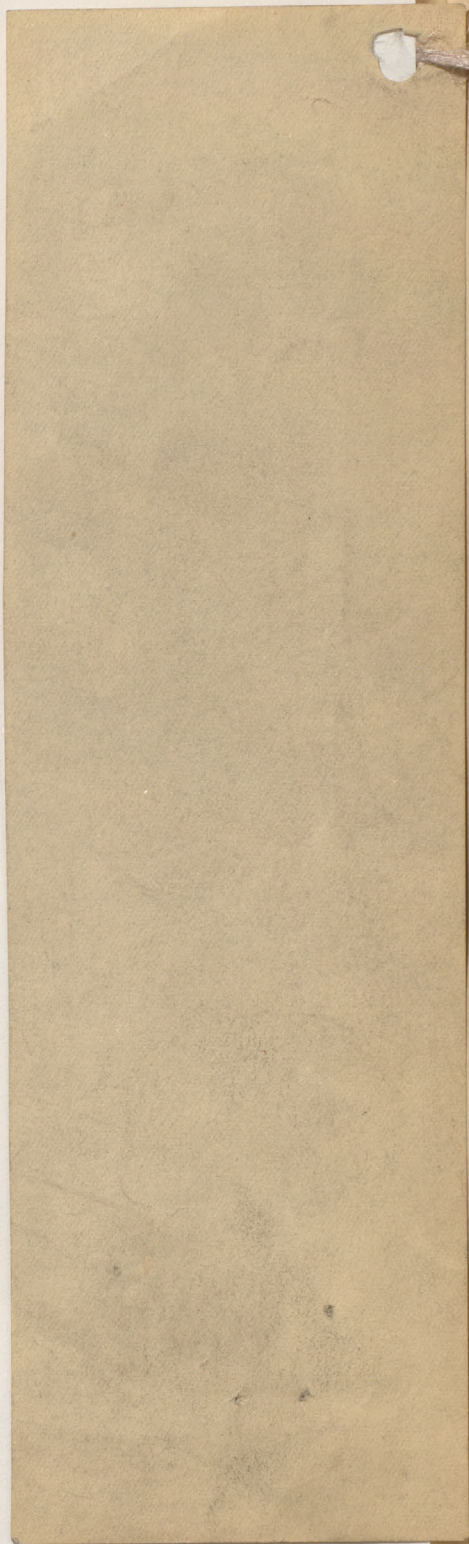
1 Francis Bacon

2 Thomas Willis,

3 Sir Anthony Carlisle

4 John Cunningham Saunders

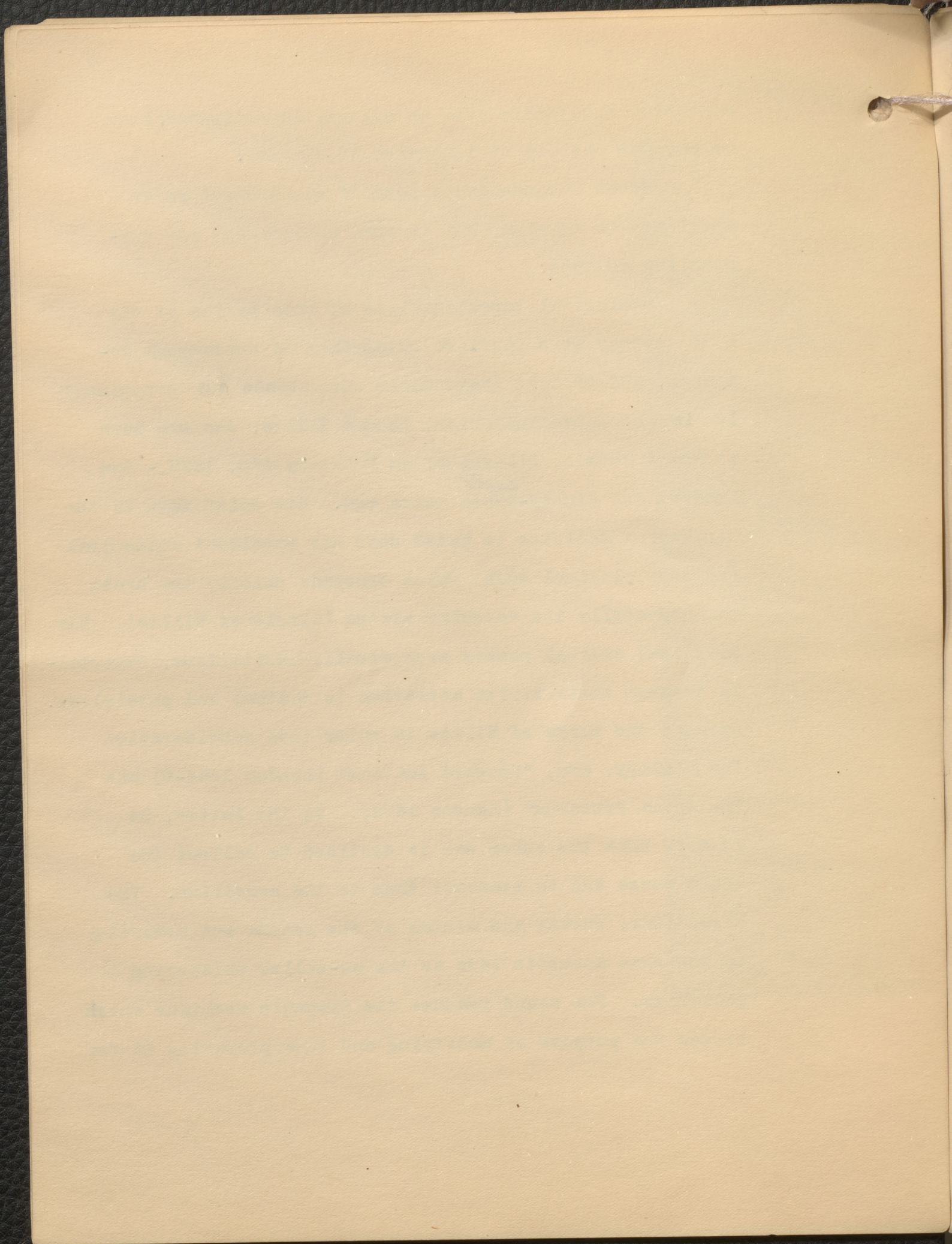
5 Alexander Munro.



erroneous hypotheses even an eminent investigator, such as he, was misled by ignorance of anatomy.

Bacon recommended a form of ear trumpet as an auxiliary to hearing, but it does not present any originality of type.

Otological investigations at this period of the 17th century were confined altogether to anatomical research, and amongst those whose name stands out preeminently is the noted anatomist, Thomas Willis, who was born at Great Bedwin, Wiltshire, on February 6th, 1622, - two hundred and eighty-^{eight}~~seven~~ years ago. His chief fame in the history of medicine is based upon his excellent anatomical and physiological work, which concerns chiefly the brain and especially its vascular system (Circle of Willis). His practical medical papers were equally meritorious, especially through their strict attention to anatomy and physiology. Amongst the works of Willis to enter into consideration for otology, are, "Cerebri Anatome" (London 1664-5) and "De Anima Brutorum" (London 1672). In the latter, he asserts that the outer ear is destined to collect the sound waves and to transmit them to the sensorium. The elevations, curves and niches of the concha act according to the same acoustic laws as the so-called whispering galleries. The sound reaches the tympanic membrane which serves the purpose of modifying and thus preparing it for



reception of the true auditory organ. It is not absolutely necessary for hearing, however, but merely advantageous to it, the sound being regulated and collected by the function of the ear muscles and auditory ossicles, through the alternating tension and relaxation of the tympanic membrane. Willis endeavored to prove this by animal experiments. The sound according to him was then conducted exclusively through the vestibular window into the labyrinth, reaching the cochlea after having been reflected and intensified in the semicircular canals, to be taken up by the auditory nerve. Willis was the first to recognise that the true seat of hearing or the immediate sensory organ of audition is in the cochlea.

Mention remains to be made of the phenomenon first observed by Willis, which after him received the name of Paracosis Willisii. This is the improved hearing of certain partially deaf persons in the midst of loud noises. This passage occurs in his work "De Anima Brutorum" Liber 1, cap XIV, where he speaks of a deaf woman who could hear well during the rattling of drums, so that her husband caused a drum to be constantly carried after her by a servant in order to be able to converse with his wife. In another instance, Willis relates the case of a partially deaf individual who could hear better in the midst of the ringing of bells.



This phenomenon, paradoxical at first sight, is explained by Willis through the assumption of a relaxed tympanic membrane, which, by the vibrations of the loud noise is brought back to its normal tension and really thereby rendered again functionally efficient.

The first epoch in the history of British Otology occurred early in the 18th century, when in 1741, Archibald Cleland, a Military Surgeon, and contemporary of Valsalva, published in the "Philosophical Transactions" an account of "Instruments proposed to remedy some kinds of deafness, proceeding from obstruction in the external and internal auditory passage". The first of these consisted "of a convex glass three inches in diameter fixed in a handle, into which is lodged some wax candle, which, when lighted, will dart the collected rays of light into the bottom of the ear". Insignificant and incomplete as this instrument of Cleland undoubtedly was, it is nevertheless deserving of our attention, inasmuch as to it may be traced the subsequent Inspector Auris of Delau, of Itard, of Buchanan and Kramer. The principal object of Cleland's inspector for throwing a stream of artificial light into the meatus was for the purpose of discovering the presence of hardened cerumen which he removed by means of a jet of medicated steam. This is the first record of any attempt being made to ascertain otological conditions by ocular inspection. The second import-



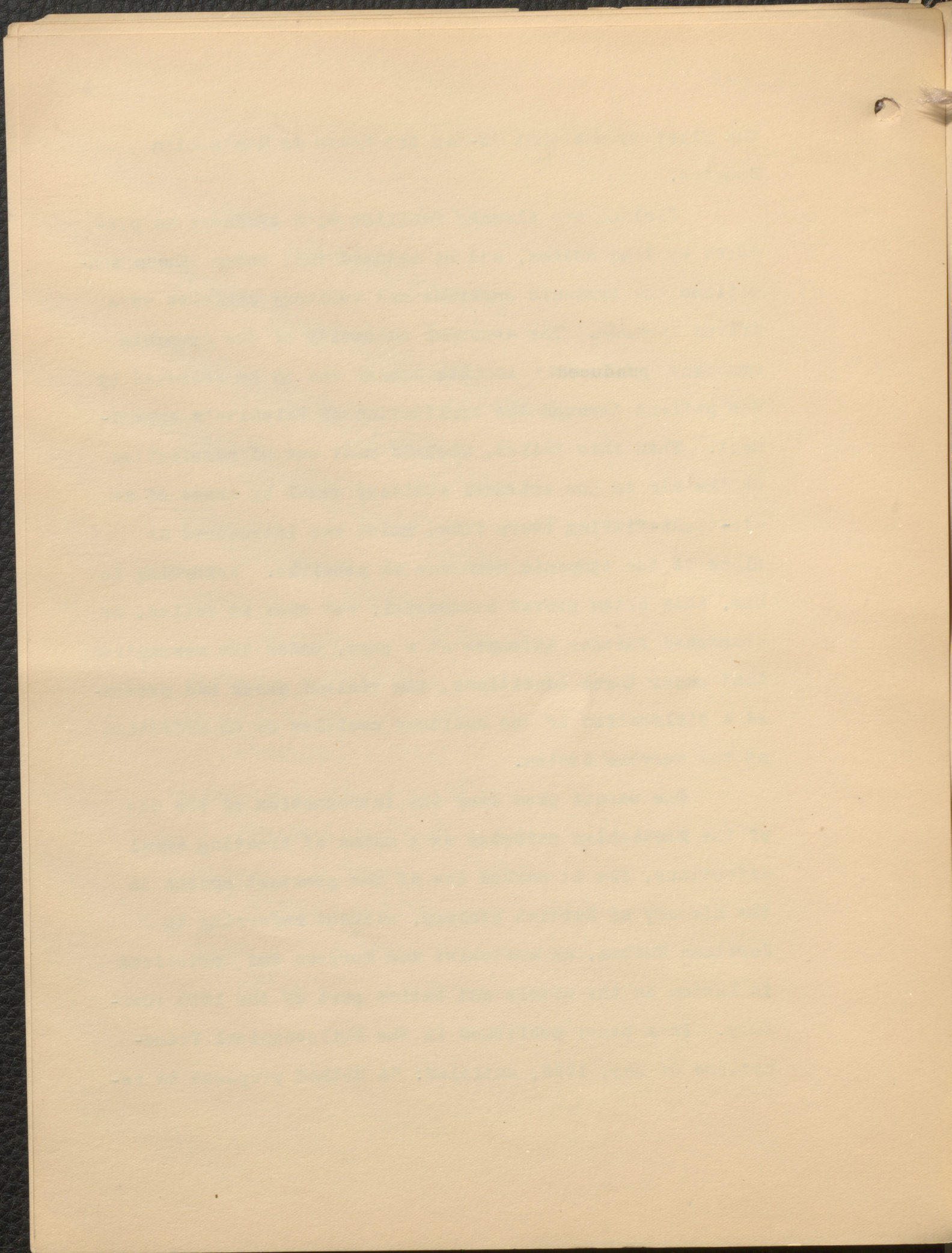
ant step in the progress of otology was also made by Cleland, who was the first to propose the introduction of the ear catheter through the nose. It is also noteworthy from the historical point of view that, at the same time when Valsalva described in his celebrated anatomical work, the experiment named after him, precisely the same experiment was mentioned by Cleland, without reference to Valsalva.

The following is Cleland's own description of a method of introducing the Eustachian Catheter "If", he says, "after the removal of the hardened cerumen in the manner previously mentioned, the person still remains deaf, the following instruments are made to open the Eustachian tube: if, upon trial, it should be found to be obstructed, the passage is to be lubricated by throwing a little warm water into it by a syringe joined to a flexible silver tube which is introduced through the nose into the oval opening of the duct, at the posterior opening of the nares towards the arch of the palate." This catheter had affixed to it a sheep's ureter, to the other end of which was attached to the syringe whereby, as Cleland states, "warm water may be injected, or they will admit to blow into the Eustachian tube, and so force the air into the barrel of the ear and dilate the tube sufficiently for the discharge of the excrementious matter that may be lodged there." Cleland likewise used probes of the same size as the catheter to explore the Eustachian tube. It is evident from this that Cleland was

the first to use what to-day are known as Eustachian Bougies.

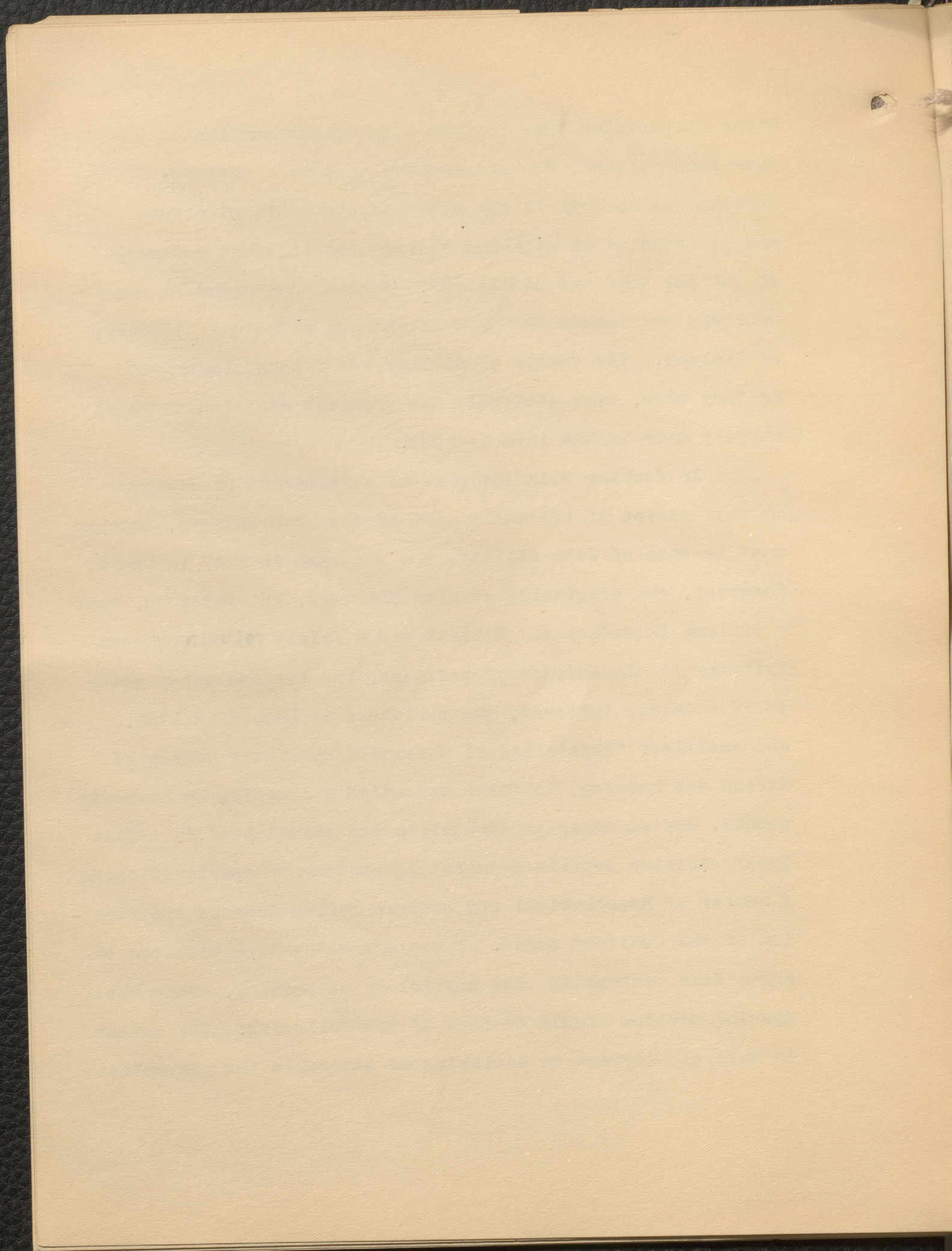
Cleland was already familiar with deafness as produced by loud noises, and he assumed that under these conditions the tympanic membrane and auditory ossicles were driven inwards. The abnormal concavity of the tympanic membrane produced in this manner was to be relieved by the patient through the application of Valsalva's experiment. When this failed, Cleland made use of rarefaction of the air in the external auditory canal by means of an air-tight-fitting ivory tube, which was introduced as close to the tympanic membrane as possible. According to him, this often proved successful, but when it failed, he abandoned further attempts at a cure, under the assumption that under these conditions, the violent shock had produced a dislocation of the auditory ossicles or an affection of the nervous system.

One cannot pass over the introduction of the use of the Eustachian catheter as a means of treating aural affections, for it marked one of the greatest epochs in the history of British Otology, without referring to Jonathan Wathan, an anatomist and surgeon who practiced in London in the middle and latter part of the 18th century. In a paper published in the Philosophical Transactions of May, 1755, entitled: "A Method proposed to re-



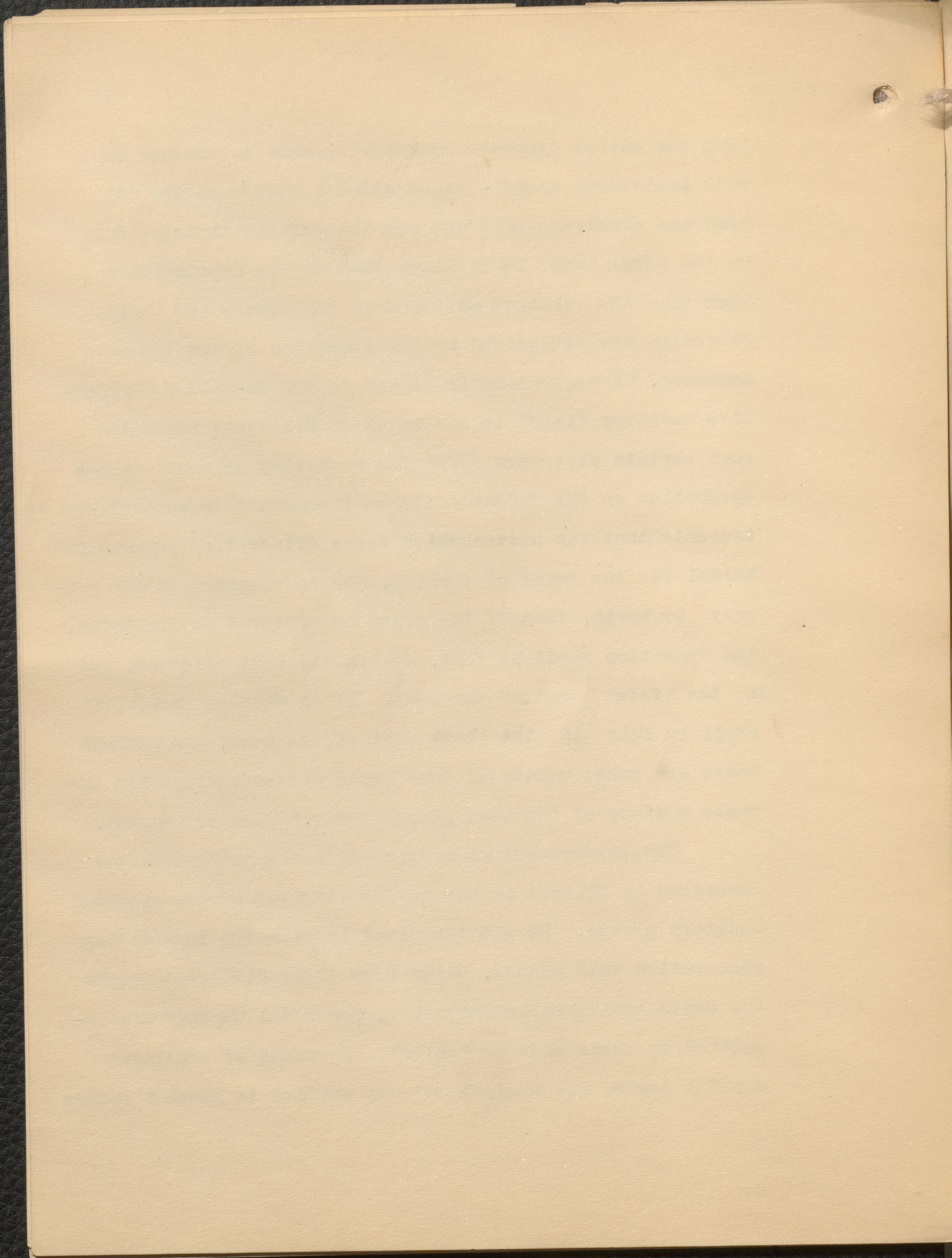
store the hearing when injured from an obstruction of the tuba Eustachiana", Wathan proposed to pass a catheter through one nostril to the mouth of the Eustachian tube and by means of an attached syringe, he injected and washed out the tube and middle ear. Wathan thus seems to have entirely overlooked the more recent and effectual discovery of Cleland. The essays of Cleland and Wathan, imperfect as they were, were decidedly the greatest addition to aural surgery made in the 18th century.

In dealing with the gradual development of otology at this period of the early part of the 18th century, mention must be made of John Elliott, who was born in 1747 in Chard, Somerset, who originally studied pharmacy, but later on, took a diploma in medicine. Elliott was a fairly voluminous contributor to the science of medicine, but his one paper which is of otiatric interest, was published in London in 1780, and entitled: "Physiological Observations on the senses of vision and hearing, to which are added a treatise on harmonic sounds, and an essay on combustion and animal heat." This paper contains certain interesting statements scattered among a number of hypothetical and useless reflections on the function of the auditory organ. There are altogether eighteen observations concerning the physiology of hearing, among which special mention should be made of the following: The author is entirely correct in declaring as untenable the assumption



"that the entire tympanic membrane is made to vibrate by each individual sound" - since several sounds strike the membrane simultaneously and are transmitted through it,. On the other hand, he inclines towards the hypothetical view" that the relative position of the sounds and their direction are recognized by the sensation of the tympanic membrane. "A suggestion in regard to the so-called "Subjective auditory field" is contained in Elliott's statement that certain observers refer the sensation of sound to the cerebellum or the forehead. "These Phenomena" he writes "seem to indicate that the nerves which serve either the tympanum or barrel for the sense of feeling, are so disposed in the sensory or brain, that, if the organ be affected in one point, the sensation shall be felt, not in the part affected, but in the fore part of the head. If in another point, it shall be felt in the back part of the head; and perhaps there are other points of that organ corresponding with the whole surface of the head respectively." (Loc.cit.pg.33).

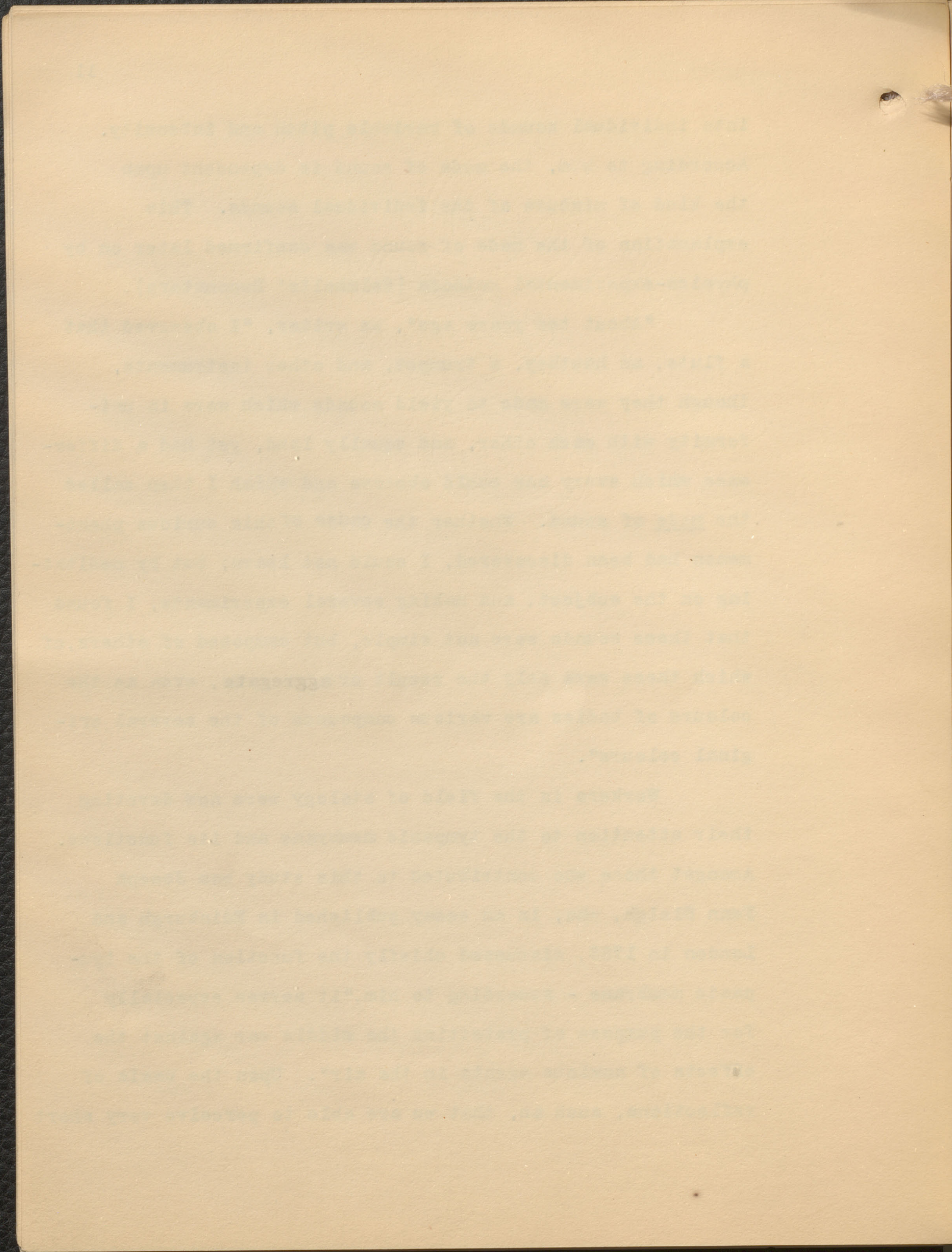
The improvement of hearing with the mouth open was explained by Elliott as due to the widening of the external auditory meatus. He was the first to make the interesting observation that sounds, aside from their different height and depth and variable intensity, are still further distinguished by their mode or "color". By means of continued careful tests, his musical ear was enabled to dissect sounds



into individual sounds of variable pitch and intensity. According to him, the mode of sound is dependent upon the kind of mixture of the individual sounds. This explanation of the mode of sound was confirmed later on by physico-experimental methods (Helmholtz' Resonators).

"About ten years ago", he writes, "I observed that a flute, an hautboy, a trumpet, and other instruments, though they were made to yield sounds which were in uniformity with each other, and equally loud, yet had a difference which every one could observe and which I then called the mode of sound. Whether the cause of this curious phenomenon had been discovered, I could not learn; but by meditating on the subject, and making several experiments I found that these sounds were not simple, but composed of others, of which these were only the result or aggregate, even as the colours of bodies are various compounds of the several original colours".

Workers in the field of otology were now devoting their attention to the tympanic membrane and its functions. Amongst those who contributed to this study was Joseph Fenn Sleigh, who, in an essay published in Edinburgh and London in 1785, discussed chiefly the function of the tympanic membrane - according to him, "it serves especially for the purpose of protecting the middle ear against the effects of noxious agents in the air". Upon the basis of reflections, such as, that we are able to perceive very short



sounds, to which the tympanic membrane cannot accommodate itself, and, that certain individuals retain their hearing capacity with a perforated tympanic membrane, or even with a loss of the auditory ossicles; and other similar reasons, Sleigh therefore denies the capacity of the tympanic membrane to accommodate itself to high and low sounds. He assumes on the contrary, that the membrane is relaxed by loud sounds, and put on the stretch by weak ones, a view which is in contradiction to the present interpretation, according to which, sounds of the most varied height are simultaneously received and transmitted by the tympanic membrane.

Another able writer on this same subject was Sir Everard Home, who was born in Edinburgh in 1763. His work was well known for his merits in the field of comparative anatomy, but with special reference to the ear, Home is the author of "The Croomian Lecture on the Structure and uses of the Membrana Tympani". In this lecture, he dealt with the investigation of the elephant's ear, in which he described an arrangement of radiating fibres in the interior aspect of the tympanic membrane. The same findings were also noted in the examination of the human ear. Home was evidently unacquainted with the almost simultaneous discovery of the radiating and circular layers of fibres in the tympanic membrane by Leopold Caldani. The radiating fibres were erroneously interpreted by Home as a muscle.



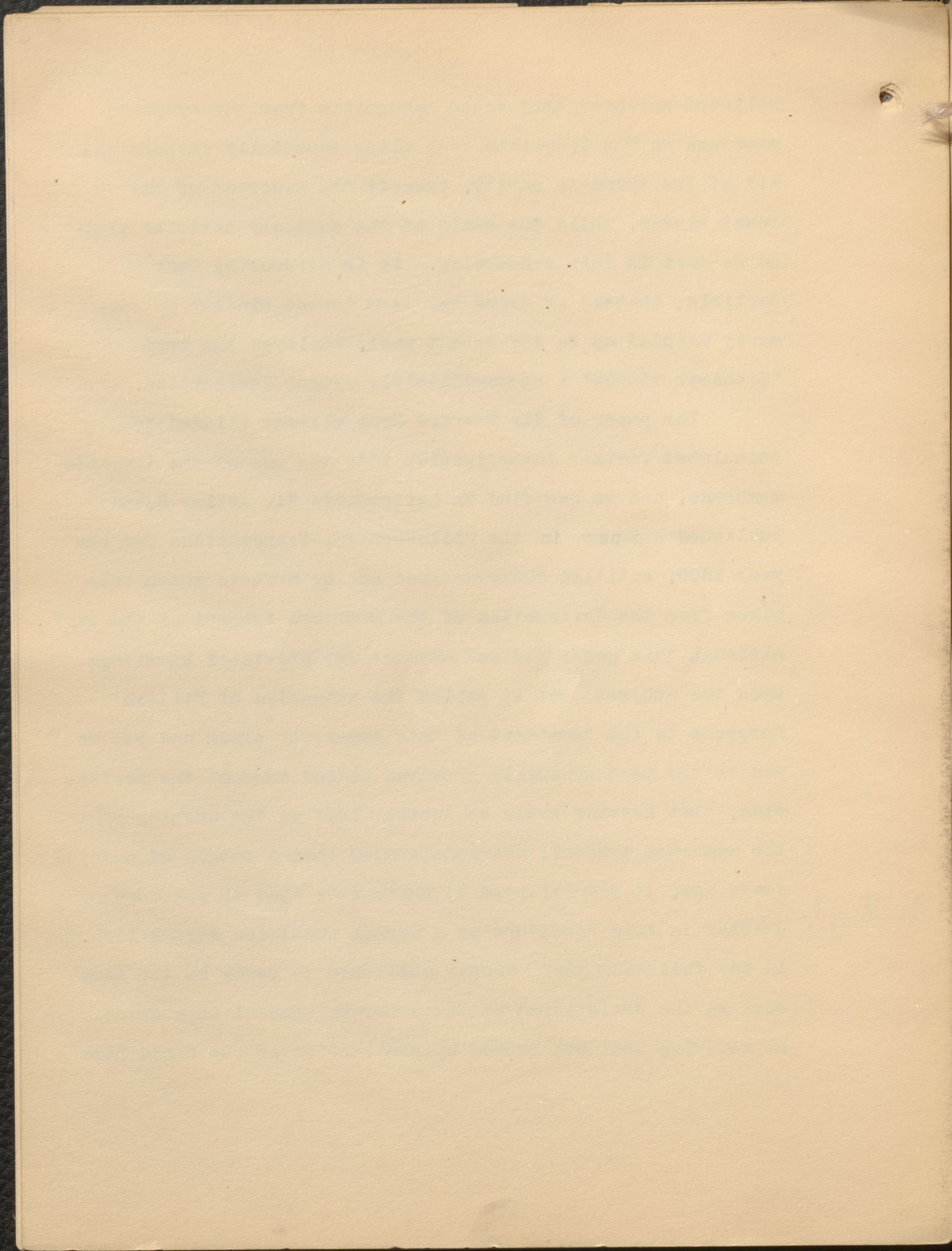
Contemporaneously with Home was Sir Anthony Carlisle, who was born in 1768 in Durham. His very numerous publications deal with a great variety of subjects including human and comparative anatomy and physiology, pathological anatomy, surgery, medicine, zoology and botany. The publication which interests us mostly is entitled "The Physiology of the Stapes, one of the bones of the organ of hearing, deduced from a comparative view of the structure and uses in different animals" (Philosoph. Trans. of the R. Society of London, 1805). The author gives a detailed description of the anatomical relations of the stapes in the human subject, to which is added the comparative anatomy of the stapes in various mammals, and of the columella in birds and amphibia. The text is enriched with excellent illustrations of the stapes and its homologues in the animal series.

In his physiological reflections, Carlisle erroneously assumed that the action of the stapedius muscle consists in pressing the stapes-plate inwards; that the stapes, while on the one hand transmitting the sound to the labyrinth, together with the other auditory ossicles, on the other hand chiefly serves the purpose of raising the pressure in the labyrinth by contractions of the stapedius muscle, and of putting the membrane of the round window on the stretch. This view expresses the precise contrary of what has been experimentally demonstrated as correct at the present time. Carlisle



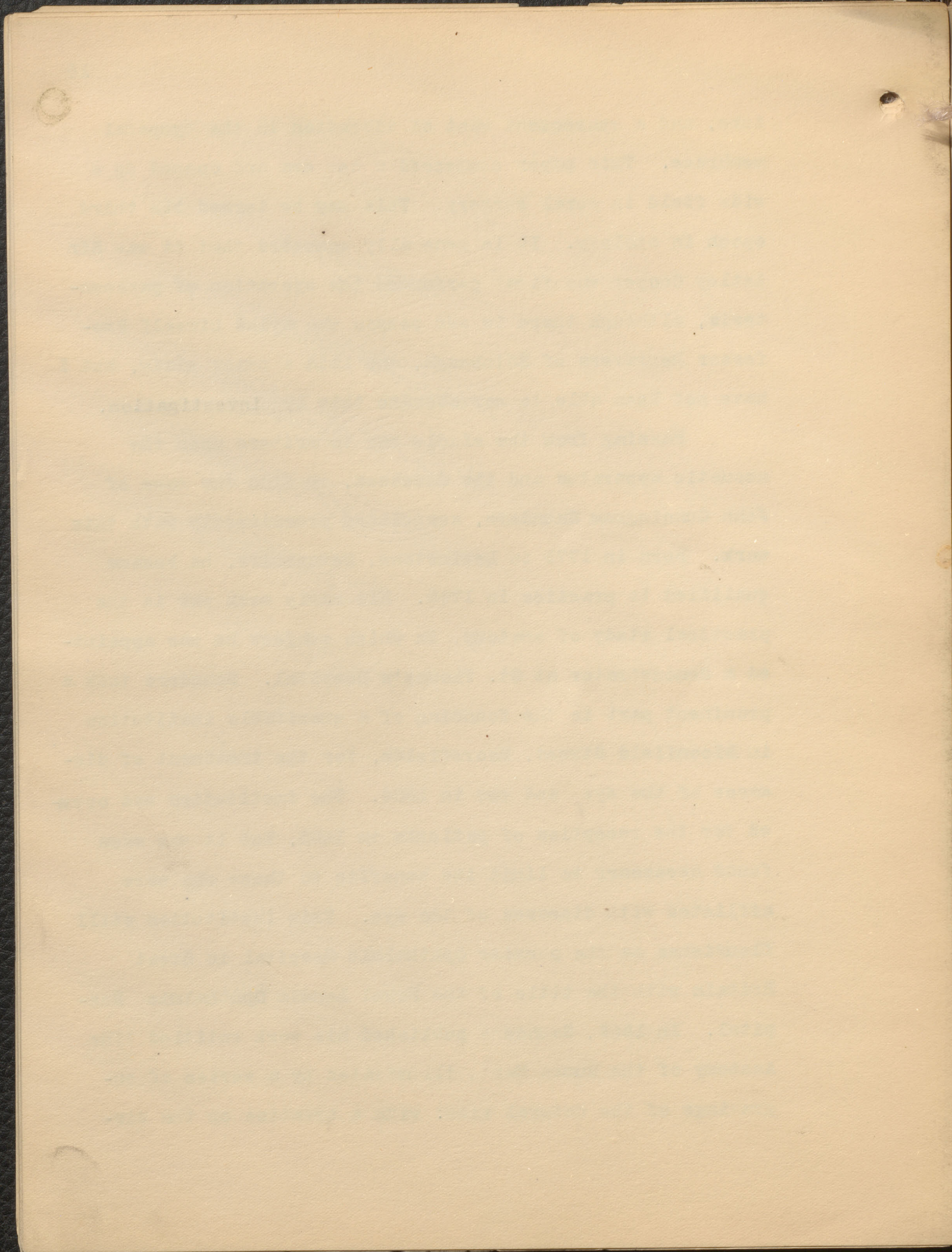
believed moreover that sound conduction from the tympanic membrane to the labyrinth took place especially through the air of the tympanic cavity, towards the membrane of the round window, while the chain of the auditory ossicles played no part in this connection. It is noteworthy that Carlisle, instead of using the term "round window" as commonly adopted up to the recent past, employed the term "Cochlear window" a comparatively recent designation.

The paper of Sir Everard Home already alluded to stimulated further investigation into the use of the tympanic membrane, and we now find Mr (Afterwards Sir Astley Cooper) published a paper in the Philosophical Transactions for the year 1800, entitled "Observations on the affects which take place from the destruction of the membrana tympani of the ear". Although this paper did not advance our practical knowledge upon the subject, yet it called the attention of British Surgeons to the treatment of this important organ and put an end to the very generally received notion amongst the profession, that hearing would be totally lost on the opening of the membrana tympani; notwithstanding that a couple of hundred years ago, it was believed by anatomists that an aperture existed in this structure as a normal condition during life. In the following year, Cooper published an essay in the same work on the perforation of the membrana tympani as a means of removing deafness caused by obstruction of the Eustachian



tube, and a consequent want of vibration in the tympanal membrane. This paper commenced a new era and opened up a wide field in aural surgery. This may be termed the third epoch in otology. It is generally conceded that it was Sir Astley Cooper who first performed the operation of paracentesis, although there is one person who styled himself Professor Degrauers of Edinburgh, who laid a prior claim, but I have not been able to corroborate this by investigation.

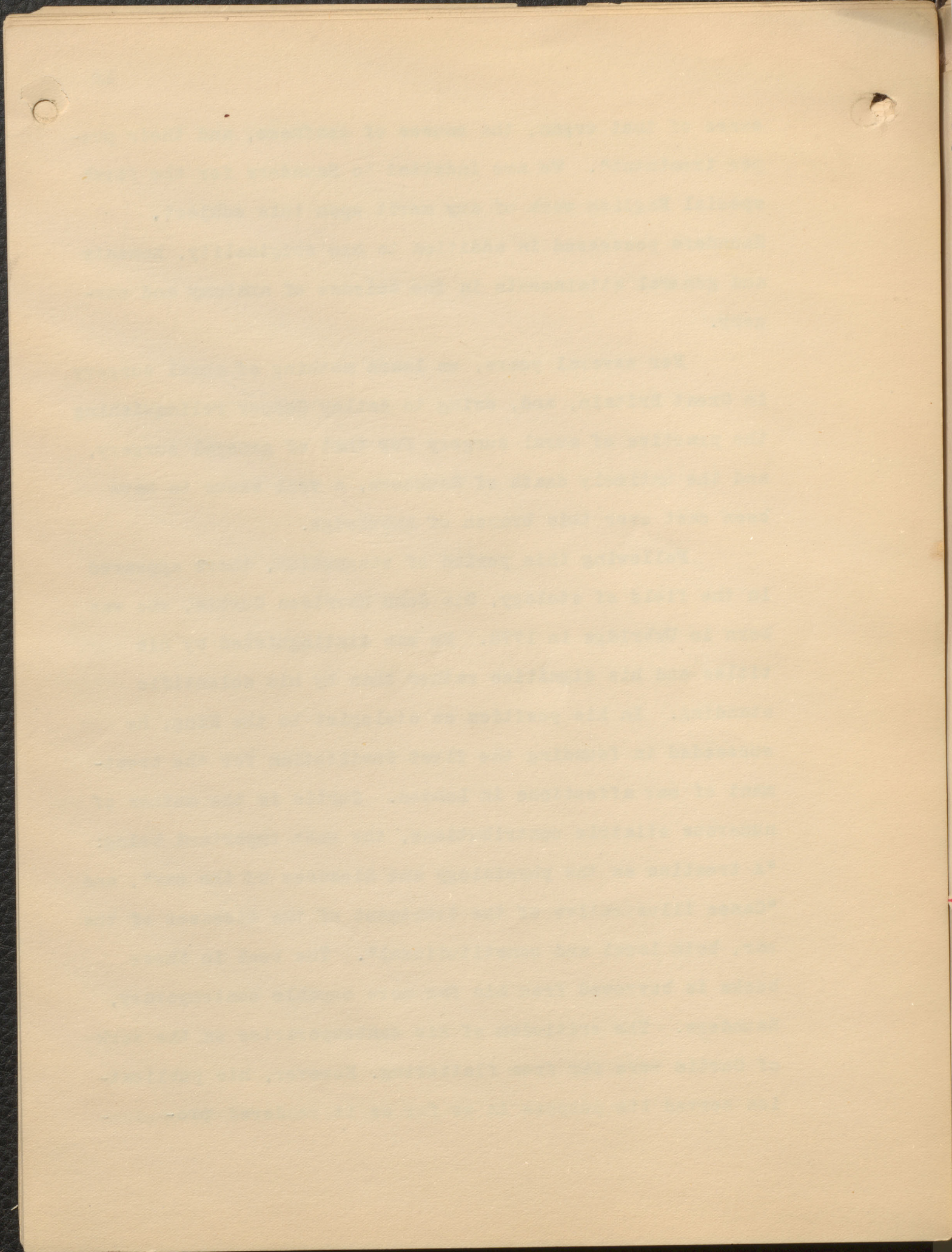
Passing from the middle ear to writers upon the acoustic apparatus and its diseases, we find the name of John Cunningham Saunders, associated preeminently with this work. Born in 1773 in Levinstone, Devonshire, he became qualified to practice in 1795. His early work was in the practical study of anatomy, in which subject he was appointed a demonstrator at St. Thomas's Hospital. Saunders took a prominent part in the founding of a charitable institution in Bloomfield Street, Moorefields, for the treatment of diseases of the eye and ear in 1804. The institution was opened for the reception of patients in 1805, but it was soon found necessary to limit its benefits to those who were afflicted with diseases of the eye. This institution still flourishes as the premier Ophthalmic Hospital in Great Britain with the title of the Royal London Ophthalmic Hospital. In 1806, Saunders published his work entitled "The Anatomy of the Human Ear", illustrated by a series of engravings of the natural size: with a treatise on the dis-



eases of that organ, the causes of deafness, and their proper treatment". We are indebted to Saunders for the first special English work of any merit upon this subject, ### Saunders possessed in addition to his originality, honesty and general attainments in the science of anatomy and surgery.

For several years, we learn nothing of aural surgery in Great Britain, and, owing to Astley Cooper relinquishing the practise of aural surgery for that of general surgery, and the untimely death of Saunders, a veil seems to have been cast over this branch of knowledge.

Following this period of stagnation, there appeared in the field of otology, Sir John Harrison Curtis, who was born in Uxbridge in 1778. He was distinguished by his titles and his dignities rather than by his scientific standing. In his position as otologist to the King, he succeeded in founding the first institution for the treatment of ear affections in London. Curtis is the author of numerous otiatric contributions, the most important being: "A treatise on the physiology and diseases of the ear", and "Cases illustrative of the treatment of the diseases of the ear, both local and constitutional". The best in these books is borrowed from his far more capable contemporary, Saunders. The criticism of his contemporaries on the work of Curtis were far from flattering. However, his publication served its purpose in so far as it rendered pro-



###

which served to stimulate the further development of otology. In spite of the restricted character of his observations, and other deficiencies, the book shows a modern bent. Diagnosis is still exclusively based upon the imperfect ocular inspection of the tympanum by the sunlight, upon Valsalva's experiment and upon objective symptomatology. Treatment, aside from internal measures, was limited to syringing of the auditory canal, the application of caustics, such as either nitrate, copper sulphate, etc., and paracentesis. The pathology comprises the diseases of the external and middle ear; all other ear affections are summarily designated as "Nervous".



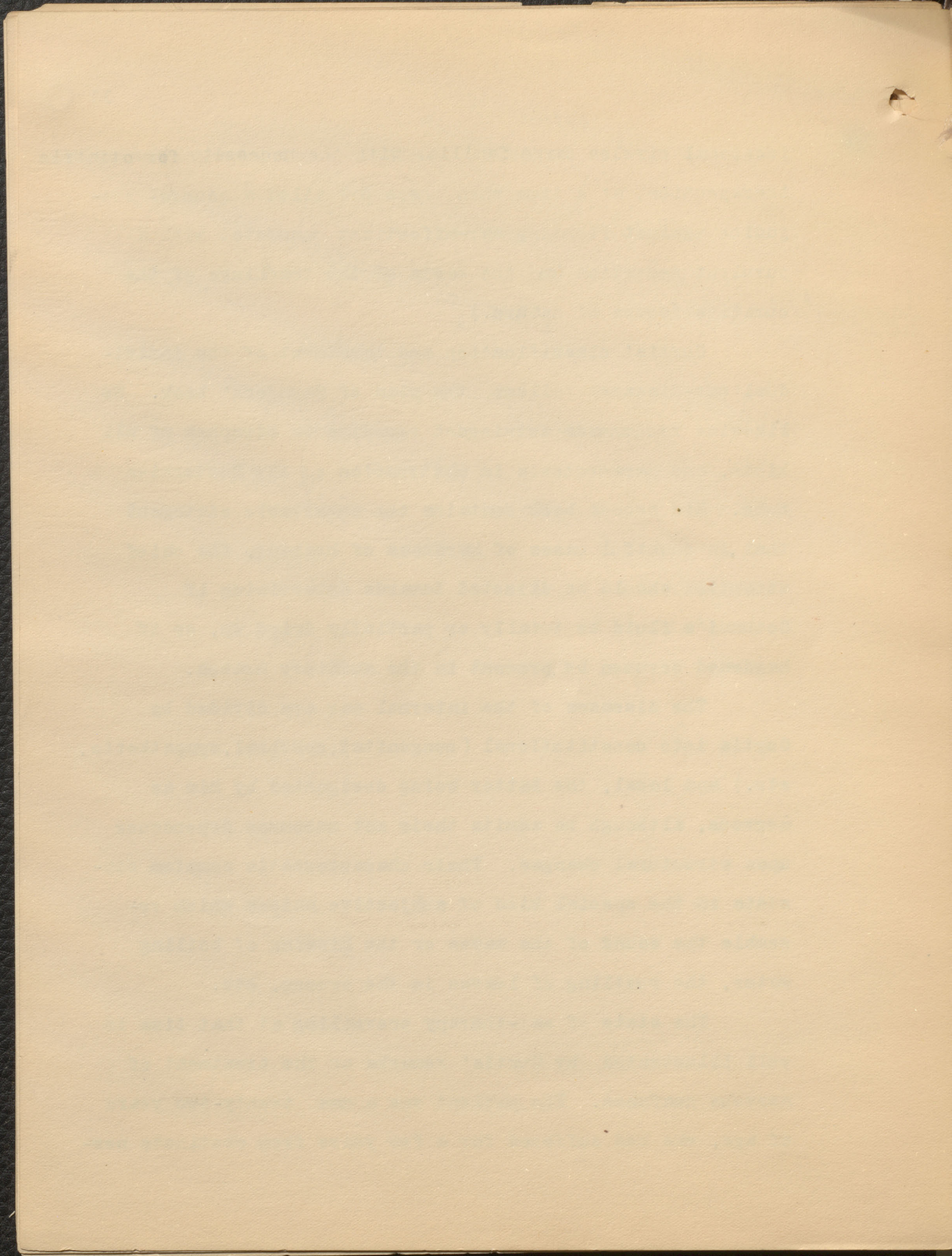
professional circles more familiar with the necessity for otiatric therapeutics, at a time when there prevailed a general prejudice against fighting ear-affections connected with a purulent secretion (on the basis of the teachings of the curative forces of nature.)

To-day!

Curtis' classification and treatment of the individual ear-diseases follows the plan of Saunders' book. He likewise recommends astringent remedies in otorrhea of all kinds, and paracentesis in obstruction of the Eustachian tube. His second book contains the remarkable statement that, in doubtful cases of hardness of hearing, the chief attention should be directed towards determining if Gotunni's fluid be totally or partially dried up, or if hardened cerumen be present in the auditory meatus.

The diseases of the internal ear are divided by Curtis into constitutional (congenital, cerebral, sympathetic, etc.) and local, the latter being designated by him as nervous, although he admits their not uncommon dependence upon structural changes. Their characteristic symptom consists in the special kind of subjective noises which resemble the sound of the waves or the hissing of boiling water, the rustling of leaves in the breeze, etc.

The state of ear-therapy prevailing at that time is well illustrated by Curtis' remarks on the treatment of nervous deafness. The patient was a man twenty-two years of age, who had suffered for a few years from obstinate ner-



vous deafness, and was cured of this complaint at the end of six weeks, by venesection, setone, vesicants behind the ear and internal mercurial medication. His account of this case is as follows: "As he was a robust man of plethoric habit, and was very desirous of obtaining his hearing, I took twelve ounces of blood from the arm, put a seton in the nape of his neck, and applied a blister behind each ear, which were kept open for a fortnight; he took five grains of the submuriate of mercury every night, and an ounce and a half of the sulphate of magnesia twice a week, at the same time adopting a strict antiphlogistic treatment".

The method of examination consisted in superficial ocular inspection. The diagnosis as to the intactness or perforation of the tympanic membrane was usually made by means of the blunt probe, but this required a very highly developed "tactus eruditus". Wilde, in his review of otological literature places the works of William Wright, published in 1829, and Joseph Williams, published in 1840 in the same category, denouncing them as largely the plagiarized works of Saunders' essay.

Another contributor to otological science of this period was Thomas B. Buchanan, who was born in Glasgow in 1783. He studied here and devoted his time very largely to anatomy. In 1820 he began to practise in Hull, and continued to do so until his death in 1853. To judge from his writings, he was especially interested in otology and dis-



tinguished himself in this department. He was the first British author since Saunders and Cooper, who based his works upon a knowledge of the principles of anatomy and surgery. He published noteworthy investigations concerning the ceruminous glands and their excretory ducts, the number of which he estimated as 1000 - 2000 in the entire auditory meatus. In his opinion, the cerumen serves to absorb the superfluous sound-waves reflected by the drum membrane, so that, according to his ideas, hyperresonance, tinnitus and deafness are the result of total absence of the secretion of cerumen. Buchanan further contributed accurate measurements of the size and shape of the auricle and external auditory canal. These investigations were carried out upon more than one hundred living individuals, as well as on the cadaver. He laid stress upon the angle which the auricle had to the temporal bone in the role of audition. Buchanan's published works ("Illustrations of Acoustic Surgery and physiological illustrations of the organ of hearing") contain some practical rules for the treatment of ear diseases. Buchanan was the first to propose for the better examination of the tympanic membrane that the external auditory canal be straightened by pulling the auricle upwards and backwards. He also improved upon Cleland's method of examining the ear by the then so-called "Inspector Auris" by the introduction of the speculum of the present day. Buchanan was the first in Great Britain to attempt an arrang-

ed nomenclature of aural diseases. He endeavored to classify these affections according to the parts engaged, but his diseases are mere symptoms. His classification is imperfect, and, in some respects, absurd.

That the development of the science of otology did not always emanate from those who were directly interested in the work has already been remarked upon, and we are now called upon to note another who did work which advanced the acoustics of otology. I refer to Sir Charles Wheatstone, the founder of modern telegraphy, who published in the Quarterly Journal of Science in 1827, a short treatise concerning very interesting experiments on the physiology of hearing. Especial interest is attached to the following phenomenon, because the idea of Weber's test is already expressed in it: "Placing a vibrating tuning fork on the head, if the ears are closed by means of the finger, an augmentation of sound will always be remarked. When one ear remains open, the sound will always be referred to the closed ear."

The name of A. Turnbull, M.D., is associated with the production of a work on otology. It has not substantial literary merit, and he seems to have given himself up largely to advertising veratria as a cure for all ear diseases. It was in Turnbull's practice that two deaths occurred from the use of the Eustachian catheter. These are frequently



referred to in otological literature. One of these patients, it is reported, died of emphysema of the throat and inflammation of the brain. For notes of the second case, we are indebted to those of Foriep, 1839, which state that, "Turnbull had his assistant perform air inflation of the tympanic cavity through the catheter by means of an air pump. The assistant introduced the catheter alternately into the right and left half of the nose, while the patient himself manipulated the pump. Death suddenly occurred under the picture of an apoplectic attack. At the Coroner's inquest, opinion inclined to the assumption of such a seizure, but the post-mortem proved hemorrhages and air bubbles under the dura; air embolism in the dural veins, and hemorrhage in the tympanic cavity."

The name of John Henry Shrapnell has been handed down to us as associated intimately with the anatomy of the tympanic membrane. I will briefly state the results of his investigations:

He was the first to point out the difference of structure in the tympanic membrane, distinguishing between a portion of tense elasticity appropriate for sound transmission and a flaccid portion not adapted for sound conduction. This latter he designated the "Membrana Flaccida" or Shrapnell's membrane". The details of this interesting discovery appear in the London Medical Gazette of 1832, vol.10, accompanied with several explanatory drawings. In this same volume are two more valuable contributions of Shrapnell.

London
Medical
Gazette,
1832

one, on "The Function of the Tympanic Membrane", and the other, on "The Nerves of the Ear".

We now arrive at a period in the development of otology when progress had been made, with the result that those who were working in this department expressed their opinion and experiences in book rather than the isolated pamphlet form. The first of these books of any value to appear was that of Pilcher, which was published in 1838. George Pilcher was a London surgeon, and he, like many of his predecessors, taught anatomy. For his work entitled: "A Treatise on the Structure, Economy and Diseases of the Ear", Pilcher was awarded the Fothergill gold medal by the Medical Society of London. This book, whilst not containing any new statement, conveys the impression of original studies, especially the first two chapters which are provided with good illustrations of ear specimens, and discuss the comparative and descriptive anatomy of the auditory organ. Upon the basis of independent preparation, he rejects the muscle fibres in the tympanic membrane, which were described by Sir Everard Home. The section on perforation of the tympanic membrane is illustrated by a plate with several roughly sketched, evidently imaginary, pictures of tympanic membrane, borrowed by Pilcher from the dissertation of Astley Cooper.

PILCHER

The next writer whose name follows in chronological order, is that of Sir William Robert Wilde. This distinguished Dublin Physician was born in 1815 in Castlereagh, Ireland,



and began his medical studies in Dublin in 1832. After their completion in 1837, he started on a long sea journey as the travelling companion of a wealthy patient. On his return, he gave his chief attention to ophthalmology and otology, visiting London and the Continent, (Berlin, Vienna) for purposes of study. In 1841 he returned to Dublin where he began his professional practice, in which he was indefatigably active, especially as a renowned ophthalmologist and otologist, until his death, April 19th, 1876.

In his literary productions he was extremely prolific, and his writings comprised a variety of subjects. His most important work on otology is entitled: "Practical Observations on Aural Surgery" (London, 1853). A German translation appeared in 1855. This contribution ranks very high, for it was this book which laid the foundation for the development of scientific otological research, through the introduction of suitable methods of examination, as well as by his numerous new and absolutely accurate observations.

WILDE.

The name of Wilde is intimately associated with a surgical procedure first suggested by him which consisted of an incision made directly over the mastoid to relieve the symptoms of an involved mastoid. This is known as Wilde's incision.

Wilde's nomenclature of aural disease was the first serious attempt to place it upon a scientific basis.

The next notable person in otology who claims our

attention is James Yearsley of London, who was born in the beginning of the 19th century, and who published a series of articles on the diseases of the ear, and the disturbances of speech. His chief work is "Deafness practically illustrated, being an exposition of the nature, causes and treatment of diseases of the ear" (London, 1839). This author showed himself ^{to be} well versed in the contemporaneous German and French literature. Mention must be made of the indication, first pointed out by him, for artificial perforation of the tympanic membrane in those cases where hearing becomes worse after the cicatricial closure of a perforation caused by suppuration. By means of the re-establishment of the orifice in the tympanic membrane, the sound-waves find their way to the round window, the importance of which, for sound-perception in the cochlea was already pointed out by earlier writers. *To-day* Yearsley's illuminating apparatus, called the "Auriscope," as well as his bulky contrivance for the introduction of medicinal vapors, per-tubam, into the tympanic cavity, have already been forgotten, but his name is associated with his invention of the artificial tympanic membrane, which he proposed in shape of a small round pledget of cotton (The Lancet, 1848). The cause for this was furnished by a patient having a perforation of the tympanic membrane, who was temporarily enabled to improve his hearing by pushing a small piece of soft paper deeply down into the auditory canal. *and*

The low standard of otology in England at that

period is best characterized by the following quotation from Yearsley:

"It must further be observed that in no department of medical science are we so much behind our Continental neighbours as in the treatment of aural disease. The explanation of this fact may be found in the statement just made, that, in this country, the subject has hitherto been treated only by non-professional persons, whereas, on the Continent, we find such men as Kramer, Itard, Delau, Saissy and others devoting their best energies to its improvement, and, with what success is evidenced in their works. Most of the British practitioners indeed in this branch, are still blundering on, amidst the same unsuccessful results as have for ages past attended the practice of aural surgery. The remedial measures are still limited to syringing, blisters, irritating ointments, purgatives, acoustic oils, stimulating ear-drops, acrid injections, emetics, gargles, etc., over and over again employed, and that, in all cases, without any discrimination or judgment. Wherever the disease of the ear may be, either external or internal to the membrane of the drum, the same senseless and generally inefficient means are prescribed."

We have now arrived at a period in the historical study of otology when the dark ages of this subject are shadows passing away before what may be termed the dawn of modern otology, and in connection with this, there arises before us the name of one of the brightest lights in British



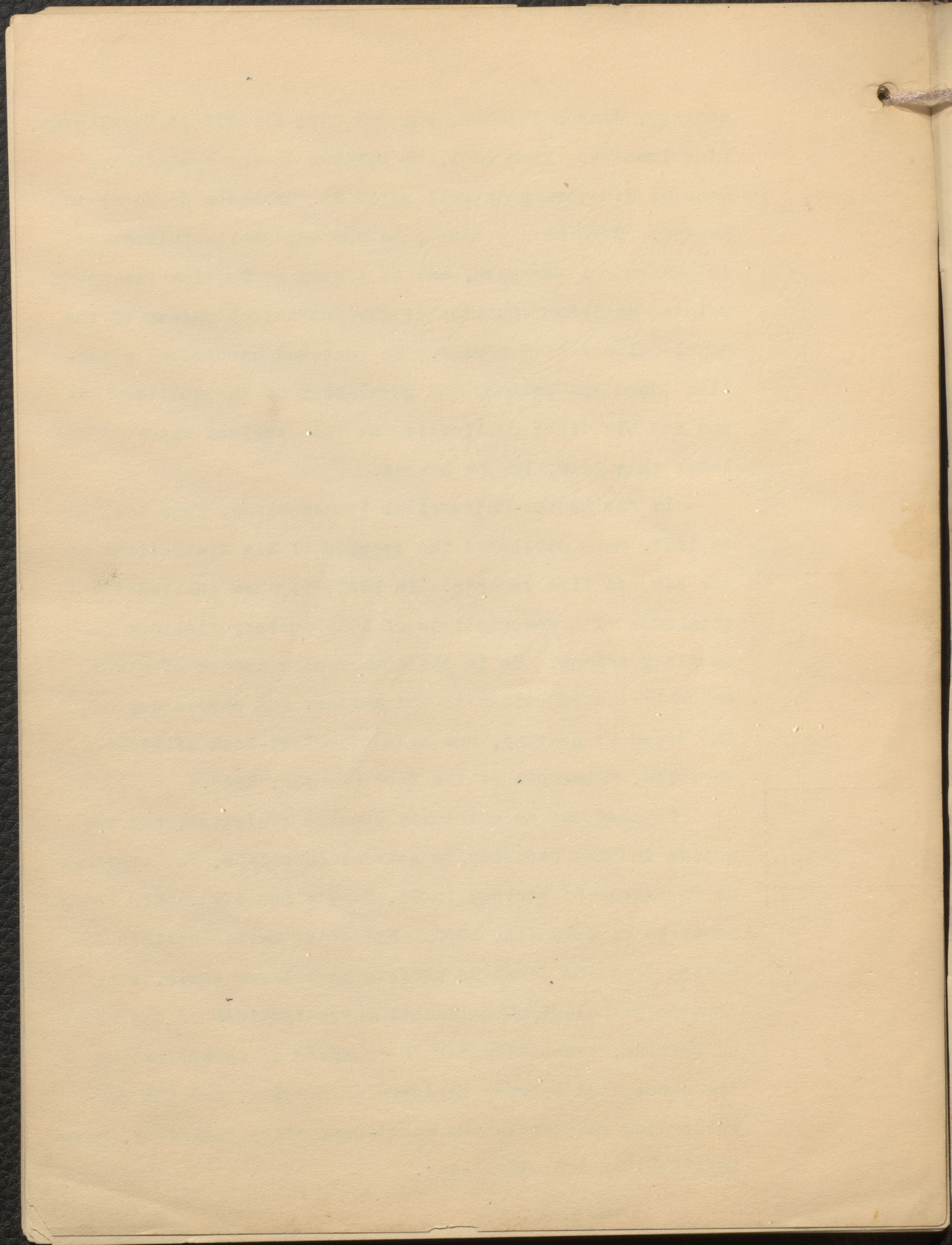
otology, Joseph Toynbee, who was born in 1815 in Heckington, Lincolnshire. From 1831, he studied in the Westminster General Dispensary as well as in St. George's Hospital in London. Even as a student, he was especially interested in anatomical research, and at a very early time was appointed Assistant-Curator of the anatomical museum of the Royal College of Surgeons. He bestowed particular attention upon the anatomy and physiology of the auditory organ and his first publication on this subject appeared not later than 1836, in the Lancet.

In the Medico-Chirurgical Transactions, from 1841 to 1855, were published the results of his dissections of the ear, in five reports. In 1857, Toynbee published a catalogue with descriptions of 1669 autopsy findings in auditory organs. He is the author of a number of other valuable contributions to the anatomy and physiology of the organ of hearing, and also of a text-book of otology, entitled, "Diseases of the Ear" (London, 1860.)

Toynbee was an extremely popular otologist, and was active in that capacity in several hospitals, for instance as Professor of otology in St. Mary's Hospital. His death occurred on July 7th, 1866. His chief merit consists in having been the first to perform on a large scale, systematic pathologico-anatomical investigations of the organ of hearing, especially for the purpose of demonstrating the connection between hardness of hearing, and the corresponding changes in the sound-conducting apparatus, more particularly the middle-ear.

Medico-
Chirurgical
Transactions

TOYNBEE



The labours and investigations of Toynbee have affected more for aural pathology than those of all his predecessors, either in England or on the Continent. He commenced at the right end, and travelled in the proper direction. He brought to bear upon the subject the true principles of science, and, accustomed to habits of minute dissection, patient research and careful observation, he accumulated a mass of facts upon the morbid anatomy of the organs of hearing that laid the foundation for a more rational mode of treatment. The lasting memorial of his great work in otology is to be seen to-day in that magnificent collection in the museum of the Royal College of Surgeons, consisting of nearly nine hundred specimens, which, even to-day surpasses the work of anyone in the field of modern otology. This collection, if viewed only as a memorial of the man who first placed otology on a scientific basis, will always arouse admiration for the diligence of one man, and surprise at the lack of contemporary appreciation of the results of his patient labour. No one ought to predict the opinion of future generations. Few men, however, will ever stand higher in the English annals of otology, and still fewer will ever more justly deserve the gratitude of subsequent workers in the science than Joseph Toynbee.

In conclusion, I wish to express my debt of gratitude to Dr. F. Robbins, of the Library of the New York Academy of Medicine, for the patient and diligent research work so ably carried out.

Pamphlet
428016028