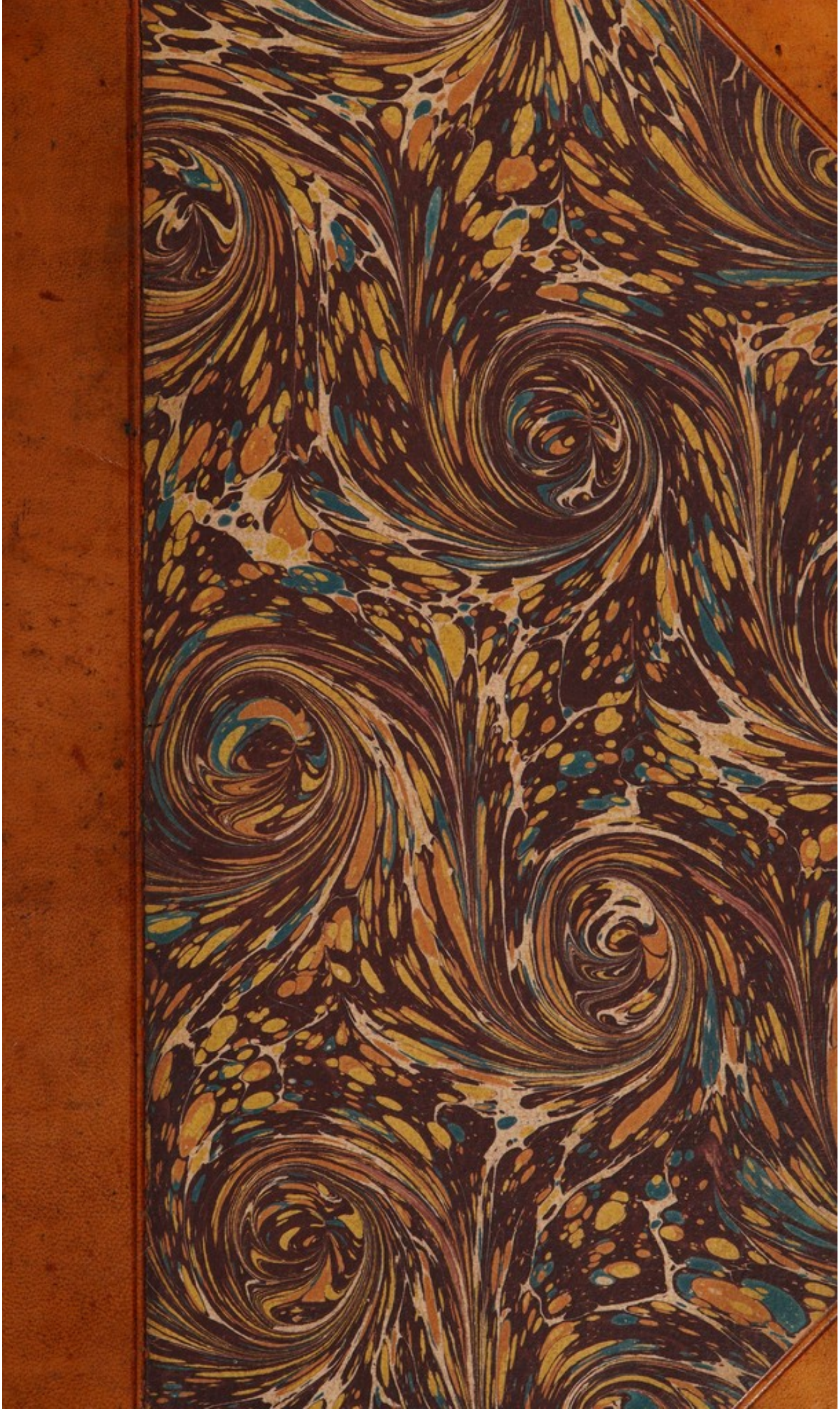
On the varieties of deafness, and diseases of the ear, with proposed methods of relieving them / By William Wright.



ON THE

VARIETIES

OF

DEAFNESS,

AND

DISEASES OF THE EAR,

WITH

PROPOSED METHODS OF RELIEVING THEM.

By WILLIAM WRIGHT, Esq.

Surgeon Aurist to her late Majesty Queen Charlotte.

AUTHOR OF

"An Essay on the Ear, &c." "An Address to Persons Afflicted with Nervous Deafness." "Observations on the Improper Use of Mercury in Nervous Deafness." "Plain Advice to the Deaf." Editor of "The Aurist, or Medical Guide for the Deaf." Lecturer in Natural Philosophy, Chemistry, and on the Anatomy, Physiology, and Pathology of the Organ of Hearing, &c.

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TO THE MOST NOBLE

ARTHUR,
DUKE OF WELLINGTON,

PRINCE OF WATERLOO,

DUKE OF CIUDAD RODRIGO, AND OF VITTORIA,

K.G.; G.C.B.; G.C.H.

&c. &c. &c.

My Lord Duke.

With sentiments of the most profound respect, I have presumed to dedicate the accompanying work to your Grace.

In addition to your triumphant and unrivalled military career abroad, you have, by grand comprehensive state policy at home, evinced yourself the real friend of your Country; therefore to you eminently, and especially, belongs the Patronage of any scientific endeavours to promote the comfort, and happiness, of the human race.

I have the honour to be,

My Lord Duke,

Your Grace's most obedient, obliged,

And devoted Servant,

WILLIAM WRIGHT.

London, March 20,
1829.

INTRODUCTION.

MEDICAL and surgical treatises, in general, are so replete with technicalities, that persons of rank will not spare time from their amusements, nor take the trouble to peruse them, although afflicted with the peculiar malady, respecting the symptoms, or relief, of which those works profess to treat.

The middle classes of society, and those engaged in professional pursuits, or in trade, have not leisure for the purpose, and the more

humble portion of the community, if they read works of the above description, replete with terms of art, do not fully comprehend them, in consequence of the style of language in which they are written.

A plain explanation of the organ of hearing, and an account of its various diseases, with observations on the methods proposed for relieving them, appears to be a desideratum. Therefore I have endeavoured to divest the language of this work of technicalities, as much as possible, in order to render it more useful to the non-medical reader. Yet I trust I have collected into one focus, so much information derived from facts, or deduced from my own extensive experience, that my labours will be deemed worthy a place in the libraries of my professional brethren, to whom I am happy to embrace every opportunity of expressing my acknowledgments, for the many personal atten-

tions I have experienced, and their liberality in presenting to my notice, from time to time, such curious cases as have occurred in their practice.

From the rank in my department of the profession, to which I have been elevated by the opinions of the most eminent medical and surgical characters of the present age, I feel it a duty incumbent on me, to oppose unreasonable, or unscientific opinions, and erroneous modes of practice, without regarding who the practitioner may be with whom they originate; for the professional opinions, or modes of treatment adopted by medical men, are of such importance to society, that they become a species of public property, the truth, or error, of which, every one has a right to investigate, or make comments upon, without being deemed guilty of personal hostility.

Most modern authors, by the manner they have written on the anatomy, and physiology of the ear, would lead their readers to believe that each of them was the individual, who had made the discovery of the several portions, and their uses in the general phenomena of the sense of hearing;—the fact is not so, for the various parts were discovered progressively, some centuries being required for the purpose; and various have been, and still are, the theories as to the use of each part. In framing my Lectures, in 1816, and 1820, I availed myself, as every lecturer on any matter of science has done, of the knowledge derived from the more ancient authorities, to which I added my own remarks, arising from actual *post mortem* examination, or from the experience I have attained, that certain causes generally produce specific effects on the living. From those lectures I have formed an abridgment of the

anatomy and physiology of the ear, sufficient, I trust, to enable persons who are not conversant in the subject to understand it. Some curious facts, as to the comparative anatomy between the human race, and other living creatures, may also, to the general reader, prove acceptable, as matter of amusement and instruction. The professional world have it in their power to refer to larger works of established merit in their original text, which would suffer by even the most careful transcription.

I have considered it necessary, in common justice to myself, to give references to the pages of my former works, where certain subjects are mentioned ; because in a publication which has just made its appearance, claims of originality are made on those very points, which I had previously, and publicly brought

under the notice of the medical world, and general reader.

W. WRIGHT.

45, Great Marlborough Street, near
Regent Street, London.

March 20, 1829.

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DEAFNESS

AND

DISEASES OF THE EAR.

ANATOMY OF THE EAR.

The external part is called the auricle, which is formed of cartilage, furnished with several muscles, ramifications of blood vessels, and of the external auditory nerve, with cellular membrane, the whole being covered with a fine skin. The auricle consists of many folds, or indentations, which terminate in the cavity called the concha, and serves as a kind of funnel to the external auditory pas-

sage. These folds vary as to figure in different persons, and I have seen examples of a variance in the shape of the opposite ears of the same individual. The auditory passage is partly cartilaginous, but more sensitive than the auricle; the mucous membrane of this passage is perforated by a great number of minute ducts, leading to the ceruminous glands, which are situated in the cellular membraneous tissue, and are each of an oval figure. The lower portion of the passage is bone, covered with a continuation of the integuments, except the glandular part; at the extremity it is entirely closed by a fine membrane, denominated Membrana Tympani, (but commonly and improperly called the drum of the Ear). This membrane is concave externally, in consequence of being attached to a small bone on the inside of it, called the malleus (or Hammer), which has its muscles so fixed as to draw it inward, and thereby not only is this shape given to the Membrana Tympani, but these muscles serve to regulate its vibratory action. There are also three more bones to complete the mechanism of this part of the Ear,

viz. the Incus, (or anvil), the stapes, (or stirrup), and the Os orbiculare, (or small round bone). Cassebohm says, the ossification of these bones begins to appear at three months, and is complete in a fœtus at five months. The Incus is articulated in a curious way with the Os orbiculare, which serves as a point of union, by a kind of universal joint attached by fine ligatures, to connect the stapes. These bones surpass all the other bones of the body in regard to density, and they are covered with a delicate periosteum, containing small vessels to convey nutriment to them. The base of the stapes is oval, and covered with a fine membrane; this part moves up and down to a certain extent in an aperture nearly opposite to the Membrana Tympani, called Fenestra Ovalis, (the oval aperture, or literally, window), where it is prevented from sinking down too low, or rising too high, by a delicate attachment of membraneous filaments to the base of the stapes, and the sides of the Fenestra Ovalis, which allow a certain degree of motion, also further controlled by a peculiar pear-shaped muscle, attached to the neck of the stapes. To allow space for this

machinery, there is a cavity beneath the Membrana Tympani, called the Tympanum; this cavity is lined with a mucous membrane, furnished with venous blood vessels, some ramifications of arteries, and of the external, or hard portion of the auditory nerve. There is another passage near the Fenestra Ovalis, called Fenestra Rotunda; (the round aperture, or window) is also closed with a fine membrane, which presents, like the Membrana Tympani, a concave surface externally, and its reverse extends internally, so as to be contiguous to the largest circle at the upper part of the Cochlea, which has received that name from its likeness, in point of convolutions, to a shell. As the last mentioned of these Fenestra leads to the Cochlea, the first named Fenestra leads to the vestibule and semicircular canals: all these internal parts of the ear are called by the general name of the Labyrinth. The whole of this portion of the auditory organ is furnished with a great number of blood vessels, and nervous filaments, covered by a fine mucous membrane: within the Labyrinth is deposited the soft portion of the auditory nerve, where its delicate, and

acutely sensitive fibres, float in a liquid, which is either in itself extremely sensible to the least motion, or is a most excellent conductor of vibration to the soft portion of the nerve. On the Continent, an anatomist has recently expressed a doubt, whether this liquid exists during life, or is only a product occasioned by the change incident to a departure of the vital functions; but there is abundant reason to believe in its existence during life, for without it great part of the phœnomena of the communication of sound to the sensorium would be unaccounted for. M. Itard also supposes that the Membrana Tympani does not vibrate, because he could not *see* a hog's bristle move, which he had placed on it during the continuance of a very loud noise. It is acknowledged by the majority of Physiologists, that vibration is the cause of most, if not of all, our perceptions; yet the vibration which causes those sensations cannot be distinguished by the power of vision, however assisted by art, or naturally acute; and M. Itard's reason for his scepticism on this point, certainly does not convey the idea that he is a very profound Physiologist.

In the upper and back part of the Tympanum, there is a large opening, leading to the cavernulæ of the mastoid cells, which are lined with a continuation of the mucous membrane of the Tympanum; and nearly opposite on the lower side is a duct or passage called the Eustachian tube, partly bony, and the lower part formed of cartilaginous integuments, blood vessels, nerves, and muscular fibre, covered with mucous membrane, continued from the Tympanum: this passage leads into the upper part of the throat, where its orifice slightly expands into a trumpet-like shape.

The Membrana Tympani presents the most beautiful net-work of blood vessels; it consists of six laminæ, two of which are fine tissues of cellular membrane, and possesses in itself considerable muscularity, independent of the muscles as before observed, that are attached to the malleus: there is also a branch of the hard portion of the auditory nerve, which passes across at the back of the Membrana Tympani, and gives increase of sensibility to it; this branch is called Chorda Tympani.

The auditory, or acoustic nerves, are known

in anatomy as the seventh pair, but they are in fact two in number on each side, they being divided even from their base in the brain; of the soft portion I have pointed out the depository: the hard portion extends its ramifications throughout the ear, all over the face and head, branches going to the eye, lips, nose, and into the neck, forming communications with the nerves of every other organ, of which further description will be given.

A foreign author states, that many examples are mentioned, but he does not say by whom, of a want of the mastoid cells, of the Labyrinth, of the labyrinthic liquid, of the auditory nerves, and of the Fenestra Rotunda. In these cases the patients must have remained deaf and dumb during life; for if the cause of their deafness could have been discovered during the lifetime of the parties, no method of treatment could afford the slightest relief.

USES OF THE SEVERAL PARTS OF THE EAR.

That the auricle serves to collect and modulate sounds, and upon the proper formation of it depends in a great measure the acuteness of hearing, has been proved by the cases of persons who, from accidental or other causes, have lost this part, and are in consequence obliged to place their hand in such a position as to supply the defect. I have had many opportunities of observing, that when the folds of the auricle are not well defined, or the concha not sufficiently deep, there generally exists an imperfection in the sense of hearing. (See Diseases of the External Ear) The auricle is furnished with strong muscles, the proportionate use of which is not very evident to a superficial observer; but to a person who makes these matters his study, and therefore examines closely, their action in moving the auricle during the

continuance of any loud sound is very visible, as they not only contract and dilate the concha in an almost imperceptible manner, but also they may be distinctly seen to move the whole auricle, so as to collect the vibration occasioned in the air by sound. In the dog, horse, hare, and other animals, the action of these muscles is very conspicuous. Ancient physicians considered a clammy coldness of the lobe of the ear as symptomatic of approaching death.

The cerumen, or ear-wax, is secreted by the small glands, which, as before-mentioned, line the auditory passage, and its lubricating properties serve to moisten that passage, and renders it more capable of transmitting the human voice, or other sounds, by refraction.

The Membrana Tympani, when in a healthy state, is semi-transparent, and vibration being occasioned in it by sound, the chain of bones at the back of this fine membrane are put in motion; the stapes is the medium of communicating the vibration, through its motion in the Fenestra Ovalis, to the labyrinthic liquid, in which the soft portion of the auditory nerves float, and thus the communication is made to

the sensorium with a velocity so momentous, as to be coeval with the sound itself.

There have been a variety of hypotheses as to the utility of the cerumen, and whether it bears any part in supporting the proper functions of the whole organ. One *erudite* author, who has just *published a Book* on Diseases of the Ear, gives his opinion that it is *merely intended to destroy insects by its bitterness!* So, when patients have no secretion of this description in their ears, according to his theory, it will be proper to apply a little extract of quassia to the auditory passage, to protect themselves from intruders of the insect tribe! One fact however is certainly undeniable, namely, that in almost every case of deafness, when there is no disease existing in the ear, and when the cause of the malady is not evident either from actual examination, or the symptoms which present themselves, except that this secretion is in a viscid, or filmy state, or totally deficient, it is an indication of returning healthy action to the auditory functions, as soon as the cerumen is exuded from these small glands in a sufficient quantity, and proper consistence.

From the mastoid cells, through the aperture mentioned as leading to those cavernulæ, an excretion, arising from the mucous membrane which lines them, passes down over the Membrana Tympani, which serves to lubricate it and preserve its proper tone, and the superabundance of which secretion passes away through the Eustachian tube; but when from any cause the mucous membrane of these cells becomes inflamed, the secretion is very much increased, and if the suppurative action succeeds, the Eustachian tube is not then sufficient to carry off the more viscid collection, or the acrimony of the pus propagates the diseased action into the cavity of the Tympanum, which becomes filled with the accumulated mass, and deafness is the consequence. The same effect occurs if ulcerated throat closes the orifice of the Eustachian tube. (See Collection of Morbid Matter in the Cavity of the Tympanum)

The external, or hard portion of the auditory nerve, extends, as before stated, all over the head and face, to the eyes, lips, nose, into the neck, and forms connexions with the nerves

of every other part of the system. Hence it is, that the eye becomes sometimes temporally affected on syringing, or touching the auditory passage, and a tickling sensation, or propensity to cough, is experienced in the throat, and fauces, by merely wiping out the auditory passage with cotton wool: (see Æther) which is to be traced to the communication of the auditory nerves with those of the throat, larynx, tongue, &c., and affords a reason why men and birds are excited to imitate each other in singing; whilst the continuation of the ramification to the nerves of the teeth and fauces, accounts for the sensation called the teeth being set on edge, and the flow of water into the mouth, on hearing any discordant sound. The same connexions extending to the heart and lungs, accounts for the palpitation, and increased celerity of breathing, experienced by persons whose nervous system is in a state of irritability, on hearing an unexpected noise, and the head is turned to the side from whence the sound proceeds, through the plexus formed between the acoustic nerve, and the second vertebral pair. By the connexion with

those which regulate the digestive organs, the injurious effect of habitual indigestion is communicated to the ear, for although derangement of the digestion will produce an infinite variety of diseases, any of which will separately and seriously affect the sense of hearing, yet there is an instant communication by means of the nervous system, between the stomach, the brain, and the ear, as can be proved by merely syringing the auditory passage, when the fibres of the external auditory nerve have been exposed in consequence of ulceration, or abrasion of the cuticular lining, for sickness and vertigo will in most cases instantly ensue.

COMPARATIVE ANATOMY.

It would lead into too wide a field if this subject were fully entered into, therefore I shall merely point out, as concisely as possible, the curious deviations which present themselves to

our notice in the examination of the organ of hearing in animals, &c.

Beasts.—The auricle, or external ear, varies much in shape and size. It mostly points forward in beasts of prey; backward in the timid animals, such as the hare; or downwards, as the dog: the horse is an instance of great muscular action in the auricle. Amphibious animals have small, and some of them no external ear. In some, the ceruminous glands are well defined, in others, scarcely to be discovered. The Membrana Tympani is common to all, and has the small bones attached to it, which have no doubt the same uses as in the human race: the ossification of these bones is completed sooner than that of any other part; they are more compact and hard than other bones of the same animal, and although their component parts correspond in a great measure with those of man, their relative properties when chemically examined, are found to differ: this will not appear at all extraordinary, for the milk of animals differs in the same manner, which, when known, ought to act as an inducement to prevent mothers from de-

priving their offspring, on slight pretences, of the proper and natural nutriment; for the calcareous phosphate with which the milk is charged, and from which bone is formed, is more abundant immediately after parturition in the human race, as well as in all animals, but this earthy salt gradually disappears from the milk of the mother, as the digestive organs of the young one are sufficiently strengthened, to answer the purposes and work of animalization. (See Essay, p. 105)

The Eustachian tube, Tympanum, Cochlea, internal parts, and division of the seventh pair of nerves, are analagous to the same parts in the human anatomy, though not exactly alike in formation; the mastoid cells vary in shape, and form, or have in some instances a substitution of other kinds of cavities.

Birds.—Have no external ear protruding beyond the feathers; what may be considered their auricle, is extremely fine cartilage, leading to a hole in the surface of the scull, forming a species of very short external auditory passage. An author has just published his opinion, that birds have no cerumem, but he ought to have

stated, that there is a liquid secretion to be found in most of them, probably having the same *real* use, of lubricating the Membrana Tympani, which is oval, and convex outwardly, instead of concave, like the same part in man, &c. The Tympanum is large in proportion, and contains one bone divided into two branches connected with the Membrana Tympani, and the oval aperture; they have no mastoid cells, but cavities connected with the Labyrinth in place of them. The Cochlea is different in shape; the semicircular canals are not in the hard portion of the temporal bone, as in animals, but may be seen without difficulty in some birds. The owl is a curious instance of a direct communication from one ear to the other.

The acoustic nerves are divided, as has been described in the animal anatomy, but the very reverse presents itself as to their proportions, the soft portion being much larger than the hard. An author who has lately, amongst other things, *collected* some remarks together, on comparative anatomy, says in one part, "*that birds are the most musical of the whole creation;*

and indeed they have a most exquisite hearing," which he accounts for by their head being shaped "*like a bell, almost sonorous, owing to its not being involved in thick bones and muscles. Hence their susceptibility to be agitated by the gentlest impulse of sound, and their labyrinth being very sonorous, is fully sufficient for that purpose. The most simple grotto will echo back a musical sound.*" In another part, probably forgetting what he had before *selected,* observes that, "*birds which have the Cochlea very imperfect, are notwithstanding the most musical of the whole creation; though this quality in them, as we before noticed, must proceed more from the disposition of their throat than the delicacy of their ear.*" The plausibility of the reasoning or the language, may, as this gentleman says in another page of his book, "*please the unlearned,*" but to follow his quotation, such contradictions leave us at a loss to ascertain what author's opinion he inclines to, as it is evident he has not formed his own on this point: and for any man to write upon such a subject till he has done so, must "*make the learned smile*" indeed. Birds have, as it is well known, very *acute*

hearing, and I am decidedly of opinion, that the larger expansion of the soft portion of the auditory nerve which they possess, and its being more exposed from the situation of the semicircular canals to the vibrations of the air occasioned by sound, is the chief cause of the perfection of their sense of hearing.

Reptiles.—None of this class have any auricle, except the crocodile, which has two fleshy lips as a kind of external auditory passage. The Tympanum, Membrana Tympani, Eustachian tube, &c., are discovered in some classes, but not in others. The turtle has a cartilaginous plate level with the surrounding surface; the frog and toad have it merely distinguished by a difference of colour; the camelion and generality of serpents are deficient of this fine membrane, whence probably was derived the old, but incorrect, adage, of "*as deaf as an adder*;" for all this tribe hear acutely, and have a curious mechanism for the purpose. They all have the Ossicula, and nearly all, nerves similar to quadrupeds, &c.

Fish.—Have no external auditory passage, Tympanum, Eustachian tubes, or Membrana

Tympani. The organ of hearing consists of two small hard and brittle bones, whose external surface is formed into groves, for the reception of the filaments of the nerves, which form a kind of beautiful net-work, and suspend them in a pulpy fluid: these no doubt serve the same purpose as the ossicula, and other parts of the mechanism in the more perfect classes of animals. I have observed that there is a great difference in the shape, and size of these bones in various species of fish, which is particularly marked in those inhabiting fresh water, and those constantly in salt.

We are much involved in doubt, as to the parts which contribute most to the perfection of the organ of hearing: by some it is considered to depend on a more perfect form of the Cochlea; yet this is a very erroneous conclusion, for the horse has only two and a quarter convolutions; man, the cow and cat, have two and a half; the dog and the fox have three; and some other animals have three and a half. There would be great difficulty in ascertaining which of these animals have the most perfect sense of hearing, for the func-

tions of the auditory apparatus are involved in considerable mystery, and every approach we have hitherto made to attain a knowledge of this intricate organ, only more increases our admiration and wonder at the exquisite arrangement of the great Creator, in forming the several parts to accord so harmoniously, yet occultly, in producing a sense so useful: but the laws by which each part is governed, or what each individual portion contributes towards the perfection of the whole, will probably never be discovered by human wisdom.

THE THEORY OF SOUND.

From my lectures delivered in 1816, 1817, 1820, and 1821, on the Anatomy of the Ear, Natural Philosophy, Chemistry, &c., I have made a selection relative to acoustics, or the propagation of sound, which may probably be useful to the general reader. In order to elucidate the subject, I must resort to a comparison of a visible, with an invisible fluid: for

instance, if a stone be thrown into a large lake of water, circular undulations, or waves, extending equally on all sides are produced, which gradually decrease in the heighth of each wave, whilst it becomes broader at the base, in proportion to the increase of distance from the point where it originated, until all appearance of undulation is totally lost in the expanse of water. Similar to this is the undulation or vibration of sound, for the air being put in motion by the collision of hard bodies, speaking, singing, or any other noise, the vibration extends in like manner, only that as in the water we see it superficially, the vibration of the air extends in a complete sphere: therefore, if a person speak into a tube, the spherical expansion of the vibrating air is prevented, and the pulses, or vibrations of that elastic fluid, are impelled forward with increased force and rapidity, and are heard at a much greater distance. Thus, in the darker ages, when more gross superstition prevailed, did the priests of that period practise their deceptions and impositions upon the unlearned, by means of oracles. In more recent times,

astonishment was excited and amusement afforded, by the exhibition of the invisible girl. This principle is now more fully understood, and acted upon very commonly, by the construction of speaking pipes for offices, shops, &c.

Hearing trumpets are in general injurious to the sense of hearing, for the waves of agitated air impelling each other forward with increased velocity, proportionate to the decrease in the size of the tube, they strike with such unnatural action against the Membrana Tympani, as to distress it very much; and this force constantly repeated, will progressively alter and relax its tone, so that the hearing trumpet is by degrees necessarily increased in its large orifice, or in length, or the speaker is obliged to elevate the voice in order to produce the same effect: therefore these mechanical contrivances should never be used, if it be possible with a little exertion and attention, to hear without, for they always render the hearing more obtuse, and sometimes so much so, that the deafness is quite incurable.

All trees, shrubs, &c., have longitudinal ves-

sels for the conveyance of the sap, whereby the tree is nourished; the fine cuttings of different woods form an interesting subject for the microscope, which beautifully displays these vessels. After the wood is cut from its roots, the sap or moisture gradually evaporates, and the vessels which used to convey nutriment to the tree, are now a series of pervious capillary tubes, through which sounds pass with astonishing facility: for instance, a person merely striking the head of a pin against one end of a long stick of timber, it will be heard as a considerable noise by another person whose ear is placed against the opposite end; and the method of making deaf people hear is founded on this principle: *dry* slips of wood are recommended, because the tubular communication is more complete: such, then, being the rationale, probably cane, which possesses such a large quantity of these tubes in proportion to its bulk, if well dried, and air forced through it by means of an air pump, to cleanse these passages from all obstruction, would be a convenient and very excellent conductor of sound.

Light travels with such momentous velocity, that it comes to the earth from the sun in 8′ 13″, and a cannon ball, flying with the velocity of 600 feet in a second, if it could be projected from the sun, would require twenty-five years to reach the earth; therefore, as regards terrestrial objects, light is instantaneous. But it having been ascertained that sound only travels a mile in four seconds and a half, the difference between the velocity of light and sound is well understood by most nautical men, who estimate the distance of a vessel, fort, &c., by the interval of time that elapses between seeing the flash of a gun, and hearing the report: and philosophers also judge in like manner the distance of the precise spot where the explosion, commonly called thunder, has been occasioned by the agency of the electric fluid, which in passing through clouds charged with oxygen and hydrogen, re-produces water, accompanied by a loud report in consequence of the decomposition of those two gases.

ECHOES.

I MUST again refer to my former comparison, for an explanation of the reflection of sound. If instead of a large piece of water, the stone be dropped into the centre of a small pool, the undulating circles strike against the banks, and return simultaneously to the place where they were caused; but if the banks be irregular, so will be the returning undulations; the greater the distance of the bank, the less they will be in point of size, and the longer time will be required for their return. In this manner Echoes are formed, the pulses of sound striking against solid substances, more particularly if their surfaces be indented, or dome-like, are reflected back a greater or lesser number of times, according to the inequalities of distance and the nature of the surrounding obstacles to their further expansion. With a view to prove that the radiation of light, heat, and sound, are governed by the same laws, I adopted the well-known experiment, and caused two large highly

polished metallic plates to be prepared for my lectures, when placing a small but strong fire in the focus of one, and an inflammable substance in the focus of the other, at a considerable distance, it was ignited. A watch also which made but a very small noise, being placed in the focus of one of these plates, they being still far apart, it was heard very distinctly by a person whose ear was placed next the opposite plate, in its exact focus. From this experiment is explained the phenomena of the whispering gallery at Saint Paul's Cathedral, and of the dome-covered recesses on Westminster Bridge, which are on a large scale, similar in principle to the two concave plates, for sounds do not pass round the sides of the whispering gallery, as is vulgarly imagined, but directly across from one side to the other; and if two half-domes of the same extent could be placed at an immense distance from each other, sounds would be reflected in a manner that would astonish every one unacquainted with the subject. Availing myself in some measure of this propagation of sound, I invented the acoustic instruments mentioned under that head. Persons may con-

verse at a distance of from forty to sixty feet, by means of two speaking trumpets, the speaker using it in the usual way, and the hearer applying the small end of the instrument to his ear, holding the large end opposite the one from whence the sounds proceed.

Sounds, according to their degree of intensity, produce vibration, as I have before observed, in the Membrana Tympani, by the agitated air striking against it. This may be proved by holding a sheet of paper stretched out, which will be visibly agitated by any loud noise. The artificial ears mentioned in this work, being caused to vibrate in like manner by a large volume of sounds striking on them; an increased degree of action is given to the Membrana Tympani, and the hearing is thereby assisted.

In an old MSS. on Natural Philosophy, written in 1693-4, belonging to my family, I observe that Sir Peter Ball, who resided near Exeter, built a musical room of an oval form over a pond, he having observed that music sounded best in a moist air, and in a room of that shape. In the same MSS. is also mentioned a curious

reflection of sound at Gloucester Cathedral, the sound being conveyed angularly, which was proved by persons standing exactly in the part where the sounds must have passed, if conveyed round by the wall, yet they could not hear the whisper, although it was most distinctly heard by another person placed in one of the angles of incidence.

MUSICAL EAR.

It was at one time supposed that the nicest power of discriminating sounds, or, in other words, that accuracy which constitutes what is called a *musical ear*, is occasioned by a very perfect form of the Cochlea. If this were the fact, there are many animals in whom this part is more completely formed than in man, and yet they are not at all pleased with those musical sounds which gratify the human race; for instance, the dog, has half a turn in the Cochlea more than man, yet that domestic animal is generally much disturbed and annoyed

by what we consider harmonious music, and evinces his dislike by howling, barking, and even becoming so irritated as to sometimes bite the person who causes it. Sir Everard Home entertained a different opinion, as he thought that the muscularity of the Membrana Tympani was the cause of this fine feeling. (See Philosophical Transactions for 1800) Neither one part nor the other has the sole advantage of producing this effect, but when every part is equally well formed, and in a state of perfect local health, its several fine membranes, its minute apertures, delicate bones, and still more sensitive nerves, all contribute to produce this pleasurable, thrilling sensibility. As it is considered an excellence to possess a truly musical ear, there are numbers of persons who wish to be considered the possessors of this power of discrimination; but it is very difficult to ascertain what combination of sounds fashion allows to be admired; whilst vitiated taste, patronage, or other causes, contribute frequently to stamp with celebrity the most unnatural notes or discordant music; and those whose real taste would lead them to condemn the inharmonious effort, and shun a repetition

of it, are obliged by fashion to applaud with the million, amongst whom there are probably very few who know, or can feel, what true harmony is. It is necessary that both ears should be alike perfect, in order to enjoy music; for if one becomes defective, the person, if previously an admirer and judge of harmonious sounds, ceases to enjoy them, for the sounds not being conveyed equally to the sensorium, a degree of discord ensues. My attention was called particularly to this fact by the case of the late Dr. Cox, a physician who resided at the Fish-ponds, near Bristol, and consulted me on this very point about twelve years ago: since which I have had many opportunities of remarking this circumstance. (See Essay, p. 100) Sauvages, and other authors, notice this defective hearing, and quote cases illustrative. One, of a musician, who when blowing his flute heard two distinct sounds at every note, which being simultaneous, one could not be an echo of the other. Catarrh occasioned this singular affection, which ceased as the cause was removed. Another, of a person who heard two distinct voices when spoken to, one of which was more than an octave higher

than the other, and not at all in unison, whereby a harsh and insupportable discordancy was produced.

THE SENSE OF HEARING.

After the authors who have written so elegantly on Natural Theology and Philosophy, it must be almost superfluous to endeavour to call attention, more than they have done, to a proper estimate of the blessings we enjoy in possessing the sense of hearing in perfection : what would have been indeed our situation without it? The principal inlet of education would have been closed, and human knowledge so limited, if deprived of the reciprocal communication of ideas, that we should never have approached perfection in any art or science. Even a diminution of the sense of hearing must deteriorate intellectual attainments. It is by the sense of hearing that we are warned of danger in darkness, as well as in the light; and so valuable a

sense demands the most scientific exertions of professional talent, to preserve it in a state of integrity, or avert the diseases which endanger its perfection. When total deafness occurs from infancy, difficult and miserable must be the passage of the unfortunate being through life. The Philanthropic of this country, as well as foreign nations, have fully appreciated and commiserated the situation of those so situated, by the establishment of asylums, with a view to supply, by almost mechanical methods, the deficiency of speech to those born totally deaf, who being unable to know that certain sounds mean certain objects, cannot imitate them, and therefore do not utter any intelligible language. (See Essay, p. 63) In France, these poor children receive in the Institution appropriated to them, medical and surgical assistance, in regard to the deficiency of the sense of hearing under which they labour; but in England this assistance is not permitted to be afforded to them, although I have incontestibly proved that these cases are not incurable. (See Gentleman's Magazine for July, 1823, p. 9) where there is a plate of a young lady born deaf and

dumb, one of those whom I have restored to society. (See Address to Nervous Deaf, p. 32. Plain advice to the Deaf, p. 10) These circumstances have caused similar instances to be obtruded on the public, by means of *apparently disinterested* letters in the public journals, stating, that a child belonging to the porter of Oatlands Park, who was born deaf and dumb, was, to the great delight of the late Duke of York, restored to hearing and speech. This statement, if respectable inhabitants of that neighbourhood, as well the household of the illustrious deceased, are to be believed, is a gross fabrication, no such circumstance being known in that vicinity. On the Continent, small works have been published, giving an account of successful operations on this class of patients, which have been copied into the English journals; but it is certain that the antiphlogistic treatment employed in this country, or the mechanical contrivances on the Continent, cannot attain the proposed object. (See Plain Advice to the Deaf)

A COMPARATIVE ESTIMATE OF THE SENSES OF HEARING AND SIGHT,

Is frequently made. An old gentleman who was my patient, and was remarkable for the acuteness of his reasoning faculties, had experience of the deprivation of these two senses, and of the delight attending their restoration. He assured me, that if he were obliged to make a choice, he would prefer being blind to being deaf. This must depend much on habits of life, age, &c. &c.

In a Book of Maxims published in 1785, we find the following:—

"Blind people are generally observed to be more cheerful than those who are deaf; the sight only furnishes us with our own reflections; the hearing, with those of different persons of different characters."

Sterne, in his Koran, gives a different opinion of the same subject.

"Sight is by much the noblest of the senses.

We receive our notices from the other four, through the organs of sensation only. We hear, we feel, we smell, we taste, by touch. But sight rises infinitely higher. It is refined above matter, and equals the faculty of spirit."

EXAMINATION OF THE EAR.

The method which I have for many years past adopted, of inspecting the auditory passage, is very comfortable to patients, as it is totally devoid of pain, risk, or the appearance of any thing that can alarm the most timid person; therefore children or adults, even when labouring under irritability of the nervous system, submit to it without the least repugnance, whilst it is at the same time very satisfactory to the practitioner, as it enables him with a *moderate* day-light, not only to see the state of the whole auditory passage, and the Membrana Tympani; but also to shew it to any attending friend of the patient's. (See

Essay, p. 35. Address to Nervous Deaf, p. 7, 72. Plain Advice to the Deaf, p. 151)

Obsolete authors, and some modern writers, direct that the rays of the sun should be admitted into the auditory passage, as the *only* method of gaining a glimpse of the part; so, according to this rule, either the aurist must act dishonorably on cloudy days, by giving an opinion without competent inspection, or he must remain idle: by the plan I use, neither him nor his patients are subjected to such alternatives.

Forceps of various shapes, are used by some practitioners to *dilate* the passage; and an instrument denominated "*speculum auris*," which by turning the handle, causes three pieces of steel to diverge triangularly in parallel lines, has been invented, very creditable to the mechanic in point of workmanship, but totally deficient in utility, when compared with my simple, but effectual instrument, which I have on several occasions shewn to the *highest* authorities in this country, both medical and surgical, who have all expressed the most unqualified approbation of it, as being the most complete ever invented for the purpose.

Some persons still use probes to sound the auditory passage, although they gain no information as to the state of the part by doing so; but on the contrary, very frequently occasion great pain, and injury. In the case of a lady, since a patient of mine, the Membrana Tympani was perforated in the examination of the ear, sometime previous, by an incompetent person, and she has had disease in that ear ever since, attended with deafness: Probably from the circumstances of intense pain being inflicted by the probe, and subsequent purulent discharge the mucous membrane of the Tympanum was wounded, and suppurative action supervening, that cavity became, and still continues, ob structed. (See Essay, p. 56)

About a year and a half ago, a practitioner advertised, that he had simplified a French invention, whereby he was enabled to see the whole of the auditory passage—a tacit confession that he had never done so before. This machine he termed an *auriscope*, and consisted, according to his statement, of a circular brass plate, with straps to go completely round the head, to which were affixed a hook, screw, and

lever, whereby the ear was to be pulled backwards or forwards, so as to examine it. It is not believed that any Frenchman was ever so absurd as to contrive an instrument of the kind; but that it was like many other superlatively foolish plans, emanating from the same source, merely intended to call attention to himself. This attempt on the credulity of the public, was so justly and completely ridiculed, that there has not been any further notice given of the *pretended* advantages of the instrument.

VAPOUR OF ÆTHER INHALED.

It often happens, that there has been considerable herpetic eruption in the auditory passage, and the mere introduction of a piece of cotton wool, or even externally touching the ear to examine it, will produce a violent fit of coughing, through the irritation given to the fine fibres of the hard portion of the auditory nerve, which communicate the sensation to the nerves of the throat, &c.

I have in these cases put a tea-spoonful of æther into a cup, or evaporating dish, floating in a basin of warm water, and caused the patient to inhale the vapour, by merely breathing over the dish, which in almost every case will allay the irritation; and the cleansing of the ear can be proceeded in without difficulty. Some persons troubled with habitual cough, from chronic affection of the Trachea alone, are peculiarly liable to have it excited by the slightest touch given to the lining of the tube of the ear; and having discovered that the above plan prevented the fit coming on, they have since constantly resorted to it with success, whenever the cough became troublesome. (See Aurist, p. 79)

HAIRS, OR DOWN, GROWING IN THE AUDITORY PASSAGE.

THERE is sometimes difficulty in examining the ear, from the obstruction to the view, by the down, or small hairs, which some persons

have in considerable abundance in the external part of this opening. When this is the case, cotton wool, twisted on the instrument used for conveying liniment into the ear, thickly covered with any innocent cerate, of a proper degree of consistence, being introduced, and turned round one way, the down or hair will adhere to the sides of the passage, and enable the eye to command a perfect view of the whole of it. (See Essay, 35, and Aurist, 55)

STATEMENT OF CASES IN WRITING.

Are frequently made by patients, on account of affections of the ear, as well as most other complaints. In regard of the organ of hearing they cannot be satisfactorily depended upon, therefore personal examination is always to be preferred. As this, however, is not on every occasion possible, on account of the distant residence of the patient, a practitioner may sometimes afford alleviation, if the following

particulars are clearly and explicitly given. The supposed origin of the complaint, how long it has existed, distance from each ear at which the tick of a common watch can be heard, whether pain accompanies the deafness, or disease of the ear; and whether when it was first discovered, the patient was under any course of medicine; and if so, for what disease, present state of general health, local symptoms, age, sex, occupation, whether sedentary, or otherwise; and what applications, or methods, have been resorted to in order to obtain relief.

EXAMINATION AFTER DEATH.

MANY authors have expressed, and all practitioners must feel, considerable regret, that so few opportunities are afforded of ascertaining the morbid changes that take place in the interior of the ear, from the effects of disease; but those diseases do not often destroy existence, and the very disorder which causes death, pro-

bably produces so great a change in the state of the delicate structure of the auditory apparatus, that even *post mortem* examinations do not always afford satisfactory elucidations of the subject, so as to enable the anatomist to form a perfect opinion of the true state of the parts during life. (See Essay, p. 113. Advice to Nervous Deaf, p. 56. Plain Advice to the Deaf, p. 6, 90)

DEAFNESS.

Is the general name given to every diminution of the sense of hearing, whatever may have been its origin; and for want of a proper definition as to the nature of the complaint, it is frequently attributed to some cause, very different from the true one; and as in most instances there is no attendant pain, it is allowed to proceed almost without notice, interruption, or probably some heterogenous mixture of oil, gall, balsam, tincture, &c., is advised to be dropped

into the ear at bed time; or some empirical remedy is resorted to, which renders the case worse, and sometimes incurable. Whereas, if proper methods were adopted, as soon as a diminution of the sense of hearing was discovered, there would be very few persons indeed, who might not be relieved; but so infinite is the variety of causes, symptoms, and consequent treatment of deafness, that together with diseases of the ear, they are consigned by the most eminent general surgeons, to the care and attention of those gentlemen who devote their study to this department of the profession, and are in consequence denominated *aurists;* or, as a French author calls them, *auriculistes.*

There are some surgeons to be found, who consider it quite unnecessary, and an innovation, to separate the profession into different departments. The advantages to the public however, from doing so, are incalculable: as practitioners who devote their study to one particular branch, have such opportunities of acquiring knowledge on that point, which no man can hope to attain, whose attention is engaged by so great a multiplicity as general practice presents, and it

would be more beneficial to the community, if it were still more subdivided. As to the division of the medical or surgical profession into various departments, it is not any innovation, for it was, according to Herodotus, the custom amongst the ancient Greeks, for one physician to treat complaints of the eyes, another those of the head, &c.; and probably the same divisions were observed amongst the Egyptians, as Diodorus ascribes the art of healing to that people, from whom the Greeks are supposed to have derived all their knowledge on the subject.

DEAFNESS ON ONE SIDE.

A VERY great proportion of persons, have the sense of hearing more acute on one side than on the other; this occurs frequently amongst those whose employments are of a sedentary nature, from the exposure of one side, more than the other, to draughts of air, by sitting constantly in one situation. It is also occasioned by tra-

velling on a coach during bad weather; or various other accidental causes of a local nature. It may, nevertheless, and does in some instances, arise from constitutional derangement which, as in some diseases, affects one side only. (See want of energy of the Auditory Nerve)

DEGREES OF DEAFNESS.

Dr. Wollaston reported to the Royal Society, some curious facts as to degrees of sound inaudible by certain ears, which may be found in the Philosophical Transactions for 1820, part 2, p. 306, but would suffer by any attempt to abridge it, and is too long to introduce here.

As the practitioner is concerned, it is very difficult for him to ascertain from the generality of patients, and from children especially, what sounds they really do hear, the precise time when the deficiency of the auditory sense was first discovered, and the state of health at that period: the symptoms are reported equally

unsatisfactorily in most instances; therefore, the only criteria whereby the aurist can form his opinion, must be derived from examination of the auditory organ, as effectually as possible, and by observing the effects of certain causes on the sensations of the patient.

CAUSES OF THE INCREASE OF DEAFNESS.

It is certainly a fact, that there are a greater number of persons daily becoming affected with deafness, and diseases of the ear, than according to the accounts of old practitioners, and other ancient persons, there were formerly; for at present we scarcely find one family which has not some of its members thus circumstanced. The causes of this are to be found in the great change of habits of life, and to the incautious and too common use of mercury. (See Observations on Mercury) The various adulterations to which almost every article of food or luxury is subjected, particularly beer, wine,

and spirits; and amongst the female sex, the incautious manner in which they attire themselves; these causes operating more or less upon different constitutions, occasion diseases of various kinds, and diminution of the sensibility of every part of the body, from which the sense of hearing is not exempt.

TREATMENT OF DEAFNESS BY APOTHECARIES AND SURGEONS.

General practitioners in the higher and more respectable ranks of the profession, candidly admit, that they do not know any thing relative to diseases of the ear, and therefore not only send patients to an aurist, but also consult him, when they, or any of their family, become affected with any diminution of the sense of hearing, or disease of the ear. Yet those in the lower grades of the profession, both in town and country, because they have, perchance, succeeded in relieving deafness, arising from the

obstruction of the auditory passage, by indurated wax, which is a very simple case, attempt to treat cases of a more difficult and obscure nature, in some obsolete or improper method—such as administering mercury, *dropping* stimulating oils into the ear, &c., whereby the organ of hearing is so materially injured, that the case is rendered incurable. A recent instance, illustrative of the truth of this reasoning, will be found in the following case. A general surgeon in considerable practice in London, was consulted by the friends of a young lady, she being deaf on one side. After adopting his plans of treatment for about twelve months, she became nearly deprived of hearing on both sides; he mercurialized her during some time, and then called to his assistance another surgeon, who advised the mercury to be persisted in; the child became totally deaf, and they then perforated the Membrana Tympani on both sides. This affording no relief, a consultation was held, to which Sir Astley Cooper was invited, who disapproved of what had been done, but could suggest no remedy. The child was brought to me when too late, for I could not

promise any certain relief, and the parents have now a totally deaf child, with an impaired constitution, through the experiments of men, who if they had been candid, would have confessed that they knew nothing on the subject.

METHODS PROPOSED FOR JUDGING WHEN DEAFNESS IS CURABLE.

Some persons have advised that the patient should be immersed up to the chin in a warm bath, and if in that situation the hearing were more acute, the case was to be deemed hopeless. Others advise the patient to hold the nose, close the mouth, and endeavour to force air up the Eustachian tubes. (See Address to Nervous Deaf, p. 20. Plain Advice to the Deaf, p. 41) It has been proposed to place a slip of dry wood to the teeth, whilst the other end was very slightly struck by some hard body; and if the sound were not communicated by this medium, it has been inferred, that the deficiency of the sense of hearing was occasioned by want of

energy in the auditory nerves. This method appears better than holding a watch in the mouth, between the teeth, or against the protuberant bone behind the ear, but it is upon the same principle, and equally illusive; for we have yet to learn what part is sustained by the hard portion of the auditory nerve, in the general perfection of the organ of hearing. It is a well established fact, that bone is a better conductor of sound than air, water, alcohol, or any other liquid, because it is agitated more than either of them, and continues the vibrations more perceptibly; and I have shewn the connexion of the hard portion of the acoustic nerves with those of the teeth and other parts.* I am of opinion, all these proposed methods must prove deceptive, because it is the fila-

* It affords a very curious sensation, to hold a stick of ivory, or bone, about the size of a tobacco-pipe, pointed at one end, in the hand, and draw the electric fluid from a person placed on an insulated stool, and connected with the conductor of a powerful electrical machine. The ivory, or bone, will quiver under the touch, and communicate a singular thrilling, but not unpleasant, feeling to the fibres of the nerves. The deaf and dumb are sensible of any vibration that shakes the floor, or substance with which they are connected, and they make us understand that they feel it near

ments of the hard portion, which become affected by the vibration of the bone, and convey the sensation in an indistinct and unnatural manner to its base in the brain, without forming any communication with the filaments of the soft portion of the auditory nerve, which is the natural and proper medium; therefore no true opinion can be formed as to the state of the internal parts, neither can the probability of a cure be prognosticated by any of these methods through which sounds pass to the sensorium. I have seen many persons who, if these criteria could be depended upon, were certain to be relieved; and yet, they had in vain consulted every gentleman who was supposed to possess any experience in affections of the ear; and I have also seen others in whom all these above-named symptoms, said to be favourable, were wanting, yet their deafness yielded to a mild course of treatment, persevered in for a sufficient period.

the sternum; this is from the general plexus of nerves, formed about that part, and the fine fibres of the nerves, or organs of touch, becoming affected, the sensation is conveyed to the larger ramifications.

MODES OF MAKING DEAF PEOPLE HEAR.

Andrew Elias Buckner, professor of medicine at Halle, published a little work on this subject: his method consisted in holding very slightly a slip of dry wood, from two to six feet long, an inch broad, and about as thick as the back of a knife, to the upper teeth of the speaker, and also in the same position to the person it was intended to make hear. I have not found it succeed well in communicating conversation; indeed I consider it merely continues the vibration, as I have just before remarked, to the bones of the cranium, which affects the hard portion of the auditory nerve more particularly. It may probably enable a deaf person to feel the vibration occasioned by music, if one end of the wood rest on the instrument; for if the axiom be good, that our sensations are occasioned by vibration, the succession of those agitations which produce harmonious concords, and give delight to the ear, being conveyed to

the extreme fibres of the nerves which constitute feeling, may also give a species of pleasure somewhat analagous. There is a gentleman born deaf, and consequently dumb, I believe now in London, who enjoys music by fixing his nails, which he keeps rather long, in the woodwork of the room, whilst a concert is being performed. (See Plain Advice to the Deaf, p. 9)

HARDNESS OF HEARING.

Various are the degrees of perfection of the several senses, which different persons enjoy: as an instance illustrative of the subject, observe the superior degree of vision which some possess, even at very advanced periods of existence, being able to read without the aid of spectacles, whilst others are obliged to use them almost from childhood. The same takes place in regard to the ear, for there may exist an insensibility to some degrees of sound, from

the commencement of life to its close, and yet the person cannot be considered deaf. Sauvages and Cullen appear to agree in denominating this, hardness of hearing.

When this insensibility of the auditory organ comes on gradually, and constantly increases, there can be no doubt but it will terminate in total deafness, unless some method can be found to arrest its progress, and professional assistance should be immediately obtained. The contrary of this generally occurs; either nothing is attempted, the family apothecary is consulted, who, for want of experience, advises some obsolete method of treatment, which probably makes the case worse, or some empirical nostrum is resorted to, which too often renders it totally incurable.

The hardness of hearing of old people, frequently occurs through want of the usual lubricating exudation from the ceruminous glands, and this state of the hearing may be amended, or prevented from becoming more obtuse, or when there is obstruction in the auditory passage by an accumulation of indurated wax, it is removed with the greatest facility, and gene-

rally a complete restoration of the hearing follows; but if the auditory sense gradually becomes more obtuse as the age increases, and on examination no reason can be discovered for the diminution, it is analogous to defective vision through old age, and the only service that can be rendered, is to advise the most judicious mechanical contrivances, to assist the departing sensibility of the organ.

DISEASES OF THE EAR.

I DO not wish fastidiously to contest the propriety of the classification, which has been made by ancient authors, or by Saunders, or Itard, who have followed their steps as to the diseases of the ear; but whilst it is so evident, that many of them which exhibit certain local symptoms externally, and *vice versa*, are derived in common from causes more remote, I cannot see how the divisions that have been made, can be adhered to consistently: it ap-

pears that most authors have bewildered themselves in the endeavour to define precisely what is, or is not, Otitis, Otalgia, Otorrhea, &c. In this work, therefore, they are placed under several heads, according to their symptoms: I shall content myself with reporting my own observations, and endeavour to point out the causes which produce those effects, leaving for the present, to others so disposed, the amusement of classifying them.

Saunders very properly remarked, that there could be no good reason shown why diseases of the ear, any more than those of any other part of the system, should be left to the efforts of nature alone. Certainly, in a sound and healthy constitution, many diseases, as well of the ears, as of other parts, are mild in their symptoms, and, after having run a certain course, are relieved without medical aid; but this is easily accounted for—when pain or diseased action supervenes, common sense indicates the use of a different diet, confinement to the house, and probably some little domestic medicine; and so nature obtains the credit of a cure, which is due to abstinence alone, nine

times out of ten: if the patient, however, be pre-disposed to strumous, catarrhal, or cutaneous disease, the experiment is *always* dangerous, and sometimes fatal.

WOUNDS OR OTHER INJURIES OF THE AURICLE.

When wounds of this part happen, the edges should be brought into contact as speedily as possible, and kept in that position until a reunion is effected. From the bites of horses, sometimes a complex contused wound is inflicted; and in the northern climates, ulceration and extensive sloughing occurs through severe cold, or as in common parlance we should say, the part is frost-bitten. The successful treatment or cure of these cases must depend upon circumstances, and the skill of the surgeon. (See Essay, p. 10. Aurist, p. 53) Considerable injury is also occasioned amongst children and others, by pugilistic encounters, boys

pulling each other's ears, and the improper methods of correction adopted by some schoolmasters, and parents. (See Aurist, p. 31, 32)

An officer suffered for a considerable time, through the paper of a blank cartridge, which being fired from a musquet, struck him on the ear: the auricle was much tumefied, and his hearing, which was for a time totally lost, never perfectly returned. A similar effect proceeded from a lamp-lighter's link being thrust against a man's ear during a quarrel; the flame and hot oil injured the auricle, and also the auditory passage a considerable way down, but by proper methods of local treatment, and frequent doses of aperient medicine, the patient was completely cured. Females also injure their hearing, by the fillets with which they bind the auricle close to the head, whereby the form of that part is materially altered, which nature bestowed, as being the best to collect and transmit the pulses of sound. (See Aurist, p. 53)

ERYSIPELATOUS AFFECTIONS OF THE AURICLE.

Are of frequent occurrence, and are sometimes caused by the irritation arising from indurated wax in the auditory passage, which, having become very much concreted, and being partially detached, acts like an extraneous substance in any other part of a living subject: the disease commences in these cases within the tube itself, extending thence to the auricle, and the symptoms are more or less active in proportion to the pre-disposition of the patient to cuticular inflammatory diseases. The removal of the cause, a little medicine, and a lotion formed of the dried alum, acetate, or sulphate of zinc, or subacetated liquor of lead in distilled water, used warm, seldom fails to give relief.

When, however, the disease arises from constitutional derangement, and a collection of small vesicles cover the auricle, and extend

into the auditory passage, and they burst and discharge a purulent matter which dries on the surface into a yellow crust ; and as in some instances a considerable ulceration takes place, the case is more tedious, in regard to the period necessary for restoring the parts to a state of health. Medicine must be our chief dependence : I have found bark particularly useful, regulating the system according to circumstances and symptoms, constantly keeping the affected parts clean, by the use of some of the before-mentioned lotions, which prevent the disposition to itch, that accompanies some of the varieties of this disease. The propensity to rub, or scratch the place, must be controlled, as it only increases the tumefaction, pain, and irritation, to an alarming extent.

I have also seen some cases of very serious erysipilatous disease of the auricle, occasioned by the application of blisters behind the ear.

THE DEAF AND DUMB.

These can only be regarded as extreme cases of deafness, *some* of which I have fully proved are not entirely hopeless, if proper methods of treatment are persevered in; for the same causes which occasion deafness in adults, must necessarily, if applied to the tender frame of infants, produce a proportionate degree of injury: probably there is no cause that more frequently occasions deprivation of the sense of hearing, than the ablutions with which infants are greeted on their entrance into the world. (See Essay, p. 111. Address to Nervous Deaf, p. 58. Plain Advice to the Deaf, p. 1)

Having succeeded with some of this class of unfortunate beings, I have consequently seen a very large proportion of them, amongst whom have been several that were previously subjected to the antiphlogistic methods of treatment, whereby it has been *pretended* by some practitioners, that they have effected cures.

One child belonging to a noble family, whose case I considered to be incurable, was afterwards, through the ill-judging anxiety of a relative, placed under the care of one of those mercurializing experimentalists, whose favourite treatment very soon released the friends of the young lady of all further sublunary cares on her account. Several others, who, being subjected to the profuse administration of mercury, blistering, perforation of the Membrana Tympani, and various other absurd modes of treatment, were deprived of what little sense of hearing they had previously been possessed of, and rendered totally incurable.

The late Mr. Cline found, on dissecting the head of a child who was born totally deaf, and happened to die of some other complaint, that the labyrinth, instead of being filled with the usual liquid, and the soft portion of the auditory nerves as before described, was formed of nearly a solid, but caseous-like substance. (See Essay, 113. Address to Nervous Deaf, p. 55. Plain Advice to the Deaf, p. 6) In such a case as this, of congenital malformation, which ex-

tends, according to foreign authors, to other parts of the internal ear, which are either totally deficient, or malformed, there could be no chance that any effort to give the sense of hearing, could ever prove successful.

From repeated opportunities afforded me for forming a judgment on this point, of which I have availed myself as fully as possible, I am decidedly of opinion, that nearly all the children, born, as it is said, deaf and dumb, are really not born deaf at all, that they have no malformation whatever, but that the injudicious methods of treating children, which I have before referred to, and to which may be added, the mercurializing system adopted towards them, is the cause why so many more of these unfortunate objects of compassion, than can be received into the asylum, are continually starting up under the notice of the public.

I believe that there are many persons who consider that deaf-dumbness is a disease *sui generis;* probably this arises from want of thinking at all on the subject, for one deprivation is merely a consequence of the other, as

there is no such thing as natural language, which has been proved by actual experiment, it being only by imitation that language in the infantile state is acquired. When children, therefore, do not hear the human voice, they consequently cannot acquire a knowledge of what idea is intended to be conveyed, by certain sounds, and they are therefore considered deaf and dumb; yet there are many sounds which some of these children hear, and from their capability in this respect, and the knowledge which a practitioner must endeavour to acquire of the origin of the deafness, he will form his estimate of the probability of effecting a cure, or affording any relief.

LEGAL CAPABILITIES OF THE DEAF AND DUMB.

Not merely as a matter of curiosity, but of usefulness, the following are selected.

At Lancaster, I believe, on the last but one

election for a member of parliament, a freeman, who was deaf and dumb, tendered his vote, having the names of the three candidates upon a piece of paper; the vote was objected to by one of the candidates. The recorder of the borough was appealed to, and it was alleged in support of the objection, that he had declared the same vote not good upon a former occasion. It was then the practice for commissioners to swear the oath in another room, and upon reference to the books, it was found that this freeman had taken the oath. The recorder wrote thus, "Do you know the meaning of an oath?" the freeman wrote, "Yes I do." The recorder then took from the voter the paper he had in his hand, and after tearing it in three pieces, the man selected one name, and the mayor received his vote. He was taught to read and write at the Asylum for the Deaf and Dumb.

In May, 1818, a marriage took place, at Kenwyn, Cornwall. William Drew, a man born deaf and dumb, to Mary Candy, of St. Columb: the father of the bridegroom answered for his son.

In November, 1819, a singular marriage was solemnized at Kirkheaton, near Huddersfield, between Joshua Barker and Mary Moorhouse; the man being deaf and dumb, of course could not repeat the necessary forms of the marriage ceremony, but this difficulty was obviated in an ingenious manner; as he was able to read, the book was presented to him, and he traced the words over with his finger. From the singularity of the circumstances attending it, this marriage had excited great curiosity, and the whole congregation remained to witness the ceremony.

PERSONS WHO ARE DUMB, BUT NOT DEAF.

These are in almost every instance idiotic: they hear perfectly, but from want of energy in the brain, are not capable of connecting the sounds together which they hear, so as to form articulate language. Professor Malachooma of Pavia, who devoted much time to the study of

the comparative anatomy of the brain, made a discovery of importance as relates to the structure of that part, and its influence on the intellectual faculties. He observed that the laminæ of the brain varies in number from 600 to 780; but in that of an idiot he discovered only 324, and in a dumb person 362. Hence he inferred, that the strength of the intellectual faculties is in proportion to the number of laminæ. Mr. C. Bonnet, of Geneva, who corresponded with the professor on the subject, admitted the fact, but denied the conclusion, as he supposed that the number of laminæ was increased in a ratio proportionate to the exercise of the intellectual faculties. Those who have witnessed, as I have done, the gradual development of mind in those born deaf and dumb, after they have gained the sense of hearing, and as a natural consequence, new ideas from the intercourse with fellow beings, will incline with me to Mr. Bonnet's opinion.

The digestive organs of idiots, do not in general perform their office properly; there is great torpidity of the bowels, and the fæces are voided in small round clots, more like those of

sheep than of human beings. I have advised the administration of repeated doses of vegetable cathartics at intervals; and to prevent the constipation which that class of medicine mostly occasions, a few prunes stewed with sugar and water on the intermediate days; that the hair should be cut by degrees quite close, and the patient be placed in a warm salt water shower-bath, every alternate morning, after which friction should be applied for a considerable time, all over the head and body. It is an obvious characteristic of idotism, that there is generally a great flow of saliva, which passes outwardly from the mouth. Now the saliva has its particular uses in the process of digestion; but what part this fluid sustains in producing this effect, is a question physiologists have left yet undecided; however, whether it has the mere mechanic purpose of preparing the masticated food to be more easily swallowed, or that descending with it into the stomach, it still further assists digestion, is not necessary here to discuss; but being convinced of its utility, I have advised that these persons should be induced frequently to eat sailors' hard biscuit,

or crusts of bread, which requiring much saliva to moisten them, I have observed the digestion improve, previous even to the administration of medicine. How far the above plan of treatment might prove ultimately beneficial, I have not had opportunity of experimenting, but it certainly has increased the intellectual faculty in some cases, after a very short trial; whilst mercury has a decidedly injurious effect, not only in these cases, but also in every case of mental derangement.

IMPERFORATION OF THE EXTERNAL AUDITORY PASSAGE,

Is a case that very rarely presents itself. Sometimes the passage is well formed within, but the orifice is covered with a continuation of the skin of the auricle: this kind of malformation is relieved without much pain or difficulty. When the sides of the orifice approximate so closely, as to form a complete valve, provided they do not adhere together as one continuous

substance, the case admits of relief by introducing substances to dilate the part, and finally silver tubes, through which sounds will easily pass. If it be the tragus, (the projecting part of the auricle next the face), which is too large, or be malformed, and the orifice be thereby closed, it is advisable, in addition to other measures, to make an incision next the face, and in the healing process draw it forward. If the auricle forms one continued substance, wholly cartilaginous alike, without any appearance of an auditory passage, it must depend upon the patient, and his or her relatives, whether they will submit to the experiment of endeavouring to form an opening; and the practitioner's own judgment must direct him, whether an operation will be advantageous to his patient, or reflect honour on himself.

I saw one case of this kind where there was not the least appearance of an auditory passage on one side, yet the young man assured me that he heard tolerably well. I saw him often, and tried him in every possible way, but found no reason to disbelieve him, although it always appeared to me very extraordinary. (See Essay, p. 11)

CONTRACTION OF THE CARTILAGINOUS ORIFICE OF THE AUDITORY PASSAGE,

Or, as some foreign authors call it, an indentation of the tragus, antitragus, or antihelix, is generally a congenital malformation, and produces deafness, in proportion to the nature of the contraction of the external opening, which sometimes is so complete, that there is no passage for the entrance of sound; and when, from any alteration in the state of the health, the glandular secretions pass out through the ceruminous ducts in a viscid state, the sides are agglutinized together, and the hearing becomes more obtuse: this was the state of the sister of a well known metropolitan surgeon; I cleansed her ears, finding she heard well whilst they were held in a particular position—I caused a model to be taken of them, whilst they were so placed as to facilitate the entrance of sound, and from the cast thus obtained, thin

silver tubes were constructed, which answered the purpose intended, and she acquired the great enjoyment of having the sense of hearing nearly in perfection. The silversmith who made them, has, I believe, sold many pairs, formed perhaps upon the same model, which people have put into their ears, and been much astonished that they found no improvement; the reason is obvious, they could only benefit cases of the above description, and should be made from a model taken of the person's ear who expected to be benefitted by the use of them. (See Plain Advice to the Deaf, p. 157)

SMALLNESS OF THE AUDITORY PASSAGE.

Provided there be no other derangement of the functions of the ear, it does not always occasion deafness; for I have known persons whose hearing was very acute, yet the auricle and the auditory tube were particularly small,

though perfectly well formed; these are, however, singular cases, because unusual smallness of this part prevents the entrance of a proper quantum of the sonorous rays. If it be merely in the cartilaginous part, that this natural smallness exists, I should endeavour to dilate the part gradually by mechanical means, which would certainly succeed in most cases: indeed, I have known persons who have dilated one of their ears to an almost incredible size, merely by plugging it with cotton wool.

LARGENESS OF THE AUDITORY PASSAGE.

If this be naturally formed very large, and the usual obliquities of internal form are absent, sounds are not reflected in a proper manner upon the Membrana Tympani, and there is generally a kind of confusion in the sense of hearing, probably through the entrance at once of a greater portion of the vibrations of air occasioned by sound, than what that fine mem-

brane can bear; the ceruminous glands also, do not perform their office, and the auditory passage consequently is dry, and very insensible to the touch. During the youthful season of life, this is the only inconvenience, but as age creeps on, the constant overstrained action sustained by the Membrana Tympani, occasions a relaxation of it, and increasing deafness proportionate to the advancing years, is the result. Mechanical contrivance of a simple nature may assist these cases, such as wearing a piece of wool loosely in the auditory passage.

MALFORMATION OF THE BONY PORTION OF THE AUDITORY PASSAGE,

Is in some instances congenital, and in others has originated from a blow, kick of a horse, fall, or other accidental injury, which probably fractured part of the temporal bone, and the extent of the mischief not being known at the time, an imperfect union of the parts took place,

whereby the natural structure being altered, the entrance of sound in the usual manner, was interrupted, and deafness resulted in a greater or lesser degree, according to the disorganization. (See Essay, p. 11, 12) Cases of this description, whether congenital or accidental, admit of very little hope of relief.

EFFECTS OF BLOWS, OR OTHER VIOLENCE, ON THE AUDITORY ORGANS.

When from accident, or pugilistic encounters, the concussion is severe, an effusion of blood takes place from the external auditory passage. I have had one opportunity of examining the parts after death, of a man who fell from a considerable heighth, and fractured his skull; he survived the fall only about a week, during which time he was wholly insensible. On examination, the whole cavity of the Tympanum, and the mastoid cells on the side where the fracture occurred, were filled with coagu-

lated blood, and even the whole squamous portion of the temporal bone itself, was discoloured from the effused serum: the other side did not show any marks of injury. Had this man survived, it is most probable, inflammation would have commenced in the mastoid cells, although they were not immediately altered in structure by the fall, yet a serious case would, no doubt, have presented itself.

In the Aurist, I have mentioned several cases of serious injury, which have been inflicted by blows on the ear, and it cannot be too forcibly impressed on the minds of persons entrusted with the education of youth, that there is great danger of producing deafness, as well as polypus in the ear, and even worse consequences, by such a method of correction.

About 300 years ago, a deaf and dumb man had his scull fractured by the blow of a cudgel: as he recovered, he began to hear, and finally had his hearing perfectly, and learned to talk. This is an extraordinary case; but it is related by a respectable author of that period. We are at a loss for

information as to what part was fractured, and if we did know, it would only be mere matter of curiosity, as we should find few patients who would submit to the experiment, and a still less number of professional men who would perform it.

CONTRACTION OF THE AUDITORY PASSAGE, FROM THICKENING OF THE INTEGUMENTS AND MEMBRANEOUS LINING.

Is occasioned in some instances by ulceration, which as I have elsewhere observed, is the consequence of fevers, catarrhal affections, measles, syphilis, &c. In others this contraction occurs from local excitement, through the injudicious use of stimulants, either with a view to relieve deafness, or disperse boils, or phlegmenous tumours; it is common for the origin of this state of the auditory passage to occur in the early periods of the person's life, so that frequently the precise exciting cause

cannot be ascertained. In general no pain is experienced, the only inconvenience being a diminution of the sense of hearing, bearing a relative proportion to the degree of the contraction. These cases have, for the most part, been deemed incurable : lunar caustic in substance, or in solution, and ointment of the nitrate of mercury, have been recommended by some surgeons, as well as other practitioners, which so far from affording relief, have materially increased the deafness, and occasioned much suffering to the patient. (See Citrine Ointment, and Address to Nervous Deaf, p. 95) When the contraction is of such a nature in point of form, situation, and absence of inflammatory symptoms, that a dossil of cotton wool, or lint, rolled upon an instrument till it acquires a degree of hardness, then moistened with a cerate, or liniment of some simple description, can be introduced, so as to dilate the passage ; or a piece of bougie, with the same intention, will sometimes succeed in conferring an increase of the sense of hearing. Unfortunately it too often happens, that the contraction is too far down the tube to allow this mechani-

cal plan to be adopted, because of the proximity to the Membrana Tympani, and the consequent pain and inflammation which the introduction of a foreign body would excite. I have employed Iodine in these cases, and its medicinal properties have produced considerable advantage: but even this is inadmissible, when there exists, as there frequently does, considerable itching, herpetic, or erysipelatous eruption, and an exudation of a whitish caseous substance; in these instances the method of treatment evidently indicated, must consist of medicine internally, and topically, cooling injections.

ON THE PROPERTIES OF THE CERUMEN.

The cerumen is composed of a thick, oily, mucous substance, albumin, colouring matter, soda, and phosphate of lime; heat or cold, or alteration in the health of the body, must produce considerable effect on any excretion thus consti-

tuted: congestion of the capillary vessels, which carry on the circulation, would interrupt its formation; exposure to extreme cold, would act upon the cerumen already exuded, by increasing its viscidity, whereby the excretory ducts would become obstructed, and the fresh exudations being thrown back on the circulation, would affect the fine fibres of the subjacent nerves, occasioning pain and inflammation, for it is an established fact, that the most healthy excretions, if interrupted in their progress by any local impediment, become chemically changed in their nature, and noxious in their effects.

Heat causes the cerumen to vapourize too rapidly, and the more liquid particles being exhaled, the remainder either forms a hard black mass, or the auditory passage becomes dry, or filled with a species of sordes, or scurf. As external heat and cold affect the wax mechanically, it will be evident that the state of health of the patient must still more regulate the nature and properties of the cerumen, which being excreted through the above-mentioned capillary vessels, it would become

acrimonious, or diseased, according to the state of the system, and consequently produce erosion, pain, and inflammation in the parts immediately surrounding the small ducts, through which it passes outwards. Thus far, I have selected from my lecture delivered in 1816, and I find no sufficient reason afforded me by any author, who has published since that time, to alter my opinion. A recent writer on the subject, considers that the acrimonious quality of the cerumen, is, *per se*, the only cause of the pain and inflammation, similar to what I have described; but surely he cannot have devoted sufficient attention, or made use of proper discrimination, otherwise he would have clearly seen that these effects were caused, in the greater number of instances, by the mechanical action of the indurated cerumen. (See Plain Advice to the Deaf, p. 60)

OBSTRUCTION OF THE AUDITORY PASSAGE, BY INDURATED WAX.

Is a species of deafness that is very common, and in most cases it is very speedily relieved, without any inconvenience; indeed, generally, the complete restoration of the sense of hearing is the immediate result: when it has, however, been a case of long standing, the mere mechanical pressure of the obstructing substance on the Membrana Tympani, produces a considerable degree of relaxation of that delicate membrane, and the hearing is not completely, nor immediately, restored by the extraction of the substance; but I have heard of cases of persons of high rank, who have been, by interested individuals, kept under their care for an unnecessary length of time, for the purpose of showing to the world that they had such patients, or to enhance their own abilities to the patient himself, when in reality the cause of the deafness was in itself very simple, and ought to have

been cured in a few days. Cases sometimes present themselves of considerable ulceration of the auditory passage, excited by the extreme hardness which the wax had acquired through the action of the air upon it, a very singular instance of which occurred to me about twelve years ago. A young gentleman was brought to me, out of whose auditory passages a substance protruded, like a small nut, the hardness of which was so considerable, that the common surgical forceps made no impression on it, and it was only broken by applying a pair of strong forceps used for extracting front teeth: the substance within was more soft; by applying a saponacious lotion, the ears were cleansed of the whole collection of cerumen, and a liniment introduced occasionally, for about three weeks, gave a healthy tone to the ceruminous glands, and the patient has remained perfectly free from any affection of the ears, up to the present period.

Some ancient authors are of opinion that the wax petrifies, and there are moderns who think it forms a gypseous substance; others consider that warm water is the best solvent:

if these latter persons had taken a little trouble, in order to make themselves acquainted with the chemical qualities of the ceruminous excretions, they would be ashamed to send forth such opinions to the world; or to tell young men, who attend for instruction, any thing so erroneous. Experience every day confirms the fact, that the best plan is to fill the ear with a solution of soap, during a longer, or shorter period, according to the hardness of the wax, and this menstruum so completely softens the accumulated mass, that frequently one syringe full of warm water is enough to remove it. As the soap lotion is absorbed by the substance in the ear, it necessarily increases in bulk, and the diminution of the sense of hearing becomes still greater. In applying preparations of this description, caution is necessary, that inspissated matter accruing from a former purulent discharge, is not mistaken for indurated wax, because it sometimes occurs, such is the case, and that below the dark coloured substance, there exists considerable ulceration, to which the Membrana Tympani has fallen a sacrifice; and the matter from the ulcerative

process being prevented by the above inspissation, from passing out through the external auditory passage, descends down the Eustachian tube into the throat: if this saponacious liquid be applied to such cases, it causes very great pain, which will last for several hours.

When the wax acquires a great degree of solidity, and the patient is of a plethoric habit, the hard substance produces very considerable irritation; great uneasiness is experienced in the ear, which by gradations amounts to intense pain, and as suppuration approaches, a pulsatory sensation, accompanied with noise in the ear, and fever, is the result. These symptoms are occasioned by the pressure, at first, of the hard wax, and then of the accumulating matter, that being prevented from passing out through the external orifice, irritates and presses upon the Membrana Tympani, which sometimes gives way, and a chronic ulceration, as has been just mentioned, is thus established. At other times the matter softens the indurated wax, which with the discharge passes out externally, and the disease, through the removal of the exciting cause, gradually subsides for the time, only to

renew itself in the same manner at a future period, unless by professional aid, the origin of the complaint be totally removed. An illustration of this case occurred in the person of a favourite female professional singer: she suffered torments under the care of her apothecary for about ten days, who unfortunately advised the use of an oleaginous liniment, with some stimulating tincture, than which nothing could be more improper in such a case. I was consulted early in the morning, immediately extracted the indurated wax, the lower part of which was much softened by the contact of the matter, and she was well enough to gratify the public, by her performance in the evening of the same day, and has continued well ever since.

Another case of a gentleman, who was seldom free from a purulent discharge from one or the other of his ears, preceded by pain; as one became free of the inconvenience, the other became affected,—this I discovered to arise from a similar cause, and it was perfectly, and permanently, cured.

But when the patient is not of a sanguine

temperament, the effect produced is not precisely similar, either in symptoms or duration; the substance which has accumulated in the auditory passage becomes hard, dry, and nearly detached, giving rise to irritation and itching, which at first proves a mere slight uneasiness; the passage itself becomes also dry, the itching increases, and extends to the auricle, which tumifies, becomes much indurated, and with the surrounding parts assumes a mild erysipelatous character, attended with very considerable diminution of the sense of hearing. When at Southampton last autumn, I was consulted by the desire of a physician there, on a case of deafness, which had been of nearly forty years' continuance; the symptoms were precisely as I have just stated, of which I had previously, as well as since, seen several instances, and complete restoration of hearing, with relief from the eruption, which had become established, succeeded the extraction of the substance from the auditory passage, aided by the use of a little medicine.

By the ideas which some authors endeavour

to promulgate as to the formation of the cerumen, or wax, those persons who are unacquainted with the subject, must naturally conclude that this substance is excreted at the bottom of the auditory passage, and that the fresh excretion propels outwards that which is already formed ;—the true state of the case is, that the ceruminous glands are situated in the cartilaginous part of the passage, and the excreted substance being acted upon by the air, becomes indurated on its external surface first. Even the attempt of a recent writer to reason upon the subject, contrary to this well established fact, seems to have shewn some opacity of his senses, for it militates against not only his own theory, but is contrary both to common sense, and every principle of anatomical knowledge ; for if the ceruminous glands are fretfully excited, as he states, by rubbing them with a coarse towel, or the introduction of the finger into the ear, (he being very fond of attributing much of the diseases of this organ to the propensity for digitation), according to his own reasoning, the glands thus excited, will excrete more than others, and the auditory

passage is not disposed to *expel* the cerumen thus thrown out from these glands, but rather from its obliquity, and the action of eating, talking, &c., to cause substances to enter deeper, which is proved incontestibly by every day's experience. (See Aurist, p. 5. Plain Advice to the Deaf, p. 60)

A very small portion of cerumen, if it touch the Membrana Tympani, will occasion deafness, but persons often have a mere external wall of cerumen, and beneath it the auditory passage is perfectly dry, and devoid of secretion: it is therefore advisable that practitioners should not excite too sanguine hopes in cases that appear even to originate from indurated wax, for when there is merely this external crust of cerumen, although it presents the appearance of a simple case of obstruction, yet it is not under the above circumstances immediately benefited by the extraction of the accumulated substance, but generally yields to persevering attention. (See Essay, p. 37) There are many persons whose ceruminous glandular excretion is so abundant, that the auditory passage *often* becomes obstructed; therefore, they are obliged

to apply periodically for professional assistance. I know a gentleman whose ear, on one side, becomes quite full in about six weeks, and many who are obliged to have their ears cleansed once in twelve months.

When the ear is filled with cerumen, the action of the air upon it will, as before observed, cause it to become hard, and the ceruminous glands having been prevented, by the obstruction, from exuding more, the moist particles of that which is already excreted, exhale, and the obstructing medium being reduced in volume, consequently recedes, and partially detaches itself from the sides of the passage, which action sounds like a loud crack in the ear, and sometimes persons hear better immediately, because there is space left for the entrance of air, and, of course, sound.

OBSTRUCTION OF THE AUDITORY PASSAGE, BY LAMINATED SUBSTANCES.

As I have before observed, either external heat, or constitutional changes of the system, cause the ceruminous exudations to assume the appearance of large scales, scurf, or sordes, which in some instances completely line the passage, or, by neglect, accumulate there in very large quantity: other causes produce similar effects, such as local irritation of the mucous membrane lining the passage, through picking the ear, and sometimes, though not frequently, the origin of these laminated substances may be traced even to the fœtal state, in which the Membrana Tympani is protected by a covering, which, if not carried off in the natural way, as elsewhere explained, becomes dry, and a cause of irritation, from which arises a curious obstruction to the entrance, or perfect conveyance of sound.

In the East Indies, China, and other Oriental

countries, Europeans, and I believe also the natives, are much troubled with the first mentioned species of obstruction, which it is a common practice for the persons who operate in those parts of the world on the ears, to extract, by means of little instruments, whereby these substances are gradually detached, in their dry state, from the cuticular lining, and brought away in one entire piece; but the frequent repetition of this operation, causes a still larger accumulation, with so great a degree of insensibility of the part, that a diminution of the sense of hearing in most cases, amongst the Europeans, succeeds. (See Essay, p. 18, 19)

When these substances fill the passage, the nature of sounds are, to the perception of the patient, very much altered, for as air is the only medium whereby they are conveyed, and as it has to pass through the various interstices formed by these laminated secretions, the human voice, and other sounds, are imperfectly understood, and even the vibrating air passing through the small openings, acts in a manner somewhat similar to what it does when it passes over the strings of an Æolian lyre, and a con-

stant hissing, or buzzing noise, is heard by the patient. This kind of deafness, and unpleasant sensation, is however very speedily, safely, and permanently removed, even if it has existed during many years; or, in the latter cases, during the whole previous term of the patient's life. (See Address to Nervous Deaf, p. 30. Plain Advice to the Deaf, p. 61)

SYRINGING THE EAR.

Is an operation unattended with pain, danger, or any other inconvenience, except that sometimes, when there either is at the time, or has been, ulceration or disease in the auditory passage, the extreme fibres of the hard portion of the acoustic nerve, are stimulated suddenly by the injection of the warm liquid, and slight vertigo takes place, which is so trifling, that it is dissipated nearly as soon as it is experienced, by a little fresh air, or the aid of a smelling

bottle. This sensation is similar to what is experienced by suddenly plunging under water, and arises from the incident confusion in the auditory passage, which is conveyed instantly by the above fibres of the nerves, to their base in the brain.

The operation of syringing is very simple in itself, when in proper hands; but what with the want of manual dexterity in some practitioners, and the absurd contrivances of others, (See Plain Advice to the Deaf, p. 164) there are frequent examples of intense pain being inflicted, in the performance of an act, which, when the ear is not in a state of disease, ought to be rather pleasant than otherwise to the patient.

A lecturer on operative surgery, has, according to the published version, thought proper in that part of his lecture relative to the ear, to say, that "*quacks, and aurists, get reputation for syringing the ear, when surgeons lose it; not because the quack has more knowledge of his profession, but because he takes more pains than the surgeon.*"

The evident intention to convey the idea, that the above two names are synonimous, could not

have been expected from any *gentleman* in the profession; but emanating from a source which has the reputation of being rendered turbid with frequent vulgarisms, such unjust attempts at classification, only excite feelings of contempt, if the utterer were sane—and pity, if he were otherwise. That there may be some, calling themselves aurists, who, from their modes of practice, justly deserve the imputation of Charlatanism, must be freely admitted, but there have been, and still are to be found, aurists quite as well acquainted with the anatomy, physiology, and pathology, of the human system generally, as this lecturer, and who are ready to give public proofs of it before any competent tribunal: as to the knowledge, locally, of the diseases of the organ of hearing, and treatment of them, it would be too ridiculous for him to enter into competition with those who, from experience alone, must have acquired a much greater acquaintance with the subject. By the directions which he appears to have given to his pupils, as to syringing, it is very evident that *he* would gain no reputation by performing

this operation; on the contrary, there can be very little doubt but *he* would occasion considerable pain, if not more serious evils.*

It is often necessary for patients to inject lotions into their own ears, and I have suggested an improvement in the formation of the Gum Elastic Syringe, which renders it very convenient, and at the same time less liable to be out of repair, which, to persons residing in the country, is an advantage. It may be proper to remark in this place, that when patients syringe their ears, the lotion used should be carefully drained out of the auditory passage.

* Aurists who wish to avoid giving pain to their patients, have their syringes perfectly air tight, and so well constructed, that not any bubbling or cracking sensation is experienced by the patient. Assalini, the Neapolitan surgeon of Bonaparte, has the credit of having made a great improvement in these instruments, to which I have added something considerable in regard to the shape of the tube that enters the ear, and also as to the nature of the piston.

TREATMENT AFTER INDURATED CERUMEN, &c. HAS BEEN EXTRACTED.

WHILST the ear is healthy, and performs its functions properly, the cerumen exuded by the ceruminous glands, is about the consistence, and colour, of new honey; but when, from any external, or internal cause, the excretion already exuded, becomes more viscid, or by derangement of the health, is altered in its properties, the ducts must become obstructed, and, in proportion to the accumulated substance in the auditory passage, the glands will necessarily cease, partially, or wholly, to perform their office, and the substance which ought to be excreted, is thrown back on the circulation; therefore, after all the indurated wax, &c., is removed, it is very necessary to stimulate these glands to a renewal of their former healthy function, and without this is done, the auditory passage becomes hard, dry, and insensible, more particularly if the patient has passed the meri-

dian of life; it is, indeed, then very difficult to restore the proper tone to these parts; whereas, by a little care and attention, after the indurated substance has been removed, a complete and permanent cure is certainly effected. Patients who know nothing of the curious and delicate structure of the ear, as soon as they find their hearing restored, by the extraction of the hard wax, conceive they are completely cured, and take no further trouble; but it often happens that before any length of time has elapsed, deafness again supervenes, and the patient has the mortification to find, that his case has assumed a new feature, and instead of there being any accumulation of wax as before in the auditory passage, it is now in the dry, insensible state before described, which would not have occurred if proper precaution had been adopted.

EXCRETION OF IMPERFECT CERUMEN.

The auditory passage is sometimes filled with a hard substance, nearly white, less viscid than true cerumen, and yet thicker than matter, and of a different texture. The sense of hearing is much impeded in the most favourable of these cases, by the mere mechanical obstruction to the entrance of sound, and is then speedily relieved; but when it has originated, as it frequently does, from measles, or other disease, which has brought on a local disability of the ceruminous glands to excrete healthy cerumen, or when debility of the system has extended to these parts, there is more difficulty, and greater time required, to obtain a favourable termination.

WANT OF CERUMEN.

A VERY great proportion of the cases that are presented to a practitioner, have this as one of their symptoms: in some the ceruminous glands have not entirely ceased to perform their office, yet act languidly, and if the patient be young, otherwise healthy, and the diminution of hearing has not been of long continuance, the case admits of almost certain cure. Persons, also, who are far advanced in life, if they have neither injured the ear by the use of nostrums, undergone improper treatment, nor allowed the deafness to exist for a considerable time previous to applying for competent assistance, may receive relief, if they allow sufficient time for proper remedies to be applied with effect: but when the auditory passage is quite dry, the person has been for a great length of time deaf, the habits of life, or usual occupations, are inimical to a sound state of the health; when there is general debility of constitution, and the patient

is much advanced in years, it is very difficult to restore the tone of the ceruminous glands, or give that degree of sensibility to the auditory passage, or Membrana Tympani, by art, which the lubricating quality of the wax would produce; and little more can be expected by the patient, or promised by the practitioner, than a prevention of becoming worse, which, in such cases, is a considerable advantage, as, without assistance, the patient would become gradually more deficient in the sense of hearing, and even total deafness would frequently occur, as the age increased.

OLEAGINOUS LINIMENTS.

I HAVE prescribed some of this class of applications in former works, particularly in an Address to the Nervous Deaf, (p. 60*) and though

* A very easy method of making the simple liniment is thus:—Oil of Almonds, 1 oz., fresh bees'-wax, shred fine 15 grains: let these be placed in a phial, in a water-bath,

they may be proper for many cases, yet, even in those very cases, they will increase the deafness, if applied in too large quantity, or dropped into the auditory passage; and this effect is not caused through the medicinal quality of the liniment, but merely by its mechanical action; for, in consequence of the obliquity of the auditory passage, the liniment descends, until it rests against the Membrana Tympani, which is thereby prevented from vibrating with the proper degree of sensibility, and sounds are, therefore, not conveyed to the sensorium.

THE PROPER APPLICATION OF LINIMENTS TO THE AUDITORY PASSAGE,

CANNOT be too forcibly impressed on the memory of patients, as from their excessive anxiety to perform this little operation in the

until both wax and oil are alike transparent. Cork the phial, and shake occasionally, as it is cooling. To this liniment any of the stimulatives mentioned in the above work may be added. It should be kept in bottles with glass stoppers.

best possible way, they too frequently defeat the very object which they endeavour to attain, in the manner just mentioned. The following, as general directions, will, it is hoped, prevent the evils which an improper use of these liniments occasion.

Cotton wool twisted on a small silver instrument prepared for the purpose,* or even on an ear pick, dip the cotton into the liniment about an inch, turn it against the side and neck of the phial, so as to take off the superfluous part, and merely leave as much as will moisten the auditory passage, into which it is to be cautiously introduced, and the moisture equally diffused by a gentle rotary motion of the hand. The dossil of cotton should be sufficiently small, to enter the auditory passage without the least difficulty, otherwise all the secretions that may have formed, will be driven down to the bottom of the passage, and the sense of hearing will be

* I have suggested the plan of having a small glass stoppered phial enclosed in a case, together with the silver instrument, and some cotton wool, which forms a very complete apparatus for this purpose, and I understand they are generally approved, and great numbers of them sold by the manufacturer.

diminished until they are removed. Whenever any of these oily preparations are advised, if the patient finds the hearing diminish, without any sensation of pain, it denotes that the liniment is used in too large quantity, or applied improperly, which can be remedied by having the auditory passage filled with some saponacious liquid for a short time, and then syringed. If the liniment occasion pain, excessive itching, or a discharge of matter from the ear, it is evident that the stimulating properties of the liniment are too great, or that it has become rancid, and therefore acrid by exposure to the air, or that the manner of using it is too violent, and the patient should not proceed without further advice.

OBSTRUCTION OF THE AUDITORY PASSAGE, BY EXTRANEOUS SUBSTANCES.

It is a common practice with many persons, to wear cotton or wool in their ears, or to place those substances sometimes moistened with

brandy and oil, or laudanum, therein on going to bed, under the impression that it will afford relief from ear ache, or tooth ache; the person being restless from the effect of the pain, by degrees forces the cotton or wool too far into the auditory passage to be felt, and under the idea that it has fallen out, he probably places another portion of the same substance in the ear; the more liquid part of the cerumen is absorbed by the cotton or wool, and through the action of the air it becomes a hard mass, which presents a mechanical obstruction to the entrance of sound: the deafness is then ascribed to a variety of causes, nostrums of all kinds are resorted to, or persons are consulted whose modes of examining the ear, are so imperfect, that they know almost as little of the cause of the complaint, as the patient himself. Amongst my collection are many specimens of these substances which I have extracted, one consisting of four separate pieces of cotton wool, which had been in the auditory passage twenty seven years, which at that time had occasioned such severe inflammation and tumefaction of it, that when the suppurative process came on, there was no

outlet for the matter to escape, and most excruciating pain was sustained ; this produced fever, and at a consultation which it was thought necessary to hold on his case, the patient's life was considered in danger, without his medical attendants or himself being aware of the inducing cause ; a large tumour at length formed at the back of the auricle, and being opened, a profuse evacuation of matter took place, from which period he gradually became convalescent. After the lapse of the above period, he requested me to examine his ear, as he experienced in it occasionally very uneasy sensations, a trifling purulent discharge, and constant deafness. On examination, I discovered that the sides of the auditory passage approximated very closely, and carefully dilating the orifice, an extraneous substance was discovered, which proved to be four pieces of cotton wool, the lower one of which was very dark coloured, and there can be no doubt was nearly, if not quite, in contact with the Membrana Tympani. The next day the discharge ceased, and he heard comparatively well. The reason of this

great local excitement, was, that the cotton rested upon, and proved a constant source of irritation to, that sensitive part, the Membrana Tympani; and the patient having lived luxuriously, was therefore at the time in a state predisposed to disease, from even trifling exciting causes; for I have taken cotton wool, which was the only impediment to hearing, out of many other ears, where it had remained from six, to even twenty-five years, without its having excited any inflammatory action. This case, no doubt, gave rise to many curious conjectures amongst the professional men of that day, and probably, (as it is said by one traveller, that the plague shows itself sometimes in tumours and ulceration behind the auricle) the poor patient might almost have run the risk of being abandoned, lest his disease should be infectious: such misconceptions were more pardonable at that period than they are now, for science has made rapid strides within twenty years; and yet I have recently been consulted by patients, who have been subjected to courses of mercury, blistering, and bleeding, until their strength being ex-

hausted, bark, and other tonics were prescribed to restore them; and by others, who, having seen advertisements as to the wonderful cures effected by electricity and galvanism, have submitted themselves to the direction of men who promised a certain cure of their complaint, without knowing what the complaint was, which proved to be nothing more than wool, that had been placed in the auditory passage, into which it had descended, and the extraction of which effected a cure in a very short period. In some cases, where relaxation of the Membrana Tympani had been produced by the pressure of the foreign body, a longer period with professional aid was required, but the result was almost always permanently successful. (See Essay on the Ear, p. 41. Advice to Nervous Deaf, p. 30, 73, and Plain Advice to the Deaf)

Children in playful wantonness, also sometimes place variety of substances in their ears. I have extracted peas, lupin seed, a small shell, grape seed, and other things from the auditory passages of children, and from those of adults, a clove, the heart of an onion, paper

rolled up, the point of a black lead pencil, &c., the first of which had been placed there for some imaginary medicinal purpose, and the latter had broken off whilst in the act of picking the ear.

Ancient authors mention cases of paralysis of one side, with other general derangement of the system, through the injudicious attempts to extract hard bodies from the auditory passage. (See Essay, p. 46. Plain Advice to the Deaf, p. 68, c. 72) formerly it appears there was great difficulty in extracting these substances from the ear. In the cases of children whose fears of being subjected to pain, and consequently, who will not sit sufficiently quiet so as to afford a fair opportunity to the operator, there certainly may be some obstacle presented; but it is merely from that cause alone, for with adults there is none, as by well constructed, but simple instruments, properly managed, the operation is neither painful nor difficult. (See Medical Repository for 1818)

An eccentric, well known surgeon, tells his pupils, that the best way of getting foreign substances out of the ear, is to lay the person's head

upon "*a large soft cushion of a fashionable sofa*, placing the side downwards, in which the substance is lodged; another cushion to be placed on the opposite ear, which is to be "*thumped*" until the substance comes out. To professional men, who can so easily extract any substance from the ear, this appears totally devoid of science, and to the ideas of any mechanic, it must seem absurd and erroneous; even a common labourer would laugh to hear it, as he practically knows, that if he wants to put a new handle to his hatchet, he strikes the opposite end of his handle. Let the lecturer place a leaden ball in a taper tube, in which it will pass to the centre only, then let him strike the smallest end, to which the ball will be drawn, and by a repetition of the blows, impacted firmly; let him then strike the large end, and he will loosen the ball and draw it there: and so it would be with the ear, because, though the auditory passages do not form one continuous tube, yet the vibration, and moving force, is communicated by the bones of the scull.

In the Kentish paper, some time ago, there was an account of a boy having had a cherry-

stone in his ear, which took root there!! And other authors mention, that seeds and grains germinate in the auditory passage. I extracted a pea from a young gentleman's ear, where it had been above four years, and from another patient a hay seed; in both instances a very profuse and fœtid discharge was excited, which ceased on the removal of the substance. M. Itard advises that these cases should be abandoned *à la chirurgie expectante*, and, from his previous statements, I presume he intends that we should await the germination of the seed, or cherry-stone, of which he has selected from very ancient authors some curious examples, for in the present improved state of science, we are well satisfied they must be apocryphal. In the instances I have adduced, the pea and seed had ample time to germinate; but it is not possible for them to do so in that situation, or in an animal product of the description I have mentioned.

INSECTS IN THE AUDITORY PASSAGE,

Which sometimes obtrude themselves. It is, however, a vulgar error to suppose that earwigs have a particular propensity to get there; but it is not important whether these or any other insects have or have not the predilections ascribed to them. It is certain that the smallest of the insect tribe will occasion extreme pain, and the most distressing sensations; but as there is a remedy always ready, I considered it proper to point it out above twelve years ago. It consists in filling the auditory passage with sallad oil, which will destroy the life of the insect, and it may then remain without any serious injury to the patient, until competent assistance can be obtained for its extraction. As an instance, I have a wasp that I extracted from the ear of a young gentleman, where it had remained above five years. I also, in the work alluded to, advised, that professional men should keep in readiness for such

occasions some oil, in which tobacco had been infused or boiled, or that to the sallad oil above advised, a small quantity of oil of turpentine, should be added. (See Essay, 43, 44. Plain Advice to the Deaf, p. 67)

A lad died a few years ago, after suffering great torture from an insect of the beetle genus, commonly called a cock-chaffer, getting itself impacted low down in the auditory passage. It does not appear that oil was tried, otherwise the vitality of the insect would have been destroyed, and its struggles, which produced such irritation of the fibres of the hard portion of the auditory nerve, and, through them, of the whole nervous system, that no human strength could exist under such a state of dreadful excitement, would have been quieted, and the patient's life saved.

WORMS, OR MAGGOTS, IN THE AUDITORY PASSAGE,

Are mentioned by several foreign authors, and, as I observed in the Essay on the Ear, p. 42, they most probably have their origin in

the larvæ, or eggs of flies, which have been attracted to the part by a purulent discharge, and, by the usual process of nature, become endued with life. I extracted the outer skin of a maggot, which had become a chrysalis, from the ear of a merchant, who having very extensive concerns in the exportation of pickled and dried pork, &c., which occasioned him frequently to be in the place where a quantity of meat was generally hanging, it is supposed that a maggot, nearly in a chrysaline state, must have dropped into the auditory passage whilst he was stooping, and the fly, attaining maturity, passed out, leaving the skin behind, for he never experienced any pain or uncomfortable sensation, except a degree of deafness, and a rattling of some loose substance in his ear.

In the *Morning Herald*, there appeared an account of a young man in Ireland, who suffered excruciating pain in the auditory passage, out of which a horse-leech was extracted; but it is said the patient died in an hour and a half afterwards. In this case a proper examination of the ear would have shown the nature of the case, and the application of salt, or injection of salt and water, would have been indicated.

RELAXATION OF THE MEMBRANA TYMPANI.

GENERAL debility of the system is sometimes the cause of this affection of the membrane. There are, however, other local causes, either affecting it externally, such as the pressure of extraneous bodies, or indurated wax, upon the Membrana Tympani; or internally, from the habit which some persons acquire of blowing the nose violently, or rather, pressing it too tight whilst using a handkerchief, whereby the whole force of the air from the lungs, is propelled against the internal side of the drum of the ear, and the frequent repetition of the act occasions deafness, through the constant force exerted against it. (See a curious case, Essay, p. 55.) When persons, from catarrh, have a large collection of mucus passing down the nostrils, the mucus, towards the latter stage of the complaint, becomes thicker, and appears to require more exertion to expel it. Nothing can be more injudicious, or tend more to produce a

contrary effect, than the force thus used, for the repeated attempt gives rise each time to a renewal, and excites or keeps up the inflammatory symptoms. Many persons who have, from debility of constitution, a relaxation of the Membrana Tympani, finding temporary relief by holding the nose, closing the mouth, and endeavouring to force air through the Eustachian tubes, obtain a habit of doing so whenever they want to hear better, and recur to this method of giving a momentary tone to the organ, by the internal pressure so often, that, by degrees, the deafness becomes worse, and at last nearly total.

Persons who are deaf from relaxation of the drum of the ear, hear better in a coach, or any loud noise, of which Sauvages gives some curious instances, which have been quoted in the Encyclopædia Britannica. One, of a lady, who could only hear conversation when a drum was beating, and her husband kept as a servant one who could play on that instrument. Another, of a bell-ringer, who could hear well whilst the bells were in motion over his head. This arises from tone being given to the muscularity of the Membrana Tympani by external causes,

but which ceases as they cease. Persons who descend in a diving bell, if deaf from relaxation of the Membrana Tympani, hear much better as soon as the machine touches the surface of the water, and the reason is obvious, for the air becomes condensed, and acts as an external pressure on the membrane. The inhalation of the nitrous oxyde gas, excites in most persons general muscularity of the system, and great acuteness of hearing, but it shortly goes off: I have administered it medically, in small quantity, to one or two persons who were deaf, and desirous of trying the experiment, but it had only the temporary effect of increasing the hearing for an hour or so. I do not think the experiment was prosecuted sufficiently, and from having administered this gas in my chemical lectures to many hundred persons, I can confidently assert that if the gas be properly prepared, it does not produce any unpleasant or dangerous effect. (See Aurist, 77, Essay, p. 55, 58. Plain Advice to the Deaf, p. 37)

MORBID SENSIBILITY OF THE MEMBRANA TYMPANI.

It has been noticed by many ancient, as well as modern authors, that a painful acuteness of hearing, called by some, exaltation of the hearing, or hypercousie, is a concomitant of fevers of several kinds, head-ache, and various other complaints. I have been consulted on many of these cases, and have always advised the ear to be left to itself, or merely to have it filled with cotton wool, moistened with some simple cerate, to act mechanically in keeping out sound, for I constantly remarked, that as the disease was removed, which occasioned this extreme sensibility of the organ of hearing, so this morbid acute sensation also disappeared, except when epilepsy was the cause, and then this nervous state of the hearing remained long after the disease, which gave rise to it, was cured. More chronic and distressing acuteness of the sense of hearing, unattended with pain,

or any specific disease, sometimes presents itself, and this I conceive, chiefly arises from too great a degree of tension of the muscular fibre of the Membrana Tympani, occasioned by its extreme nervous sensibility. A recent foreign author thinks the labyrinth is the seat of this complaint, but this is merely conjectural, yet it may be so in some cases, when the brain is the part much affected by the fever or other complaints, in which the soft portion of the auditory nerve, and other nerves, having their base in the brain, must participate. The chronic cases are not very common, yet I have seen several, and in general have observed, that the patient laboured under great nervous irritability, so much so indeed, that any sudden noise would cause starting, palpitation of the heart, quickness of breathing, and a momentary trembling; these sensations, as I have explained in my lectures, are clearly to be traced to the connexion of the hard portion of the auditory nerves with those of the throat, lungs, and heart, and to the influence of the nervous system on the muscular fibres of the body. I have tried the effect of very slight sounds, at certain distances, on

some of these patients, but could not discover that the sense of hearing was more acute in them, as to conversation, or sounds of which they were aware, than other persons. On examination of the auditory passage, the sides of it are generally encrusted with a secretion of a light brown colour, in some instances very viscid, and in others dry, and beginning to assume a scurfy hardness; this is however common to several descriptions of deafness, and therefore affords no distinguishing criteria; by cleansing it away, and inducing a more healthy action of the ceruminous glands, the proper functions of the ear are restored, and, aided by a course of vegetable tonics, permanent relief from this distressing state is gradually obtained.

RUPTURE OF THE MEMBRANA TYMPANI,

May occur through external violence, such as a blow on the ear, (see Aurist, p. 4, and

Plain Advice to the Deaf, p. 58) Or if the air from the lungs be suddenly propelled against the internal side of this fine membrane, through the Eustachian tubes, the same effect will be produced, as was the case with a boy who ruptured the Membrana Tympani, on both sides, in consequence, during a sudden paroxysm of hooping-cough, of placing a handkerchief to his mouth, which stopped both that and his nostrils. (See Essay, p. 55, and Plain Advice to the Deaf, p. 39) The former of these cases was speedily relieved, and very little injury to the sense of hearing was sustained; the latter required professional assistance during a longer period, and the hearing was never so good afterwards.

The sudden expansion of air, resulting from the discharge of artillery, has also ruptured the Membrana Tympani; therefore, amongst military and naval men who have seen much service, are to be found a great number afflicted with deafness, sometimes combined with diseases of the ears. Although this deprivation is very great, it has not, generally, like blindness, &c., been compensated with a pension, although

the deafness was contracted on actual service. The Directors of the Hon. United East India Company, much to the credit of their humanity, have recently thought proper to give to one of their marine officers, an increase of his retiring pay, on account of the deafness he labours under, and which was contracted in their employ.

FILM, OR SKIN COVERING THE MEMBRANA TYMPANI.

This is a very common cause of deafness; sometimes it occurs after purulent discharges from the auditory passage, and resembles diseased cutis, which has been thrown off by the ulcerative process, and in these cases does not entirely close the passage against the entrance of sound; it is very easily removed, and if the disease which caused it have ceased, the deafness is also speedily cured.

There is another kind of film, or skin, often

found in the ears of children, which I have fully mentioned, in Essay on the Ear, p. 49, and also in my lectures, 1816 and 1820. In 1825, I observe a foreign author also notices it, who quite agrees with what I formerly stated, that these cases are easily cured. This obstruction to the entrance of sound is in some instances very considerable, and the child has not the faculty of speech in full perfection, because the sense of hearing being very much diminished, the child cannot learn, that certain sounds mean certain objects: some practitioners have endeavoured to raise a superstructure of fame upon cases of this nature, which are really, in themselves, very trivial. The obstructing medium appears, at first view, to an unexperienced person, like the Membrana Tympani; but a discriminating eye will instantly discover that it possesses neither the shape, nor vascularity of that membrane; there is, however, neither pain nor difficulty in removing it, but it is far beyond the abilities of common practitioners to decide, or operate upon.

In the fœtus, the Membrana Tympani is covered with a glutinous substance, which is

sometimes carried off by a slight discharge from the auditory passage; when this is not the case, its surface, by the action of the air upon it, becomes hard, presents the appearance, and has the effect I have mentioned. (See Essay, p. 50)

I have seen some instances of this skin, or as it is called by one author "*morbid septum*," becoming the irritating nucleus for the formation of a laminated substance in the auditory passage, which takes the precise form of the passage so completely, that, on attempting to remove the substance after it has been properly softened, it acts like the piston of an air-tight syringe, and cannot be extracted until air is admitted beyond it; the little operation requires care, and proper instruments, but occasions no pain. (See p. 66) I have several specimens of these curious cases, one which I extracted from the ear of a gentleman aged 85, who had been deaf, according to his own account, 75 years, but, in my opinion, his deafness originated in the fœtal state, the substance being precisely the same as I have taken out of children's ears, for it presented, like them, a

complete model of the lower part of the auditory passage, and of the Membrana Tympani. When children, therefore, do not appear to notice sounds, or, at the proper and usual age, do not evince the faculty of speech, no time should be lost in obtaining for them competent professional advice.

DROPSY OF THE MEMBRANA TYMPANI.

By some ancient authors, dropsy of the drum of the ear is named. I have never met with more than one well defined case of this anasarcous affection of part of the cellular tissue, of which some of the laminæ of this membrane are composed, and that was the case of Miss Thatcher, who was born totally deaf, and was, on her gaining the sense of hearing through my exertions, presented by me to her late Majesty, Queen Charlotte, to whom I had the honour of explaining the peculiar nature of the case, and

the methods so successfully employed for her cure. The appearance which the Membrani Tympani presented, when I first saw this young lady, was convexity outward, like the same part in birds, instead of concavity, and by exciting the action of the absorbent vessels, I gradually, but not until after long perseverance, completely succeeded. Probably there may be many similar cases amongst the deaf and dumb, which might also be cured by the same means, if the rules of the Deaf and Dumb Institution in this country, allowed of surgical attention to the unfortunate inmates of that establishment. Not that I intend to convey the idea, that the above state of the ear is the general cause of total congenital deafness; the causes are various, and not as some authors apparently would lead us to suppose, a disease, or affection of the ear *sui generis*.

BOILS IN THE AUDITORY PASSAGE,

Cause very considerable pain, but do not differ in their nature from tumours of the same kind, when they occur in other parts of the body. I have uniformly observed, that discutient applications fail in producing any ultimate good effect, and that it is much more easy to the patient, and satisfactory to the practitioner, to promote the suppuration, which the existing pain indicates has already commenced. Oils and tinctures are often advised in these cases, by the lower grade of apothecaries, and surgeons, and nothing can be more improper. (See Plain Advice to the Deaf, p. 55)

An onion, boiled in milk until tender, the middle part of it placed just within the auditory passage, and the remainder beat into a pulp, and placed in a small bag upon the auricle, will generally relieve, by a few repetitions; after the pain has subsided, let the ear be carefully syringed. This affection of the ear, if properly

treated, is not attended with any danger as to the sense of hearing, and very little pain; but under the direction of incompetent advisers, abscesses sometimes form, which end in fistulous ulcers, and very unpleasant consequences are often experienced by the patient during the remainder of life. (See Aurist, No. I., p. 8; Essay, p. 47—116.)

FUNGOUS GRANULATIONS IN THE AUDITORY PASSAGE,

Result from nearly the same causes as polypi in the same part, and, like them, were the subject of an operation from the earliest periods that surgical science attempted to relieve diseases of the ear, until about five years ago, when I discovered a method of safely and permanently removing them, without the slightest pain, or an hour's confinement, by the application of the alumen exsiccatum. I wrote a paper on the subject, to be delivered to a learned

society, which I entrusted to the hands of one of the members; but as he was unable to attend, he transferred it to the care of a gentleman with whom I had previously disagreed on some points of practice, and the paper never reached its destination. I therefore published a full account of this more humane method of curing a very troublesome complaint, in the Aurist, No. I., p. 18, and in Plain Advice to the Deaf, p. 49.

A very curious case of fungous granulation was presented to me recently. A lady who had, when a child, some disease of the ear, which had rendered her totally deaf on one side, and nearly so on the other, acquired, she does not know how, the habit of introducing a piece of paper, rolled up, about the size of a tobacco pipe, into her ear, and discovered that she then heard better. By degrees she was able to introduce this piece of paper, shortened in length, so adroitly, that she heard tolerably well whilst it was in, for about two or three days at a time, but as soon as she removed it, she became quite deaf, until she placed a fresh piece there. By her wish, I examined the side on which she was totally deaf,

wherein she had been told by several practitioners that the Membrana Tympani (or drum) was totally destroyed. This opinion I discovered to be unfounded, as the membrane was sound, but completely covered by a flap of fungous flesh, which I could lift up. On looking into the ear in which she constantly kept the paper, there was a similar flap, which did not quite cover the Membrana Tympani, and which, by the introduction of the paper, was lifted up, and so admitted sounds to strike upon that fine membrane. In this case I have not had an opportunity of proving the efficacy of my remedy, through it being impracticable for the lady to attend me at present, but at some future time, I hope to add her to the successful instances relieved by the remedy I mention.

ENCYSTED TUMOURS IN THE AUDITORY PASSAGE.

I HAVE seen some cases of this description; one in particular, which was occasioned by the

injudicious attempts made to extract a pea from the auditory passage. In this case such very decided advantage was derived from one or two doses of calomel, insufficient in quantity to act on the bowels, that the tumour discharged a large quantity of red serum, and matter streaked with blood; the skin of the tumour only was left, and the auditory passage having thus become free for inspection, the pea was extracted without any difficulty. (See Medical Repository for 1818)

It may be proper here to remark, the very great effect a small dose of calomel produces in cases of this nature, which sometimes occur through syphilis; and also on discharges of a purulent nature, arising from the same complaint: in the latter, this medicine, on the first dose, will increase the discharge so abundantly, that it will run from the ear almost as limpid as water.

POLYPI IN THE AUDITORY PASSAGE.

Scarlet, and other fevers of an eruptive nature, cow-pox, measles, catarrhal diseases, scrophulous predisposition, excoriation of the parts, by picking the ears with pins, ear-pickers, &c., or blows inflicted on the head, afford an origin for most of these substances. The only cure is extraction, an operation which, in proper hands, is attended with very trifling pain, and is so completely successful, that I very rarely use any other method. I have lately had a case which appeared to originate from a very different cause than any of those which I have mentioned. On examining the root of the polypus, after it was extracted, a small piece of bone was discovered, which, there can be no doubt, was the irritating substance that produced the excrescence; and the only probable way of accounting for the detached piece of bone being in that situation is, that the young lady had had some time previously a very serious fall, which frac-

tured the clavicle, besides, as it is believed, injuring her head considerably. Now, at the orifice of the bony part of the auditory passage, as will be evident by inspecting a skull, there is, next the face, a small projecting piece of the temporal bone, which being very slight, might easily be splintered, and, remaining under the integuments, would occasion the pain she had been subject to, and the formation of the fleshy excrescence. The correctness of this supposition is confirmed by the situation of the root of the polypus, which was in the precise spot to account for such a cause producing that effect.

In the lectures of a surgeon, published *malgré lui*, he is said to advise his pupils "*not to be extracting excrescences out of the tube of the ear, as he has* KNOWN *cerebral affections arise from the irritation of such operations.*" This advice is something on a par with that of a female lecturer on electricity, &c., who deprecated the use of an electrical battery, because it was, in her opinion, so dangerous! whereas, every one at all acquainted with the subject, knows it is perfectly under controul. If we are to judge of the progress which this lecturer has made in point of

manual dexterity, by the "*very great force indeed,*" which he directs to be used in syringing the ear, we shall entertain the opinion, that if the same kind of injudicious violence has been applied by him in cases of polypous excrescences in the auditory passage, *he may have* KNOWN that *cerebral affections* HAVE *arisen from the irritation occasioned by* SUCH *operations.*

DEAFNESS FROM CATARRH.

EXPOSURE to sudden changes of temperature produces not only a degree of atony of the fine, and diffused fibres of the hard portion of the auditory nerve, but also occasions considerable inflammation of the capillary vessels, through the congestion that takes place; and the descent of a large quantity of pituitous humours down the nostrils, result from the diseased state of the mucous membranes which supervenes; this semi-mucous discharge, in a greater or less quantity, is frequently forced into the orifices

of the Eustachian tubes, by the mere act of blowing the nose; and persons suddenly become deaf on one, or both sides, through the air being thus prevented from having free ingress into those passages. The diminution of the hearing varies in proportion to the density and quantity of the obstructing medium; and when it is either removed by the efforts of surgical skill, or, as it sometimes is, by yawning, sneezing, &c., a loud crack is heard by the patient, if the whole of the obstructing substance passes off at once, through the air rushing in suddenly; or a squeaking noise, when the removal is more gradual. (See Obstruction of the Eustachian tubes by Mucus)

Catarrhal affections also occasion a great interruption to the ceruminous glandular excretions, which are thrown back on the circulation; and when there is a tendency in the constitution to scrofula, or cutaneous eruptions, the case assumes a malignant appearance; the membraneous lining of the mastoid cells becomes inflamed, and as the diseased secretion forms in them, it descends into the cavity of the Tympanum, thereby occasioning great difficulty in overcoming the disease. (See Collection of

matter in the Tympanum, and whiteness of the Membrana Tympani)

In some persons catarrh will occasion local inflammation of the auditory passage, fungous granulation, polypus, or abscess, preceded by ear-ache, and succeeded by puriform discharge; or, in other constitutions, want of the usual secretion from the glands, noises in the head, and deafness, without any of these previous violent symptoms.

It cannot be necessary to enter further into an account of the effects of catarrh, as affecting the system generally; the treatment of diseases of the ear arising therefrom must consist in reducing inflammatory action by antiphlogistic treatment, whilst the topical applications must depend on the symptoms which present themselves. I have, in former works, pointed out the danger of incurring the sudden changes of temperature, incident to mixing in crowded assemblies, the night air, &c., for it is to our luxuries, and it may be truly added, vices, that we owe most of our local, as well as constitutional diseases. (See Essay, 58, 59, 103, and Plain Advice to the Deaf, p. 46, 103)

DEAFNESS THROUGH WEARING DAMP CLOTHING.

GREAT want of proper caution is evinced in this respect, and diminution of the sense of hearing, as well as noises in the head, may clearly be traced to sleeping in unaired bed-clothes, putting on damp linen, particularly night caps. It is not enough during the humid season, that linen should be aired before it is put away into its proper place, the whole of the moisture which it may have attracted, whilst lying in drawers, should be driven off before it is worn, else the latent heat of the body will be rapidly abstracted, by the vapourization produced; want of action in the vessels of the skin will thus be induced, and congestions of the capillary portion of the circulation ensue, from whence local complaints of the head, and other parts of the system, have an origin. We prove it is the vapourization which produces the mischief, because persons wetted with sea water, do not so quickly incur

catarrhal affections, as those wetted with common water, for sea water does not vapourize by caloric so rapidly, and consequently the latent heat is not carried off more suddenly than the body will supply its loss. Certain substances have a greater, or less attraction, or affinity for moisture, which they absorb from the atmosphere. Hard and close grained wood will increase 14 per cent. from this cause, and some soft wood, such as beech, 28 per cent.; cotton about 15 per cent., linen about 10 per cent., and sheep's wool from 18 to 20 per cent., before it is manufactured into flannel; afterwards near 25 per cent., owing to the sulphur used in the process, but after it is washed, probably about the same as before it was manufactured. In proportion to the affinity of these substances for moisture, the greater is the difficulty to excite the vapourization necessary, for the purpose of driving off the watery particles they have imbibed; therefore persons suffer less by sleeping between blankets, if they suspect a bed be not well aired, because the latent heat of the body is not abstracted too rapidly, in consequence of the woollen having so great an affinity for moisture: the electric powers of woollen

may also have a considerable influence in this respect, but it is not necessary further to discuss this at present.

The affinity of sulphuric acid for moisture is so great, that when I first lectured on electricity, the humidity from the breath of the number of persons assembled, became so considerable, as to prevent the machine from acting properly: I availed myself of the knowledge of affinities in subsequent lectures, by placing small saucers amongst the apparatus, with a table spoonful of concentrated sulphuric acid in each, which rapidly increased in quantity, by the abstraction of the moisture from the atmosphere, and by the following morning was more than trebled. By distillation, the acid was again concentrated for the same, or other purposes.

DEAFNESS FROM SCARLET FEVER.

When the ulceration of the throat is so considerable, as to extend up the Eustachian tubes

into the tympanum, that cavity being lined with a mucous membrane, speedily becomes inflamed, and ulcerates, whereby the small bones on the inside of the Membrana Tympani, with the membrane itself, are sacrificed, and thus the labyrinthic liquid being allowed to escape, the soft portion of the auditory nerve loses all mobility, and the deafness is total; the same also occurs if the orifice of the Eustachian tube become closed through the ulceration, or rather, during the process of healing. In this state of the organ, no hope of relief ought, by any *honourable* practitioner, to be excited in the patient's mind, beyond that of removing any fungous, or polypous excrescence, should any such have formed in the external auditory passage, or arresting the progress of puriform discharge, if it exists: but when the disease has not been sufficiently active to produce all these direful effects, and but a partial diminution of the sense of hearing, it is probable that the stapes has not been detached, by the ulcerative process, or that none of the small bones have been sacrificed, or that the mastoid cells, being lined

with a fine mucous membrane, and consequently readily yielding to suppurative action, are the seat of the disease: in these cases, considerable relief may be afforded. (See Plain Advice to the Deaf, p. 27)

DEAFNESS AFTER COW POX.

It is not the place in this treatise, to discuss the merits of vaccination, nor shall I positively assert, that it gives rise to complaints of the ear, having no evidence on the subject, except the declaration of the parents of children who have been brought for my advice, that their child never had any disease previous to having the cow-pox. Yet in a strumous habit, there is great probability that the above disease will give activity to the latent pre-disposition. It is certain, that I have been consulted on cases of puriform discharges of the most obstinate description, which I was assured dated their origin from the cow-pox.

DEAFNESS AFTER SMALL POX,

Is in most instances of a mere mechanical nature, and is relieved very speedily. Most cases of this description that I have seen, were occasioned by the eschar left by one, or more pustules, which had formed in the auditory passage, specimens of which I have in my collection; the removal of the above substance, it must be obvious, would restore the sense of hearing. (See Essay, p. 38)

DEAFNESS FROM MEASLES.

This disorder occasions very considerable changes, in regard to the organ of hearing; in some instances, a purulent discharge follows, which is difficult to cure; in others, there is an

accumulation of a white, soft, yet tenacious matter, on the sides of the auditory passage, which is an imperfect excretion from the ceruminous glands, rather of an ichorous nature, thereby occasioning considerable irritation, and inducing the patient to relieve himself by rubbing, or picking the ear: the repeated attempts thus made to obtain relief, drives the substance down against the Membrana Tympani, and produces deafness, in the same manner as would be caused by any mechanical obstruction. The ceruminous glands seem much affected by this disease, which, in some cases, alters their excretions as above mentioned, whilst in others it leaves them entirely deprived of their usual functions, and the auditory passage dry, and hard in consequence. The mucous membraneous lining of the mastoid cells, cavity of the Tympanum, and Eustachian tubes, also suffer very much from, and during this complaint, and coagulable lymph forms in the Tympanum.

DEAFNESS FROM SYPHILIS.

This disease frequently occasions thickening, and inflammation of the membraneous lining of the Pharynx, with ulceration of the orifices of the Eustachian tubes, which sometimes extends to the cavity of the Tympanum, and destroying the Membrana Tympani, continues its effects into the external auditory passage, producing encysted tumours, fungous granulations, or polypi; and in extreme cases, which have been neglected, or unskilfully treated, even caries of the bone sometimes occurs. The usual general treatment must be adopted, to relieve the primary disease, which requires more skill, than non-professional readers are presumed to possess, and a successful result as to the restoration of the hearing, depends very much on the degree of injury, which that organ of sense has sustained. When the symptoms have not extended beyond a degree of pain, or thickness of hearing, the case is generally relieved as the disease is

cured, but when noises in the head attend it, they are more difficult to remove. (See Observations on Mercury. Essay on the Ear, p. 20)

One author has ventured an opinion, that a "*thickening of the membraneous texture and periosteal lining of the different divisions of the labyrinth*," takes place in this disease, but he offers no data for his reasoning.

PERFORATION OF THE MEMBRANA TYMPANI.

When, from Catarrhal affections, scarlet fever, and its frequent attendant, ulcerated throat, syphilis, measles or any other cause, inflammation and suppurative action occurs in the immediate neighbourhood of the Eustachian tubes, the disease, by the continuity of the membraneous lining, is propagated into them; as it abates, and the process of healing comes on, the orifices of these tubes, which are but small, are sometimes obliterated by the

adhesion of their sides, and consequently causes great deficiency of the sense of hearing, for as there is no ingress and regress for air to the internal cavity, that which is there confined, by its elasticity prevents the Membrana Tympani from vibrating: a familiar illustration of this is to be observed in a common drum, which requires a hole in its side, otherwise the air confined within, will prevent, in a very great degree, the vibration, and the sound will therefore be trifling in comparison; so much indeed is the air inside the drum agitated by a very slight blow on the parchment head, that a large candle held opposite the hole in the side, will be instantly extinguished.

It having been long a well known fact, that many persons had acute hearing, although the Membrana Tympani had a perforation through it, the idea of perforating this membrane, which had been frequently proposed at intervals, ever since the time of Riolanus, was carried into effect by Mr., now Sir Astley Cooper, and the operation formed the subject of a paper from him to the Royal Society, who awarded him the Copleian medal, on 30th

Nov. 1801, for this improvement, as it was *then* considered, in surgical science. Like all new plans of treatment, brought forward to public notice under respectable auspices, there were hundreds of servile imitators, who, without the least discrimination as to the nature of the cases, were so eager to perform the operation, that they perforated this membrane in thousands of instances, without there being a shadow of a reason for so doing, or a chance of its being successful. When, from ulceration, an aperture is formed in this membrane, the edges of the opening often become fistulous, and then the sense of hearing suffers comparatively very little injury, for the Membrana Tympani will still in a degree vibrate, by the air being set in motion through the impetus given to it by sounds, and whatever diminution the sense sustains, from the want of the full and perfect vibration of the Membrana Tympani, is amply compensated by the facility with which nature gradually enables the two membranes of the Fenestra Ovalis, and Rotunda, to accommodate themselves to receive *direct*, instead of *reflected*, sounds, and communicate them to the sen-

sorium. A perforation made by art, is very different in its nature and effect; the crude air is let in suddenly upon the two fine membranes just mentioned, and a painful acuteness of hearing takes place; the Membrana Tympani however soon re-unites: the repetition of the operation only serves to renew the same process, and the hearing is more and more defective as the sensibility of the membrane to vibration decreases: if, indeed, the perforation could be made permanent, the benefit would probably be considerable; triangular, and various other instruments have been invented, and many plans proposed, but still there have not been many, if any, successful cases: I never had one well authenticated instance presented to my notice. A new idea has occurred to me on the subject; but it must bear the test of experience before it can be submitted to the public.

The insufficient manner in which examinations of the ear are made by most practitioners, has prevented many persons from having the Membrana Tympani perforated, as I have seen repeated instances, where the instrument had

pierced the sides of the auditory passage, and the operator no doubt congratulated himself, on having performed the so much talked of operation. Whenever the experiment is attempted, great caution is necessary, otherwise a ramification of the external carotid artery, which passes nearly opposite to the Membrana Tympani, in the Tympanal cavity, may be wounded, and serious consequences ensue: it is believed a wound inflicted on this artery, was the cause of the death of a lady some time ago, who, whilst picking her ear with a large needle, it was forced, by some accidental motion, into her ear. There is also great danger if the operator be deficient in anatomical knowledge of the ear, as he may pierce the membrane at the point where the handle of the mallens is attached to it, which would not only defeat the object sought to be attained, but would also occasion very considerable pain, and make the deafness more complete. (See Aurist, 47. Plain Advice to the Deaf, 33, 71. Essay, p. 57, 73, 75, 77)

An author, who some time ago proposed a new instrument for performing the operation,

stated that the North American Indians have a perforation through the Membrana Tympani, and yet have very acute hearing. He may have seen one or two examples of the kind, and so have I amongst my own countrymen seen several, who could force tobacco-smoke through the Eustachian tubes, and out at the external auditory passage, yet their hearing was not at all defective : and, by a most respectable physician, I was told of a man who heard perfectly well, yet could not only force the smoke through his ears, but also through the lachrymal ducts, out at the corners of his eyes; these must be considered as extraordinary examples; and it is no more correct to state, that the North American Indians are so formed in this part, because a few of them have been observed to have that defect, than it would be to say; the natives of England, France, or Germany, have naturally a passage through this membrane. (See Essay, p. 78)

The case of deafness mentioned in Plain Advice to the Deaf, p. 142, which is always relieved by closing the orifice in the Membrana Tympani, by means of a liniment, or other

liquid dropped exactly upon the spot, is of a very curious description, and the patient still continues to hear quite well for twelve or sixteen hours together, by adopting the plan there mentioned.

MERCURY

Has been recommended, and still continues to be prescribed, by some practitioners, in cases termed, or mistaken for, nervous deafness. From long and extensive experience, I am satisfied that deafness, even if truly nervous, is never benefited by the administration of mercury, under any modification; on the contrary, there are abundant proofs that it not only increases the noises in the head, diminishes the hearing, and renders the majority of cases very difficult to relieve, but that this baneful mineral will absolutely destroy the hearing entirely, and occasion such distressing noises in the head, that the patient's life becomes a burthen, and

no human skill can remove the continual confusion in the head thus created.

Whilst writing this, I had a deaf and dumb child sent to me by an eminent physician. The child heard perfectly until it was more than twelvemonths old, when an eruptive disease took place on its head. A medical man, who resides in the neighbourhood of the child's home, about ten miles from town, applied mercurial ointment, which cured the eruption very speedily, but left the child totally deaf. I have seen several cases of a similar description, in which mercury applied to the head produced the same effect. (See Observations on Mercury, p. 19)

In Calcutta, Dr. Halliday was accused of introducing rash and crude innovation, because he conscientiously discontinued the use of mercury, having very clearly satisfied his mind, that in India, amongst the natives, as well as the Europeans, it is not only unnecessary, but the proximate cause of death; and in the General Presidency Hospital, at Calcutta, he distinctly proved, that out of *five hundred and seven* deaths, *three hundred and seventy-four* would

have been averted by different modes of practice, of which mercury formed no part. The proselytes to the mercurializing system raised, as it appears, the strong arm of power against Dr. Halliday, and endeavoured by threats, as well as promises, to induce him to forego his methods of treatment. The Doctor disregarded the former, and refused all offers, and the government there, having gone too far to recede, suspended him from rank and pay as a presidency surgeon. Dr. Halliday immediately prepared his memorial to the East India Company, stating that the most shameful abuses existed in the above hospital, copies of which he printed, and sent to each individual director. I was favoured with the loan of one of them, with permission to make and publish an abstract of it, which I did very fully in the Aurist, No. II., p. 40 to 51.

By the medical writings of the Chinese, it appears, according to Dr. Morrison, that mercury has been long known amongst them, and administered internally. About 1079 years ago, one of their princes, desirous of becoming immortal, was advised to take certain preparations of it, which killed him in four years. The cases

in which this mineral is recommended in the Chinese books on medicine, are very few. The details of its mischievous effects are numerous. Its application to the head is most deprecated, as it is deemed highly injurious to the brain, the bones, and that it destroys the power of propagating the species.

All the *pretended* new discoveries, in regard to the administration of mercury in cases of deafness, are merely revivals of the opinions of ancient authors, who advise, that when the patient cannot be cured of deafness, blindness, &c., they should be placed under a course of mercury, as an experiment. The late Mr. Saunders experimented very freely on this subject, for he administered it to 1200 patients, and relieved only *six* out of this large number; which six cases, according to his own shewing, were, from the syphilitic nature of their complaint, probably incurable without its use.

A poor woman was sent to me for advice; she was totally deaf, and the bones of her skull were, in many places, perfectly soft; her deafness had come on after being in the Calcutta hospital for fever, during which she was profusely salivated.

Institutions for affording gratuitous advice to the poor, are *believed* to be established, for the purpose of enabling those who cannot afford to pay for professional assistance, to obtain it, and thereby be more capable of providing for the necessary support of themselves and families; when the medical officers are men of reputation and experience, they prove a blessing; but there are too many of these establishments set on foot, merely as a medium for bringing their projectors into notice, and where the poor become the victims of interested experimentalists; who, in the greater portion of cases, increase, and render permanent, a complaint which deprives the sufferer of the means of getting his subsistence. Yet, in the advertised public reports, we see so many have been admitted, of which nearly, or quite all, were cured! If some public-spirited, and charitable man would only become a governor of some of these institutions, and demand a list of the patients, with their residence, &c., he would, by a very slight scrutiny, obtain a different result, and discover the gross imposition on the credulity of the charitable and humane. (See Aurist, p. 50)

As collateral proofs, the evidence can be adduced, of persons who have attended some of these institutions for many months, not only without experiencing the least relief themselves—of which, probably, their cases did not allow—but they declare, and are ready to confirm the fact in any way, that during the whole period which they so attended, they never saw or heard of one patient who had been either cured, or even relieved.

Generally speaking, there exists a very great dislike, in ninety-nine persons out of every hundred, to take mercury, in spite of which, there are few pills made without it, although the patients are most dishonourably assured to the contrary. Whenever the word *hydrargyri* occurs in a prescription, or any abbreviation of, or addition to it, mercury under some modification is ordered.

As to the general abuse, or injudicious use of mercury, there can be no doubt but it is the cause of the great increase of deafness, noises in the head, blindness, paralysis, apoplexy, and madness. (See Observations on the use of Mercury. Plain Advice to the Deaf,

p. 130. Address to Nervous Deaf, p. 3. Essay on the Ear, p. 19)

PURIFORM DISCHARGES FROM THE AUDITORY PASSAGES,

Result sometimes from the erroneous treatment of boils, but more frequently succeed cow-pox, measles, scarlet fever, syphilis, catarrh, the suppression of usual evacuations; any of these, or other constitutional causes, acting upon a scrophulous predisposition of the system, will produce inflammation and consequent pain of the external auditory passage, commonly called ear ache, which is succeeded by ulceration, and a discharge of matter, more or less acrimonious, sometimes streaked with blood, and fœtid in proportion to the nature of the inducing complaint, the general health of the patient, &c. The ulceration proceeds, probably, until polypus, or fungous granulations close up this inlet of sound, and deafness follows; if stimulating, or oleaginous compounds be applied, the ulcera-

tion increases very considerably, and is sometimes so profuse, liquid, and at the same time acrid, as to have the same effect on such parts of the cuticle of the auricle, or neck, which it happens to touch, as a blister would produce; I have even seen a clear limpid discharge, like water, run from the ears of persons, to whom stimulatives had been used. There is also another evil resulting from these last named class of remedies, the orifice of the auditory tube becomes tumefied, the sides approximate, and there is no space left for the matter to escape, the pressure of which upon the cartilaginous lining, increases in some one point. The ulceration, which by rapid degrees forms a deep abscess, is attended with very great pain, as it makes its way outwards, generally at the back of the auricle, from whence the pus is discharged abundantly: after the symptoms abate, this new formed passage remains open during life, and a slight chronic discharge is established without exciting any further painful sensations, of which I have seen many examples; the hearing, however, is generally defective in these persons, from the injury sus-

tained by the Membrana Tympani, which almost always suffers more or less. A method might be devised for healing the opening formed by the process described, which would consist in making a simple wound of the part, bringing the sides together, and healing by the first intention; but under the circumstances which usually attend these cases, I question the propriety of attempting, even such a trifling operation.

Another termination is frequently given to this disease of the external auditory passage; the ulceration extends internally, destroys wholly, or partially, the Membrana Tympani, and the matter escapes by the Eustachian tube; even in this stage, if active and judicious treatment be adopted, greater mischief may be averted; but the suppurative process which has been excited, if left to the efforts of nature alone, even for a time, becomes a chronic discharge of a semi-purulent nature, and after the Membrani Tympani re-unites, as it will do, unless the edges of the aperture made in it have assumed the fistulous character, is very difficult to remove. If the disease be left to run its own course *wholly* unchecked, more

formidable symptoms present themselves, and sometimes total deafness, caries of the bone, and even death supervene.

The late Mr. Saunders, as before observed, very properly contested the absurd, and mischievous doctrine of suffering a state of disease to exist, or proceed, without attempting any remedial process; it must, however, be admitted, that considerable judgment is required, in order to form an accurate estimate of the injury which the ear has sustained, and the precise nature of the complaint, of which, if a puriform discharge forms a part, it should not be arrested by mere topical astringent injections, unaccompanied by medical treatment.

The glandular vessels of the ear are frequently so much relaxed, in consequence of general debility of the system, or from the effect of various causes of alteration in the state of the health, that the excretions assume very much the semblance of pus (or matter). Abrasion, or excoriation of the auditory passage, sometimes inflicted by the improper use of a syringe, picking the ear, or the use of stimulatives, will give rise to a puriform discharge. The best

method for unprofessional persons to treat these kind of affections, until they can obtain proper advice, is, for them to syringe the ear gently, by means of a gum elastic syringe, once or twice a day with a lotion formed of sixty drops of the subacetated liquor of lead, in a pint of distilled, or filtered, rain water. This lotion must be used new milk warm, as also should all aqueous applications to the ears.

CARBONIC ACID GAS.

Such has been the quackery relative to the medical administration of aërial fluids, that it has disgusted most of the medical profession, and caused agents that are probably very useful, under proper modifications, to be abandoned. My object in noticing this gas here, is, that it may be applied, if there be deep-seated pain in the auditory passage, which, when the Membrana Tympani is partially destroyed, and there is considerable ulceration in the cavity beneath,

is sometimes very intense, and no liquid can be injected, or even dropped into the ear, without exciting the most agonizing pain in the part. Carbonic acid gas may be applied in these cases with advantage, by introducing a stream of it frequently into the auditory passage, from a bladder furnished with a stop-cock and small tube; or even by the method mentioned for generating hydro-carbonate gas from æther; or it may be kept in the auditory passage by means of gold-beater's skin, and a little mechanical contrivance.

The following experiment will shew the effect of this gas in relieving pain. Place a small piece of blister plaister on the finger, until a vesicle is raised, the skin of which being cut off, the action of the oxygen of the atmosphere will occasion pain. If the finger be now placed in a jar of oxygen gas, the pain will become almost unbearable; but ease will be instantly afforded, on the finger being introduced into a jar of carbonic acid gas.

Carbonic acid gas has been applied with advantage to open cancers, on account of its antiseptic quality; it also is recommended

medically by many, who never think of the cause why soda, seltzer, and other waters, are deemed beneficial. If this gas were not present in most of our celebrated mineral waters, the substances held in solution by it would be precipitated: in proof of this fact, take the strongest chalybeate water; its iron becomes oxide of that metal by exposure to air, which causes the carbonic acid gas to evaporate.

WHITENESS OF THE MEMBRANA TYMPANI.

When there is a total absence of cerumen from the auditory passage, and the deafness has come on during, or immediately after, measles, fever, catarrhal affections, &c., the Membrana Tympani appears quite white, and resembles a piece of bladder which has been sodden in water for a considerable time. This state of the membrane, I have had an opportunity of ascertaining by *post mortem* examination, did not depend upon any diseased action in itself,

but was occasioned by a collection of coagulable lymph, which had acquired a caseous degree of consistence; and it appears very probable, that as this semi-purulent matter possesses a greater, or lesser degree of consistence in the cavity of the Tympanum, it would, by lying against the Membrana Tympani, give it more or less that appearance, from the mere mechanical effect of the effused lymph, without there being any disease in the membrane itself, or, as it has been supposed, any thickening of it. The collection in the cavity, of which I have a specimen in its caseous state, does not dissolve in alcohol, and is quite inert, occasioning no particular sensation, but that of mechanically preventing the due vibration of the Membrana Tympani, consequently of the small bones attached to it (except as I shall hereafter mention, when the quantity of the substance is increased); and as upon the proper vibration of these parts, the sense of hearing in perfection so much depends, an interruption of their functions must necessarily occasion deafness, which varies in proportion to the degree of solidity which the substance in the cavity has acquired. In order to restore

the hearing, this obstruction must be removed; and if it has been left in that situation for a considerable time, without any judicious remedial process being adopted, the accumulation becomes of a very caseous nature, and there is but little hope of exciting the action of the absorbents sufficiently to have any effect on it. When the case is more recent, the probability of a favourable result is greater; the absorbent system should be excited both locally and generally; electricity, galvanism, embrocations, and stimulating liniments to the external auditory passage, are advisable, to promote the first intention; whilst medicine, diet, and exercise, are the means to be depended on for the latter. I do not observe that any author has given an account of this sodden, or white appearance of the Membrana Tympani in a satisfactory manner. One practitioner has, indeed, supposed it to be occasioned by a species of film, which forms externally, or, as he writes, that occasionally a formation of a "false drum" occurs. This state he has proposed to remedy by the daily application of a solution of lunar caustic; but in several cases upon which I have

been consulted, in consequence of the injury occasioned by this application, I have not only *seen*, but *shewn* the state of the Membrana Tympani to professional gentlemen, who have either brought the patients to me, or attended them with me, and they, as well as myself, have been perfectly convinced that there was no such appearance, nor any thing to warrant such a supposition, or treatment. (See Address to Nervous Deaf, p. 6 to 12) In one case, there was actually a rupture of this fine membrane, and the caustic, on entering the cavity of the Tympanum, occasioned intense pain, brain fever, and nearly the loss of a valuable life, highly, and justly prized by his grateful country. Excitement being thus given to these internal parts, it was not very easily nor speedily allayed; suppurative action took place, the cavity of the Tympanum became filled with matter, and thereby vibration was prevented; independent of which, the ulceration, excited by the caustic, probably detached, or elongated the ligature which connected the handle of the malleus to the Membrana Tympani, which, from the elasticity of its own muscular texture, as-

sumed a plane surface, instead of remaining in that natural state of concavity which is so necessary to collect the sonorous rays; added to this, the ulceration of these internal parts may have thickened the periosteal covering of the small bones, or the inflammation which the pain denoted as having taken place, would produce adhesion, and consequently an immovable state of these ossicula. Any of these causes would occasion deafness, for which no certain hope of relief ought to be entertained. Another unpleasant symptom was, occasional pain about the upper part of the temporal bone, and this I have remarked, is common for patients to be afflicted with, whenever this kind of chronic suppurative process has been called into action. The rationale I conceive to be, that according to the state of health, manner of living, anxiety of mind, &c., the matter in the cavity of the Tympanum is increased in quantity, or tenuity, and by its pressure at such times against the fine membranes of the Fenestra Ovalis and Rotunda, it inflicts pain, by causing compression of the fibres of the soft portion of the auditory nerve, which being

so extremely sentient, convey that uneasy sensation to their base in the brain. Compression of any fibre of a nerve is extremely painful; for instance, it sometimes happens that teeth, which are perfectly sound, are the cause of great inflammation of the gum, and most severe pain; they become very loose, and, on their extraction, there is sometimes an effusion of matter from the socket, in the alveolar process. I have divided some of these teeth, and discovered that the longitudinal cavity, through which the nerve passed, was contracted about half way from the lower extremity, which no doubt caused the extreme pain, inflammation, suppuration, and, in some instances, necrosis of the tooth. It is not, I think, difficult to account for this state of the teeth; but it would lead me into a large field of discussion foreign to my subject.

Mechanical methods have been suggested, and practised on the Continent, for cleansing the Tympanal cavity, such, as forming an opening into the mastoid cells, injecting through the nose, and Eustachian tube, or perforating the Membrana Tympani, and

through the opening thus made, injecting warm water, ten or twelve times a day. This method, according to M. Itard, has been successful in an instance or two of congenital deafness, but the operation occasioned great pain, and very distressing sensations to most persons. It has been tried upon patients, whose deafness was believed to proceed from collections in the cavity of the Tympanum, of the description I have mentioned, but were not born deaf. In all these cases, the operation not only proved unsuccessful, but also, in some of them, it destroyed what little sense of hearing they had enjoyed previous to undergoing the experiment.

COLLECTIONS OF MATTER IN THE CAVITY OF THE TYMPANUM.

These are characterised by pulsatory, and other noises in the head, deep seated pain in the ear, which feel to the patient as if it extended down the throat, restlessness, thirst

and fever, and are commonly called, like diseases of the external ear which occasion pain, by the indiscriminate name of ear-ache. The causes are similar to those I have first mentioned, as producing the same effects in the external auditory passage, only, that as the Eustachian tubes become affected by the inflammation which is excited, and the suppurative action proceeds, the tumefaction, and approximation of their sides, with consequent want of space to allow the escape of the accumulating matter, produces a much greater disturbance in the system, and more intense pain, than when the external passage is the seat of disease under similar circumstances; and this may easily be accounted for, not only by the greater proximity of the congestion, and inflammation of the fine vessels, to the depositories of the soft portion of the auditory nerve, but also mechanically, from the pressure of the matter, which is constantly increasing in the cavity of the Tympanum, against the Membrana Tympani, and the fine membranes of the Fenestra Ovalis, and Rotunda: the Membrana Tympani after a time gives way to the pressure, assisted

by the acrimony the matter acquires through its retention, which then passes out by the external auditory passage, as a puriform discharge. When the above symptoms present themselves to the experienced practitioner, it will be proper to perforate the Membrana Tympani, as he will thereby save the patient from much suffering, incurable deafness, and even death; for if, by the pressure against the delicate membranes of the Fenestra Ovalis, and Rotunda, or the acrid nature of the matter, retained in the cavity of the Tympanum, they should be destroyed, and the labyrinthic liquid be let out, total deafness would ensue. Or if the diseased action were continued into the mastoid cells, abscesses would form amongst those numerous fine septums, caries of the bone would be easily excited, which would gradually extend its ravages by a species of re-action, upon other parts of the temporal bone, until it reached the membranes of the brain, and death would take place, of which many instances have occurred. One, mentioned in the reports of the King and Queen's College, Dublin, with the state of the parts on dissection, evinces the

danger of sudden changes of temperature, or of cases of this nature being neglected by the friends of the patient. The case quoted, was that of a girl aged about fourteen, who had been subject to a discharge from her left ear, for above three years, attended occasionally with head-ache. This discharge had stopped for about three weeks, owing as it was supposed to exposure to cold; the head was shaved, and sponged with cold water, then a blister was applied, also one in the nape of the neck; blood was abstracted from the arm and temples, and cathartics were administered, but all in vain, for she died the fourth day in the morning. An elaborate display of the appearances on dissection is given, which I have not room for; they however, abundantly prove, that the bones had become carious through the retention of the discharge, and that inflammation of the brain had supervened, which caused the distressing symptoms, and ultimately death. Dr. O'Brien, who reports the case, thinks, that the disease originated in acute inflammation of the internal membrane of the ear, which being neglected, or not treated with sufficient activity at first, a

semi-purulent discharge was established; and that discharge being checked, by the exposure to cold, the inflammation was propagated to the brain. All the effects which Dr. O'Brien observed, might have proceeded from scrophula, syphilis, or the effects of local percussion; for although the mucous membrane of the Tympanum in scarlatina may become inflamed, the suppurative action follow, and the ulceration detach the whole of the ossicula; yet in the far greater number of cases, no such direful effects occur, as attended this case, namely, phrenitis, convulsions, and death. I presume to question the propriety of the treatment adopted, for what benefit could be derived in such a case, from the abstraction of 14$^{oz.}$ of blood from the arm, or 6$^{oz.}$ from the temporal artery? and if, as is stated, the change of temperature from warm to cold, were the inducing cause, why shave the head, and apply cold water? for even cutting off the hair will occasion congestion of the fine capillary vessels, and give rise to inflammatory affections of the head, eyes, and ears. Why not bleed from the jugular vein in this case? A young lady, whose case is mentioned in the

same volume, was saved by the adoption of that plan. (See Observations on Mercury, p. 14)

When collections of matter form in the cavity of the Tympanum, and the disease is attacked in its early stage, provided the patient is otherwise healthy, the generality of cases terminate more favourably; the inflammation and thickening of the Eustachian tubes subside, leaving a passage for the matter, which has collected in the cavity of the Tympanum, and very trifling injury is sustained as regards the sense of hearing. In other cases not so well conditioned; after the Membrana Tympani has been ruptured, and part of the matter has passed outwards, the Eustachian tubes become open, and the Membrana Tympani then re-unites; there remains a chronic kind of diseased action about the mucous membrane, lining the cavity of the Tympanum, in which probably the mastoid cells participate, as they are lined with a continuation of the same membrane. This abundant secretion, of a pus-like substance, finds an outlet either by continually passing down the Eustachian tubes into the throat, or collecting, and passing

down at intervals. I have seen several cases of this description: the patients complained either of constant, or periodical unpleasant flavour on their palate, sometimes attended with a very slight soreness of the throat, and their breath was extremely offensive. On the examination of some of these cases, and causing the patient to make a little effort, by moving the jaw, the matter could be distinctly seen passing down; and there can be little doubt, that the irritation which was felt about the throat, was occasioned by the acrimony of the matter, whilst the unpleasant taste, &c., were occasioned by its fœtor. A very curious case was presented to my notice a few years ago, in the person of a lady who had been formerly, during fifteen years, constantly affected with nausea, and vomiting, about once in seven days. At length the mind participating in the disease of the body, the fit, if I may so term it, came on regularly at a certain day and hour, which it was found impossible to avert. The first medical and surgical practitioners were consulted, but confessed they were completely at a loss to form any satisfactory reason for such an extra-

ordinary complaint; it was however cured by the exhibition of medicine, tending to correct the deranged state of the digestive organs, and the use of tonics, under the advice of a medical gentleman since deceased, who neutralized the efforts of the mental enemy which he had to contend with, by inspiring confidence in his modes of treatment. The patient remembered to have experienced a pain deeply seated in her ear, and about the upper part of the temporal bone, and a fœtid discharge from the external auditory passage, for a long time previous to the establishment of the long protracted periodical sickness, and as she began to feel similar sensations, I was consulted. On examination of the ear and throat, hearing her statement of the past, as well as present symptoms, and forming an opinion from these, and a comparison with other cases which I had seen, it appeared to me, that the whole of her sufferings were caused by the collection of fœtid matter which periodically passed down the throat into the stomach: probably this puriform substance might have become inspissated

at the orifice of the Eustachian tube, by the effects of the external air on it, and so a temporary stoppage of the passage occurred, which yielded to the pressure of the accumulation that periodically occurred, and as she lived very regular in point of diet, the quantity of matter furnished in a certain period, was nearly the same, in proportion as the chronic action was more completely established. Under this view of the case, I advised topical, and constitutional remedies, which afforded relief, and she remains free from any of the former unpleasant affections, up to the present time.

This presents an hitherto unnoticed feature in these cases, but it is analogous to inflammation, and suppuration of the external auditory passage, where the Membrana Tympani, having partially fallen the sacrifice, has reunited, yet the discharge continues.

That matter of this description would produce sickness, I am convinced, as I know a lady of rank, who has a discharge of this kind from the pituitous membrane of the nostrils, which has existed a considerable time, and has baffled the efforts of many eminent sur-

geons: it passed outwardly, until one gentleman applied citrine ointment, it then descended down into the throat, and produced constant nausea. Her health and spirits failed, and there is little doubt but she would have rapidly descended into the grave, had not some means been suggested, which again caused it to pass as at first.

DEAFNESS FROM MERCURY.

The primary effects of this mineral poison, are to increase the secretions of the whole system; consequently, if persons who are under its influence for any disease, expose themselves to sudden changes of temperature, and particularly to damp or night air, a sudden check is given to any increased circulation that may have been excited in the lymphatic, and absorbent system; inflammation succeeds, which causes a thickening, and suppurative action of the

mucous membranes, more particularly those of the throat, fauces, Eustachian tubes, cavity of the Tympanum, and mastoid cells: coagulable lymph, of various degrees of solidity, becomes deposited, and the whole phenomena occur the same as are so fully described under the head, "Collections of Matter in the Cavity of the Tympanum." It is rather a curious circumstance, that persons who are partially deaf from the effects of mercury, hear much better when they are lying in a horizontal posture, but gradually become deaf, on resuming an erect position. (See Observations on the Improper use of Mercury) It would appear by this circumstance, as if the mucous membrane of the mastoid cells were particularly affected by this mineral, and furnished a large portion of fluid matter, which, when the person was lying, remained in their numerous cavernulæ, but on rising, gradually descended over the inside of the Membrana Tympani, obstructing its vibration, and consequently the sense of hearing.

As I have before observed, the primary effects of mercury are stimulative, and the secondary

effects, like those of most stimulants, occasion debility, and many become deaf from this latter cause. Noises in the head are generally an attendant symptom, on all deafness produced by mercury, and every case originating from its administration, is difficult to relieve, and in too many instances, incurable.

OBSTRUCTION OF THE EUSTACHIAN TUBES BY MUCUS.

CATARRH, sore throat, measles, syphilis, and incautious bathing in rivers, or cold baths, have all occasioned this species of deafness; and as the orifices of the Eustachian tubes are placed behind the palate, so as to prevent the possibility of their being seen, considerable experience in the symptoms of such cases is necessary, in order to enable any practitioner to form a correct opinion. As I have observed, in Plain Advice to the Deaf, p. 77, in speaking of deafness from catarrh, this obstruction often

passes away, and the sense of hearing is suddenly restored, after an apparent crack, or squeaking noise—the first arising from the sudden entrance of a volume of air, the last from a more gradual dislodgement of the obstruction—and the trifling noise which this occasions in reality, occurring so near to the soft portion of the auditory nerve, appears a loud report to the patient.

DEAFNESS THROUGH STAYING HÆMORRHAGE FROM THE NOSTRILS.

I WAS consulted some time ago by a gentleman, who stated, that he had heard quite well until an effusion of blood from the nostrils occurred. A young surgeon was called in, who syringed the nostrils with a solution of sulphate of copper, (vulgarly called blue vitriol), from which period the patient never heard any sound. There can be no doubt but this deafness was occasioned by the blood being forced by the

injection into the guttural orifice of the Eustachian tubes, where it coagulated, not only by its own natural tendency to do so, but still more by the properties of the lotion. The only probability of affording relief would have been to syringe through the nostrils, and use gargles; but the patient being in a very bad state of health at the time, nothing was attempted. Shortly after, I heard from his medical attendant, that his health was worse, and I do not know if he be yet alive.

CLOSURE OF THE EUSTACHIAN TUBES.

Ulceration of the throat, and various other diseases, produce a complete closure of these passages, and there is little hope of affording relief. (See Deafness from Scarlet-fever. Perforation of the Membrana Tympani. Essay, p. 76. Plain Advice for the Deaf, p. 32)

The general symptoms which characterize inflammation of the Eustachian tubes, are a sense

of painful tickling in the throat, which appears to extend even to the outward ear, and into that part of the neck, immediately under the lobe of the auricle. When the disease affects the cavity of the Tympanum, and the mastoid cells, great sensibility, approaching to pain, is experienced in that protuberant bone; but these feelings vary according to the degree of excitement, state of constitution, &c.

An author, who has lately favoured the world with his lucubrations, states, that he convinced the two physicians of "*a lady residing in one of our fashionable squares,*" that there was inflammation of the "*Eustachian trumpet,*" because *he* occasioned "acute pain" by introducing his finger into her throat, and "*pressing upon the cartilaginous extremity of that tube.*" In the opinion of an anatomist, or even of any person of common sense, who had ever seen the anatomy of the ear displayed, these physicians must have been very *easily* convinced, as the mere attempt to reach this place would occasion great pain to any person, if the part were even in a state of perfect health; but I *totally contradict* the *possibility* of his finger coming in contact

with the guttural orifice of the Eustachian tube at all, or even within some distance of it.

As to the obliteration of the bony portion of the Eustachian tube, which the same author mentions, it is only an instance of congenital malformation, analogous to those which I have before named, as occurring in the external auditory passage; and from the natural size of this internal part, there may have been many examples of its occurrence.

A foreign author mentions, on the authority of many writers, congenital imperforation of the Eustachian tube, which he considers to be curable in some instances. How any cure is to be effected, he leaves us in doubt. Every person acquainted with the subject must be aware, that a manual operation is necessary to open this internal passage; but the difficulty is, as to how it can be performed. I have read a proposition for opening this passage, which it was suggested might be useful, when it became contracted, or obstructed, by a species of stricture, like what occurs in the lachrymal canal. The plan was, to perforate the Membrana Tympani, and introduce a flexible silver

stilet through the whole extent of the Eustachian tube, from its tympanal to its guttural orifice. After the opening was effected, a piece of well oiled catgut was to be left in it for a few hours, which was then to be withdrawn, and the opening in the Membrana Tympani suffered to heal. Some very ingenious reasoning was displayed respecting this operation, which might be performed if the parts were *insensible;* but unfortunately few are the patients who would submit to any such method of treatment, which in common cases of stricture of the part, would be difficult to effect, through the irritation it would occasion, and nearly, if not quite, impossible, in congenital imperforation of the guttural orifice of this tube.

INJECTIONS INTO THE EUSTACHIAN TUBE, BY WAY OF THE MOUTH,

Was proposed about a hundred years ago, by a person named Guyot, a post-master, at

Versailles, who, being deaf, and imagining that he had derived relief from some attempts which he had made, he communicated to the Royal Academy of Sciences at Paris, the result of his experiments. The members of the Academy gave the subject full consideration, and decided, as every one else must, who has the least knowledge of the anatomy of the part, that Guyot had been in error, for that it was utterly *impossible* to reach the guttural orifice of the Eustachian tube by that route. Yet we have lately seen several advertisements, issuing from a practitioner, who professes to have an instrument on the *Sieur Guyot's* plan, for performing this operation!!! (See Essay, p. 86. Plain Advice to the Deaf, p. 105. Address to Nervous Deaf, p. 18)

INJECTIONS INTO THE EUSTACHIAN TUBE, BY WAY OF THE NOSE.

These were attempted by a Mr. Cleland and Mr. Douglas, and more effectually in 1755, by

Mr. Wathen, since which period the operation has not been performed, that I can discover, except by M. Itard at Paris, and myself, about ten or eleven years ago, when I first commenced it. A Dr. Deleau, jun., who resides, I believe, in some part of Flanders, according to his own ideas, and account of the operation, professes also to have performed it, but there is so much palpable inconsistency in his statement, that every one who reads it must be convinced, he never reached the Eustachian tube, as he probably thinks he has done; indeed, the very means by which he proposes to attain this end are inadequate to effect it. (See Plain Advice to the Deaf, p. 13) M. Itard's plan is very complex, and such as few patients would submit to. I am not friendly to the operation, being fully satisfied that it is not to be depended upon, and is extremely unpleasant, as well as alarming to the patient; I do not mean as to the introduction of the tube, which, I am perfectly satisfied, occasions no pain; for I have not only the statements of patients to that effect, but have also tried the experiment on myself. It is only when the injection takes place that, in most

cases, vertigo, a sense of suffocation, sickness, and fainting occur, which induces me to think that other methods may prove more beneficial. (See Plain Advice to the Deaf, p. 109 ; also see Gargles)

TOUCHING THE TONSILS WITH CAUSTIC,

Either in substance, or with a solution of it on a brush, or a feather, has been persevered in by some practitioners, as long as the patient would attend. An author who has recently given his reasoning to the world upon this subject, and it is to be presumed, has done so in support of the practice, considers that these glands, when in an enlarged state, pour out a very copious secretion, which mixing with the aliment, injures the tone of the digestive organs, and impairs the health. This opinion is quite hypothetical, the size of these glands vary naturally in different subjects, and when they enlarge through catarrhal affections, it is the *reten-*

tion, not the *pouring out* of their secretions, which produces the effect. Such an hypothesis betrays a want also of knowledge of animal chemistry, and physiology, for the descent of this very fluid assists, instead of injuring, the tone of the digestive organs, unless indeed when altered in its quality, by the admixture of his caustic. As, however, the plausibility of the reasoning may mislead junior practitioners, and the public, as to the success of this method of treatment, I shall merely relate a case or two. In the daily journals appeared the following:—"*We are happy to learn that Lord ——— the second son of the Duke of——— has perfectly recovered his hearing under the judicious care of Mr. ———, and has returned to ——— School.* The congratulation, thus no doubt *disinterestedly* offered to the public, by the newspapers, proved very erroneous, for in a little time afterwards, this *same* young Lord came to me, by the desire of the family physician, and I found the young nobleman had been subjected to this tonsil brushing system for a considerable time, and had had the comforts of relishing his food destroyed, during all that period, without, as he declared to me, deriving

the *smallest advantage;* indeed his deafness originated from other causes, totally unconnected with the tonsils. I can cite other instances of the same nature, but shall content myself with stating another, of a gentleman from Southampton, who had his tonsils touched with caustic, and experienced all the uncomfortable sensations attending it, for above six months. Finding no benefit, he left town, but was persuaded by a patient of mine to return, and consult me. On examining his ears, I found one ear had a polypus in it, which I extracted, and he has continued well ever since, now a period of eight years. How touching the tonsils with caustic was calculated to relieve polypus in the external auditory passage, most persons will be at a loss to imagine. As it has been felt "*a duty,*" by the advocate for the practice, "*to make the important communication,*" that many of the younger branches of noble families have been cured by this plan; I consider it to be equally my duty to state, most unequivocally, that one of them, to whose case the public attention was called, as having been cured, was *not relieved in the slightest degree!!*

How this *false* intelligence procured insertion, or *how* various other *on dits*, and congratulations of a similar nature, find their way into respectable newspapers, is best known to those who are the *fabricators* of these kind of articles: if the insertions be made by the direction of any professional man, he forfeits all claim to respectability, by such contemptible charlatanic attempts to impose on the credulity of those who are afflicted.

The persons who have been thus treated, by the application of lunar caustic to the tonsils, through which they must have swallowed a portion of this oxide of silver, ought to congratulate themselves, that they have not acquired the dark lead-coloured tinge, which this metal has given to so many persons, to whom it has been administered, as a remedy for epilepsy; some of these are frequently met in our streets, and present a most dreadful appearance, as the colour is in the *rete mucosum*, and remains during the remainder of life. It may probably in supposed triumph be observed, that the quantity of the nitrate of silver, which could pass into the stomach by touching the tonsils, would be very

small, and could not produce any such effect: in answer, we have proofs on record, that 3-16ths of a grain daily, *have* produced this effect, and no method yet discovered alters the colour. We have yet to learn what minimum dose will give the lead coloured tinge.

I question very much the correctness of the opinion, that enlarged tonsils frequently occasion deafness, for unless the passage of the nostrils be closed by them, such an effect cannot be produced: when the tonsils become inflamed, the inflammation may, and will probably, be continued into the Eustachian tubes, and as they tumefy, and their diameters contract, deafness will ensue. But when these glands become chronically enlarged, they also become pendulous, in a certain degree, and it is false reasoning to assume, that because they impede deglutition, they also injure the hearing—the very reverse of this is the fact, for, in proportion as they are more pendulous, they are more out of the way of occasioning injury to the hearing. It is, I am aware, an error that is to be traced to many old medical works, but modern authors have advantages over the ancients, and no man

of science should be satisfied with the opinions of others, unless he finds them consonant to sound reason, and that he can prove the former ideas entertained on the subject, are well founded on the basis of immutable truth.

If it were certain, that local, and circumscribed inflammation existed about the orifices of the Eustachian tubes, and there was not that continuity of mucous membrane, so susceptible of suppurative action, counter irritation might be scientific, but in cases of inflammation of the throat, and internal ear, the tonsils are frequently enlarged, and deafness supervenes from the disease itself, of which the tumefaction of these glands is only a symptom, for it is very seldom a mere local affair of the tonsils alone; and surely no person will assert, that caustic is a proper application in these cases. Facts are, however, superior to all theories, however specious; and I can most confidently affirm, that although I have been consulted by a considerable number, who had been victims of the experiment, I never discovered any who had derived the least advantage from it, nor do I believe one fair case can be adduced. (See Plain Advice to the Deaf, p. 113)

TOBACCO SMOKE,

Was recommended by Count Orloff, to Mr. Grosvenor, Surgeon, &c. of Oxford, as a cure for deafness. The mouth was to be filled with the smoke, the nose and mouth closed, and an effort made to force the smoke into the Eustachian tubes. Mr. Grosvenor at first imagined, that he had derived benefit from this Russian method of treatment, but for several years previous to his decease, he was more deaf than before he tried it.

I never heard of any person permanently benefitted by this application, but I have both heard of, and known many persons, on whom it has produced a contrary effect; indeed the force exerted in the endeavour to impel the smoke into the above orifice, has a very injurious tendency, and it is confidently believed, has occasioned the loss of more than one valuable life, by apoplexy. (See Essay, 78. Address to Nervous Deaf, p. 22. Plain Advice to the Deaf, p. 112)

Some persons, who have been told of the forcing tobacco smoke into the ear, have caused it to be driven into the external auditory passage, by luting with some clay the bowls of two tobacco-pipes together, and placing the small end of one into the ear. This plan, like the other, has also proved useless, but less injurious than the former.

GARGLES,

More or less stimulating, according to circumstances, are frequently beneficial, when the Eustachian tubes, particularly their orifices in the throat, are obstructed by mucus, provided the patient lies in a horizontal posture, which is the only one that will admit liquids to reach these apertures, they being situated in the upper part of the pharynx. (See Essay, p. 61, 79, 92. See Address to Nervous Deaf, p. 66, for a Variety of Gargles. Plain Advice to the Deaf, p. 111)

Celsus appears to have entertained a good opinion of Gargles, as he advised them for diseases of the head. (Lib. 4, cap. 2; and also for Hardness of Hearing, and Sounds in the Ear, lib. 6, cap. 7) An author, from whose opinions I have, in several instances, dissented, appears to think that Celsus had a knowledge of the Eustachian tube, because he recommended Gargles. If the gentleman refers to the book and chapter I have first quoted, he will discover why Celsus did recommend these applications.

In using Gargles, some little tact is necessary. As much as possible should be taken into the mouth at a time, then making a slight noise, the air, which necessarily passes up the trachea, to produce that noise, causes an agitation, or bubbling of the liquid, and thereby washes mechanically the guttural orifices of the Eustachian tubes; and, if the Gargle be prescribed with judgment, its medicinal quality will also prove useful. I have seen persons use great exertion in gargling, which is very improper. To perform this little act advantageously, the effort should be gentle, easy, and natural.

STERNUTATORIES,

At the present day, are chiefly composed of the leaves of herbs, dried and powdered, and by their medicinal, as well as mechanical action, they give a stimulus to the whole membraneous lining of the nose; and its continuation to the throat, fauces, and orifices of the Eustachian tubes. These powders are taken in the same manner as snuff, only a more sudden inspiration of air is required, and they should be used only a little time before going to bed. I have recommended them with considerable effect, in diminution of the sense of hearing from slight catarrhal affections, and particularly when deafness has come on after bathing. (See Essay, p. 78, 92. Plain Advice to the Deaf, p. 116, and formulas for these Powders, in Address to Nervous Deaf, p. 54)

The ancient authors advise liquid sternutatories, most of which, at the present day, are considered worse than useless.

Many empirical snuffs are advertised for deafness, blindness, &c., which are generally composed of acrid, and deleterious ingredients, such as preparations of Mercury, powdered glass, &c. (See Address to Nervous Deaf, p. 35. Plain Advice to the Deaf, p. 117)

NERVOUS DEAFNESS,

Is a term far too indiscriminately used, and is frequently as little understood by the patient, as by the practitioner, who sometimes adopts it to hide his ignorance. In the compass of this work, it is impossible sufficiently to do justice to the subject, I must therefore, defer entering so diffusely into a consideration of the causes, which produce those obscure cases termed nervous deafness, until I place a larger work before the public, nevertheless, what I shall write upon it, and the points connected with it, will, I trust, prove useful. Such an intimate sympathy exists between the sto-

mach, brain, and more remote organs, that want of due exercise, abstaining too long from food, and then eating to satiety; indulgence in the use of wine, spirits, or fermented liquors; retention, or suppression of natural, or usual evacuations; worms in the intestinal canal; a life of celibacy; too great excitement of mind, or indulgence of the passions; late hours, crowded assemblies, night air, sudden changes of temperature, debility from the secondary effects of mercury; or whatever reason points out as being inimical to the general health, produces dyspepsia, hysteria, hypochondriasis, debility, and almost every variety of disease, together with the whole train of nervous symptoms. The organs of hearing and vision, from their delicacy of structure, are liable to become peculiarly affected, and relief cannot reasonably be expected from topical applications, unless they have the auxiliaries of gentle medicine, diet, and exercise, judiciously regulated according to the age, sex, and peculiar circumstances of the case, and so calculated as to assist and invigorate the constitution, and restore its energies. A contrary practice too often prevails, and medicines

are advised, which have a tendency to excite the constitution beyond those limits that nature, reason, and prudence point out as being the proper boundaries; the consequent result of which is, debility, and a languid state of all the functions as soon as the increased excitement be withdrawn: this applies particularly to the eye and ear, and hence are derived nervous deafness, and blindness. (See Essay, p. 16, 103. Advice to Nervous Deaf, p. 76, 77. Plain Advice to the Deaf, p. 80)

WANT OF ENERGY IN THE AUDITORY NERVES.

It is supposed by some persons, that the soft portion of the auditory nerve experiences a local derangement of its functions, but this is mere hypothesis, if considered even upon the reasoning of those who promulgate such opinions. M. Itard has made several distinctions, as to the causes of this deficiency of the power of the auditory nerve, which all resolve them-

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the nerve arises from fever, convulsions, or apoplexy, it is still not a local unconnected disease of itself, for the causes themselves which immediately produce this effect, are derived from general derangement of the system, except when injuries of the brain are occasioned by violence. There may, however, be an immediate cause of incurable deafness, through injury inflicted on this portion of the nerve, although it is apparently so well protected by its situation, in the petrous part of the temporal bone: but the evil is inflicted in a different way from that which M. Itard supposes; very loud explosions we well know will break windows, through the violent agitation of the air, an apparently trifling impetus given to the small portion of air, which can be conveyed by a quick motion of the hand into the auditory passage, will, as I have mentioned in the case of the late Mr. Knight, rupture the Membrana Tympani: (See Aurist, p. 4) and violent sounds will not only do the same, of which I have seen many examples, but probably may so agitate the malleus, that the muscle of the stapes, or its fibro-membraneous filaments, which together regulate the

action of this bone, in the Fenestra Ovalis, may become relaxed, and cease to act without extraordinary excitement, such as louder sounds than were previously necessary; or it is even possible the membranes, both of the Fenestra Ovalis and Rotunda, may be ruptured, and so the labyrinthic liquid being let out, incurable insensibility of the organ of hearing must take place.

There are practitioners who, I am informed, tell patients that the nerve of their ear is destroyed, and consign the sufferer to utter hopelessness, thereby often preventing an application for further advice. I have seen many of these patients, and have proved that the person who gave such an opinion, knew very little of the nature of common diseases of the ear, for the cases have been of a very simple description, and perfectly curable. After what I have said, it is almost needless to remark, that any medical man who ventures to give the above opinion, displays his ignorance completely, yet has, at the same time, cunning enough to impose himself on his dupe, as a man of talent, and scientific attainment.

We are at a loss to know, the precise part borne by the hard portion of the auditory nerve, in the general phenomena of the organ of hearing. I have mentioned its connexion with the nerves of the throat, heart, lungs, &c., and it appears to have a very considerable share in the perfection of the sense, consequently any cause that interrupts its proper action, must necessarily deteriorate the sensibility of the whole; I have seen many cases of deafness on one side, which could be traced, to exposure of that side to cold wind in travelling, sitting constantly in one situation in a current of air, and other causes of a similar nature, all or any of which would produce local congestion of the blood vessels, and pressure thereby being exercised upon the fibres of the nerve, a deficiency of its energy would occur, on the side which had been chiefly exposed. I have in these cases recommended Electricity, or Galvanism, aided by other methods of treatment, with very decided success.

BUZZING, SINGING, AND OTHER NOISES IN THE HEAD AND EAR,

To which persons in sedentary employments are peculiarly liable, as it is the nature of such occupations, to produce indigestion, with all its dreadful train of diseases. When deafness precedes, or succeeds, these illusory sounds, they may go on for several years without occasioning any serious effect; yet they are very often symptomatic of apoplexy, epilepsy, paralysis, phrenitis, or other serious calamity, and the most active measures, promptly adopted, in regard to medicine, together with strict regimen, are necessary in order to avert dangerous, or fatal terminations. (See Essay, p. 102. Plain Advice to the Deaf, p. 86)

With the exception of those cases where laminated excretions are the cause, (see that article), these false perceptions are almost, in every instance, dependent upon general derangement, or debility of the system. One local

cause of this distressing symptom, is to be traced to a dilated state of some fibre of an artery, the size of which has probably been preternaturally increased through former congestion in the part, and for which the natural foramina through the bone, is not now sufficient, consequently the action would be laboured, and a kind of aneurism take place, which being so near the sentient parts of the auditory apparatus, a constant sound, like dull heavy blows struck at a distance, would be experienced. This sensation is very different from that which is produced by the pulsation of the external carotid artery, after considerable exertion, or excess, either in eating or drinking, which can be clearly traced to be in the artery itself, whilst the other gives an imaginary idea of something really occurring at a considerable distance; and unfortunately it is not a case that admits of any certain relief: whereas, most other noises in the head, especially if recent, may be alleviated, or cured by proper medicine, aided in some instances by topical applications.

CIRCULATION OF THE BLOOD.

As it may be necessary to explain to those unacquainted with the subject, the data upon which some of the subsequent reasoning is formed, it will be proper to give a general outline of the process of the circulation.

The arterial blood is more liquid, and florid red, than the venous; it is propelled by the action of the heart, through the whole course of the arteries, which are divided and subdivided, until they end at last in a series of capillary vessels, some of which form the perspiratory vessels of the skin, and throw out continually the more fluid portion of the blood, either visibly, or in a state of vapour, as insensible perspiration. This loss is very considerable, for it has been estimated, that the cutaneous transpiration, amounts nearly to thirty ounces in twenty-four hours, two-thirds of which pass off during the hours devoted to wakefulness, and the remaining one-third during the period devoted to

sleep. A late author, in writing on the diseases of the ear, has taken occasion to display his *profound knowledge* of the subject, by inverting this fact, and, in opposition to all physiologists, states that the perspiration is greatly increased during the hours of sleep! The remainder of the blood, thus deprived of its more fluid particles, and of the greater part of its oxygen, finds its way through the fine net-work of the capillaries into the veins, and such parts of it as are not taken up by the absorbents, for the purposes of nutriment, returns of a dark red, or almost purple colour, to the right ventricle of the heart, from whence it passes into the pulmonary artery, and is thus conveyed into the lungs, where it circulates, through extreme minute vessels, over a surface equal to that of the whole body. During this circulation through the lungs, it absorbs from the atmosphere oxygen, or the vital part of the air, which changes the colour of the blood again to florid red; it is then returned by the pulmonary veins, to the left side of the heart, and thence passes into the aorta, which distributes it through the arteries, over the whole body, again to perform

the same round, with the addition of fresh particles, obtained by the absorbent vessels, and derived from the transmutation of food into *chyme*, and thence into *chyle*. It may probably be necessary to observe, that it is not oxygen in its aëria! form, that is absorbed by the blood, but the base of oxygen, divested of that quantity of caloric, necessary to give it the form of air ; and the caloric which is disengaged in this process, disperses itself through the body, serving to keep up its temperature, and is the origin of animal heat.

We inspire usually about forty-two cubic inches of air, at every drawing in of the breath ; and it has been calculated that a man usually consumes nearly thirty-two ounces of the vital part of the atmosphere, in twenty-four hours, continually throwing out carbonic acid gas from the lungs, at every expiration, as may be shown by breathing through a tube, into a glassful of clear lime water, which will speedily become turbid : such being the chemical affinity of lime for carbonic acid, that a neutral carbonate of lime will be deposited, if it be left at rest for a short time. It is said by some authors, that the

quantity of carbon which escapes from the lungs in twenty-four hours, amounts to three pounds, whilst others say it is five pounds; probably the medium between these two would be about the average.

Having mentioned the usual amount of loss by perspiration in twenty-four hours, it is evident, this does not include persons who take very strong exercise, wear super-abundant clothing, or whose occupations subject them to great heat; these causes increase the quantity almost beyond belief. Persons who in general do not use much exertion, sometimes, during the heats of summer, by taking more exercise than they are accustomed to do, perspire so considerably, that the colouring matter of the blood will even pass out with the perspiration, and tinge the linen at parts where it is in close contact with the body.

We can bear very great artificial heat, without suffering much inconvenience, except excessive perspiration, as was instanced in the experiment made by the late Dr. Fordyce, who remained a considerable time in a room heated to 260° Fahrenheit; the lock on the

door, watch, and keys on the table, could not be touched without burning his hand; an egg became hard, his pulse was 139°, yet a thermometer held in his mouth, was only 2° or 3° higher than ordinary. (See Phil. Trans. 64, 65.

Indigestion, independent of its other evils, serves to impede the circulation, by the pressure occasioned on the large blood vessels, and it being calculated that one sixth part of the whole blood is continually passing through the head, it will be evident that any impediment to the freedom of circulation, must seriously injure the brain, and the function of every organ dependant on it.—I have observed, under the article, "Head-ache," that tight neckcloths, or any constriction which prevents the due return of the blood, should be avoided as inimical to health; and the caution cannot be too generally known or applied.

OPENING THE JUGULAR VEIN.

When noises in the head, vertigo, and other symptoms are excessive, there is reason to apprehend the approach of more serious deprivation of the faculties of both mind, and body, and this operation is advisable; even after apoplexy, arising from too great a retention of blood in the head, has taken place, the jugular vein should be immediately, and carefully opened, for the venous portion of the circulation having no propelling power, except from the impetus communicated by the arteries, the veins possess no muscular power to assist in the process. As the congestions which commence in the capillary vessels, extend rapidly to the larger veins, common sense surely points out the propriety of removing the cause of the momentarily increasing evil, by relieving the vessels where it exists, of the morbid accumulation as speedily as possible, and this cannot be done in any way so effectually, or

reasonably, as by opening the jugular vein, and abstracting a portion of its dark coloured grumous blood, thereby leaving space for the smaller veins, and capillary vessels, to relieve themselves of the congestion, which thus assisted they would soon do, and the more fluid arterial blood meeting no obstruction to its passage, the circulation would be restored to its former healthy state. It is really matter of considerable astonishment, that any professional man at the present day, should talk about *reducing arterial action;*" but there always have been, and it is presumed that there ever will be, a certain class of men, who slavishly follow the jargon they have been taught, and not having sense enough to discriminate between causes and effects, are constantly mistaking one for the other. For, if the temporal artery be opened, the congestion is left in the same state, or even increased, because the propelling power which the arteries possess, is partially diminished, and that impetus would contribute very materially, to remove the obstruction from the fine venous vessels, and so gradually from the whole of the circulation, if the large trunk of the vein were opened.

Reasoning upon the formation of the various parts of the human frame, it is distinctly evinced, that the arteries are not the vessels, from which nature intended blood should be abstracted; their contraction, and dilation evince their muscularity, even after all sensation has departed from the heart, or as we more commonly say, death has taken place, if a wound be inflicted on muscular fibre, the parts will recede from each other; and so much greater is the recession during life, that all surgeons know the only arteries they dare open, are those situated upon a bone, whereon they can press the wounded parts, placing the edges of the incision in contact, and by retaining them for a time in that position, effect a re-union. I have endeavoured to explain this subject as fully as possible, being fully convinced from reasoning, founded on anatomy and physiology, as well as repeated experience, and observation, that if the family of any person attacked with apoplexy, were to *insist* upon the blood being abstracted from the jugular vein, the patient's life would be preserved; but if it be taken from the artery, death will certainly ensue. (See Plain Advice to the Deaf, p. 161) If we refer

to brutes, do we not bleed them from the jugular, without any injury, even on the contrary, does it not confer speedy benefit on them? A case in point, which is far beyond theory, will prove more fully convincing; it is that of a young lady, and reported by Dr. R. Grattan, in the 2d volume of the Transactions of the King and Queen's College of Physicians, Dublin: this instance shows most decidedly the efficacy of bleeding from the jugular vein, in an extreme case of inflammation of the ear, which, in the opinion of the physician and surgeon, had produced effusion on the brain, and death appeared inevitable; but the performance of this operation, which was absolutely forced upon them, through the state of the patient, who was lying nearly insensible, with her arms pressed close to her chest, which were so rigid and inflexible, that they could not be moved; and although neither of the medical gentlemen had the least hope of saving her life, yet they considered it right to bleed, and being unable to do so from the arm, 10 oz. of very dark blood were taken from the jugular, which, no doubt, preserved her life, as from that time she amended. (See Observations on Mercury, p. 14)

CUPPING,

Is often beneficial in deafness, if attended with noises in the head, vertigo, or pain in the ear. The punctures made by leeches, and cupping-glasses applied over them, yield a considerable quantity of blood; and to a timid patient, this method is less alarming than the use of the scarificator, and as efficacious. There are cuppers who keep a large quantity of leeches, with which, and their apparatus, they attend patients. I have successfully directed the leeches to be applied under the ears in some instances, at the back of the neck in others, and in both places, after an interval of a few days between the operation, if the person were of a very plethoric habit. (See Plain Advice to the Deaf, p. 161) Cupping is a very ancient operation. Celsus recommends it in affections of the head; but the manner of performing it was, no doubt, very clumsy at that period, in comparison with the present.

The method of applying the glasses with a lamp, is better than with an exhausting syringe. By the syringe, certainly, the atmospheric pressure is diminished on the surface covered by the glass; and the elasticity of the internal vessels, from having great part of the weight of the air taken off, exert their force without that natural counterpoise;* but the flame of the lamps destroys, in a great measure, the oxygen of the air; and as observed, under the head, "Carbonic Acid Gas," it is the oxygen which occasions pain; so the operation, if performed by the same instrument, on the keenness of which much always depends, must, if considered philosophically, be attended with less pain if the lamp be used, than when the exhausting syringe is adopted.

* Persons ascending to great heights, by means of balloons, experience a somewhat similar effect all over the body; for part of the atmospheric pressure being removed, the circulating fluids swell the internal vessels very considerably, and a sense of fulness, approximating to pain, ensues.

ÆTHER,

When in a state of vapour, forms hydro-carbonate gas, which possesses a sedative property, and has been found serviceable in some very obstinate cases of deafness, attended with noises in the head. About the year 1819, when engaged in some chemical experiments, it occurred to me, that by having a bent tube, adapted to a small glass flask, something in the manner of a gas-bottle, and placing the tube in the ear, whilst the bulb of the flask was gradually immersed in a basin of warm water, the hydro-carbonate gas would pass with facility into the ear. The tube, of course, must be ground, and polished at that end which enters the orifice of the auditory passage. Caution should be observed that the water in the basin is not so hot, as to drive the æther over in substance, instead of in vapour. (See Aurist, p. 80. Plain Advice, p. 159)

NERVOUS IRRITABILITY OF THE SYSTEM, OCCASIONED BY DEAFNESS.

As diminution of the sense of hearing is, in many instances, derived from general derangement of the system, so deafness, arising from any local cause, will occasion hypochondriasis, debility, and the whole train of nervous disorders, of which I might cite many hundred examples. More particularly is this effect evident, when the deficiency of hearing is attended by those illusive sounds in the head or ear. I have met with many cases of this description, which some practitioner had decided was nervous deafness, and incurable, or that the nerve of the ear was destroyed, &c., &c.; and perhaps ten or twelve years of the patient's life had been passed in misery, when the whole of the complaint originated from causes very speedily relieved. There are, nevertheless, many cases which, *a priori*, were merely local affections, and probably might have been cured, but, by neglect, have

become gradually fixed too firmly for human talent to remove. The patient becoming annoyed more and more by the increase of the complaint, abandons his friends, and almost turns misanthrope, continually thinking of the deprivation he suffers, until at length the system becomes affected, and general nervous debility is the result, from mere original local causes.

DEAFNESS DURING, OR AFTER, ATTACKS OF GOUT.

I HAVE seen a number of cases of this description, which varied in proportion to the state of the malady to which they were attributed. The nervous system becomes very much disordered by acute pain in any particular part; and if there be any derangement in the organ of hearing, it will be increased, as the sufferings endured by the patient are more or less intense; independent of which, gouty affections are in general derived from such

habits of life as are inimical to health, and, consequently, they alone would operate disadvantageously on the organ of hearing, as I have pointed out under the head, "Nervous Deafness."

DEAFNESS DURING, OR AFTER, ACUTE RHEUMATISM.

CATARRHAL affections are the causes, frequently, of rheumatic pains. Sometimes, during a course of mercury, they also come on from exposure to damp and cold. A few instances have occurred in my practice, of diminution of hearing which has succeeded rheumatism; probably the disturbance of the nervous system occasioned by the pain, may, as in gouty cases, occasion this lesion of the sense of hearing. Topical applications, unless assisted by medical treatment, applicable to the original cause of the complaint, can never succeed.

INTERMITTENT DEAFNESS.

I ONCE had a case of this description. A young lady, in a debilitated state of health, hysterical, and hypochondriacal, became my patient; she was at that time constantly very deficient in the sense of hearing, for which no other cause appeared, than what is above mentioned. After attending her a short time, it was discovered that she heard tolerably well one day, and the succeeding day was as deaf as usual. She was obliged to return to her home, and the period of my attendance on her was not sufficient, to enable me to investigate this curious case thoroughly.

DEAFNESS FROM WORMS IN THE INTESTINAL CANAL.

I HAVE frequently been consulted by adults, and on behalf of children, whose symptoms led

me to form the conclusion, that they were troubled with worms, and considering that nervous irritability would be occasioned by the presence of these reptiles, and that any derangement of the digestive organs would inevitably prevent the return of blood from the head, and so occasion congestion, and injurious pressure on the brain, which, if it did not give rise to more serious evils, must diminish its sensorial powers. (See Plain Advice to the Deaf, p. 124) I have endeavoured to dislodge these parasitical reptiles, and, by succeeding in my intention, have, in many instances, completely restored the sense of hearing. (See Observations on Mercury, p. 17, for proper medicines, and for cautions against the fatal effects that have, and will probably again occur, through the use of plausibly advertised worm medicines)

HEAD-ACHE.

This painful affection, in most cases, arises from the state of the stomach, and, if treated

improperly, lays the foundation for the most serious diminution of the sensibility of the organs of vision, and of hearing. Indigestion occasions such intense pain in the head, that the patient suffers tortures during the paroxysm, and nothing short of a complete evacuation of the contents of the intestinal canal, will afford perfect relief: there are many palliatives, but they will give only temporary, or partial assistance, and in the end are found merely to defer the complaint, to afford it an opportunity of returning with redoubled force, and most distressing effect, in another and more violent paroxysm, which may be deferred for an indefinite number of days: during the interval there is a sense of weight, fulness, and vertigo, sometimes attended with a sudden kind of flash of light before the eyes, and a curious and indescribable feeling, like a momentary insensibility. It is believed by some physiologists, that this sensation is occasioned by an accumulation of electric matter, in consequence of the dryness of the scalp, and surface of the body, being an imperfect conducting medium for its passing off. Such may be the case, and when a certain quantum of electric fluid is collected, the force

it exerts to pass off, occasions the sensation which I have attempted to describe. The state of fulness, &c., above mentioned, though not exactly amounting to pain, insidiously affects the nervous system; a degree of congestion takes place in the vessels of the brain, and on the least exertion, either mental, or bodily, the most alarming, and painful sensations are experienced all over the head, particularly at the back part, extending down into the neck, whilst the pulsation of the arteries appears to be heard, as well as felt; for they perform their office with considerable difficulty, owing to the fulness of the vessels of the head, and as more force is necessarily exerted, their muscular coats contract, and expand to a greater extent at each pulsation. The sympathy between the genital system, the stomach, and the brain, is most peculiarly, and curiously evinced in these cases; for although the primary cause of the affection of the head be removed, namely, the derangement of the digestive functions, yet still there remains a degree of latent congestion in the brain, which probably would remain inert, and gradually disappear; but if it be called into

action by any excitement of the passions, the most intense pain instantly supervenes, with every symptom of approaching apoplexy; this gradually, but not wholly, disappears, and is renewed again by the same cause, probably during a period of from seven, to fourteen, or even twenty days. Mercurials are very injurious in these cases, for although they appear at first to give ease, they increase the complaint eventually; the paroxysms are more frequent, of a longer continuance, and sometimes become incurable beyond a certain degree of occasional relief, which is only whilst the patient is under the influence of this mineral, whereby the complaint is rendered permanent, and noises in the head are occasioned, which are very difficult to remove.

I have discovered, that very speedy, and permanent relief can be rendered by rhubarb, either in tincture, or made into a draught. (See Address to Nervous Deaf, and article on Medical Treatment). The application of a succession of hot cloths over the whole of the head, taking off the neckcloth, and unbuttoning the shirt-collar, will, even before the medicine

begins to operate, have the effect of producing a defluxion from the nostrils, like as occurs in catarrh, and almost instant ease from the pain will in some instances be afforded.

THE INFLUENCE OF THE MIND, ON THE BODILY HEALTH.

THE honourable portion of the medical profession have, in all ages, endeavoured to inspire confidence in the efficacy of the remedies prescribed, and to excite *hope* in the patient's mind, that a favourable termination of the disorder would take place. Charlatans have also availed themselves of the same knowledge of the human mind, only they use it to a dishonourable end, for their own purposes of imposition, by exciting expectations, or promising a certain cure in cases, that every honest man would declare to be *hopeless*, merely for the sake of obtaining from the poor patient, thus cruelly duped, a larger

portion of that, which is the sole object of empirics—money.

There is a duty, however, which patients owe to themselves, and to their medical adviser, that they are very deficient in, and no class more so, than those who are deaf. Many of these retard, or prevent, the successful termination of their malady, by resigning themselves to *despair*, and the relatives or friends of the person afflicted should, by every means in their power, discourage such a state of mind. Trials of the extent of hearing should not be allowed, before a sufficient period has elapsed for the prescribed remedies to have a fair chance of operating. Patients labouring under the obscure species of deafness, generally have the concomitant of great nervous irritability, and, naturally enough, become impatient to ascertain whether any improvement has taken place, without considering the length of time they have probably been deaf, and the disproportionate length of time, the remedial process has been adopted: under these circumstances, finding no advance towards a cure, as indeed it would be unreasonable to expect they should so speedily

discover improvement, the irritability of the nervous system is increased, despondency gains the ascendancy, and those methods of treatment which it may be proper, or even absolutely necessary, for the patient to observe, are either totally neglected, or carelessly performed; and the practitioner may consider himself unfortunate to have such patients, for they seldom give him a fair opportunity to gratify his own feelings of humanity, or acquire fresh reputation, by curing them. (See Plain Advice to the Deaf, p. 126)

MEDICAL TREATMENT.

No man in his senses will attempt to deny, that local maladies are, to a certain extent, relieved, and, in some instances, the cure effected, solely by the aid of internal medicine. It was the opinion and recommendation of the most ancient authors, that the medicines, which they considered appropriate to the nature of the disease, and cause from whence it originated, should be exhibited in conjunction with

local remedies. It must be confessed, however, that they formed their medicines of too great a variety of articles, but they were chiefly derived from the vegetable kingdom. At the present day, some of our practitioners have become mere copyists of the ancients, and taken to themselves the merit of new discoveries, but have fallen into an opposite error. Every malady, even, it is said, accidental injuries, are referred to disorder of the chylopoietic functions, and blue pill is the panacea for every disease; on which head, some of the advocates for this system have so committed themselves with the public, that no retreat is open to them, without acknowledging their former errors: therefore, the same routine is continued, and like the fabled magicians of old, protected by their charmed circle, whilst within it they thought themselves safe, and were insolently commanding to the surrounding demons, but once without side its influence, they would consider themselves as lost.

As different kind of aliment agrees, or disagrees with various constitutions, and even with the same person, in proportion to age, alteration of manner of life, food, exercise, &c., it will evidently appear that no general rule can

reasonably be laid down, or the effect of any particular medicine, or quantity of it, prove uniformly successful, for it will be very materially regulated by the above causes, not on various persons alone, but even on the same person, when under different circumstances. (See Essay. Plain Advice to the Deaf) There are some general directions on this subject; (see Address to Nervous Deaf, p. 90) in addition to which, I have now given prescriptions for some pills, and a tonic mixture, both of which, I have proved, are very serviceable, if persevered in for some time, particularly the latter. It must be remarked, that all kinds of medicine should be gradually discontinued, so that nature may re-operate of herself, without the aid of any stimulus—a very material point, which escapes the consideration of too many medical men, and generality of patients.

APERIENT PILLS.

℞. Best India Rhubarb, in powder 1 drachm
Jalap, in powder . . . . . 2 scruples
Socotrine Aloes, in powder . . . 1 scruple
Gamboge, in powder . . . . . 10 grains
Carraway-seeds, *fresh powdered* 2 scruples and a half
Mucilage of Gum Arabic, a sufficient quantity to make a

mass, which is to be divided into sixty pills. Dose, two to four at bed time.

TONIC MIXTURE.

℞. Cascarilla Bark, in large pieces, (bruise it)	1 ounce and a half to 2 ounces
Carraway-seeds (bruised)	1 drachm
Distilled, or soft water, in a boiling state	1 pint

Let these infuse together, in a warm place, for two hours; then remove them to stand until cold. Strain through coarse muslin, and add

Tincture of Cascarilla
Compound Tincture of Cardamoms
Syrup of Orange-peel

Of each from half an ounce, to an ounce. Dose, two tablespoonsful once, or, in some cases, twice, a day.

DIET.

TEMPERANCE may very properly be considered one of the cardinal virtues; it is our luxurious, and artificial modes of life, which occasion the evils of diseased action in the system, and enervate both mind and body. It would occupy a volume, to give full direc-

tions as to the particular quality of every article of food; but general rules will be sufficient for those, who have not injured their reasoning faculties by intemperance. The quantity of food which is taken at any one time, should never be so much as to produce satiety; and to avert the temptation to make, what is considered by some, a "*good dinner*," and thereby incur the miseries of repletion, refreshment should be taken more frequently than is the practice amongst the higher, and professional orders of society.

As I before observed, the quality of the food requires attention, and of this each person must form his own judgment, taking as an unerring rule, that whatever satisfies, enlivens, and refreshes the whole frame, without producing subsequent uneasiness, must, when taken in moderation, be proper. On the contrary, drowsiness after eating, unsound sleep at night, hypochondriasis, diminished strength, and activity, denote that the aliment is inimical to that particular constitution—is in itself injurious—is taken at improper periods, or in too large a quantity, and if persisted in, must end in serious derangement of the health.

Most old ladies have a store of articles of diet for an invalid, which, upon the authority of Doctor this, or that, who was "*a very clever man in his time*," are the "*most wholesome things in the world*." Some are advised to eat eggs, which are injurious, instead of beneficial, to many constitutions; others are to eat water-cresses, to *sweeten* the blood; some eat oysters in the morning, or at noon, to give them *strength*; others, again, drink brandy after eating the most indigestible food, under the pretence, that it is to assist digestion; but in reality, because they have excited a craving desire for something, to relieve the fumes of the morbid mass which they have taken into the stomach; and as that viscus, when oppressed, is like the mind in a state of disease, or a man in a state of inebriety, so it is not safe to gratify the desires thus excited, with those things which the exercise of a little reason and plain sense, must convince us are sure, eventually, to produce incalculable mischief; for the appetite thus indulged, will be like a spoiled child, continually increasing in its demands, until all mastery over it is gone, and the man of sense, sinks into the sensual, and senseless gourmand.

Wines next demand attention, since the use of them is now so common, that to dine without is a proof of such bad taste, as no family of the least pretensions to gentility, would be guilty of; many of whom, to keep up appearances, injure their own health, by purchasing cheap trash, called foreign, but really made in this country; and some more wisely make their own. As this article has, however, become an artificial necessity, and the demand for it is greater, so is the temptation to adulterate. Even before wine is shipped, it is very much sophisticated; but it must be confessed, that the *art* and *mystery* of making up wines, is better understood in this country, and persons who deal with the numerous petty agents, who have recently started up in every outlet from the metropolis, cannot reasonably expect to have so wholesome, or even cheap a commodity, as they can obtain of respectable, and established wine merchants, whose trade being so much more extensive, have the means of obtaining the purest wines that are imported.

Since foreign wines are become so cheap, British wines have fallen greatly into disuse,

and it is better for the public that it should be so; for some of them were manufactured at so low a price, that from their composition they proved equally, if not more injurious to the constitution, than even the commonest kind of foreign wines; as they injured the tone of the stomach, by running into the acetous state of fermentation very rapidly, occasioning severe head-ache, and other derangement of the health.

Some physicians direct, that a patient when becoming convalescent, should take a glass of Port wine every day at eleven, and another after dinner: this is mere routine practice with those who do not *think;* but those who *know* that wine does not possess one fiftieth part of the sanative property of many vegetable articles of the materia medica, which might be prepared domestically, should break through such follies of the old school, and enjoin forbearance from wine, in many, if not all, the cases in which it is now recommended. In fact, every one enjoys much greater health, strength, and aptitude for exertion, both mental and bodily, who does not from habit, make wine, at, or after his

dinner, a matter of necessary comfort, which he cannot abandon ; such people soon become deficient in some sense, or faculty, and are generally either gouty, paralytic, or short lived.

The immoderate use, or rather, abuse of ardent spirits, amongst the lower orders, is also to be deprecated in a moral, as well as physical point of view : it is the incentive to every vice, ruins the health of the population in large towns, and brings on in early life, imbecility, and decrepitude.

Porter, and ale, too, when even made of wholesome materials, if used in excess, assist the foregoing in their direful effects, and as spirits shrink, and caricature the human face in one form, beer swells and bloats it, until its original character is lost, and we look in vain for any traces of God's image, in which form man was created : but when the liquor is manufactured of deleterious ingredients, of which we have unfortunately too many proofs on record, the evil is still more extensive and formidable.

As I have elsewhere remarked, the organs of sight and hearing, from their delicacy of structural formation, are almost certain to become

affected by any habitual intemperance, and nothing but an alteration in regard to diet, more consonant to sound reason, can possibly aid the efforts of professional talent, in obtaining a restoration of the sense which may have become affected. (See Advice to Nervous Deaf, p. 86. Plain Advice to the Deaf, p. 122)

Acuteness of all the senses, is constantly found amongst savage nations, who have little more of what we denominate comforts, than the untameable beasts which inhabit their native woods; but no sooner does civilized man extend his discoveries to previously unknown regions, than the luxuries, and vices which he introduces, entail disease and misery, where before reigned health, and, according to the ideas of the uncultivated race—content, and happiness.

EXERCISE,

Is of great importance in the preservation of a healthy state of the body, as well as of the

mind: and when disease assails us, it is the greatest auxiliary in the restoration of the original vigour. Walking is not only the most natural, but the best, as the whole of the muscles of the legs, thighs, arms, back, &c., are called into motion, whilst the peristaltic action of the intestines is increased, and other secretions excited. Next to this, in point of usefulness, probably, is riding on horseback; but neither of these, particularly the latter, should be used after a full meal. When the patient can neither walk, nor take exercise on horseback, travelling by coach, or in a chaise that has the springs not too finely made, sailing, swinging, &c., render considerable benefit to the valetudinarian. A sea voyage has restored many persons to health, when every other method failed of affording relief. A patient of mine, aged ninety-five, had a board, I believe, of lance-wood, about twelve feet long, and fifteen inches wide, composed of three or four narrow pieces fixed together, and placed at each end, upon a kind of stand. She was seated near the centre of this long board every day, and it being set in motion, she, by her own

exertions, continued the action for some time, and thus occasioned considerable exertion to the muscles, which answered for her the purpose of exercise, she being unable, through having broken her thigh, to take any other, except riding out daily in her carriage. Friction with the hand of a healthy person, or even with a flesh-brush, when a patient cannot leave the house, is of great service in promoting the circulation, and assisting the operation of medicine. Late hours must be most cautiously avoided, and as too much indulgence in bed should not be allowed, early rising, which is most conducive to promote the proper exertion of the bodily, as well as mental functions, will necessarily be the consequence. There has been of late a great deal said about the benefits to be derived from the gymnastic exercises, introduced into this country by a foreigner. Some parts of these exercises are, no doubt, very useful, but like many new inventions, other parts of them have been carried beyond the bounds of reason, and prudence; being very liable to produce complaints which are never cured: even the teacher himself now labours

under the effects of an injury, occasioned by some exertion incident to his system. It having proved very advantageous, in a pecuniary point of view, to male professors: female teachers of dancing, also, give lessons to young ladies, as to placing themselves in certain attitudes, which they wish to style something similar; but as it would have been improper to call these female exercises by the name of Gymnastic, which would give an idea to the learned, of their being performed naked, the erudition of a divine (the master of a large public scholastic establishment,) was called into requisition upon the occasion, and he christened the attitudinizing of the ladies, "Calisthenic Exercises." In speaking of exercise in a medical point of view, I should have left Gymnastics, as well as Calisthenics, to stand or fall by their own merits, had not the improvement of health been brought forward as a plea, to support the reputation of these movements of the human frame. The former is most certainly useful to men, in every station of life, and beneficial to health generally, if we except some parts of it which have a tendency, and actually do occasion ruptures; but

as to ladies, many of the old-fashioned exercises and amusements of girls, and even walking in the open air, will assist nature more than any of the studied attitudes can possibly do, although the pretext is used, of giving play to such and such muscles, by placing the body in some particular, and often unnatural, posture; on the propriety, or impropriety of which, as regards health, it cannot be supposed most of these *professors* have any knowledge.

I have frequently been consulted on behalf of young ladies, and have succeeded in relieving them of noises in the head, with deficiency of hearing, by repeated small doses of very gentle medicine, and enjoining them to walk every fine morning for a certain time, beginning and ending their exercise with a slow motion.

EMBROCATIONS APPLIED UPON THE MASTOID PROCESS,

Prove very useful; when they are composed of stimulating liquids, they are somewhat simi-

lar to blisters, as to their intention; but with this advantage, the application of them can be continued during a longer time, and thus, by exciting the action of the subjacent parts, they are more beneficial. Embrocations are not always advised to be composed of the stimulating class of preparations, it being sometimes necessary to prescribe those possessing a very different quality; this, however, must depend very much on the origin, and symptoms of the case. (See Plain Advice to the Deaf, p. 95)

BLISTERS,

Are, by some practitioners, prescribed without any discrimination, in every case of deafness; they of course, like all specifics, are very often unsuccessful, and I am certain, if many of those persons who prescribe them were called upon to give a reason why they do so, in the majority of cases, they would be very much puzzled.

The true object of blisters is, to remove any disease that may exist in the mastoid cells, but it must be obvious, that deafness does not always depend on the state of this part of the ear. If, from the symptoms displayed, there be reason to form an opinion that the mucous membrane, which lines these cells, has become inflamed, either from catarrh, and consequent fever, or any other cause, and that there be a quantity of morbid lymph, or mucus, deposited in those cavities, it may be judicious to apply a blister, but I incline very much to the adoption of an embrocation on the part previously, if not even in preference, as being more manageable. When there exists evidently a vitiated state of the body, or a tendency to dropsy, blisters are very unsafe ; independent of which, they often occasion erysipelatous eruptions of the surrounding parts, which extend into the auditory passage. And when great debility of constitution, or nervous irritability exists, blisters generally prove extremely prejudicial to the sense of hearing. (See Plain Advice to the Deaf, p. 96. Address to Nervous Deaf, p. 12. Aurist, p. 80)

ISSUES

WERE very frequently prescribed by ancient authors, for disorders of the eyes, ears, vertigo, head-ache, epilepsy, *stupidity*, defluxions, catarrh, &c. Particular directions were given as to the places where they were to be made, viz., on the coronal suture, arms, neck, and various other places. The manner of making them is by the actual cautery. These methods of treatment have now fallen into disuse, and even the authors above alluded to, if their works be closely examined, acknowledge that there was very little more to be expected from them, than mere temporary relief.

A SETON,

Is similar, but equal in effect to two issues, and I have been consulted frequently by patients, who had been needlessly tortured with

blisters, or a seton, for cases of a very simple nature, which the person previously consulted did not know how to treat, and therefore advised these at random, in order to shew the patient he was inclined to perform something. As to the benefit to be expected from setons, in any case of deafness, I do not see even a probability of such taking place. I have seen numbers who have had them inserted, but never yet discovered one person who derived the smallest benefit; on the contrary, I have known erysipelas occasioned by them, one case of which proved very obstinate, and even dangerous. (See Plain Advice to the Deaf, p. 101. Address to Nervous Deaf, p. 12)

MOXA.

Amongst the ancients, this was merely another method of applying the actual cautery, as it was composed of the down of the china mugwort, which was made up into little cones, and attached to the part, they were then fired

at the point, and allowed to burn down to, and cauterize the flesh.

I employ rolls of cotton wool by means of a small tripod and blow-pipe, upon Mr. Guthrie's plan, whereby the flesh is not cauterized, but merely a degree of stimulative excitement is given to the part, without occasioning pain. I have applied this modification of Moxa, to the mastoid process with considerable effect, and advantage to the patient. The reports from the Continent are also favourable to further trials of its efficacy. When the case is of such a nature, as would be benefited by embrocations, Moxa thus applied is likely to prove useful. (See Plain Advice to the Deaf, p. 102)

PERFORATION INTO THE MASTOID CELLS,

Was performed with success by a German surgeon, named Schumcker, upon the Mastoid process of a man in Silesia. Valsalva mentions a case of the same nature, and Riolanus also names it. Dr. Jasser, a Swedish phy-

sician, about the middle of the last century, was successful in one instance. Unfortunately the majority of experiments which have been made of this operation, have proved unsuccessful, distressing, dangerous, and in one case, it is said to have proved fatal, in 1791, to Dr.* Jean Just Berger, physician to the King of Denmark. The object of this operation is to form a passage for the nozzle of a syringe, so as to inject a liquid into the Mastoid Cells, and through them into the Cavity of the Tympanum, whereby these parts, and the Eustachian tube, would be cleansed of the accumulated mucus. In all the instances in which the operation succeeded, it was after the mastoid process on one side had become carious, through disease, and the injections used to cure that, descended by the route I have mentioned,—the exact spot for the perforation on the other side was thus clearly indicated. The chief difficulty appears to be the acquirement of a knowledge of the precise place where the opening into these cells should be made, which

* Not as a recent author has incorrectly copied from Itard, J. T. Bergman. See Traité des Maladies de l'Oreille, &c. par. I. M. G. Itard. Tome 2, p. 223.

is, however, very difficult to define, as there are probably no two persons in whom this part exactly corresponds, either in exterior or interior formation. Females particularly have these cells smaller than men. (See Essay, p. 88. Plain Advice to the Deaf, p. 105)

IODINE,

Has been for some time past administered internally, and applied externally with a view to reduce glandular swellings, and has proved successful in relieving Bronchocele, commonly known by the name of Goitre, or Derbyshire neck. Dr. Gairdner, and Dr. Manson, of Nottingham, have written upon the subject, as well as several foreign authors. Dr. Manson thinks that it ought to have a trial, in cases of deafness occasioned by a thickening of the membraneous lining of the Eustachian tubes, whether such a state of these parts was the result of scarlet fever, inflammatory sore throat, measles, syphilis, or scrophula. I have prescribed the internal exhibition of this medicine,

in cases of deafness, which appeared proper for its administration, increasing it cautiously, and gradually, until the dose was very considerable; but I have not hitherto found it successful. As an external topical application, I have used, and prescribed it with success; it is, however, very uncertain in its action upon different constitutions, and I have known a most unexpected effect occur from very small doses, in the case of a scientific gentleman, who commenced taking it at my recommendation; the effect was nearly similar to what would be produced by cantharides, and which did not cease for a considerable time. This is a curious property, that I believe no author has before noticed, and having happened to a person of education, and undoubted veracity, the fact may be depended upon: the tincture was obtained from the shop of a first-rate practical chemist, and was very pure.

This leads me to make some remarks on the formulas for the tincture of Iodine, which, with the other preparations of this substance, not being yet taken under the cognizance of the College of Physicians, is made arbitrarily by different chemists, of various degrees of strength,

some using twelve grains, and others forty-eight grains of the chrystals, to the ounce of spirit: it therefore becomes necessary in prescribing, if the practitioner does not know the proportions which the chemist adopts, who is to make up the prescription, to direct the form in which it should be prepared. It is always the best plan to advise that the tincture should be obtained from some excellent practical chemist, who, having a considerable sale, and knowledge of the article, has it always more recently prepared, than those who probably do not sell an ounce in twelve months; for it is a desirable object to have it fresh made, as when it has been prepared a considerable time, the Iodine takes up a portion of the hydrogen of the alcohol, and thus becomes converted into Iodurretted hydiodic acid, which is highly deleterious.

In cases of contraction of the lower part of the cartilaginous portion of the auditory passage, from thickening of the membraneous integuments, I have applied Iodine under several forms with considerable success; (see Plain Advice, p. 136) and also advised it as an embrocation for other cases of deafness, to be used upon the mastoid process, which, with the exception

of one case, in which I ascertained that it decidedly occasioned a degree of vertigo, it has been beneficial; but not sufficiently so to entitle this form of application to complete confidence.

ELECTRICITY,

If continued for a sufficient period of time, will probably excite the action of the absorbent vessels, and so prove beneficial when there is a collection of coagulable lymph in the cavity of the Tympanum: it is also serviceable, when there is want of tone in the acoustic nerves; but it must be confessed, even by the advocates for electricity, that although it is sometimes an useful axiliary, it is not always to be relied upon, and that its effects vary very much on different constitutions.

As electricity and galvanism are, with very few exceptions, administered by persons of humble education and acquirements, the most erroneous statements are published, as to the certain efficacy of these agents, in almost every

disease that can affect the system, and through the charlatanic representations that are made by interested individuals, which professional men know to be *mere fabrications*, these two useful assistants to medicine and surgery, have undeservedly fallen into a degree of disrepute. (See Address to Nervous Deaf, p. 38. Aurist, p. 5, c. 13. Plain Advice to the Deaf, p. 91)

In some courses of lectures, which I gave about 1816, on medical electricity, I quoted a great number of cases from unquestionable authority, as well as many to which it had been applied most successfully under my own superintendence; whilst in other instances, when the symptoms appeared much more favourable, it did not afford the least relief: and I am quite satisfied no perfect dependence can be placed on it for a cure, in any complaint. (See Plain Advice to the Deaf)

GALVANISM,

Is only another modification of electricity, produced by the oxidation of metals, and the

decomposition of water in consequence, which forms the two gases, oxygen and hydrogen, in such exact proportions, that when an electric spark is passed through them, they explode, and water is re-produced.

Galvanism was, according to the accounts given by some foreign practitioners, thought to be almost a specific for deafness: they proved in this, as they have done on other occasions, far too sanguine, as the powers of this agent have been much overrated, and, like electricity, cannot be depended upon with any degree of certainty. When the deafness appears from the symptoms to be occasioned by want of energy in the auditory nerve, after the inducing causes of the affection be removed, both electricity and galvanism deserve a trial, and a preference may be given to commencing with the former, which is capable of being applied in a very mild, and almost imperceptible manner.

In the *Morning Post* for August, 1823, there is an account of a lady who laboured under paralysis of the tongue, which was cured by electricity; and another of a boy, whose speech was restored by galvanism, administered by

Mr. Partington, an old established, and respectable practitioner.

A plan was brought under the notice of the public, about twenty-four years ago, which was said to have cured forty-five persons of deafness by galvanism, applied in the following manner:—A small ball, connected with one end of the galvanic trough, was held to the orifice of the auditory passage, whilst a much larger ball was held in the patient's hand; the communication was then formed, and interrupted by means of machinery once in every second, for four minutes daily, during two or three weeks. The plan did not, I presume, ultimately succeed, as no further communications were made on the subject.

GALVANIC BRUSH.

I HAVE had small wires of *zinc* and *silver* mixed with bristles, which are drawn in with *copper* wire, and consider this to be an improvement on the former Galvanic Brush: some,

made as hair-brushes, are very serviceable in affections of the head; others, made as flesh-brushes, act as stimulants upon the fibres of the nerves, and therefore restore tone to the nervous system, where locally deficient. The original Galvanic Brush was formed of *zinc* and *copper*, made as above; but the latter metal rapidly oxidates, by the exudations from the human body, and communicates a green colour to the bristles, unsightly to use, and liable to give a greenish tint to light, or grey hair. Whoever the person was that first invented these brushes, he evinced considerable science.

COLD BATHING.

Several cases of total deprivation of the sense of hearing, occasioned by using the cold bath, which had been recommended to persons in a state of debility, as a remedy for a slight deafness, have been brought under my observation.

SHOWER-BATH,

If of cold water, is equally objectionable with cold bathing; but my recommendation of a tepid shower-bath of sea water, or soft water in which salt has been dissolved, continues to prove very successful. The head should be dried as quickly as possible, and as this cannot readily be done, if the patient have much hair, the superabundant tresses must be removed by degrees. As a general caution, it is to be observed, that no bath should be used whilst the patient is under the influence of calomel, blue pill, or mercurials of any denomination. (See Essay, p. 115)

WARM BATHING,

In a salt water bath, either of sea water, or made artificially, is not only very refreshing, but also useful in many cases of deafness,

arising from debility; but patients of this description should on no account remain in the water more than a quarter of an hour, and should, immediately on entering the bath, immerse the head: the failure of doing so will produce a great sense of fulness about the head. I have seen an instance or two, of persons suffering very much, and for a considerable time, from these feelings, in consequence, which were only relieved by aperient medicine, and the abstraction of blood.

At Paris, there is a bath made artificially, to imitate the waters of Bareges, which is extolled as a cure for deafness. The form of the bath is that of an inclined plane, with a niche for the head: the patient lies down, and the water passes freely in and out of the auditory passages. As this water contains sulphur, its medicinal quality may be useful in cases where cutaneous or herpetic disease exists in the part, independent of its mechanical action as a menstruum, in cases of indurated wax. (See Aurist, p. 15)

SEA-BATHING,

Should not be used under the idea that it will afford relief in cases of deafness, except with the advice of a professional man, competent to judge of the nature of the case; as in some instances, it has decidedly proved injurious to females. (See Aurist, p. 17, c. 35)

Caution is very necessary in regard to bathing in the sea, or in rivers, more particularly in the latter, that the person be not warm at the time of plunging in, and that there be not any delay in dressing and drying the head thoroughly.

I have been consulted by many persons, whose deafness came on from want of caution in this respect, and by a still greater number of the male inhabitants of the sea-coast, whose deafness occurred through plunging into the sea from considerable heights, and in most of these cases I have observed, that the Membrana Tympani was ruptured, and in a state of disease.

AIR NEAR THE SEA.

THERE are many deaf persons who entertain the opinion, that their hearing improves during a residence near the sea. This, to a certain extent, may be true, but it has the effect chiefly on persons, whose derangement of general health is the cause of the diminution of the sense of hearing, which they labour under; and the improvement that they, and indeed most persons, experience at such periods, is to be attributed more to a change in the modes of living, relaxation from the cares and fatigues of business, regular hours, and exercise in a more salubrious air than they are generally accustomed to, which gives increase of strength and energy to the system; than to any property in the air itself, that is capable of increasing the power of the auditory sense; for it is a fact, that amongst the inhabitants of the sea-coast, there are quite as many deaf persons in proportion to the population, as in any other part

of the kingdom. (See Aurist, p. 17. Address to Nervous Deaf, p. 76)

I had a patient, whose case was a profuse puriform discharge, of many years duration. When she was by the side of the sea, the discharge, which was previously abating, again increased very considerably, and on her removal inland it decreased. (See Aurist, p. 35)

EFFECTS OF CHANGES OF THE ATMOSPHERE ON THE HEARING, AND HEALTH.

MANY deaf persons hear much better when the air is dry, than when it is moist; and this is supposed by some ancient authors to be occasioned by moisture causing a greater relaxation of the Membrana Tympani. I have collected from the reports of many patients, that when they were in great assemblages of persons, they heard worse than when in the open air; and from repeated observation, I have remarked, that these were cases in which every symptom

indicated that the cause of the deficiency of hearing was, relaxation of the Membrana Tympani; therefore, it would seem that the dampness of the air operated mechanically, and still more increased the original complaint; but I do not think that any other cases of deafness are either affected in the same manner, or so sensibly, by the state of the air.

In condensed air, as is instanced in the diving-bell, sounds are painful, which, in the common atmosphere, would not unpleasantly affect the auditory sense; and the converse of this takes place, by striking a bell under the exhausted receiver of an air-pump, which will give out no sound—demonstrating that air is the medium of sound.

Air increases or diminishes in bulk, according to its degrees of heat or cold: every degree of the thermometer alters it, in respect of its volume, about $\frac{1}{473}$, but its quality is not altered by the mere action of change of temperature, or even heating or cooling in any known degree, but it is contaminated, and the vital properties reduced, by the respiration of men and animals, who, as I have mentioned, continually, at every

expiration of the breath, send out a large quantity of carbonic acid gas. Hence persons who are afflicted with inflammatory diseases of the lungs, are much better whilst breathing air from which a portion of the oxygen, or vital principle, has been abstracted; and patients of this class are benefited by residing in or near a cow-yard; whilst those persons who have a torpid circulation of the blood, derive advantage from a residence in elevated situations, where there is, consequently, a degree of acute freshness in the air. It may very reasonably be demanded, by those unacquainted with chemistry, how it be if this continual vitiation of the air occur, that any portion be left uncontaminated, or undeteriorated? The answer is easily given, and affords fresh reason to look with wonder on the exquisite beneficence of the great and glorious architect of the universe; for the carbonic acid gas, which by its superior gravity descends to the earth, is the support of vegetation; and herbs and plants absorb it as part of their nourishment, returning from the upper surface of their leaves, whilst growing, pure oxygen gas, as can be proved by actual experiment.

The contamination which the air receives through the destruction of part of its oxygen, and from having been inhaled and expired by many persons, probably not all in a sound state of health, as well as from the quantity of lights, each of which require a certain portion of the vital part of the air for its support, render fashionable routs not at all proper places for the valetudinarian; as, independent of the danger to the health from the causes just alluded to, there is still greater, by the transition from rooms so conditioned, to cold currents of air, which must be encountered in order to reach a carriage; and even if the air be not cold, it contains so much larger portion of oxygen, than what has been for some time previously breathed, that the lungs are suddenly stimulated, and in delicate females serious diseases succeed—amongst which deafness, and diseases of the ear, are by no means the least frequent; indeed to these causes, a great number of cases of this description may be most clearly ascribed.

A column of air, the heighth of the atmosphere and one inch square, weighs about fifteen pounds; suppose, therefore, the human body

on the average to present fifteen square feet of surface, the compression, which is equal in every direction, will amount to about fourteen tons; delicate persons, therefore, necessarily feel the alteration in the weather very sensibly, for the pressure they have to sustain, is often increased, or diminished, from one to ten hundred weight in a few hours, whilst the resisting force of the internal circulating fluids does not change.

WASHING THE HEAD,

Or rather neglecting to dry the hair quickly, and thoroughly afterwards, is the cause of many persons becoming deaf, and having noises in the head and ear. A little common salt put into the water prevents the vapourization from being so rapid, and consequently averts in some degree the danger of inflammation, and congestion in the capillary vessels, which is certain to occur, if the latent heat be carried off too sud-

denly: the addition of spirits only increases the rapidity of the vapourization, and of course the mischievous effects are more certain to succeed. (See Essay, p. 108. Address to Nervous Deaf, p. 57. Plain Advice to the Deaf, p. 2)

FLANNEL CAPS,

May be worn with advantage in cases of severe catarrhal affections, provided they be not left off until the complaint have subsided, even then the use of them should be abandoned cautiously and gradually; but it is highly injurious, and contrary to common sense, to wear these coverings at night, and leave the head exposed on quitting the bed-room, to currents of cold air. (See Essay, p. 47, and Plain Advice to the Deaf, p. 157) A recent author, who has *copied* my observations on the above subject, advises the *filthy*, and dangerous practice of

sleeping *without night-caps*. Now, as the cutaneous transpiration is considerably less during sleep, a moderate covering to the head is advisable, on the score of health, as well as *cleanliness;* but on leaving the bed-room, if the weather be cold, and the person have to traverse cold passages, or currents of air, both sexes should guard against the change of temperature by wearing a cap or covering of some kind. Children who are at all deaf, should also be prevented from running out into the air, without some covering for their head. The young ladies mentioned in these pages, one of whom died in Ireland, and the other who was saved by opening the jugular vein, had the respective diseases in their ear increased to the degree described, by leaving a crowded assembly without sufficient covering for the head. Ladies who are obliged by fashion, or from inclination, to attend parties, should have large cloaks with hoods to them, and thus their heads, as well as persons, would be conveniently and perfectly protected ; whereas, by the present ridiculous fashion which has innovated the use of cloaks, they now merely afford protection to the person,

and leave the most important part exposed to the inclemency of the weather: what with this, and the thinness of their shoes, it is not matter for astonishment that ladies are so liable to various complaints of the head and ear, or that so many of them sink into a premature grave. I have seen more than one gentleman, who had been rendered totally and incurably deaf, through attending ladies to their carriage after dancing, without waiting until his hat could be found; and an old and respectable practitioner became my patient some time ago, from merely leaving the house without his hat, to hand a lady into a carriage on a very cold day.

THIN SHOES,

Ladies frequently cause serious derangement of their own health, as well as diminution of the sense of hearing, by want of caution as to

this part of their dress: damp, or cold applied to the feet of persons of delicate constitution, or who from habits of life are accustomed to warm rooms, or the use of a carriage, is extremely injurious, and even sometimes fatal. (See Essay, p. 48. Plain Advice to the Deaf, p. 159)

But if ladies were subject to risk from the above cause formerly, how much more extensive has now become the probability of injury, through the folly of our countrywomen, by adopting foolish fashions in the make of their shoes. A few years ago the objection was, that the soles were too thin; now, the sole is so misplaced, that in most instances at least one-third of the outside of the foot, depends upon the substance of which the upper part of the shoe is composed, to keep it from damp or wet: this method of constructing shoes, brings the edge of what little sole there is, under the outer part of the foot, whereby its shape is distorted, weakness and swelling of the ancles are produced, and callosities and corns follow, which might be prevented if some little attention were paid to the anatomical structure of the foot; and if the shoe were formed, not according to any

particular fashion, but in such a manner as would protect the feet from damp.

DANGER OF EXPOSURE TO DAMP AIR, &c., AFTER THE HAIR HAS BEEN CUT.

In my Essay on the Ear, p. 111, it is mentioned, that two young ladies had been sent to me for advice, one of whom had become totally deaf through having her hair cut, and being exposed afterwards to a current of cold air; the other from exposure to damp, by putting her head out of the window for a considerable time, to see a procession, or something of the kind: both cases resisted every effort made for their relief. I have seen, since that period, many similar instances, some in which the diminution, or deprivation of the sense, had occurred from the same causes, to even stout and muscular men; and in all these cases, the noises in the head, which I have always observed to accompany deafness of this description, is, as well as

the deficiency of hearing, very difficult to relieve, and often impossible to cure.

The old fashioned and vulgar error, of washing, or rubbing children's heads with spirits, in order, as it is supposed, to prevent them from taking cold after the hair has been cut, produces the very reverse effect from the one intended; for as spirits evaporate more rapidly than water, and as vapourization cannot proceed, except by an increased temperature, so the latent caloric is abstracted from the skin, and, as I have before mentioned, congestions and inflammation follow, more or less, according to the predisposition, and strength of the patient, and these consequences frequently fall on the organs of sight or hearing.

EAR PICKS, &c.

In my Essay on the Ear, p. 18, it is observed, that in the East Indies, and hot climates, a species of scurf, sordes, or scale, forms in the auditory passage; and in those countries the barbers,

and persons who shampoo, cleanse the auditory passages in a very dexterous way; but a repetition of this cleansing, by degrees, materially injures the sense of hearing. The use of ear-picks, or other metallic substances, I have deprecated in the above work, and also in Plain Advice to the Deaf, p. 69, unless they be covered with cotton wool, to prevent them from excoriating the fine lining of the auditory passage; therefore it is not necessary to say more than has already been advanced on this point.* About a year and a half ago, I requested the favour of the surgeon of an India ship, to bring me home a set of the instruments used by the Chinese for the above purpose, as a matter of curiosity; and he has been good enough to send them to me. I observe a public statement has lately been made, that the "*dexterous manipulation of ear-pickers constitutes a considerable source*

* The idea attempted to be inculcated, upon the authority of Sir Hans Sloane, that nearly all cases of deafness originated from the use of ear-picks, is really too ridiculous to be worthy refutation. An aurist ought to know more on the subject than to quote such authority, for the knowledge possessed by Sir Hans Sloane as to diseases of the ear, must have been very limited indeed, if he ever gave any such opinion.

of emolument amongst the Chinese." It is very clear the gentleman who has made this observation, never saw any examples of their manipulation of these articles; for they cannot compare with the workmanship of our own country; the Chinese instruments being badly formed, and left quite unpolished.

EAR TICKLING.

In China, it is said this forms a species of luxurious enjoyment amongst the great: in this country it is common to all classes; the only difference is, that in the East, it is a manual operation, and the operators are poor, whereas, in Europe, every observer of human nature must have remarked, that the performers are of different grades in life, who each attempt to operate successfully on those immediately above him, and sometimes enrich themselves at the expence of their probity and honour, by dexterously tickling the ear "*with flattery*,

which all are pleased with, yet all pretend to despise." It was, however, reserved for the present age, to produce a professional man, who could be so much at a loss to account for undue action of the ceruminous glands, as to ascribe it to the almost unconscious "*habit*" which *many persons* have, of "*amusing themselves, and beguiling their vacant moments*" by giving "*a gentle friction to the ear, by the end of one of their fingers, and thereby producing an agreeable titilation.* Surely, the *learned* gentleman must be guilty of an anachronism, and during *his vacant* moments, has unconsciously referred to the filthy habit of some school-boys, for it is really a species of libel on the cleanliness of his acquaintance and patients, to accuse them of such a practice—at any rate, he is not practising the intellectual art of ear-tickling, by making such an observation.

SNUFF TAKING.

THE filthy habit of using this powder, is very injurious to the sense of hearing, and sight, as well as to the digestive organs, from the narcotic properties of the tobacco. The action of this powder constantly applied to the delicate membrane of the nostrils, causes a species of suppurative action, or at least a great flow of pituitous humours, to take place from the nose, and contiguous mucous membranes, whereby obstructions are created in the Eustachian tubes themselves, and probably even in the cavity of the Tympanum. Independent of this, supposing the irritation has not affected the mucous membrane of the Eustachian tubes, still the defluxion from the nostrils is so considerable, that a handkerchief is in constant requisition, and by the repeated violence of the effort to cleanse the nostrils, great injury is sustained by the Membrana Tympani. (See relaxation of that membrane. Essay, p. 93)

EAR TRUMPETS.

Of these there are an infinite variety of shapes, but the adaption of an ivory ear-piece to a small bugle-horn, which I have directed to be made, appears to answer the purpose better than any other, and I believe the person to whom I gave the pattern, makes and sells a great number of them. The idea suggested itself to me through looking over Heister's Surgery ; but the above plan is an improvement on the plate and description therein given. (See Essay, p. 122. Plain Advice to the Deaf, p. 154)

ACOUSTIC INSTRUMENTS.

Reasoning upon the principle of the two concave metal plates, mentioned in the Observations on the Theory of Echoes, and upon

the manner in which the hearing is assisted by placing the hand behind the ear, thereby giving an artificial expanse to the auricle, I invented some instruments, to collect and reflect into the auditory passage, a still larger portion of the pulses of sound, which have the advantage over hearing trumpets, of not injuring the tone of the ear—these merely reflecting the sounds naturally, and without increased velocity upon the Membrana Tympani; whereas trumpets convey the sounds in a concentrated forcible manner, so that they impinge painfully upon that fine membrane. Observing that the more elastic the metal, the better was the effect of the instrument, I sent by the favour of the surgeon of an India ship, to China, for some made of a peculiar metal, which we have not the art of manufacturing. I have only recently received them, but in the trials I have hitherto made, they most fully answer my expectations, and probably may be found so useful, as to induce a quantity of them to be imported.

ARTIFICIAL EARS.

In France there are instruments which are so called, made of fine pasteboard, or rather *papier-mâché*, which cover the auricle, and assist some classes of deaf persons very considerably. There are also some very complex, and expensive contrivances in this country, manufactured by, or for persons who have endeavoured to bring them into notice. If these machines were really useful, the inventors ought to receive encouragement as clever mechanics, and the sale of their articles of trade, would, no doubt, be commensurate with their utility; but they are so notoriously the reverse, that they have sunk into oblivion, in some measure, through the well-merited castigation which this experiment on the public credulity received, and richly deserved. (See Plain Advice to the Deaf, p. 154, and Contraction of Orifice of Auditory Passage)

PROPOSED REMEDIES FOR DEAFNESS,

Are so very numerous, that a tolerable sized volume might be formed of the recipes. From motives of curiosity, I have selections made from Pliny, Galen, Celsus, Dioscorides, Trallianus, Gabelhouer, Matthioli, Riverius, and others, who have all given numerous prescriptions, some of them very whimsical, and which either imperfectly translated, or with some still more fanciful additions, form the basis of those proposed remedies that are to be found in every cookery, or family "receipt" book. As the use of spirit became more common, such articles as were formerly applied in substance, are now recommended in many medical compilations, in the form of tinctures, oils, &c.—such as tincture of opium, or of myrrh, which are highly improper and dangerous, if applied when inflammation, pain, or purulent discharge exist. Opium was considered by Galen in this point of view; and cases are mentioned of total

deprivation of hearing arising from using it; the addition of spirit cannot make it more salutary. I have seen one case of total, and I believe irremediable deafness, which occurred after the copious application of laudanum to the auditory passage; and many instances of considerable injury produced by using it.

WARM WATER DROPPED INTO THE AUDITORY PASSAGE,

Has become a popular remedy, because it has, by repeated applications, softened indurated wax, and by so doing, it has in those instances afforded relief; but when applied to cases of a different nature, it seldom fails to do harm. (See Aurist, p. 7)

SEA WATER, OR WATER WITH SALT DISSOLVED IN IT,

HAVE also obtained some repute, through the mechanical, not medicinal action, which these liquids exert on indurated wax; but when there is the least tendency to disease in the ear, they are very likely to give activity to it, and so occasion injurious consequences. (See Aurist, p. 17, 34)

SOAP IN SOLUTION,

Is the most useful solvent of indurated wax, provided there neither be, nor have been any previous inflammation, or ulceration, as it then occasions so much pain, as to be quite inadmissible. A saturated solution of Naples soap in alcohol, diluted with distilled water made warm, with which the auditory passage is to be filled, will soften indurated wax sooner than

any other known menstruum. Or a solution of soap in distilled water, will have the same effect, although it will require a longer time. But no preparation of soap should be used to any case where disease exists, as before mentioned. (See Aurist, p. 34)

GALLS OF ANIMALS WITH BALSAMS, &c.,

Possess a certain degree of reputation, even with some professional men. Probably as the gall of animals contains a large portion of alkali, it was first recommended as a solvent for the wax, and so continues to be misapplied to a variety of other cases. I believe some of this animal bile, mixed with balsam of Peru, forms the nostrum of a female, who sells it for *any* and *every* case. (See Aurist, p. 39)

THE URINE OF A VARIETY OF ANIMALS,

Applied during a certain *mystical* number of nights, have had a share of reputation, as remedies for deafness. (See Aurist, p. 38)

The *sap*, *juice*, or *infusion* of different *roots*, or *herbs*, *steaming* the ear with *hot water*, or *medical decoctions*, are all of that class of applications, which, like several of those I have mentioned, act mechanically, in consequence merely of the quantity of liquid they contain; and when indurated wax has been the cause of the deafness, they have, no doubt, after using them some time, from the power they possessed merely as solvents, relieved the complaint; but the same effect would be produced, more certainly, safely, and speedily, by the professional assistance of an honourable practitioner; whereas, in some peculiar species of diminution of hearing, many of the foregoing methods would be highly improper; therefore persons who apply them, and who cannot have any knowledge of the

actual nature of their own malady, frequently occasion irreparable injury to the organ of hearing, by the experiment.

About two years ago, a statement appeared in the *Times* newspaper, that an old man, in the neighbourhood of Fulham, was cured of deafness which had continued for many years, by applying infusion of poppy heads for a certain number of nights; and, I think it is said, he was directed to this remedy by a dream. It is a very ancient remedy, and may be found in most of those old authors whom I have quoted: since the appearance of this case in the paper, probably many hundreds have tried the same method, with no other effect than that of making the diminution of the sense of hearing still greater; whilst others, whose cases were analogous to this old man's, may have derived benefit.

OILS

Of all descriptions, also *fat* of eels, hens, capons, ducks, geese, herons, cow's feet, foxes'

lungs, marrow of a ham bone, bacon—some of which are directed to be boiled with certain herbs, roots, or flowers—others with some whimsical or ridiculous things, such as wood-lice, ant's eggs, earth worms, &c., are recommended by many ancient authors. Many of these oils and animal fats, from the action of the fire, have a greater affinity for oxygen, and absorb it from the atmosphere more readily, whereby they become what is commonly termed rancid; but chemically speaking, vegetable or animal oxides, and therefore acrid, and stimulating, occasioning great pain and inconvenience, as well as danger, if there be any inflammatory action going on in the ear. (See Essay, p. 22. Address to Nervous Deaf, p. 27. Plain Advice to the Deaf)

CITRINE OINTMENT.

I HAVE seen many prescriptions directing the application of this to the auditory passage; in some instances for deafness, and in others for herpetic affections of this part. Persons who

are unacquainted with the nature of the composition, use it, under the idea that it is an innocent application; it is, however, proper that its composition and effects should be known, as it is capable of occasioning very serious evils. It is made by dissolving crude mercury in nitric acid, to which is added lard, and oil. This preparation not only has the effect of diminishing the sense of hearing, but also occasions noises of the most unpleasant description in the head, and even a degree of aberration of the mental faculties.

In one case, which came under my observation, it was introduced into the auditory passage, under the pretence, that it was the ointment of cabbage stump, (see Cabbage Stump Ointment,) and it injured the sense of hearing, the faculty of speech, and indeed the whole sensorial powers very materially. (See Plain Advice to the Deaf, p. 167)

In another case it caused paralysis of the tongue, which continued some time, and was succeeded by the most distressing noises in the head. (See London Medical, and Physical Journal, for Sept. 1827, p. 279)

PRETENDED AURISTS.

THERE are always some of these empyrics advertising in London, and its neighbourhood, as well as in all parts of the country, who either profess to cure deafness in a wonderfully quick manner, or sell some nostrum for the purpose. (See Address to Nervous Deaf, p. 37) These impostors of the first class, may be detected by a very trifling exertion of common sense; for they promise a cure in all cases, and demand from three, to ten guineas to be paid in advance, which of itself is quite enough to awaken suspicion, as no regular professional man expects to receive more than the established fees. Those of the second class sell specifics, which it will be evident from the foregoing pages never can exist, so various are the causes of deafness. These charlatans also produce, and publish, certificates, that they have cured persons, who, if inquiry be made, either never existed, are now dead, or if alive, are probably

confederates in the scheme of deception, and villany. (See Aurist, p. 66, 67, 68. Plain Advice to the Deaf, p. 174)

I have just had a letter handed to me by a lady of rank, from a clergyman of Hertfordshire, whose name had been most unjustifiably used by one of these quacks. By this letter, it appears the empiric nearly destroyed the life of a young lady, who was induced to consult him; which is not matter of astonishment, as the clergyman, who has known the man and his family for many years, declares that he is totally ignorant of every species of knowledge necessary for such an undertaking, except *impudence*. I understand that he pretends to derive his nostrum from some relative of his family, who lived 200 years ago. This assertion excites the astonishment even of his own relatives, although they are prepared, from his former conduct, to expect he would assert any falsehood.

BETHESDA-POOL MINERAL WATER.

See St. John, chap. 5. A liquid under this name, was three or four years ago recommended by a Licenciate of the College of Physicians, as a cure for deafness, as well as, I believe, every other complaint; according to his *printed* directions, this water could only be obtained at *certain places*, which he pointed out. Incredible as it may appear, although even the scite of the sheep market has been for centuries unknown; yet this man had the impudence, I am informed, on this fact being pointed out to him, to pretend that the original spring had been discovered, in consequence of some excavations having been made for that especial purpose; and in proof that the water was genuine, the angel of the Lord, he said, periodically troubled it in each individual bottle,—the same as we are told he used to trouble the pool. There were many persons who drank a considerable quantity of this water for a variety of complaints, until the

shafts of ridicule spoiled the Doctor's trade in the article, by correcting the aberration of his patient's minds from the true standard of sanity. (See Plain Advice to the Deaf, p. 167) After this, we must not be surprised if a portion of clay and water, said to be from Siloam's pool, were to be sold by some empiric, to cure blindness! (See St. John, Chap. 9) Or a pretended importation of casks of water from the River Jordan, to be made by some adventurer, and disposed of at a high price, as a cure for leprosy! (See 2d Kings, Chap. 5) This is not so very unlikely, after the above example; and one much on a par with it, namely, the Quack who a few years ago advertised wild elephants' milk for sale, and gave a description of the manner in which his agents in Africa performed the operation of obtaining it.

CABBAGE-STUMP OINTMENT.

As if the Bethesda-Pool water were not considered a sufficient trial of the extent of the

public credulity, this ointment was to be an adjunct, and to be applied *by* the *inventor* of it, every alternate day for *three months*, during which time the above precious water was to be drank, and the ears washed with it. From the similarity of the injurious effects produced on a person to whom this ointment was applied, and from its turning a gold ring white like silver, which is a chemical precipitation of an inferior, by a superior metal, there is no doubt of this pretended cabbage-stump ointment, being in reality the ointment of nitrate of mercury. (See Citrine Ointment)

STOPPING THE AUDITORY PASSAGE WITH CERATE,

In order to cleanse the Eustachian tubes, was either almost as bold and impudent an attack on common sense, as that last mentioned, or originated from the most consummate ignorance; yet the newspapers of the day, professing to give the outlines of the *learned* gentleman's

lectures, who *discovered* this *wonderful* metastasis, or method of transmutation, eulogized the plan as an improvement, affording a new æra in acoustic surgery. In the country, and amongst some classes in London, the information was received as an article of intelligence, and probably considered by many, as being highly serviceable to the community: various persons, therefore, no doubt, had their ears thus plugged; but from the nature of it, which I have fully noticed in the Aurist, p. 85, Address to Nervous Deaf, p. 14, Plain Advice to the Deaf, p. 165, it is morally impossible that any case could be relieved by such means. I have some of this scented cerate, which I extracted from the ear of a gentleman, where it had been left by the operator. The editor of one of the before-mentioned newspapers, on being asked how he could insert any thing so ridiculously opposed to sound reason, replied he had nothing to do with the paragraph, which was like many other articles of *intelligence* of the same kind, technically termed mere puffs, and were paid for liberally, to insure them a good situation in the paper; so that they might more

effectually call attention to the person mentioned, and attract patients, which was the end designed by the insertion. If the proposer of the plan really believed that it could, by any possibility, afford even the slightest relief in deafness, it is fortunate he did not live in the time of Celsus, and have occasion to become that great man's patient; for he would assuredly have placed an issue on the coronal suture, in the hope of relieving *stupidity:* but if this plan were brought forward solely for the sake of advantage to himself, and hopes were thus excited, which he knew could not be realized, there must be such a deficiency of rectitude, that he is fully entitled to *another species of application!*

CONCLUSION.

I HAVE thus most conscientiously and plainly given what appears to me useful information, upon the varieties of Deafness, and Diseases of the Ear, with the methods in use, or that have

been recommended, for relieving them. In the performance of what I consider to be my duty, I have been led to animadvert, probably severely, upon preposterous modes of treatment, the opinions of system-mongers, and every species of Charlatanism, that has come to my knowledge; the object of which has evidently been to impose on the public, or the afflicted, by artful and apparently disinterested misrepresentations, and thereby gain an unfair advantage over the honourable practitioner, who does not descend to such disgraceful methods of obtaining a false reputation. That this will be unpalatable to the parties concerned, I am fully aware, and that I shall become still more the object of their resentment, and animosity, than I am already, may also be anticipated. Indeed, I have had sufficient examples of their feelings on this point, and capability for misrepresenting me, to leave me in doubt on the subject: but the proofs which I have received of the good opinion of the first scientific men of the present æra, as well as, I may truly say, of all my patients, satisfies my mind that my professional conduct is considered to be correct, and that if

I were to pass over unnoticed the impositions and empirism which have been attempted, I should be guilty of a dereliction of every principle of honour, and unworthy to retain the rank I have acquired in my profession. Thus, then, fortified, I shall fearlessly proceed, even more *decidedly* than I have done, to expose every future attempt of the same description, regardless, yet prepared for *any consequences* that may ensue.

I have not studied to write elegantly, nor employed any hireling to do so for me; my aim has rather been to write a work of real utility for all classes;—if I have succeeded, my labour will be amply repaid.

FINIS.

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