Nasal Obstruction - Its etiology, symptoms & treatment

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This subject for a Graduation
thesis suggested itself to my mind during
a clinical Assistantship at a London
Hospital for diseases of Throat, Ear and
Nose, where I had the opportunity of seeing
a great many cases of nasal troubles wholly
overlooked by the General Practitioner, and
where even suspected, diagnosis and con-
treatment consequently were erroneous. Nor is this
ignorance on the part of the very great
bulk of Practitioners to be wondered at
when at all the Medical Schools there is
little if any time devoted to the study
of this important subject, with the result
that the student begins practice wholly
ignorant of diseases caused by Nasal
Obstruction. Indeed until within a
comparatively recent time this was an
entirely neglected region and all treat-
ment consisted of the mere use of an
astringent powder perhaps in some cases
preceded by the use of douching. Of late
Certainly much has been written upon the
subject, and has become the hunting ground
of many Practitioners for the sources of
numerous and obscure symptoms, which they could not otherwise explain. Still, it has not, except at the hands of a very few, received that attention its importance demands from specialist or General Practitioner. Among Continental men much credit is due to Vallolini and Hack for giving an impetus to the study of nasal diseases, and also to Michel, Holden, Haener, Tuckerkandl, Fränkel, Hering, and in our own country to Mackenzie, Woakes, Casswell Baker, Spencer Watson Lennop Browne, Greville Macdonald.

When we consider that the nose communicates with so many important structures, viz.: by the Eustachian tubes with the Middle Ear; by the lacrimal duct with the conjunctiva of the eye; with the Frontal sinuses, anterior and posterior Ethmoidal cells, and spheno-palatine foramen; and is separated from the brain by the thin cribiform plate of the Ethmoid bone, we cannot but wonder at the comparatively little attention devoted to this organ and
its diseases, altogether apart from the very important physiological functions performed. Further, the extensive nerve supply would, of itself, of necessity, under irritation or disease, lead to so many reflex symptoms, which could not be treated with any like satisfaction to the patient or conscientious practitioner, without tracing them to their origin.

Before describing the causes of Nasal Obstruction, it would be well, I think, to give a rapid sketch of the anatomy and physiology of these cavities.

The nose is divided into two cavities by a septum. These cavities are wider anteriorly posteriorly than transversely. The septum is formed by the perpendicular plate of the Ethmoid, the Torus, and the Palatine Bones, and in the recent state by a central cartilage.

The roof is formed anteriorly by the Cuboid form plate of the Ethmoid bone, horizontally and sloping the Nasal and
of the Frontal Bones— and posteriorly by the body of the Sphenoid bone. The floor is formed by the Superior Maxilla, the palate bones and the soft palate.

The external wall is formed by the Frontal portion of the Superior Maxilla, Lachrymal and Ethmoid above, and by body of the Superior Maxilla, the perpendicular plate of the palate, and pterygoid plates of the Sphenoid bones below. This wall is rendered uneven by the presence of the turbinate bones, three in number. Of these the inferior is the most developed and indeed is the only one of them which is a distinct bone—the other two being merely portions of the Ethmoid Bone. Their attachment on the inner wall is nearly parallel, and their posterior extremities are in the same line and so the inferior being the largest extends more anteriorly. These three bones divide the nasal cavity into three channels, or meati, of these the inferior (between floor of nose and inferior
turbinate bone) is the most important, being in the normal state concerned in respiration than the others, as the air enters it more directly, and consequently any obstruction in it more readily affects the respiration through the nose.

The blood supply of the nasopharynx is derived from both the External and Internal Carotid arteries. From the External Carotid - the facial as it ascends obliquely on the side of the face, passing near the angle of the mouth and at its termination joins the nasal terminations of the ophthalmic artery. From the facial, a somewhat large branch, the ascending Palatine artery ascends between the stylo-glossus and pharyngeus muscles, supplies the tonsil and Eustachian tube and ends in the soft palate supplying its muscles, mucus membrane and glands. The Coronary artery of the upper lip supplies the septum. The pharyngeal branches of the ascending pharyngeal supplies the tonsil, Eustachian tube & soft palate.
There is also a branch from the Superior Palatine Artery after passing through the incisor foramen and an astomosing with the Naso Palatine artery. The Sphenoid Palatine Artery passes through the foramen of same name, and dividing supplies the spongy bones, Ethmoidal cells, and antrum. One large branch runs along the septum and supplies its mucous membrane Internal Cartilid. The Ethmoidal arteries - posterior branches supply the Ethmoidal cells and upper part of the nose. The anterior branches supply the mucous membrane of the fore part of the nose. The Frontal sinuses and the Anterior Ethmoidal cells.

The Nervous supply is derived from the Sphenopalatine ganglion, which lies deeply in the Sphenomaxillary fossa. It has a motor and sensory branch from the Facial nerve and branches from the Superior Cervical Ganglion of the Sympathetic. The Anterior Palatine nerve after supplying the
mucous membrane of the hard palate, enters the anterior palatine canal, and supplies the middle and inferior turbinated bones, and sends a separate branch to the inferior. The posterior Palatine supplies the tonsils, uvula, and soft palate. The upper nasal branches supply the posterior and upper part of the septum, the mucous membrane of the superior and middle spongy bones, and the posterior ethmoidal cells.

The nasopalatine nerve runs between the bone and the pituitary membrane on the septum, which it supplies. The Vidian Nerve Communicates with the Great Superficial petrosal with the Facial, and by the deep petrosal with the sympathetic, and supplies the roof of the nose, the septum and the Eustachian tubes. The mucous membrane of the pharynx is supplied by the Pharyngeal plexus formed by the Glossopharyngeal nerve, the vagus and the sympathetic.
Mucous Membrane

The mucous membrane of the nose is continuous with that of the pharynx, antomum of Highmore, Eustachian tubes, and the frontal and ethmoidal sinuses. Sometimes it is prolonged anteriorly into the mouth through the incisor foramen. It is divided into two portions:

1. The Respiratory portion

Covers the lower half of the septum, inferior turbinate bone and the lower half of the middle turbinate. It is of a somewhat pinkish colour, composed of ciliated epithelium on a basement membrane. It is perforated by numerous filaments of the fifth nerve and the openings of many serous and mucous glands. Between the glands are scattered muscular fibres whose function is probably to aid the expulsion of the gland contents during their contraction. Underneath the mucous membrane are some nodules of adenoid tissue, which form an important element in
the production of the disagreeable odour of Rhinitis Atrophica, which will be mentioned later. The mucous membrane covering the inferior spongy bone is much thicker than elsewhere, and is composed of a structure similar to the Corpora Cavernosa of the penis, and hence the explanation of the transitory enlargements of this erectile body under stimuli of various kinds, and its diminution through the astringent action of cocaine.

The olfactory mucous membrane is somewhat pigmented and very adherent to the underlying structures. It covers the upper half of the septum, the superior turbinate bone and the upper half of the middle. It is non-iliated, thinner and much less vascular than that of the respiratory portion, and is also supplied with much fewer glands. The important element in it is the terminations of the olfactory nerve after piercing the Cribriform plate of the Ethmoid bone, being spread out on the septum and sides of the nose.
The mucous membrane of both tracts is very adherent to the bone underneath and sends prolongations into its substance. There is no periosteum so-called, the under layer of the mucous membrane acting as such as well as a perichondrium for the cartilages. This explains the determining cause of many cases of Polypi, Atrophia Rhinitis and necrosis - these being in many instances, secondary to catarrhal inflammation of the mucous membrane extending by the prolongations already alluded to.

The area of the mucous membrane is very materially increased by the folds on the turbinate bodies, which is important in exposing the inspired air to a more extended vascular area, supplying heat and moisture before entering the lungs.

**Physiological Functions**

The most important of these are **Respiration**, smell and speech.
Respiration — In the normal state the air inspired into the chest passes through the nostrils, the mouth remaining closed. Even when the mouth is open, the greater part of the air passes through the nose if in a healthy state. The current of air passes along along the inferior meatus, where it is heated and moistened, and as expired air, which is of a higher temperature than the former, passes along the same channel, there must of necessity be a constant current established in the nostrils. At the opening of the nostrils anteriorly there are some hairs, whose function it is to prevent the entrance of any foreign particles, which might set up irritation. Any minute particles which may pass are lashed away by the continuous movement of the cilia. The cilia move towards the base Pharynx, carrying the secretion from nasal glands backwards to the pharyngeal tonsil, there in all probability to be again reabsorbed.
So when the cilia are gone as in Ate"phie Rhinitis one can readily understand the evils resulting, viz.
the entrance and lodgement of foreign bodies and mucus lying unremoved.

The membrane being spread over the turbinate bones gives a much more extended surface than if they did not exist, and as already stated (see page 10) heats and moistens the inspired air. This has been well shewn by Sir Morrell Mackenzie in his work on Throat and Nose Vol ii page 372. He inserted a thermometer into the mouth with the bulb in the pharynx on one side between the uvula and pharyngeal wall. It was retained in the mouth without being touched by the lips, by passing it through a piece of wood. The instrument was allowed to remain until it reached 90°F. when it was found gentle nasal respiration reduced it ½°, whereas gentle buccal respiration reduced it 1½° - the difference between buccal
and nasal respiration thus being 107. The air therefore after passing through the long narrow nasal cavities reaches the pharynx hotter than when it enters by the mouth. Hence in Nasal Obstruction and in Atrophic Rhinitis (where although the cavities are very much widened, the nasal mucous membrane is destroyed) we must have much cooler air inspired with a consequent loss of heat from the lungs, and with the baneful effects of mouth breathing, which generally are much more apparent in the pharynx than in the chest, the mucous membrane becoming irritated by particles floating in the atmosphere.

Although the mucous membrane of the nose is continuously exposed to an ever-changing temperature, yet being regulated by an effective nerve supply, its glandular secretion and vascularity remain uniform, yet at times very little disturbance serves to upset the balance, as shown by the following case.
M.M., a lady of 50, complained for years of a periodic sneezing and profuse watery discharge from the nose. It always recurred on Sundays making the day miserable, and always required an ample stock of pocket handkerchiefs at hand. Examination could reveal nothing abnormal to account for the symptoms complained of, nor was there any change in mode of living or residence to explain cause. On making very minute enquiries into mode of living I discovered that on the days she suffered from her malady, she changed her under clothing which was not woolen but linen. The cold stimulated the skin to reflex action and by this pathologic irritation this paroxysmal sneezing was brought about. Being thoroughly convinced this was the real cause of her trouble I ordered the wearing of flannels, or at any rate to heat the linens before using. The result being, that the symptoms entirely disappeared.
Under stimulation the mucocon membrane becomes engorged and by frequent repetition we get hypertrophy established and later atrophy. I have no doubt this is one factor in the production of polypi. The membrane on the dependent parts becoming swollen and before reduced is again irritated swells, and so on until at length a time comes when it cannot return to its normal state and a polypus is the result. This membrane being hyposeopic, during the least moisture in the atmosphere, water is absorbed and a swelling produced, causing the train of symptoms complained of by the subjects of Nasal Polypi. Stimulation of the Nasal mucous membrane has been found to produce reflex symptoms elsewhere e.g. lachrymation, asthma, hay fever, cough (as shown & maintained of Baltimore in International Journal of Medical Sciences), inflammation of eyes, and even Glaucoma as reported.
reported by Lennox Browne in his Diseases of Throat & Naso Pharynx p. 507

Smell. This function is localized in the upper third of the nose, and is produced by stimulation of the terminations of the olfactory nerve either by gaseous inhalations or direct irritation by particles. When nasal obstruction exists, from whatever cause we have an anosmia to a greater or less extent produced. It is also produced by a directly opposite way viz Atrophic Rhinitis. Where the mucous membrane is almost entirely destroyed.

Taste is partly produced in the nose as we always find loss of taste accompanying anosmia. If there is only an abeyance of the sense of smell taste may still be present by relation of particles from the food stimulating the olfactory region from the post nasal space. This is a fact popularly known, although ignorant of the explanation as many people, when swallowing dis agreeable drugs, hold their nose very firmly to avoid the unpleasant taste.
Speech - The nose is concerned in the quality of speech. We can at once diagnose nasal obstruction from the voice, where its metallic ring is lost, and an alteration in the utterance of certain consonants.

Examination of the nasal cavities can be made in several ways:

By Anterior Rhinoscopy by means of a nasal speculum. As in this country sunlight is so uncertain, we must make our examination by artificial light. For this purpose we must use a concave mirror with a somewhat long focus. If we could use sunlight then a plain mirror is requisite. The speculum serves a twofold purpose, it not only reflects light, but what is more important, separates the alae of the nose and permits of an extensive view of the cavities. The form of speculum depends very much on the operator. Whichever form is employed, it should not have fenestrated blades, in order to prevent the hairs at the nasal orifice
obstructing the view. This is a defect possessed by Frankel's speculum, otherwise it is a very good one, especially in the case of children, as it causes not the slightest pain or discomfort on insertion. An important quality, and I should almost say essential property, a nasal speculum should possess, is that it be self-retaining, as the hand of an assistant obstructs the light, and we cannot depend on the patient himself retaining it in position. Lennox Brown's is the only one I know possessing this property, and the blades being made of ivory, although non-reflecting, are non-conductors of heat, which is a decided advantage during Galvand Caustic operations. Volta's modification of Chariet's is not self-retaining but otherwise an excellent instrument and one very much used. Kramer's is, I think, clumsy and owing to its shape does not permit of a good view.
decidedly averse to, as the patient always complains of discomfort during its use. On inserting the speculum and gently separating its blades, we get a view of the inferior of the nose, and more prominently a part of the inferior turbinate body, which is generally swollen, although not pathologically so, the erectile tissue of which it is composed being in a state of turgescence. On touching it with a probe we find it does not feel solid, and can be moved about. To ascertain if my physiologically enlarged brush is with a temperate solution of cocaine when it will gradually diminish. On inclining the patient's head backwards the middle turbinate bone comes into view, the superior is seldom seen. The most of the septum comes into view, except at its most superior and posterior parts. We rarely find it straight, being generally deflected to one or other side. At the same
Time not infrequently examiners are to be made out. Between the middle and inferior turbinated bones is the middle meatus. The Eustachian orifices open at the level of the inferior meatus, any obstruction in this channel will therefore cause a disturbance in the passage of air to and from the middle ear by the Eustachian tubes. In some cases, especially those of atrophic Rhinitis we can see the back wall of the pharynx, and by asking the patient to perform the act of swallowing see the movement of the pharyngeal muscles. Occasionally and especially by beginners some mucus secreted from the sphenoidal glands may be mistaken for the posterior pharyngeal wall, and this error should be guarded against.

The difference in colour between the different parts of the mucous membrane should be noted. The respiratory portion, especially that covering the inferior turbinated
being of a bright red, whereas that covering the middle is of duller hue.

By posterior Rhinoscopy

This method can be performed by the aid of a laryngeal mirror, by bending the stem a little. By

for the most convenient instrument is that by Michel of Cologne as de-

scribed in his "Die Krankheiten der Nasehöhlen". Its advantages are that

the mirror is smaller than the smallest laryngeal one used, and can be inserted in the same plane as the handle. By a spring at the end of the handle we can set mirror at any angle to the stem we please. On constant use, the pressure of thumb on the spring becomes some what tiresome. To make an ex-

amination the surgeon and patient should face one another. The latter should sit quite erect in his chair, with the head resting against a rest fitted to the chair, or very high backed chair constructed for the purpose. The mouth must be widely
opened and the tongue depressed by means of a depressor and I think a narrow one suits best. Either Frankel or Rabeis. Finkel's has the advantage that it can be held by the patient leaving the operator's hands free to move the chin upwards or downwards as he may wish. Palate hooks I deem unnecessary, and the practice followed by some men of passing a string through the means into the pharynx to hook up the palate I consider barbarous, and one the most of private patients would strongly resent. The tongue should be pressed downwards and forwards by Moldenhauers in his 'Krankheiten der Nasenhöhlen' and by Frankel in Ziemssens 'Encyclopedia Vol. IV p. 782. Voltolini in his rhinoscopic and pharyngoscopic follows a similar method and gets the patient even to the point of retching. If the uvula is drawn backwards the method of asking...
the patient to produce certain nasal sounds and breathing through the nose in most instances defeats its own object, as generally he does exactly what you wish him not to. Simply ask a patient to breathe naturally and success is much more certain to crown your efforts.

In not a few cases it is necessary to brush the fenes and pharynx with a solution of cocaine before an examination can be made. The mirror being crammed should be tilted to a right angle, and each space examined separately. The principal landmark in posterior rhinoscopy is the septum, which can be readily distinguished and rarely, if ever, do we find it deplanted in this position. On each side of the septum are the choanal openings of the nares. Occupying this space are to be found the three turbinate bodies, springing from the outer
wall and extending towards the septum, their posterior borders being in the same line perfectly.

The most prominent of these are the middle ones, the lower ones come next inside and are readier in color.

The lower nares is larger than the middle. A lateral view shows the Eustachian orifices, with a fold of mucous membrane in front and behind. Behind them is the fossa of Rosenmüller into which not unfrequently the Eustachian catheter passes instead of the proper orifice.

To get a view of the vault we must place the mirror horizontally. In the anterior part of the vault there is a collection of adenoid tissue, usually called Luschka's tonsil, after Luschka who first described it. From this two folds of mucous membrane stretch outwards and known as the Pharyngeal brusa. In the centre of the brusa one finds a small opening described by Frankel Zeissmeiss Encyclopedia Vol 4.
like that in a poppy capsule. Morel Mackenzie denies existence of opening, says it is only due to absence of the mucocele membrane at that point. Luscha who first described it, says there is always an orifice of the size of a pin's head. Sometimes larger, bounded by a projecting cushion and presenting a cubical of ovoidal shape. Frankel considers it is connected in the embryo with the Hypophysis Cerebri. Journal of Laryngology and Rhinology, February 1887. The same idea is held by Landowis & Stirling. Human Physiology, p 1220, where they say that the hypophysis is a diverticulum of the nasal mucocele membrane, extending through the skull towards the hollow infundibulum, which grows to meet it. Its outer existence, entirely as a special structure, is denied by many, and the opening a depression in the mucocele membrane, and a space formed by the coalescence of the two inner lips of the ridges seen at the back of the pharynx.
Symptoms

A feeling of stuffiness in the nose and difficulty of breathing are among the most generally complained of. The patient, while sitting or standing, does not as a general rule experience such a difficulty in breathing as when in the recumbent posture, because the air entering the nostrils in the former position can more freely, and also in the latter posture blood is driven more forcibly towards the head and consequently the inferior spongy bone becomes swollen and prevents the passage of air into the nostrils. There is a constant sniffing, which is so disagreeable to patients' friends. This is to raise the opening of the nose anteriorly to the level of the inferior meatus and allow a free current. The openings of the frontal sinuses being blocked up, we get the air in these rarified and hence the headache so frequently complained of over this region.
The nasal duct becomes closed both from extension of inflammation and pressure on its opening producing epiphora, and even lachrymal abscess. This is a fact not infrequently forgotten by ophthalmic surgeons when treating the latter condition, for although the canaliculus be slit and the duct probed, yet if the primary cause be not removed, the cure cannot be permanent, but a recurrence sure to follow.

Closure of the Eustachian Orifices, causing deafness by preventing passage of air into the middle ear and hence membrana tympani becomes indrawn from want of balance between force of external and internal air. There is not infrequently an extension of inflammation from the naso-pharynx along the tubes not only causing deafness but inflammation of middle ear, and ending in suppuration, perforation of tympanum and serena of external ear by irritation.
From the discharge. Even a more serious complication may arise in the form of necrosis of mastoid bone and even cerebral abscess. Along with this we generally have a distressing limnitus which can only be cured by removal of the obstruction.

Anosmia is due to the difficulty of odoriferous particles getting access to the olfactory mucosa and stimulating it, and secondly when the mucous membrane becomes cinked and new terminations atrophied.

Loss of taste frequently accompanies anosmia, from difficulty of volatile particles entering the nares.

Speech becomes nasal, not really so, although popularly supposed, it being due to obstruction. It is devoid of its natural metallic ring. Mouth breathing with all its baneful consequences is even present. Prominent among them being pharyngitis, sore throat, and snoring at night.
Pharyngitis cica is in most
instances produced by the cold
air impinging against the back
wall of the pharynx and by the
particles conveyed and then deposited
setting up irritation.

By extension of this latter we get
laryngitis cica produced. To treat
this condition without removing the
cause, as is often done, is fruitless
and certainly never successful.

Enlarged tonsils from irritation
spreading along the lymphatics.
As a result of these one is often
called upon to see fijen breast
in children from the improper
expansion of lung, owing to the
eliminshed quantity of air inspired.

Varied neurones are without doubt
traceable to this cause and cured by
the removal of the obstruction.

Prominent among these neurones
is Asthma as was first pointed
out by Voltoine.
Indigestion very often occurs from continuous dripping of secretion from the posterior nares into the stomach setting up fermentative changes. It is also produced reflexly by irritation of the vagus which sends a filament to the pharyngeal plexus.

There is an abundant discharge from the nostrils, at first viscid and latterly becomes thin and acrid. When long continued and cirrhotic processes go on it becomes very offensive.

The facial expression in many cases is quite pathognomonic of the malady—being pinched and anxious looking, with a comparatively broadened nasal bridge, which is only relatively and not absolutely altered, the cause being the falling in of the alae nasi from want of current of air passing through.

Reddening of the tip of the nose is not an unusual symptom, which I saw recently well illustrated in the case of two young ladies—sisters,
who complained of this periodically and always accompanied by nasal catarrh. On examination the noses were found quite blocked, and a well marked pharyngeal sicca present as well.

Anaemia - One is quite prepared for the presence of anaemia, as the blood under these circumstances is never properly aerated. This explains loss of memory, languor, sleeplessness and other disagreeable symptoms complained of.

Etiology - (A) Acute Nasal Catarrh

Simple as this cause may appear attention to its treatment is very important, as I am thoroughly convinced that the many other and more serious varieties of nasal obstruction nearly all are the outcome of frequently repeated nasal catarrh. It is by far the commonest cause, especially in children and young people. Its causes are predisposing and exciting.
Predisposing.

(1) **Struma** is a very decide cause, and children of this habit with enlarged tonsils are much more liable to catch cold than are healthy ones.

(2) **Nervous diathesis**—due not doubt to the inefficient inhibitory control of the nervous system over the vascular supply of the mucous membrane under even very slight provocation. The importance of the nervous element in the production of colds is seen in the liability of persons fatigued to contract nasal catarrh; and also, if engaged in some outdoor work, e.g. driving, one falls asleep, often enough he awakes with all the symptoms of a nasal catarrh, due to the tone of the nervous system being lowered during sleep.

3. **Alcohol** is a decided factor in the production of nasal catarrh. (1) by depressing the vitality of the system and by these means making the subject more susceptible to the influence of colds;
(2) By dilating the superficial capillaries a larger surface for radiation of heat is afforded. It is certainly a fact that the children of drunken parents are more disposed to colds and more frequently the subjects of asthma than those of the healthier and temperate.

(4) Hereditary syphilis by causing a dryness of skin, and sweat glands being enfeebled the waste products are not properly got rid of and a liability to catarrh established. There is also a tendency to hyperaemia and from this frequently recurring a chronic obstruction is established.

Exciting Causes.

Foremost among them is exposure to draughts—air blowing on uncovered head or against any part thinly clad. The feet being longer exposed than other part to a changing temperature are a very frequent source. The prolonged lowering of temperature or abstraction of heat causes shock and reflexly
calænh. See Works on "Post Nasal Calænh" page 29 et seq. Not an unusual cause is a sudden transference from an overheated to a cool atmosphere. Irritating particles, as pollen from certain grasses have long been known to be the cause of the Coryza of Hay Fever.

In certain exanthemata Coryza occurs as an early symptom, e.g., measles and Scarlet Fever. Indeed the former is nearly always ushered in by an attack of Coryza, and when occurring in children, measles should always in the absence of anything definite be kept in mind. In Scarlet Fever it comes on at a later stage and probably is due to an extension of inflammatory action from the throat. Infection certainly, as one can always see one member of a family after another attacked, even when living different modes of life.

In treating with dodecis, one must not
forget the possibility of producing symptoms of nasal catarrh. Moakes considers that the production of butyric and lactic acid fermentation occurring in dyspepsia in lowering the system is an important factor in the production of nasal catarrh.

**Symptoms** — Before an attack is harbored in there is a sense of general oppression with aching of bones and disturbed sleep complained of. There is stiffness of the nose with general chilliness and an invariable rise of temperature. The eyes are full from extension of inflammation along the nasal duct. There is usually no complaint of pain in the nose, as the tissues, when they swell have sufficient room to expand. Pain over the frontal sinuses is due to blocking of the infundibulum and consequent rarification of the contained air. Inflammation of the frontal sinuses is not always by extension, sometimes is through nervous influence (Moakes)
The secretion from the nares becomes increased, at first watery and then mucoid, mucopurulent and lastly thin. Sometimes it becomes during the second stage quite rusty coloured as in Influenza. The discharge is irritating as evidenced by the eruption on the skin at the margins of the nostrils.

Voice becomes nasal and the pronunciation of certain consonants impossible, thus in being pronounced b, t, n and d.

Blocking of the Eustachian tubes leads to deafness, inflammation of middle ear and its consequences. By the use of the tuning fork we find bone conduction is increased and air conduction ever diminished.

Anterior Rhinoscopy reveals a swollen, congested red mucous membrane over the turbinate bodies and septum. Posterior rhinoscopy shows the choanal to be nearly closed.

Although in adults, independent of its consequences, it may be regarded as of minor importance, yet in
Children it frequently becomes a dangerous form of illness. As the child is obliged for its nourishment to suck with its mouth for comparatively long periods at a time, nasal respiration is all important, and obstruction in the nares causes very great inconvenience. Often the child has to let go its hold of the nipple as soon as it has fastened on to the breast. This seriously interferes with its proper nourishment, emaciation follows and often threatens serious danger to life. Besides infants in the normal condition sleep with their mouths shut, as can always be seen, and it has been shown long ago by Kussmaul that the tongue has pressed against the roof of the mouth, so that in this way obstruction might prove dangerous. Treatment.

Prophylactic. For the catastrophically disposed, the use of occasional Turkish baths and the wearing of warm but light clothing are of great
Any diet favouring butyric or lactic acid fermentation, e.g. much sugar is to be avoided — when an attack threatens the best treatment is a stimulant to encourage diaphoresis. A dose of doreis powder, preferably given during the day, for a night it encourages sleep and has not the desired effect, answers well. Inhalations of carbolic acid and chloride of ammonium are especially serviceable — the former acting as an antiseptic destroying any germs which may lodge and cultivate in the nases. In newly born infants with syphilitic coryza the direct method is by some form of mercury and of these I have found grey powder by far the best. If this a child can easily tolerate one grain twice a day. Sometimes imination of mercury does well, but not so uniformly successful. Catarrh from gonorrhreal infection is best removed by antiseptic infections.
Considering that the retention of effete matter is a decided cause, it follows that purgatives are essential and should be accompanied by diluents to wash out the kidneys. To relieve the congestion nothing answers better than finely cut Adonis, carefully matched, by means of this remedy attacks at the beginning can be readily cut short.

It is of the utmost consequence to attend to the deafness produced at this stage as it is so easy to cure and while the neglect of it is the starting of a very intractable and often very incurable form of dry middle ear catarrh, I am sorry to say not all uncommon. Polishing in most cases opens the tubes and gives permanent relief. Its use is frequently assisted by blowing with the entrained vapours of Chloroform, which enables the tubes to open much readier. It can be effected by obtaining a special bag...
with a wooden nose piece jointed in the centre. In this part we can place a plug of wool containing the Chloroform, the vapour of which is blown along with the air to the tubes. Chloride of ammonium inhalers act very beneficially in cases of deafness. Should pollitening fail to restore the patency of the tube then recourse must be had to catheterisation. The best form is a short one, giving less leverage, thus in unskilled hands permitting of a smaller chance of doing damage to the adjacent structures. In applying there should never be any force used; a gentle manipulation and some twist only are required in cases the most difficult. The commonest method is to hook the instrument round the septum and then rotate through a semicircle when its point enters the tube. My principal, Dr. Hunter, has drawn my attention to the fact, and which he demonstrated to the Edinburgh Medical & Chirurgical Society.
In January 1886, that the opening of the tubes is 3/4 inch behind the line of the septum, so that the catheter should be pushed a little backwards as well as rotated outwards. The success of the catheter should always be tested by means of the OtoScope.

Earache points to inflammation of the middle ear, and speculum reveals congested bulging drum which if not relieved by leeching front of the ear, should be incised in the posterior inferior quadrant, and thus avoiding the I. Nerve in its passage through.

The cataract of the exanthemata is best treated by syringing systematically with some antiseptic e.g. caustic acid or solution of Permanganate of Potash. The good result of this I had strongly impressed upon me during an epidemic of Scarlet Fever in 1886. In a great majority of the cases a severe nasal catarrh set in as an early complication. In all cases where clouching was neglected...
the tonsils became enlarged and inflamed by extension through the lymphatics, and the submaxillary glands followed the same course. In cases will illustrate the different results of diligent as compared with neglected treatment.

Mrs. aged 3, was laid up with the two sisters. Nasal catarrh set in very early and breathing was entirely buecal. Temperature was high and patient was very irritable and fretful. Salicylate of Soda was administered with very great benefit to the general symptoms but nasal trouble continued. She was ordered a dose of Leidy's fluid every hour, and her parents carried out instructions very rigidly. The result was a fall of temperature, and patency of the nasal passages established. As contrasted with this case quote that of S. F.'s children - boy and girl attacked mildly, temperature for
first few days not high, and no complication present. On the fourth day nasal catarrh set in, with a rapid and weak pulse. Stimulants were ordered and the local application of nasal douche and brushing the tonsils and fauces which became covered with a greyish membrane with congealed blood. The mother, not being intelligent and having other duties demanding attention, failed to carry out instructions, and the boy died very suddenly. I am sure from nasal diptheria.

The tonsils and glands at the angles of the jaws of the girl began to swell, and a diffuse cellulitis of the tissues of the neck set in. The urine at this stage contained no albumen. The mother could not manage to syringe the nostrils or brush the fauces as the patient would not open her mouth except under strong pressure. Consequently there was no attention paid to the local application except when I paid my visit. Latterly she
refused to take any stimulant or nourishment of any kind. On forcibly opening the mouth, the fauces were seen covered with a greyish membrane. Abscesses followed the cellulitis and a great quantity of tissue in front of the neck sloughed away. Had death not ended the case, from the very rapid progress of the sloughing I believe the large vessels would have been opened into and a fatal hemorrhage in consequence.

B. **Chronic Catarrh** commonly supervenes on the repeated occurrence of the acute variety. Those of a strumous or syphilitic diathesis are most liable as evidenced in their offspring. Not an infrequent cause is the use of irritants as snuffs and tobacco.

By far the most prominent symptom is the increased production of mucus, with a constant...
desire to use the handkerchief. The nose feels constantly blocked and the voice nasal. Eustachian catarrh with deafness, epiphora and lachrymal abscess complicate just as in the acute form.

On examination the mucus membrane appears thick, red and succulent and covered with mucus. If long continued the surface becomes abraded and small ulcers appear, setting up a constant irritation. This irritation is so troublesome that by scratching the crusts are removed and bleeding follows.

In treating, the diathesis must always be kept in view and corrected. Then follows the use of alkaline and antiseptic douches, which as a rule are more beneficial than sprays. The best form of douche is Jenkin's of the Moor's Hospital. Gray's Inn. Its use can easily be taught to the patient. The head should be bent over a receiving dish, with the mouth opened wide. In this way the solution passed...
up one nostril comes down the other. A douche containing Carbolic acid, borax and some alkali does well, giving the combined action of an antiseptic, astringent, and salvent of mucus. When it resists many forms of treatment and application of Tocidein saturated in Ether does well. The use of Iodine acid is seldom followed by a good result. Where there is much irritation and the preceding forms of treatment are not well borne, the application of a 10% solution of Hydrochlorate of Cocain answers well, acting as an astringent and sedative.

C. Chronic Hypertrophic Rhinitis is generally a further development of the preceding forms, and especially after any of the acute exanthemata. As far the greatest number of victims is supplied by the strumous. Among other causes is the entrance of infections from
particular employments.

Accompanying hypertrophic rhinitis especially in children we find amyloid degenerations in the naso-pharynx and the presence of enlarged tonsils, which more usually are the cause rather than the conse-
sequence of this state.

The mucus membrane is much swollen, especially over the middle turbinated bodies. This is not a mere physiological swelling of erectile tissue often seen in the inferior nose, but a true hypertrophy of the tissue. There is little or no tissue friction, and on probing we get a feeling of resistance not of bogginess and mobility as in the former condition. The inferior often blocks the anterior nares so effectually that anterior rhinoscopy is useless. In posterior rhinoscopy the enlarged bodies are seen nearly filling up the Choanae and obstructing to a great extent the normal breathing. The turbinates
bodies often appear weak and may be mistaken for polypi. This is a mistake very frequently fallen into by general practitioners. I have on several occasions seen patients with this condition sent elsewhere for removal of polypi. The vascular appearance seen in Chronic Rhinitis is gone and a pale fleshy colour supersedes.

Sometimes the symptoms are very slight. As might be expected prominent among them is deafness by the blocking of the tubes, and the appearance in many cases of middle ear catarrh. It must be very evident that there must be decided hindrance to nasal respiration caused by the hypertrophied mucous membrane as well as by an accumulation of secretion. Smell and taste are nearly always in abeyance, and avitiated sense of smell substituted is not at all uncommon. The anosmia is
produced by the stimulating particles, gaining admission to the olfactory mucous membrane.

Both mouth breathing is always the rule, and both tongue and pharynx become dry and a pharyngitis sicca results. I do not believe that a pharyngitis sicca persists to exist, it being secondary to nasal obstruction where cold air impinges against the pharynx, absorbing moisture and drying secretions, and it becomes covered with a thin layer of mucus giving it a glazed appearance. The mucous membrane around the Eustachian tubes proliferates rapidly, which with deposited mucus gives the characteristically grey appearance seen. By fibrosis this process may go on to atrophy, the mucous membrane of the pharynx then seems thin and shiny with fine red folds. So this often the secretion adheres very firmly, setting up a constant hawking
to aid its removal. There is often the feeling of a foreign body irritating the throat, especially in the mornings. The voice becomes easily tired and the high notes can only be with difficulty produced. There is a copious secretion which frequently becomes dry and encrusted. In recent cases it is watery, later becomes viscid and tenacious. When the crusts so formed are forcibly removed, bleeding always follows, and in such cases blowing the nose forcibly is a frequent cause of epistaxis. The tip of the nose becomes red from the improper return of the blood due to pressure exerted on the vessels.

Reflex necroses are not so common as in the case of polypoid growths, because the latter more often come in contact with the septum. Without friction and irritation of the septum reflex necroses don't occur. Michel states that small polypi often cause reflex symptoms when larger ones don't, and that
Chronic and large swellings in
the choanae seldom cause reflex
neuroses, whereas acute and changing
swellings do. Probably the explanation
of this is that the larger masses
accommodate themselves in the cavity
when smaller ones, varying as polypi
do, impinge now and again against
the septum irritating the mucous
membrane.

In a lecture by McKeide
(Edinburgh Medical Journal Jan 29, 1867)
he quotes a paper by Haeck, in which
he shows that the constant erection
of the nasal mucous membrane
may give rise to such neuroses as
Asthma, night mare, cough, megrine,
supra-orbital neuralgia, redness of swelling of the nose, vertigo and
even epilepsy. Asthma occurs
more frequently in the presence of polypi. Attacks come on usually
at night and are preceded by
sneezing and a profuse watery discharge from the nose. Haeck
has even traced catarrh and headache to the same source, and makes mention of transitory defects of vision. He even goes so far as to say that atrophy of the optic nerve in some cases can be prevented by operation on the nose. In the same lecture reference is made to Sommerbrodt's experience, who also relates cases of asthma, megrim, edema of face and conjunctiva, sneezing and cough due to changes in the nasal mucosa, and further he has noticed vaso-dilator changes in the Bronchial mucosa.

Cough is not unfrequent symptom usually begins at night, unaccompanied by any expectoration, with perfect roundness of lung on physical examination. The cause of this is doubtful. Mackenzie of Baltimore and many others believe it to be reflex. Bride believes it to be due to the dropping of secretion upon the inter angularoid fold from the post-nasal
space. This latter explanation does not seem quite satisfactory. I believe it to be reflex from stimulation of some filaments of the 9th nerve. It is possible that many people, from the many cases seen and recorded, believe in this origin of reflex neurosis is undoubted. Yet many others and among them Semon, who have failed to treat neuroses by curing nasal mischief, deny this origin. To argue that because these symptoms disappear on the use of the application of the galvano-cautery to the nose may not be tenable, for it may be possible were one to apply any other irritant in the neighbourhood of the nose the symptoms might disappear. It is well known that in cases of epileptics if we apply rigorous treatment to the part where an aura begins a fit may often be aborted. Symptoms and the appearances of acute laryngitis may result from
hypertrophic rhinitis as illustrated by the following case - and a medical friend suffered from hoarseness and generally out of sorts. For some weeks he was losing flesh. I brought him to a well-known London specialist, who examined his larynx and found the right cord inflamed with a ragged margin, which he demonstrated to me. He diagnosed incipient phthisis and ordered a sea voyage and prolonged rest. Not feeling satisfied, and being not a little anxious about my friend, I took him to another Dr. who made a more thorough examination and found an enlarged middle turbinate body which he removed with the cold snare. The result was very satisfactory, laryngeal symptoms very quickly disappeared, and he began to put on flesh rapidly. Now he is engaged in general practice feeling perfectly well.
If this state should remain chronic, the next step one would expect would be an otitis or chondritis, and this does really occur, although not nearly so frequent as some authors would have us believe, e.g., Woakes see his Post Nasal Polyps. This stage he has dignified with the title of Necrosing Ethmoiditis.

Considering the varied nerves caused by nasal obstruction it behoves us carefully to examine the nose, at the time it is absolutely necessary if possible to look for causes elsewhere and if not present then attribute them to the nasal obstruction.

When hypertrophic rhinitis exists for a lengthened period, atrophic rhinitis becomes developed. This is undoubtedly due to the formation of fibrous tissue during the inflammatory stage, which later becomes cirrhosed, as occurs in cirrhosis of liver or other organs.
The soft tissues become thinned, the glands in the mucus membrane are obliterated. The cilia covering the epithelium disappear and hence the explanation of many symptoms. The turbinateated bones are also affected, thinned and from the formation of osteoclasts are often almost entirely absorbed. At this stage the mucus membrane appears thin and shining covered with a layer of mucus. Consequent upon the atrophy of all the structures the nares become very much widened relatively, although of course not absolutely. On examination the nostril seems a big cavity with no differentiation between the meatus and the posterior wall of the pharynx is easily seen, and even sometimes the openings of the Eustachian tubes can be demonstrated. Covering the mucus membrane of the shrunken turbinateated. Bodies are yellowish green or grey crusts which are very firmly adherent, or not.
in a few cases the septum is perforated from the nostrils emanates a most overpoweringly offensive odour, so very characteristic that once perceived it is not easily forgotten. This must be very disagreeable to the patient himself and to his friends. Even if no more serious symptom prevails I think atrophic rhinitis demands prompt and speedy treatment.

I have known of a case, that of a young woman, sobad that her father threatened to turn her out of doors unless she got rid of an offensively smelling atrophic rhinitis. Atrophic rhinitis is what is generally termed serena, an unfortunate term I think, as serena as a special form of disease does not exist, the offensive odour being merely a symptom. Other causes are syphilis and the long impaction of foreign bodies.

The cause of the offensive odour is a very much disputed
point. It is supposed by some, among them Frankel, that it is due to fermentative changes, but should the crusts be washed away, the newly formed secretion smells as bad. Others regard it as the consequence of fatty degeneration of the gland secretion, which is not tenable for the same reason. Michel in his Krankheiten der Nasenöhlen (Handbuch p. 109 et seq.) attributes it to purulent inflammation of the sphenoidal cells. He showed it could not be from the antrum of Highmore, as there were no symptoms connected with the filling of so large a cavity present. He also demonstrated it was not from the frontal sinuses. The openings of the ethmoidal cells being at the level of the turbinated bones mucus coming from these in the erect position drops towards the floor of the nose. If lying it goes backwards to the pharyngeal roof.
It is not due to necrosis, which to cause such an odour must be extensive. The complexion of these patients is sallow and the throat dry. The throat appears dry and glazed, a process of atrophy from the nares being the cause. Partial and even total loss of smell is generally present, either due to the crusting over the septum and turbinate bodies preventing odoriferous particles coming in contact with the terminations of the olfactory nerves, or may be due to the atrophy of nerve fibres and impossibility of responding to the stimulation of these particles. The nasal obstruction is caused by the collection of crusts. Tinnitus Aurium is often present as a most distressing symptom, and caused by the constant patency of the Eustachian orifice from the atrophy of the tissue surrounding it.
On this account when speech is attempted, one's own words are heard in the ear, causing a very disagreeable sensation. Often when swallowing food, particles may get up the tubes and set up an inflammatory process. On account of the atrophied mucosa cold air brushes in to the posterior pharyngeal wall, and does not derive any heat or moisture in its passage so that the baneful effects of mouth breathing follow here—moisture is absorbed from the pharynx and then follows a pharyngitis sicca, consequently laryngitis sicca. From the absence of the cilia the secretions are not washed down and hence reason of collection of crusts, and also dependent on the want of moisture. Foreign bodies can also gain entrance which were the cilia present would not be admitted, set up irritation, the offensive odour and the
continuous dripping of mucus into the oesophagus set up an intractable dyspepsia. A case came lately under my notice, where there was a well-marked Rhinitis Atrophia extending over a great many years—the complexion was sallow, and anosmia, wide noses thickly crusted from which emanated a disgusting odour, and a persistent dyspepsia were present. She tried Hospital and private treatment but without any success, because there was never any attention directed to her nasal condition. One medical man treated her vigorously for months with charcoal biscuits to cure her dyspepsia, it need hardly be added his treatment was unsuccessful, as the sole cause was left unremoved. This is far from being a solitary instance I regret to say. The use of suitable remedies locally applied got much relief and expressed herself as being better than she had been for years.
Treatment of Hypertrophic Rhinitis

The treatment adopted varies with the severity and duration of the case. As might be expected, the more recent the case the more amenable to treatment will it be.

As in all cases there is an increased secretion of mucus and crusts, the first thing to be attended to is the cleansing of the nostrils by spray or douching. In the continent syringing is a much more common mode of treatment than any other, but douching is much more preferable, as it can be more comfortably performed by the patient than syringing.

The simplest form is the syphon douche, which any person can use. Indeed, the form of instrument is of little consequence. Although douching the nostrils does seem a simple operation, yet there are some points that must be alluded to, and impressed
upon the patient. In using the head must be bent forwards with the mouth open. The fluid injected by reflex action causes a contraction of the soft palate and uvula and thus communication with the pharynx is shut off. The fluid rises in the cavity and comes away by the other nostril. The stream should be intermittent, otherwise there is the risk of overconning the contraction of the palate and uvula and the fluid runs down the pharynx. The force must be attended to; for if too strong, there is the risk of sending some of the fluid into the Eustachian tubes, and setting up an acute middle ear catarrh. There is also the risk of injecting some into the accessory canthi producing disagreeable symptoms. Moldenhauener recommends an examination of the nares to be made with the speculum.
to ascertain if one cavity be wider than the other. If so, send the fluid through the narrower one, which comes away very readily if the wider. If the converse is done we get a collection of the fluid and same result follows as when it is forcibly injected.

The temperature of the fluid should be about blood heat, for if too hot a disagreeable sensation is produced by the cold air inhaled. If too cold a most disagreeable feeling is produced accompanied by headache.

The quality of the fluid should be alkaline resembling in its composition that of the living tissues, not ordinary water.

A common salt solution 0.75% has this composition and answers the purpose. The idea of douching being antiseptic as well as cleansing, we combine some antiseptic substance with the saltfor thin Carbonic acid(479,814),(863,995)
He cannot expect more from the douche than the mere washing of the crusts and limiting of the secretion, and these its functions.

The use of astringent solutions is to be avoided, as it is not only attended by a disagreeable sensation, but it acts deleteriously on the sense of smell. Care should be taken to guide the stream along the floor rather than to the roof, this is easily done by holding the douche horizontally when the crusts are removed. The use of astringents e.g. tannin, alum, chloride of zinc or silver nitrate may be tried, but as a rule they invariably fail.

In the earlier stages bougies or large tents can be employed with good results. By such intermittent pressure we expect to arrive at the same results as in urethral structures similarly treated. We can use a graduated series of bougies, but the disadvantage
is that being solid they interfere with respiration. To overcome this inconvenience we can use ones hollowed out made of vulcanite or celluloid, which can be left in position for a little time at first after insertion they remain in for a very short time, which can be increased as their use becomes tolerated. This form of treatment I have seen followed with very admirable results. Tangle tents act well, and certainly much more speedily. Patient should be instructed to let them remain in the nostril for an hour or two before removed. I can recollect a female patient, who not quite understanding instructions given her, let one remain in her right nostril for a whole week, and although it caused her very much discomfort and pain, it was followed by very material benefit to her.
Chronic acid has been much favored in treatment of hypertrophic rhinitis, and used more largely on the Continent than in this country. From my own experience of it and from what I have seen of its use in other hands I would not at all be disposed to recommend it, and certainly would not have it used for myself.

There are several disadvantages attending its use, which should be guarded against; there is first the risk of making a raw surface on each side, which may be followed by union of the adjacent surfaces and a more complete nasal obstruction result. To prevent this use a saturated solution and apply it on a copper spatula, taking care that it is only on one side.

Then there is the danger of some of the acid dropping into the stomach and set up vomiting.
pain and the other usual symptom of strong irritants.

After its use patients as a rule complain of severe pain. In his paper before the International Medical Congress Copenhagen 1884, Hering in expatiating on many of its advantages claims for it that it is painless during and after operation. His experience has been supported by some and denied by as many. His method of use is first melting a small crystal on a silver or platinum wire and then applies. The pain caused by Chonic acid he attributes to an impure form of crystals containing sulphuric acid, on which latter depends the pain. If prepared according to his method, the acid evaporates and consequently painless operations ensue, he says. After its use he immediately washes out the nare with an alkaline solution. As might
naturally be expected some of this solution may gain entrance into the stomach carrying in its passage some of the redundant caustic with it. Sering himself had some cases followed by in toward results, but he shields his treatment by stating it was due to the cleansing fluid entering the stomach owing to a paralysed palate. Even cases of epilepsy have been recorded after its use. It has certainly some ad advantages over its most formidable rival — the Galvano-banter — that by those inexperienced or having little practice with the latter, the former is more easily applied, besides no costly apparatus has to be purchased or kept in order — a very important factor to many general practitioners. By far the most efficient treatment of hypertrophic rhinitis is by the use
of the galvano cautery. It is certainly the quickest, surest and least painful of all methods. It possesses decided advantages over chromic acid, as we can at any time judge the amount of cauterisation produced by regulating the strength of the current passing; and by careful manipulation it is only necessary to touch pathological surfaces by inserting the galvano cautery points cold and when at the proper place burning on the current, and after using withdrawing them cold. In this way we avoid touching any healthy structures, which would be very painful, and make an otherwise simple operation very unpleasant. So long as the heated platinum is in contact the pathologically hypertrophied mucous membrane no pain is complained of, but immediately healthy structures
are reached the patient cries stop, which is in most cases an indication to stop the current and withdraw the instrument.

Galvanoelectrolytic operations are at a rule free from bleeding—a decided advantage over the cold snare. The simplest form of battery is the bichromate; it can be easily cleaned and when out of order can quickly be put right without the trouble and expense of sending it to an instrument maker. Its construction is very simple—two or three large glass cells containing the solution of bichromate of potash and strong sulphuric acid, carbon and zinc plates. When the latter become eroded they must be washed with acid and coated with mercury and should never be allowed to touch the solution except when operating.

Before operating we must anaesthetise the patient parts.
solution of cocaine either by spray or the use of cotton plugs saturated with it. The latter method is I think much more effectual, although many patients prefer spraying. When on dilating the nostril the inferior turbinate is found to block the passage, the best thing to do is try to use the hot snare. Suck it along the floor and when it envelops it, pull the wire gently until a resistance is felt. Then turn on the current and remove. Care should be taken that there is not too much current passing as the wire may become too hot and break. There is no pain complained of, and as already mentioned no bleeding. After the passage is so far cleared, then an examination must be made to ascertain the amount of obstruction still remaining.

Operations on the middle turbinate body are preferably...
made by galvano cautery knife rather than the snare. Introduced cold and when at the desired part the current is turned on and the tissues scored through. If we wish to burn the remains of the pathological mucous membrane after using the snare, the best form of point is not flat knife but one coiled so which seems to act better for the purpose if there are any projections posteriorly they can be removed by the aid of the rhinocropic mirror the loop or point to the part and then removing.

The after-treatment consists in gently drenching the cavity in the morning and evening and applying some antiseptic emollient substance to the raw surface. The patient can quite well be removed to any distance in an hour or two after the operation. If necessary
the operation can again be repeated on the fortieth day or at any time subsequently. Although as a rule no untoward effects follow this operation, yet sometimes they are known even to occur when performed by most experienced specialists. I know of a well-known London specialist who had among his private patients six consecutive cases of acute catarrh of the middle ear following the use of the galvanic cautery. The best preventive for this unpleasant and dangerous complication is the insertion into the ear of some cotton wool dipped in laudanum immediately after the operation. A less serious but common complication is pain over the eyes and headache and in two or three hours pain complained of in the cavity of the nares. Erysipelas has sometimes been known to follow, and is
mentioned by Frankel in Von Ziemesen’s Encyclopedia Vol. IV, one case I know where it supervened a few days after.

As a general rule one arrives at the result anticipated from the galvanoe cautery. Neuralgia disappears, paroxysmal sneezing goes, hearing, taste and smell return, and not the least of its benefits is that a free breath way is established, and the patient can sleep with a shut mouth. As illustrative of these I mention the case of Mrs. J., an elderly lady, who for years complained of a very severe neuralgia on the left side of the face. During the attacks which were very frequent and easily brought on she could not speak without very much exaggerating the pain. There was a constant dribbling of clear fluid from the nostrils, the speech was nasal
and breathing was entirely 
breath. She had all kinds of 
remedies applied external and 
internal with only temporary 
relief. But the exception of a 
hypodermic injection of morphia 
she found most relief from the 
use of cocain directly applied 
sto the nose on cotton wool. 

Dr. Hunter my principal advised the 
Cautery which was agreed upon. 
On examination a greyish look: 
ing mass was found quite ob: 
structing the mass naves. This on 
removal turned out to be a 
large piece of cotton wool, which 
was used with cocain and for:
gotten to be removed. She maintains 
that it must have lain there a 
long time. Two or three applications 
were made by the cautery and 
several small pieces removed 
from the hypertrophied mucous 
membrane, with the result that 
pain was entirely gone.
waxy discharge ceased, and as she expressed herself, "better than all I can breathe and sleep with my mouth shut."

When hypertrophic rhinitis is followed by the atrophic condition a different form of treatment is necessary. Even under the most favourable circumstances the treatment is not only a difficult one, but very protracted extending over months, and probably resource had to various remedies. Indeed many authorities deny the probability of a cure, and promise their patients at best only temporary relief. While admitting that the treatment is tedious and difficult yet from what I have seen I have not the slightest hesitation in saying that a permanent and thorough cure can be established. Every surgeon called upon to treat such cases should always impress upon the patient that
that the treatment is a prolonged one, or otherwise the patient may become impatient and disheartened. Very probably seek advice elsewhere. I can recall a case so thoroughly treated, that on being passed over, the surgeon to one of his colleagues, for diagnosis, the latter was unable to detect any abnormality in the nasal cavity. At the meeting of the French Society of Otology and Laryngology, April 1887, Maguer stated that he has treated cases where the mucous membrane was regenerated, and the offensive odour entirely gone. Runahl also at the same time mentions cases among young girls becoming spontaneously well. The first thing to be done in the treatment is the removal of the crusts and the unpleasant odour so disagreeable to patient himself and his friends. For this purpose
the nasal douche must be diligently and persistently used morning and evening with an alkaline and antiseptic solution. The alkaline douche recommended by Sir Morrell Mackenzie answers better than anything I know (Throat Nose Vol. 1) Very soon the nose becomes free from crust and to a great extent the offensive odour disappears of itself a great boon to the patient. Believing that in these cases the odour is due to the secretion from the accessory cavities as suggested by Michel and not from Baekenia as believed by Loewenberg, the injection of some fluid into them does help much to remove it. To effect this Michel and Euldenhaener recommend that after the fluid has run down the nostril to close both nare with the forefinger and thumb and bend the head forward when the fluid enters
the sphenoidal and ethmoidal cells producing a sensation of soreness above the eyes. While the dread helps not inconsiderably, still a great deal of energetic treatment remains to be done, and certainly many such and varied remedies have been employed. I have seen very good results follow the local application of Jodol and Vaseline to the base. This is easily used by the patient at his own house. This is largely used at the Moor Hospital and successfully. The application of Jodol is sometimes followed by unpleasant results, headache and even delirium.

By far the best form of application is a twenty-five percent solution of Menthol in Olive Oil. This was first used in Berlin by Rosenthal for laryngeal phthisis, and from the good results was tried wi
Atrophic rhinitis. Under Dr. Laking who used it largely in Sciar and treated very many cases. The application should be made at least twice a week by means of cotton wool in a vulcanite holder, which is better than using brushes, as there is some risk in using the latter a second time. The properties of menthol are anaesthetic, antiseptic and deodorises, and reduces the swelling of the inferior turbinate bones. After its application the patients always feel refreshed and experience a cool comfort, able feeling in the nose. The mucous membrane becomes regenerated and healthy looking and the odour gone. Acneerosis is sometimes present, treat-ment must be directed towards its cure. The origin of the necrosis is difficult to explain—whether a sequel to the Atrophic rhinitis or an extension during the
inflammatory stage from the mucoperiosteum to the bone and necrosis resulting. I believe the latter to be more common, but however the treatment in all cases is the same, and consists in the application of the Galvano. Current to points here and there on the mucous membrane to act as a counter irritant. Care must be taken that the application is made very lightly and not extensive, as the tissues are very thin, and much damage might be done.

From attention in this way we find a return of smell, absence of the disagreeable odour, pharyngeal and laryngeal complications corrected, the persistent dyspepsia disappears, and the countenance which was pallid and pinched assume a healthy appearance. All together I should say the patient will soon to have received a new lease of life.
Polyph

After hypertrophic rhinitis polyph form a very important factor in the production of nasal obstruction. Reflex symptoms are much more common than in the former, owing to the intermittent nature of the obstruction due to changes of weather.

They are found most frequently on the anterior free border of the middle turbinate body, then on its concave surface and posterior from which spring those hanging in the choanae. They are very seldom on the roof of the nose. Their origin in most cases I believe to be due to repeated congestion of the nasal mucous membrane occurring so frequently that there is no time for resolution. Growing usually from dependent points, they by their weight assume a bear-snape and
strangulation of some of the vessels at the root occurs with an impediment to the free return of venous blood. Added to this is the hygroscopic nature of the tissues, which make them swell on the least exposure to moisture. This factor in their production is denied by Morrell Mackenzie, because they are not found in children, where the tendency to nasal catarrh is more frequent than in adults. Woakes believes that in all or nearly all there is an ethmoiditis.

Symptoms: Of these stuffiness in the nose is the most common and is always aggravated during wet weather. The speech is decidedly nasal. Loss of smell and taste are complained of, and hearing is often impaired. It is in those people troubled with polypi that neuroses are so common, because pressure is intermittent, but in hypertrophic rhinitis the swelling
is a constant quantity, which it
accommodates itself to its surroundings
and the nose becomes quite accustomed
to the foreign element. The commonest
among the nerves and the first
drawn attention to is asthma as
demonstrated by Voltaioni. Among
the others is cough, due to irritation
of the 5th nerve. This cough is not
accompanied by any expectation
nor relieved should there be. It is
loud and barking, and on being
heard should make one suspect
the presence of polypi. Paroxysmal
sneezing is often present, too, due
to irritation of the sensory part of the
fifth nerve, and the seventh. Neuralgia
is very common, and pain across
the nose.
We have of course nasal respiration
interfered with and mouth
breathing established. The patient
snores loudly at night.
One result of polypi is
happily a face she is paralysis
of the face. I have only seen one case and never saw any recorded. W.A.B. at 22, a clerk presented himself suffering from acute inflammation of the middle ear. In a few days this was relieved by a free discharge from the meatus. The discharge at first copious, stopped in a very short time, when great pain supervened and on the following morning there was a unilateral paralysis of the right side of the face. On making inquiries into his history no apparent cause could be discovered for the new complication. An examination of the nose revealed a large single polyp on the paralyzed side and well back. On re-moral by the cold snare there was a rush of pus from the Eustachian orifice followed by instant relief of his pain. The paralysis very speedily disappeared. I have not the
slightest doubt that in this case the paralysis was due to the blocking of the pass in the meatus middle ear and pressing on the seventh nerve along its passage through the tympanic cavity.

Ear complications are very common.
By far the commonest cause of deafness, both from mechanical obstruction and extension of a cataract to the tubes. Tinnitus is a distressing symptom and often accompanied by vertigo. The diagnosis of polypi is easy enough, but I have known men of experience mistake them for hypertrophied mucous membrane. One case I know where the latter was diagnosed and a cocaine spray was ordered which had the effect of so reducing the mucous membrane that the polypus came down and protruded at the anterior nares. By anterior rhinoscopy they
appear as shiny bluish grey masses. They are invariably never single, and packed closely like herrings in a barrel and as soon as one is removed it nearest neighbour swells and takes its place.

Treatment under all circumstances must be radical. Removal may be effected by forceps, cold snare or galvano-caustic snare. The first method was until recently the one universally employed, but now entirely abandoned by specialists and where used only by some general surgeons. The only advantage that can be claimed for this clumsy and now antiquated treatment is rapid removal, but there are several counter-balancing disadvantages, viz., working with an instrument, without in the least seeing where it is and what structures are being torn and removed.
Profuse hemorrhage in many instances may follow and not infrequently a piece of subjacent bone is removed with the polypus. This is generally undesirable, although sometimes it may be necessary to do so before getting at the polyp when it is situated in the concavity of the middle turbinate body.

The next form of treatment, and one which will be more practised by the ordinary general practitioner, is removal by the cold snare. Its advantage is that it can be introduced through the speculum, and allowing the operator see what he is doing. It is introduced horizontally and afterwards turned into the vertical position. When the polyp is felt in the loop, the operator by means of the handle of the instrument gently draws the wire and removes it away, bleeding often ensues.
and if a stump is left it quickly grows again. To prevent this an application of chromic acid, as a saturated solution or as used by Stening may be employed. The best, safest and most satisfactory method is by the galvanic caustic snare. Use an ordinary wire, introduced same as the old. The current used must not be too strong as the wire might give and cause mischief by its jagged edges. Bleeding is entirely avoided and not the slightest pain is caused. More important still it acts as a counterirritant to the pathological mucous membrane, and if we wish to cauterise the stump we can do so very readily as it is not obscured by bleeding. The return of polypi is probably in many cases due to an underlying ethmoiditis, and so the cauterisation promotes a
A healthy action and thereby prevents a return of the polypi. The advantage of galvano cautery in removal of nasal polypi is well shown in a case reported by Dr. Wobston of Edinburgh—a young man but 29 developed nasal polypi at the early age of six. Had some removed at the ages of 8 and 10, and when he was recommended by a well-known surgeon to have the bones of the nose resected and so clear the cavities—an operation which the patient wisely refused to have performed upon him. Dr. Wobston by means of galvano cautery have removed 113 polypi in three sittings at intervals of fourteen days with the result that he has perfect breathing space, but owing to the long continued pressure of polypi atrophy of mucous membrane ensued smell & taste have not returned.
Deflected septum is many times the cause of obstruction. It is usually seen from the external configuration of the nose, more especially if of the cartilaginous part. Inspection of the anterior nares at once reveals the cause. Its causes may be from blows or constant blowing of the nose with the same hand.

The symptoms are those of nasal obstruction already mentioned.

The treatment is, if in cartilaginous portion to straighten with Grant's forceps. If deflection be S shaped it will be necessary to establish free respiration to perforate the septum in such a way that we get a communication from both nostrils. The opening must be kept patent by passing of bougies for some time. This dulling of the septum is invariably followed by good results.
Excases very frequently are a source of nasal obstruction. They do not as a rule attain to a large size. Their most frequent situation is at the junction of the septum with the floor of the nose, near the anterior orifice, extending from the middle towards the outer wall and ending in a spur like projection. Often they are found at the junction of the ethmoid and sphenoid and are frequently here cartilaginous. The diagnosis is easy and can be confirmed by the probe. From a deflected septum we diagnose it by inspecting the opposite cavity, where there is a compensating concavity for the increased displacement in deflection. The treatment is to score by galvanic cautery, or better still by a drill revolved by a powerful motor attached to a battery.
By its removal is speedy, but I have seen a good many cases followed by a smart hemorrhage. The after treatment consists in the application twice a day of some antiseptic ointment, and douching to keep parts clean.

VII. Enlarged tonsils in children is by far the most frequent cause of nasal obstruction, especially in children of the strumous diathesis. The diagnosis here cannot be mistaken, as on making an inspection of the mouth with the tongue depressed, two fleshy masses are seen on either side of the fauces of very variable size. Sometimes occupying the crypts or follicles of the glands are to be seen cheesy masses, but not as a general rule. For the first years of life these glands have not the slightest tendency
to diminish in size, but on the contrary with each fresh exposure to cold swell and give more trouble, which is the cause of their being brought under the notice of the surgeon. Indeed sometimes they swell so much that they endanger life, one such case I have seen—a young female where they were so large that respiration was well nigh impossible, and the distress of the patient for breath sad to see. In such cases treatment must be decided and prompt.

The appearance of those suffering from enlarged tonsils at once suggests the cause of obstruction, and the voice is thick and easily recognised. The mouth is open and the face bears a dull expression. There is a good deal of difficulty with the respiration, sleep is disturbed, and always snoring.
Respiration through the nose cannot be carried on as the enlarged tonsils cut off the posterior nares from the pharynx - hence the cause of the constant open mouth. This necessitates mouth breathing and the throat becomes dry.

Hearing is impaired oftener from a catarrhal process than by direct mechanical obstruction, as the enlargement of the tonsils tends to come forwards rather than backwards. When long-standing there is a falling in of the sides of the chest from imperfect expansion of the lungs, giving the so-called pigeon-shaped chest. As sufficient air is not admitted into the lungs the blood is improperly aerated and hence the dull lethargic disposition as well as the predisposition to pulmonary disease. The senses of smell and taste are usually impaired. Deglutition is difficult and painful during the subacute attacks.
From the difficulty of swallowing there are digestive troubles and cause of inflammation.

Treatment. I know of no ailment where surgical interference is necessary where there is so much dallying in proper treatment by the general practitioner as in enlarged tonsils. Indeed very few general practitioners care to interfere, but apply astringent remedies which serve no purpose except perhaps reduce the acute inflammatory attacks when present and thus for a short time improve matters. The patient very soon again comes under treatment. The internal administration of iodine generally in the form of tymp of iodide of iron is not followed by much benefit, except supplying iron which is deficient in the blood.

The only efficient and satisfactory method of treatment is excision, which can easily and quickly be carried out. I have
seen quantities of cases operated upon, and never any toward re- 
quest followed. I am perfectly well aware that many fear hemorrhage, 
and that now and again cases are recorded where it has proved 
fatal. How much that may be 
due to some idiosyncrasy on the 
part of the patient or to the operator 
and the instrument, I cannot say. 
I would never use the bistoury, as there is a risk of wounding the 
carotid, but with a guillotine such 
as Mackenzie's modification this 
complication is entirely impossible. 
Before applying the instrument, an assistant standing behind the 
patient, should press the forscils 
towards the middle line by his 
4 hands placed at the angles of 
the jaws. The instrument then 
catches the glands in their entirety, and 
the blade is thrust quickly and 
energetically home. Instead of 
pulling in the vertical position
the instrument should be turned into the horizontal, when the gland comes readily away. This is not the case if kept in the vertical position, then the gland being rather torn to the annoyance and discomfort of the patient. This mistake is always made by beginners. In some cases where the glands are very large and inflamed I think the galvano-cautery snare answers much better, as by this method what would otherwise be followed by a probable hemorrhage is avoided. The wire used should be stout, and the current not too strong, so that the removal be gradual to cauterise as much as possible. In the case mentioned on p. 95 the advantage was very evident as one could see the patient months of comparatively large vessels. This method answers well when the tonsils have a tendency to extend downwards.
and cannot readily be got at by the gullet knife. The after treatment consists in immediately gargling with cold water and if a tendency to dizziness arise with tannin or other astringent. If still there is a tendency emesis of reflex action acts. Sometimes the common carbolic has to be tried, but is I think an unnecessary procedure because if patient faints from loss of blood, hemorrhage always ceases. We can encourage fainting by keeping up patient head for some days the diet should be liquid given at blood heat. After excision if properly performed, they never give any more trouble.

VIII Adenoid Vegetations

This form of obstruction is nearly always found among children and perhaps may on rare occasions among adults
They have been found in infants a few months old. They cause obstruction by limiting the post-nasal space and in some cases obliterate it entirely.

They consist of small glandular vegetations growing from the roof and sides of the pharynx, and never from the septum. The cause of origin is uncertain and speculative. They are found among the children of all classes and in every country. Children are more predisposed during the exanthemata and excited by cold or damp climate at that time. Morrell MacKenzie says they are due to the great abundance of lymph follicles present there, which are easily excited to active growth.

The subjects are usually brought for advice on account of snoring during sleep and crowing breathing during the day. In very young infants snuffles should always make
one suspect the presence of adenoids.

The speech is quite pathognomonic of the disease and is well described by Meyer of Copenhagen as dead.

The very look of the patient is quite sufficient to establish a diagnosis. The face is drawn, expressionless and pinched. The nostrils from want of use become collapsed and consequently the mouth is kept constantly open giving a stupid expression. The complexion is pale, pasty, and al:together unhealthy looking. Deafness follows from spread of inflammatory mischief, and is the principal complication, and cataula of the middle ear with all its consequences may follow. Very often this is accompanied by enlarged tonsils and indeed in young children whenever the latter exist, we should suspect the former being present. How much they are dependent one on the other.
It is difficult to say how they are diagnosed by rhinoscopy and palpation. The former method is almost always impossible in children as the space is very narrow. By palpation, they feel like soft, fleshy little tumors, which easily break down and bleed freely. By rhinoscopy, they appear as small pinkish or grey bear-shaped masses.

Treatment — In an adult one can understand where there is a general widening of the nasal cavities that they would give rise to much less trouble than in young persons, and besides less moisture in the channels from the free access of air would cause them to dry up. From this it would be unsafe to leave them alone in children expecting to give no trouble in adult life, because the most serious complication being deafness, it might become so profound as to be incurable.
Sometimes on the removal of enlarged tonsils I have seen them disappear. The simplest method and in almost all cases satisfactory is to introduce the finger, guarded by a flexible shield, into the mouth, establish a diagnosis and at once remove them by scraping them with the finger nail or a steel nail, preferably the former. As sometimes mischief is done with the latter. Some people use forceps—commonest being Lowenberg's. By whatever method removed it is essential that they are entirely and absolutely taken away, for the least stump left remaining grows with increased vigour, and the symptoms which have temporarily disappeared recur very soon. The bleeding which is not very profuse soon stops. It is quite unnecessary to administer chloroform, excep perhaps to nervous
children. The disadvantage is that some blood might trickle down into the larynx and set up pulmonary mischief. The after treatment consists of gargling with cold water and douching through the nostrils with any simple alkaline lotion.

IX. Arched Palate

In very young children obstructs the nasal cavities by narrowing the lumen from above downwards. Its chief importance lies in being able to diagnose it, and explain the cause of the symptoms. On opening the mouth it is quite apparent the palate bones of both sides meeting at an angle, (N shaped). One can readily imagine the danger to life, when acute cataract supervenes, as sucking would be very much interfered with as already explained.
Chronic Catarrh of the Nasal Fossa

When nasal obstruction exists with pharyngeal dryness and hawking of a yellowish sticky material in the mornings, without any hypertrophy in the cavities or apparent condition of pharynx, we should always suspect the source of trouble to be in this gland.

On rhinoscopic examination it will be found covered with a quantity of mucus. The pharyngeal wall in the neighbourhood of the gland is dry. Occasionally we may see the secretion dropping into the larynx. If the secretion is retained we get as a consequence a cyst formed. Serious secondary symptoms are sometimes produced by the dropping of secretion into the larynx—laryngitis, even dysphonia. The obstruction to the nasal cavity is followed by the usual symptoms.

Treatment consists in the early stage of
douching, and local application of
Menthol. When very chronic, use the
Salvado canary and lemon gland.

**XI. Rhinoliths**

occur rarely and suspected to pain
Constant foetid discharge and nasal
obstruction, with a vague history
of a body entering the nostrils.
Treatment is removal by forceps

**XII. Syphilis**

In the tertiary stage by sometime causing a complete adhesion
between the soft palate and the
pharynx, and torn a diaphragm
in the cavities, with perhaps an
opening only large enough to
admit a probe. I have seen cases
where this happened.

The treatment should be incision
by a tenotomy knife, keeping the
opening patent by the passage
of bongies, and the internal
administration of large doses
of Iodide of Potassium.