Mackenzie (J. N.)

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SOME REMARKS ON NASO-AURAL CATARRH AND ITS RATIONAL TREATMENT.

—BY—

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SOME REMARKS ON NASO-AURAL CATARRH AND ITS RATIONAL TREATMENT.

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Mr. President and Gentlemen of the Faculty:

As the media of communication between the external air and the organs of respiration, olfaction and audition, and the natural guardians therefore of their integrity, the nasal passages are constantly exposed to the ever-changing conditions of the atmosphere and to the injuries incident to occupation. In the discharge of function, their mucous membrane must bear the brunt of every barometric fluctuation—must be affected by every vitiation of the atmosphere. And thus, apart from the operation of other agencies which civilization and luxury impose, the inner nasal cavities are peculiarly predisposed to the influences that determine catarrhal conditions. Nasopharyngeal inflammation is the most common affection of our climate. If there be one disease whose name may be aptly derived from that of the city where it most prevails, the term *Morbus Baltimoriensis* may be not inappropriately accepted as the local synonym for nasal catarrh. As it is the most common, so is it perhaps the least perfectly understood, and I venture to assert that there are many to-day to whom the sources of the discharge in that affection are as vague and indeterminate as they were in the days when Galen brought the secretion from the pituitary gland or from its reservoirs in the ventricles of brain.

It would far exceed the limits of this paper to attempt the discussion of the many abnormal conditions which, separately or collectively, make up the starting points of naso-aural inflammation, and by their constant presence perpetuate it. These remarks will accordingly be confined to one or two of the more common causes of the phenomena whose *ensemble* makes up the natural history of nasal catarrh, and to the radical methods for their removal.

The cases of catarrhal inflammation of the nose commonly encountered in practice may be conveniently thrown into two groups or classes, corresponding to the stage of the disease at which the patient applies for treatment.*

The anatomical appearances of the first stage consist essentially in localized or diffuse injection, with moderate swelling, of the mucous membrane. This involves necessarily an increased irritability of that structure, which finds its expression in an abnormal excitability of the erectile tissue which is found on the inferior and middle turbinated bones and on the septum. In some persons, the mucous membrane is thereby rendered so exquisitely sensitive to the slightest perturbation of the atmosphere that the faintest vibration of the air is sufficient to produce erection of this tissue and consequent obstruction of the nasal passages. A simple catarrhal or granular state of the pharynx is usually associated with the hyperæmia and tumefaction of the Schneiderian membrane. Mucus collects in the orifices of the Eustachian tubes, in the posterior nares and on the pharyngeal vault. The mucous membrane covering the turbinated bones and septum is at times greatly swollen; at others presents simply an injected appearance, according to the degree of abnormal erectility of the tissue which separates it from the periosteum and the bone. Such patients wonder why it is that they are constantly catching cold, and that the slightest change in the weather produces a stoppage of the nose and ringing in the ears. They can not understand the tendency to sneeze and the hoarseness which is present on arising in the morning, or which follows the use of the voice in speaking or singing. A more or less constant itching of the nose is facetiously referred to the advent of a mythical stranger, and the mere suggestion of chronic nasal catarrh is resolutely, and sometimes indignantly, rejected.

There arrives, sooner or later, however, a time when these symptoms become more pronounced. The patient becomes aware of a gradually developing difficulty of breathing through the nose. Sleep is rendered unquiet by the accumulation of mucus in the throat, and the patient arises in the morning with a dry throat and a coated tongue. The organic matter of the buccal secretions is deposited on the teeth and gums and collects and dries at the corners of the mouth; the breath is offensive; headache is complained of. Soon the lips become fissured and cracked and their mucous membrane peels off—the general health begins to suffer—the appetite becomes capricious—more or less

* In this paper the atrophic stage, or ozæna, will not be considered.

constant ringing in the ears is the rule, followed by gradually deepening deafness. These signs indicate an increase in the hypertrophy of the nasal membrane—the second stage has been reached; the catarrh has become hypertrophic. Examine the nose now and you will find the inferior meatus obstructed by enlargement of the turbinated bodies (generally the inferior), and swelling of the mucous covering of the septum. When the hypertrophy is anterior the diagnosis can be made by inspection of the anterior nares, and in some cases the deeper regions of the nose and even the Eustachian tubes can be seen with the aid of a strong light and special inspection apparatus. To the practised touch the probe is often an important auxiliary in the detection of posterior hypertrophies, but all such manipulation is rendered unnecessary by the ease with which the posterior nares may be examined by reflected light. The rhinoscope thus becomes the most valuable instrument in the diagnosis of hypertrophic catarrh. It is only in exceptional cases that the floor of the nostrils and the whole of the inferior edge of the lower turbinated bone can be seen in a rhinoscopic examination. Generally only the upper portion of its posterior end is visible, the lower half being concealed by the veil of the palate, and this anatomical fact furnishes an excellent guide in measuring the amount of hypertrophy. When, however, the posterior part of the lower turbinated body is hypertrophied, it appears in the mirror, rising above the velum to a height varying with the amount of enlargement. It often projects backward over the palate into the naso-pharynx, and occasionally extends across the septum to the nostril of the opposite side. The inferior meatus may be alone occluded, or the whole naris occupied by the hypertrophic mass. The latter is occasionally freely movable and may readily be mistaken for polypus. It may be uniformly smooth or irregularly lobulated, or it may be studded with little protuberances, giving it the appearance of a raspberry. It varies in color from a dirty grayish or yellowish-gray color to a deep red or even purplish hue. In contour, it is either rounded or oval; sometimes its upper border is irregular in outline, occasionally presenting a depression at its upper inner aspect.

The hypertrophy is nearly always bilateral and associated with a swollen condition of the tissue covering the middle turbinated bone and posterior half of the septum. In two cases I have been able to demonstrate its existence even on the superior turbinated bones. After the removal of the redundant tissues, small nodular growths are occasionally seen in the middle meatus which represent local-

ized hypertrophies or polypoid growths of that region. The hypertrophic turbinated tissues have sometimes a whitish, œdematous, almost hydatid appearance, due to cystic degeneration of the mucous membrane. Almost always there is a corresponding hypertrophy of the tissue covering the septum, which bulges into the fossæ on either side and assists in the occlusion of the nostril. In this situation the hypertrophied tissue sometimes presents a depression corresponding to the convex enlargement of the turbinated bone. Small localized hypertrophies of the lateral surfaces of the septum are also observed presenting the appearance of papillary growths. Hypertrophy of the upper posterior half of the septum is common in long standing cases and causes a bulging on either side of the median line, which, with the central depression, presents sometimes a heart-shaped appearance. The bloodvessels over the septum are often enlarged and tortuous. In the majority of cases hypertrophy of the pharyngeal tonsil exists, either as a well-defined sessile tumor, or a mass of polypoid vegetations. This hypertrophy is at times so excessive as to fill the entire naso-pharynx, occluding the nares and Eustachian tubes and pressing the velum downward and forward. The lips of the Eustachian tubes are generally enlarged, tumefied and reddened, their orifices dilated and patulous. This gives the tube the appearance of an enlarged cervix uteri in a state of chronic hyperplastic inflammation. Occasionally a granular condition is noticed due to swelling of the muciperous glands of the tube (tubal tonsil of Gerlach). They are sometimes occluded from pressure of the enlarged pharyngeal tonsil and hypertrophied turbinated bodies. Mucus collects in the orifices of the tubes, in the fossæ of Rosenmüller, on the pharyngeal vault and in the posterior nares. Usually, a thick, tenacious shred extends from the vault of the pharynx to the posterior border of the septum. All secretion must be removed before a satisfactory diagnosis can be made.

Adenoid growths appear as sessile or pedunculated vegetations of varying size, number and consistence, scattered over the vault, posterior and lateral pharyngeal walls, and upper part of the septum. They are often massed together so as to form a tumor of considerable magnitude. When removed, they present the gross appearances of papillomata. Their diagnosis can be made with the mirror, or, in small children, by means of the finger introduced behind the velum. The sensation communicated to the finger is compared to that obtained by touching a bunch of worms. They bleed readily

when touched, and, as a rule, discharge profusely. In all cases of deafness in children, the naso-pharynx should be examined for these growths; if present, their ablation is imperative. If thoroughly removed, the deafness and nasal discharge rapidly, often immediately, disappear; and if the case be not complicated with hypertrophic catarrh, no further treatment will be necessary.

The interruption of function produced by nasal obstruction will vary with the extent and character of the occlusion, and the physiological importance of the occluded portion. Thus obliteration of the upper meatuses or malformation of the nasal roof is accompanied by interference with the sense of olfaction and the varied train of morbid impressions which follow its perversion. Over a century ago, Morgagni* called attention to deflection of the septum as a not infrequent cause of unequal distribution of the nervous power of smell, and † related a case where, from obliquity of the crista galli and consequent diminution in number of the olfactory foramina, this sense was supposed to have been less acute in the nostril corresponding to the narrower side of the cribriform plate. Just here let me observe that the ability to respire with freedom through the nose by no means negatives the existence of obstruction; the upper nasal chambers may be crowded with growths and the pharyngeal vault covered with vegetations, and yet respiration go on with perfect ease. This is a fact which is systematically and persistently overlooked by many practitioners of medicine, and the absence of obstruction is too often inferred from the passage of air through the nostrils when the mouth is closed.

Should the obstruction occur in the inferior meatus, the mouth becomes the channel through which the air passes to and fro from the lungs, and nasal is transformed into buccal respiration. From this transference of physiological relations it naturally follows that the air reaches the delicate lining membrane of the lower respiratory tract in a state unfit for respiration. Hence arise hyperæmia and chronic inflammation of the pharyngo-bronchial membrane, with their associated alterations in the voice. In nasal obstruction of long standing chronic inflammatory changes are sometimes induced in the bronchial and pulmonary mucous membrane, which are exceedingly difficult to deal with even after the original cause is removed, and this has doubtless given rise to the popular idea that "catarrh" is

* Adv. anat. 6 in calc. explic. tab. 2 in Decemb. n. 2.

† De sedibus et causis morborum. Epist. XIV, cap. 16 in fin.

the forerunner of consumption. Certain it is that nasal obstruction predisposes, other things being equal, to inflammatory conditions of the respiratory tract, and that the practical physician cannot afford to overlook the influence which it exerts in their production. In this country, the vast majority of the cases of chronic laryngitis originate primarily in disease of the nose, and many a winter cough is allowed to go on from bad to worse from failure to recognize this relationship. I am furthermore convinced that nasal obstruction may and does awaken diseased states of the lungs, and in an individual so predisposed may favor the development of pulmonary consumption. Fraenkel* states that emphysema frequently coexists with nasal stenosis, and Kussmaul† believes that acute hyperæmia of the lung may be produced by the forced inspiration of the air. The vesicular murmur is weakened, feeble and shortened in inspiration, and only approaches the normal when deep inspiratory efforts are made. Frequently mucous and subcrepitant rales can be heard in different portions of the chest. Attention has been called to certain deformities of the chest walls consisting chiefly in malposition of the bones and loss of power in the muscular covering. I believe these deformities to be rare, except in very young children.

There is one symptom of nasal obstruction to which especial importance must be attached, and for which alone the physician is often consulted. *Dyspnoea on exertion* is one of the most annoying features of the case. Such patients complain that in talking they must frequently pause for breath; that in going up stairs, walking rapidly or running—in fine, in all bodily operations which require unusual exertion, they get very readily out of breath. Difficult breathing is also present when the mouth is occupied or closed as in swallowing, smoking, etc. They are accordingly constantly haunted by the dread of heart disease and consumption. Physical examination, however, fails to detect any cause for the dyspnoea. At times the breathing is perfectly normal and vesicular; at others a few small mucous rales may be heard posteriorly in the inferior lobes or in the infrascapular and mammary regions.

It is a matter of common experience that various forms of excoriated mouth depend upon a disordered stomach, the so-called herpetic diathesis, etc., but occasionally cases occur which cannot be referred to these conditions, whose dependence on hypertrophic nasal catarrh must be inferred from their disappearance with the cure of the nasal affection.

* Ziemssen's Cyclop. Am. ed. 1876, Vol. IV. † Quoted by Fraenkel, l. c.

Several factors are probably concerned in their production, among which mouth-breathing plays an important part, and, possibly, the disordered condition of the stomach occasioned by the nasal discharge.

The inflammation of the conjunctivae which is so often observed in connection with nasal catarrh is generally explained by the extension of the inflammatory process through the nasal duct; but I am inclined to regard it in the majority of instances as a reflex vaso-motor phenomenon, the vessel dilatation being kept up by the constant irritation of the sensitive nasal area. In like manner I would explain the recurrent herpes and keratitis which have been observed in connection with this disease, the phenomena in these cases being called forth by trophic disturbances. Zauful * has found trachoma a frequent complication of ozæna.

Besides the part which the nose plays in the processes of olfaction, respiration and voice production, it also serves as the channel of conduction of atmospheric air to the middle ear. The aural pressure is kept in a state of stable equilibrium by the constant supply of air to the cavity of the drum through the Eustachian tube. In the natural state this ventilation of the tympanum is continually taking place, not only as the result of the partial vacuum created in the naso-pharynx during the act of deglutition, but also during normal nasal respiration. It follows, therefore, that anything which tends to obstruct the passage of air through the nose will interfere to an extent varying with the amount of obstruction, with normal aural ventilation, and consequently with physiological intra-tympanic pressure. This diminution of pressure within the cavity of the drum, which can readily be demonstrated experimentally, leads necessarily to inward collapse of the membrana tympani, with consequent abrogation of function in the osseous and muscular apparatus of the middle ear. Catarrhal otitis media with its long train of phenomena is the inevitable result; fluid not infrequently accumulates in the tympanum, which finds an exit ultimately by perforation of the membrane and leads to chronic otorrhœa. This same chain of events follows the obstruction of the Eustachian tubes by growths in the pharynx or the pressure of the hypertrophied nasal turbinated structures, or by inflammatory engorgement of the orifices of the tubes themselves. This not only cuts off the air-supply from the tympanum by direct occlusion of its natural channel, but also, by interfering with the motions of the velum, and therefore with the opening of the tube by the tensor palati or

* Aerztl. Corresp. Blatt. für Böhmen. 1875, No. 24, S. 23.

dilator of the tube. The intimate and direct connection of the blood-supply of the tube and pharynx with that of the middle ear, and their anatomical continuity of tissue, favor, furthermore, the extension of the inflammatory process from the one to the other. Indeed, in very many cases the aural inflammation is merely a symptom of nasal catarrh, and gradually disappears without special treatment upon the removal of its primary cause.

Inflammation of the tube may result in stricture; and in long-standing cases of salpingitis, fatty degeneration of the tubal muscles occurs with the consequences described above.

These are by far the most common causes of chronic catarrhal inflammation of the middle ear. There is still another way, however, in which morbid conditions of the nose may react upon the circulation and upon the nutrition of the aural chambers, viz. through the reflex agency of the vaso-motor and trophic nerves. I am led to the assumption of reflex irritation by the pain and congestion in the ear which occasionally follow the manipulation of instruments within the nasal cavities, or the application of caustics or other remedies to their lining membrane, and furthermore, by the existence of symptoms referable to the ear (tinnitus, pain, etc.) which cannot be explained on any other hypothesis.

It is impossible to exaggerate the part which diseases of the nose play in the production of inflammatory conditions of the middle ear. Between 60 and 75 per cent. of all cases of ear disease originate primarily in morbid states of the naso-pharynx, and the successful treatment of middle ear catarrh will in the vast majority of instances depend upon their recognition and removal. So important is their relationship that we may lay down the rule, that *the examination of the ear should be begun, not with the inspection of the external meatus and tympanic membrane, but with the exploration of the nasal fossæ and retro-nasal space.**

The symptoms of advanced nasal obstruction from adenoid growths have been well described by Meyer and others. The pallid countenance assumes a dull, stupid expression, and the cheeks become flabby from elongation of the naso-labial sulci. The mouth is kept open, the lower jaw depressed; the gums are fissured and cracked, and saliva dribbles from the mouth. This often leads the parents of the child to connect the stupid countenance and deafness, which is

* Comp. Zauful, *Ueber die allg. Verwendbarkeit der kalten Drahtschlinge zur Operation der Nasenpolypen*, Prag, 1878, S. 1.

nearly always present, with imbecility. Some writers call attention to the unusual prominence of the front teeth as a symptom of obstruction in the naso-pharynx, and Michel* observed in a girl, eight years old, the inner canthi of the eye so depressed that her countenance wore a strange, Chinese appearance. Deafness and tinnitus are nearly always present. Neuralgia is common. Taste is impaired; the nasal discharge profuse, excoriating the nostrils, filling the pharynx, preventing sleep and provoking suffocating attacks. These symptoms, together with constant snuffling, are well marked among children, and react most powerfully upon the general health. Several of my patients complained of a heavy dragging sensation in the back of the nose, which they compared to the presence of two heavy weights hanging into the throat. (The condition found was bilateral turbinated hypertrophy.) Later in life the nostrils become abnormally narrow, from arrested development or collapse of the *alæ nasi*. The speech becomes nasal, the tone of the voice dull and "dead" (Meyer). The tone is furthermore weakened and rendered indistinct by the interference with the motility of the soft palate from the presence of tumors and hypertrophies of the turbinated bodies. Obstruction in the nasal fossæ (deflected septum, polypi, etc.) prevents the free passage of the voice and diminishes correspondingly the force of the tone.

A symptom of hypertrophic catarrh which has been overlooked by writers is hemorrhage; indeed it is often put down as diagnostic of polypi and other growths as contradistinguished from hypertrophic conditions of the nasal membrane. My experience furnishes me with quite a number of such cases, in several of which the life of the patient was threatened. The bleeding comes from the cavernous tissue, and seems to depend sometimes upon stoppage of the nostril; for when the nose is freed of mucus and crusts and the normal aerial pathway restored, the recurring hemorrhages cease.

In concluding this account of the symptoms of nasal catarrh let me call your attention, briefly, to the subject of reflex phenomena originating primarily in morbid conditions of the nose. Some of these, such as flushing of the conjunctiva, lachrymation, sneezing, headache, and neuralgias in the course of the fifth nerve, are familiar to specialists. For some time past I have given considerable attention to the study of these reflex phenomena and the mode of their production, and hope soon to embody the results of my experiments in the form of a sepa-

* Die Krankheiten der Nasenhöhle, etc., Berlin, 1876, S. 78.

rate paper. I desire to-day simply to insist upon the *great frequency of reflex cough as a symptom of nasal disease.* In my experience it has become so common that I have long since ceased to regard it as a curiosity.

My clinical experience furnishes abundant proof that the cough occurs only when, from a local pathological process or ab extra stimulation, irritation of the turbinated corpora cavernosa of the nose exists; and I have furthermore succeeded experimentally in localizing *the area of reflex excitability to the mucous membranes covering these erectile bodies.* Repeated experiments also show that all parts of this sensitive *area are not equally susceptible* to irritation, and that *the cough is most constantly produced by artificial stimulation of the membrane clothing the posterior end of the inferior turbinated body and that of the erectile body on the septum immediately opposite.* In other words, there exists in the nose a reflex sensitive area analogous to that discovered in the larynx by Stoerk, Vulpian and others.*

Apart from its physiological interest, the practical importance of this fact in a diagnostic and therapeutic point of view is sufficiently obvious; in it is found the explanation of many obscure cases of cough which heretofore have received no satisfactory solution, and its recognition, therefore, is the key to their successful treatment.

A thorough knowledge of the topographical anatomy of the naso-pharyngeal cavities and ability to recognize departures from their normal structure, are absolutely essential to him who would undertake the rational treatment of what is popularly known as "nasal catarrh." Irregularities of conformation, congenital or acquired, play such an important rôle in the evolution of nasal, and, therefore, aural disease, that the surgeon of to-day cannot afford to overlook them. With the improved methods of examination now at our command, there is no reason why every surgeon should not be able to explore the deeper regions of the nose and alleviate the commoner of its diseases.

Systematic treatment is a *sine quâ non* in the successful management of chronic nasal inflammation. There is perhaps no disease where lack of method is followed by such signal failure as hypertrophic nasal catarrh, and the unfortunate being who deserts his family physician for the prescribing druggist, thence to wander

* Since writing the above, I have published the results of my experiments in the American Journal of Medical Sciences, July 1883.

through every dilution of quackery, is a living daily illustration of this truth.

The indications in the treatment of hypertrophic nasal inflammation may be considered under the following heads:

1. *Removal of the obstruction.* If the catarrh be dependent upon a deflected or dislocated septum, or upon other irregularities in the nasal chambers, these must, of course, be rectified before we can proceed with the treatment of the case. If adhesions, from syphilis, the essential fevers, misuse of caustics, etc., exist, they must be divided. If the pharyngeal tonsil be hypertrophied, or if growths exist in the nose or in the retro-nasal space, they should be removed. If, as is often the case, the faucial tonsils be enlarged and indurated, they should be excised. It is useless to temporize with sprays, caustic applications and other palliative measures.

2. The nasal and retro-nasal chambers should be thoroughly cleansed and *kept clean.*

3. The congested or inflammatory condition of the naso-pharyngeal membrane which remains should be treated on the general principles which govern the management of simple inflammation of this structure, and the patient put under the hygienic conditions which favor a return to the normal state.

In this paper I shall consider principally the first of these indications, and shall limit my remarks to the question of the removal of the hypertrophied membrane, as this is the operation which is called for in the majority of cases. To remove this element of obstruction a number of methods have been suggested—caustics, dilatation with bougies, sponge tents, etc., galvano-cautery, thermo-cautery, electrolysis, injections, the knife, forceps and cold-wire snare. I shall not discuss the comparative merits of these various methods, but will ask your attention to the cold-wire snare, a procedure which is the most generally effectual, and possesses fewer disadvantages than most of the devices which have been enumerated.

It is only within a comparatively recent period that the hypertrophic masses found on the turbinated bones and septum have been assigned to their proper anatomical place among diseases of the nose. The ancients probably knew of their existence, but confounded them with polypi, an error which has descended to our own time, and into which some of the recent writers on the subject have apparently fallen. Although these masses were probably again and again removed by the wire, as any one can convince himself by referring to

the standard surgical works of the last two centuries, their true anatomical significance and relation to nasal inflammation was not properly appreciated until Bigelow * demonstrated the erectility of the tissues concerned in their development. The credit of urging the necessity of the removal of the hypertrophic mass with the cold-wire snare belongs to Dr. Jarvis, of New York.† Prior to the introduction of the wire, the galvano-cautery had been used both in this country and in Germany. In the latter country it was extensively adopted, and it is a noteworthy fact that Zaufal,‡ who is an enthusiastic advocate of the snare for the removal of polypi, recommends the cautery for the hypertrophic masses of the turbinated bodies.

The use of the snare in the removal of intra-nasal growths dates from the time when Robertson § published the account of his instrument in the Edinburgh Medical Journal for 1805. This was one step, and an important one, in the evolution from the ligature of the ancients to the apparatus in use at the present day. The Greeks and Arabs applied the ligature by means of a peculiar kind of forceps which is described and figured by Dionis, but it was not until centuries later that the canula was introduced by Fallopius. This was variously modified by the surgeons of the eighteenth century, prominently by Levret, who, among other contrivances, used a double canula with retention rings, and also, in common with Palucci and others, a single canula divided at its distal extremity by a small partition. Various methods have from the time of Riolanus been suggested for the tightening of the wire, the most interesting of which is perhaps the knot-tightener of Graefe, which consisted of an outer piece sliding on the canula, and thereby producing compression of the tumor. This was subsequently modified by Dupuytren, the ligature or wire being attached by several turns to a retention nut, at the promixal extremity of the instrument, and compression of the mass secured by means of a quick screw, after the method in use at the present day. It was probably these instruments that suggested the snares of Robertson and Wilde and led to the modifications of Hilton, Blake, Zaufal, Jarvis and others.¶

* Bost. Med. and Surg. Journ., April 29, 1875.

† Archives of Larnygology, April, 1881.

‡ Ueber die allg. Verwendbarkeit, etc.

§ Quoted by Morell Mackenzie, Arch. Laryngology, April, 1882.

¶ On the Literature of the Ligature and Snare, *vid.* Levret, (Observations sur la cure radicale de plusieurs polypes, etc., Paris, 1749); Velpeau, (Operative Surgery, Vol. III, Am. Ed., N. Y., 1847, pp. 149 and 411); M. Mackenzie (*loc. cit.*)

The instrument which I show you is the one I have generally employed, and is the result of numerous modifications of the original canula and knot-tightener. Whatever form of snare be used, the most important thing to be looked to is the character of the wire employed. Steel piano-wire as recommended by Zaufal,* Jarvis † and Bosworth,‡ is the one commonly employed, as it possesses considerable resistance and resiliency, and retains its original direction to a great extent when projected from the mouth of the canula.

In performing the operation with the aid of the rhinoscope, the nostril is first dilated with the speculum, and the wire loop passed, under the guidance of a strong light, through the slit between the turbinated bones and septum, into the naso-pharynx. The nasal speculum is then removed, and the tongue depressed, either by an assistant or the patient himself, with a Türcks or similar depressor. The mirror is then introduced with the left hand, the loop directed over the hypertrophy with the right, and the wire pulled home. The mirror and spatula are then removed, and the operation completed by slowly tightening the screw. When the pharynx is unusually small or narrow, the soft palate may be tied up prior to the operation by means of a rubber cord, whose ends are passed through the nostrils, brought out through the mouth, carried over the ears and tied under the chin, after the method described by Wales,§ or the uvula may be elevated by one of the combination tongue depressors in use among specialists. These latter accessories are, however, rarely necessary; the latter instrument, although theoretically an excellent auxiliary, will too often be found an embarrassing impediment, and the elevation of the palate will sometimes interfere with rhinoscopic examination by the involuntary salivation and gagging which it every now and then occasions. Although the rhinoscope facilitates the operation and renders it impossible to damage any of the tissues adjacent to that to be removed, it is in the majority of cases unnecessary, *provided* the changed relations of the parts be known and mapped out beforehand, and the touch be sufficiently educated to recognize the various parts with which the instrument comes in contact, and, therefore, to avoid needless injury to the sensitive structures that it traverses. The mode of operation which I generally adopt is

* Ueber die allg. Verwendbarkeit, etc., S. 19.

† *Loc. cit.*

‡ New York *Medical Record*, July 9, 1881.

§ New York *Medical Record*, 1875, p. 785.

as follows: The patient is seated in a tall, straight-backed, narrow-seated chair, with the head thrown slightly back against the head rest (or supported by the arm of the operator). The surgeon, standing at the side of the patient to be operated on, and elevating the tip of the nose with the thumb of the left hand, passes the wire loop, having the requisite diameter and curve, into the nostril. In this position the canula of the instrument will form an angle with the floor of the nostril varying with the curve of the loop, and its subsequent passage into the nasal fossa will throw the shank of the instrument toward the median line. It should then be pushed slowly and gently backward and slightly downward, until the loop enters the naso-pharynx. Bearing in mind the distribution of the fifth nerve in the nostril, the snare should be kept as close as possible to the floor, hugging the inferior border of the septum, and avoiding as much as possible contact with the external wall. This not only facilitates its introduction, but lessens the tendency to reflex phenomena and painful sensation. The wire, being pliable, will adapt itself to the sinuosities of the nostril and pass the obstruction without difficulty. No force should be used; but if the canula be arrested, firm and gentle pressure will nearly always cause it to glide past the obstruction. The patient should be directed to keep his eyes open, and avoid facial contortions, which militate against the painless passage of the instrument. In cases where the fossa is more or less completely blocked, gradual dilatation with rubber bougies will materially aid the subsequent passage of the instrument. As the loop passes through the posterior nares over the bulge of the muscular palate, the contraction of the latter can sometimes be felt as it elevates the distal extremity of the wire. The wire should be pushed back until it reaches the posterior pharyngeal wall, and then gently withdrawn, care being taken to avoid the swollen lips of the Eustachian tube. The handle is then pressed slightly inward toward the septum as it is withdrawn. This will usually bring the loop over the hypertrophied mass. The distal extremity of the canula should now be pressed firmly against the turbinated bone, and the wire tightened by means of the screw. As the loop passes over the base of the palate, involuntary acts of deglutition sometimes occur, interfering with the adjustment of the wire. When the latter is properly placed, the presence of the growth within its grasp is easily recognized by the sense of resistance imparted to the finger in turning the screw. By this method the hypertrophied tissue may be

removed without difficulty and with a very slight amount of pain. Where, from the extreme narrowness of the passage, the introduction of the curved wire gives rise to pain, it may be introduced straight, bending it subsequently with the forefinger introduced into the naso-pharynx. In several instances I have facilitated its adjustment by the following device. A fine rubber cord is tied by one of its extremities to the wire loop; the other end is then passed through the nostril and carried out through the mouth. The snare is then introduced into the pharynx. By pulling the cord downward and outward, the wire is bent and carried over the growth. The subsequent steps of the operation consist simply in division of the mass. When from anæmia or certain diathetic conditions, loss of blood is to be deprecated, the mass may be slowly severed, a half an hour or more being consumed in the écrasement. In ordinary cases I have never occupied more than ten minutes in the operation, and although I have operated a great many times, have never seen a hemorrhage which gave me cause for alarm. Indeed, a moderate flow of blood seems to act beneficially, by relieving the engorged condition of the remaining portions of the mucous membrane. When the hypertrophy is seated anteriorly on the bones or septum it can be conveniently snared by previously transfixing with a glover's needle, as suggested by Jarvis.* The hypertrophies over the posterior half of the septum are more difficult to deal with, and in these cases I believe the galvano-cautery preferable to the snare. In a tractable patient the mass may be transfixed and snared; but I generally resort to one of the other methods which have been given above. In one case permanent relief was obtained by linear radiating incisions of the mass with a bistoury, followed by dilatation with rubber bougies, which act not only as dilators but also as tampons to restrain the hemorrhage which follows the incisions. In this connection I may add that I have resorted *to incision of the turbinated bodies in acute coryza*, and invariably with great and immediate relief. A depletion of the erectile cells is thus effected and the nasal stenosis which attends that affection is diminished.

The after-treatment consists in spraying the nostrils with a soothing, disinfectant and detergent spray. The one I commonly employ is a weak solution of carbolic acid in oil of sweet almonds. A cotton respirator should be worn in the nostrils for a day or two after the operation to avoid the irritation of the floating particles of dust in

* Archives of Laryngology, October, 1882.

the atmosphere. The patient may be directed to saturate a plug of absorbent cotton with the solution and pass it into the nostril once or twice a day until cicatrization is complete.

I have never seen the disagreeable after-effects here which follow the operation with the galvano-cautery. One patient complained of pain in the infra-orbital region for one or two days after the removal of an anterior hypertrophy; but it was very questionable whether this was due to the operation, as he had been for a long time subject to neuralgic pains in the course of the trifacial nerve. Rapid amelioration and disappearance of complications has been the invariable rule in all cases where I have performed the operation.

The amount of hemorrhage will vary with the time occupied in the écrasement, with the age and vascularity of the mass. The slower the traction, the less profuse the hemorrhage. As a rule, the cleaner, whiter and older the hypertrophy, the less abundant the bleeding. To avoid hemorrhage, it has been advised (Bosworth) to tighten the loop slowly, giving one-half turn of the screw every five or ten minutes, consuming at least two, or better, three hours, in the operation. I have never found such a procedure necessary. When the operation is quickly performed, a gush of blood follows the removal of the mass and the nose continues to bleed until the engorged vascular spaces of the erectile tissue have been depleted. The hemorrhage then ceases in many cases spontaneously. *Secondary hemorrhage* sometimes occurs, and generally takes place from six to twelve hours after the operation. It is never profuse, and can be readily checked by the patient himself.

In the majority of instances, if the instrument be gently and skilfully introduced, and the facial contraction and straining of the patient be controlled, the snaring of the hypertrophy is quite painless. If the mass be slowly severed, very little pain is felt—sometimes none at all. I have several times removed the growth without the patients being aware of the performance of the operation. When the nostril is very tortuous, or when hypertrophy of the turbinated bodies coexists with a deflected or irregularly thickened septum, the introduction of the snare is sometimes painful, the amount of pain depending upon the altered relations of the parts, the degree of hyperæsthesia of the mucous membrane, and the curve and diameter of the wire loop. The pain may be diminished, however, by hypodermatic morphia or an anæsthetic spray. In the compression of the mass, pain is occasionally referred to various points in the dis-

tribution of the fifth nerve. Various other reflex phenomena sometimes occur during the operation, such as cough, pain in the ear and larynx, movements of deglutition, etc.

The appearance of the growths when removed is quite characteristic, as will be seen by the specimens which I show you.

The advantages which may be claimed for this operation, apart from its comparative painlessness and simplicity, may be briefly summed up as follows:

(1) It fulfils in the simplest and most radical manner the chief and absolute indication in the treatment of hypertrophic nasal catarrh, viz. the removal of the obstruction.

(2) It restores the respiratory current to its normal channel, thereby avoiding the irreparable injury with which the organs of respiration, vocalization, audition and olfaction are necessarily threatened.

(3) It removes the most prolific source of the discharge in nasal catarrh, and favors the return of the mucous membrane to its normal state.

(4) In the majority of instances it causes the various complications, and especially those of reflex character, to disappear.

(5) By the depletion of the cavernous cells of the turbinated bodies, it exercises a beneficial effect upon the whole area occupied by the erectile tissue.

The second indication is best accomplished with a detergent, alkaline spray. Carbolic acid, borax, boracic acid, the bicarbonate, phosphate and sulpho-carbolate of soda alone or in combination are the medicaments commonly employed. By means of the compressed air cylinder, the nasal cavities can be thoroughly cleansed and the crusts removed with facility. If a sufficiently powerful spray be not available, the latter should be carefully brought away, a probe wrapped with absorbent cotton and dipped into vaseline, cosmoline, or some such substance being used for the purpose. Sometimes thick shreds of mucus are found in the Eustachian tubes and the fossæ of Rosenmüller, which cannot be dislodged by the spray and which require to be removed with the cotton-carrier or forceps. This cleansing of the nose is of the utmost importance. Satisfy yourselves by inspection that the parts are clean before applying alterative or other remedies to the nose. It is useless to apply them to inspissated mucus. I have found the continuous use of alkaline and sulphur waters productive of decided benefit in diminishing the secretion. The nasal douche is a dangerous remedy. It by no means accomplishes what is claimed

for it, and subjects the patient to inflammation of the middle ear. Since Roosa first called attention to this fact, there has been an almost daily accumulation of evidence to warrant the condemnation of its indiscriminate use. Acute inflammation and abscess of the middle ear have repeatedly followed its use, and in one case death was the result. Its employment, therefore, by the physician himself is to be undertaken with the greatest caution—to place such an instrument in the hands of a patient is, to say the least, an injudicious and dangerous experiment.

Gargles are sometimes of benefit, but the sphere of their usefulness is limited. Even by Troelsch's method very little of the fluid reaches the posterior part of the pharynx, and as all communication is shut off between upper and lower pharynx in the act, the remedy never reaches the spot it is designed to medicate. The medicament may act, however, mechanically by producing muscular contraction and thereby dislodging mucus from the naso-pharynx. A gargle of water will accomplish the same result.

Mosler's plan, viz. by regurgitation of the fluid into the naso-pharynx, is an unphysiological procedure and a roundabout way of accomplishing a great deal of possible harm with considerable difficulty and personal inconvenience. A better method is to lie flat on the back with the head inclined slightly downward, and allow the fluid to gravitate into the pharynx.

The astringent or alterative to be used will depend upon the character of the inflammation and upon the susceptibilities of the patient. It is better, as a rule, to change the remedy from time to time until one is found which accomplishes the maximum of good. One of the simplest and best is common alcohol, diluted according to circumstances. Weak solutions of bichloride of mercury, as recommended by me elsewhere,* are often of decided benefit. For post-nasal and pharyngeal inflammation I have also used the *tincture of galanga* with excellent results. Galanga is an Indian remedy for catarrh, whose powdered root has been recommended (Bosworth) in the form of snuff. It will be found, however, exceedingly difficult to reduce the root to an impalpable powder, and even when mixed with other powders it is irritating and often produces attacks of acute coryza. To obviate this, I have had an alcoholic tincture of the root, diluted according to circumstances, prepared for use in spray behind the soft palate. This has an aromatic, not unpleasant odor, and produces a sharp,

* Maryland Medical Journal, Feb. 15, 1883.

pungent, peppery sensation, which subsides, however, almost instantaneously, and generally affords immediate relief. The application leaves an agreeable astringent sensation in the throat which lasts for some time, and is not open to the evil results which follow the use of nitrate of silver and similar substances in that locality.

The use of powders in the nose will often do more harm than good, *unless the substance be reduced to an impalpable state.* Their indiscriminate use is to be discouraged, especially where the parts cannot be thoroughly and repeatedly inspected. Otherwise they will form a thick paste with the discharge whose removal they mechanically impede, or collecting in the crevices of the nasal chamber, lay the foundation for crust formation or act as foreign bodies. It is much better to apply the remedy to the mucous membrane in some such vehicle as glycerine, gelatine, cosmoline, vaseline, etc. This should not be thrust blindly into the nose, but the nostril should be dilated and the application made directly to the diseased surface. Where excoriations or ulcerations of the nostril exist, I have found the powder of *calendula* dusted over the raw surfaces, or applied as a glyceride, will cause rapid healing and diminution of the discharge. I have also found the combination of this drug with boracic acid, as recommended by Dr. Sexton,* of New York, in otorrhœa, of considerable value in purulent cases of catarrh of the nose.

During inclement weather and when exposed to a vitiated atmosphere, the nasal chambers should be protected by means of a respirator. Those in common use are ungainly objects, against which personal vanity and æstheticism alike rebel. Few patients, especially ladies, will submit to being muzzled with these unsightly appliances, which, besides masking to a great extent their personal charms, are in the eyes of their fellow-man the outward and visible suggestion of chronic nasal catarrh. When the discharge is not very profuse, absorbent cotton, medicated or not according to circumstances, may be substituted for the ordinary respirator. A small piece of cotton is taken and its fibres teazed gently apart with the fingers. It is then folded lightly upon itself and introduced into the nostril just beyond the orifice of the anterior nares. If care be taken to separate the fibre sufficiently loosely, respiration can take place with ease. This simple expedient will be found of considerable value to mitigate the severity of the atmosphere and to equalize the temperature within the nasal chamber.

The cotton respirator should not be confounded with the plugs in

* N. Y. Med. Record, Dec. 31, 1881.

common use to medicate and give support to the inflamed nasal membrane. The use of tents of various kinds as a means of conveying remedies to the cavities of the nose is of very ancient origin, and it is therefore amusing to read the altercations in which some surgeons of the present day have indulged as to the priority of their introduction in the treatment of nasal inflammation. Where the discharge is profuse, or when caries or necrosis of the bones is present, I can strongly recommend *oakum* as a substitute for the cotton tents commonly employed.

In addition to local applications, attention should be given to the general health, which is often seriously impaired. The existence of diathetic diseases should be carefully sought for and the different organs and their functions systematically interrogated. It is perhaps a trite remark that he is a poor specialist who does not look beyond the anatomical limits of his specialty, but successful treatment of his patient will often depend more upon the intelligent appreciation of associated, though remote, pathological processes, than upon the routine treatment with which he assails the organs whose diseases it is his peculiar mission to alleviate.

As a tonic, stimulant, disinfectant and alterative I know of nothing better than the *sulphate of quinia.* Either alone or combined with mercury it seems to exert a beneficial effect in quite a number of cases of chronic nasal catarrh, and is sometimes an important auxiliary in the treatment.

In the subsequent treatment of the catarrhal otitis media our chief reliance must be placed on the systematic inflation of the middle ear with atmospheric air, and the use of vapors through the Eustachian catheter, or by means of the various appliances in general use. The injection of fluids through the Eustachian tube is a practice of questionable utility, and it is only in exceptional cases that permanent results may be obtained by the use of electricity. Spraying amounts practically to the injection of the remedy in a fluid form, the finely divided particles reaching the upper portion of the tube or middle ear, if they reach them at all, not as spray, but as a liquid injection. Dilatation of the tube with bougies is occasionally of decided benefit; but their use requires caution, as it is not unattended by danger. I believe that *the employment of bougies of large calibre* would diminish materially the danger and be productive of more good in the dilatation of the tube, or, at least, its lower portion. Among the numerous vapors used may be mentioned the benzoate of

iodine, the iodide, muriate and benzoate of ammonium, and the vapor pini sylvestris (London Throat Hospital Pharmacopœia). If a diathetic condition be present, or if the general health be impaired, they, of course, call for appropriate treatment; but, as a rule, very little can be expected from constitutional medicinal treatment in chronic catarrhal inflammation of the middle ear. Cubebs, mercury, the salts of ammonium and guaiac will occasionally afford temporary relief, and the use of alkaline and sulphur waters, especially when combined with local treatment, are sometimes of decided benefit; but it is often very difficult to measure the exact amount of influence which the former exert in the production of a cure. The treatment of the tinnitus—the most annoying symptom—will obviously depend upon the condition which produces it. I have rarely seen any marked improvement from the use of hydrobromic acid, and the same can be said of that much vaunted and grossly overestimated drug, ergot. *Residence at the seaside* will often do more toward dissipating this troublesome phenomenon than all the medicines of the pharmacopœia.

One word in regard to the treatment of hypertrophic inflammation of the middle ear. Let us take an illustrative case. The drum head is gone, a chronic otorrhœa has been established; the ossicles have long since been swept away in the discharge. Over the promontory the hypertrophic membrane appears as a swollen thickened mass, smooth or granular in appearance, or projecting outward as a well-defined tumor which every one at the outset of his aural studies has mistaken for polypus. This hypertrophic mass encroaches on the cavity of the drum and is the most prolific source of the discharge. The principles which govern us in the management of hypertrophic nasal catarrh are equally applicable here. If ordinary methods fail, or if it be excessive, projecting outward like a polypus, it should be snared or excised with the ring knife, or destroyed by caustic applications, the galvano-cautery, etc.

Adenoid growths are best removed with forceps. The instrument which I show you is one that I have had made by Willms of this city. The blades are fenestrated and slightly flattened posteriorly and superiorly to admit of perfect contact with the walls of the pharynx. Their cutting edges are made on the principle of the Lüer bone-nippers except that they are prolonged downward to the shank. When closed the edges should be in perfect apposition. Thus constructed they will cut with ease through the densest growth. No pulling or

dragging is necessary, as is often the case when the dentated or ordinary beveled bladed forceps are used; the operation can be performed without the slightest discomfort to the patient. The blades bury themselves in the mass and bring it readily away. These forceps possess, furthermore, the additional advantage that each blade may be used as a curette. The growths being brought away, the instrument is reintroduced and one blade is fixed, whilst the other is used to scrape off the remains of the vegetations. Should the blade slip, no harm can be done, for it will close with its fellow of the opposite side. We thus have two instruments combined in one. The *f*-shaped curve of the ordinary Loewenberg forceps has been retained as the most convenient.

This instrument may be put to a number of uses. Besides removing growths from the throat, it may be used for scraping or nipping the granules from the walls of the pharynx, and can be employed to remove portions of the tonsils, the stubs left after old follicular diseases, and other conditions which give rise to irritation and require excision.

In conclusion, gentlemen, let me say that the nose is too often regarded simply in its capacity as the organ of smell, and its important physiological relations to the functions of respiration, audition and vocalization receive but imperfect attention or are altogether overlooked. Within its cavities changes in the air take place which are absolutely essential to normal healthy respiration, and the removal, therefore, of nasal obstruction is as necessary to the maintenance of perfect physiological life as when the obstruction is situated lower down in the air passages. The consequences of impeded nasal respiration detailed above are not exaggerated; they are facts of every-day experience. To insist upon their proper appreciation and upon the radical removal of the causes upon which they depend has been the object of these remarks; for it is only by a more careful study of the pathological conditions of the nose, and their relation to diseases of adjacent and communicating organs, that we may ever hope to emancipate these affections from the dominion of quackery and empiricism and place them under the control of rational therapeutics.