

chronically, examination of the pharynx should always be carefully made. The removal of diseased tonsils in such cases, unless performed too late, is followed by remarkably beneficial results.

The treatment of an hypertrophied Luschka's tonsil must depend in some degree upon the nature of the growth, the size to which it has attained, and the age of the patient. In a few instances, in which the disease is

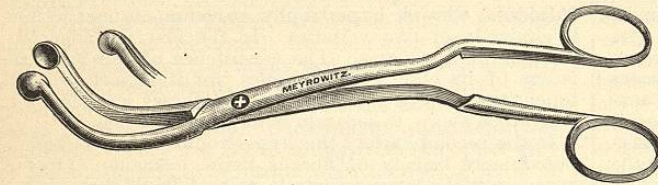


Fig. 4734.—Loewenberg's Forceps, modified.

acute or subacute, where the tissue is soft, and where the growth is small, or finally, where the patient is old enough to submit to local treatment, the application of resorptives and the administration of alterative and tonic medicines, together with careful attention to hygiene, may accomplish a cure. Almost invariably, however, these means will be found unsatisfactory, and the question of radical measures will present itself.

As to the methods by which the offending tissue may be removed the use of local applications for the reduction of adenoids has not yet been a success. The attempt to reduce them also by escharotics is highly objectionable, as both with the ordinary caustics and with the galvano-cautery much difficulty is experienced in making the application and great danger is incurred of injuring important neighboring structures. Hence some form of surgical operation seems in the present state of our knowledge to be unavoidable.

The relative thoroughness and safety with which an operation can be performed will depend somewhat upon the kind of instrument employed. It is necessary therefore that the instruments commonly used for the purpose should be described.

Beginning with the finger-nail and Meyer's ring knife, an almost unlimited number and variety of instruments for the removal of hypertrophied lymphoid masses have been devised. They may be classified into several groups—namely, those made upon the principle of (a) the curette, (b) the forceps, (c) the wire loop, and (d) the adenomatome.

(a) The curettes are of three kinds: The ring knives of comparatively small size, the sharp spoon, and the Gottstein instrument. To this class may be added the finger nail.

(b) The forceps include those instruments which are constructed with comparatively blunt edges and which are intended to tear away the tissue rather than to cut through it. Of these, the Loewenberg is the best example. Many modifications of it have been made, some of which are very satisfactory.

(c) The wire snare or loop has been used by some, either in a simple curved cannula or in an instrument especially designed for the purpose. While it has possibilities of usefulness, it appears that they have not yet been fully realized.

(d) By the name adenomatome is meant an instrument constructed more or less upon the principle of the scissors and intended to make a clean incision through the substance of the growth.

Nature's instrument, the finger nail, is undoubtedly useful in completing the work of other implements by the separating of partly detached fragments of tissue and by the removal of it from corners difficult for an instrument to reach. Gottstein says: "It is clear that with the finger only a very little can be removed, and, moreover, it must be recognized that from the point of view of asepsis the finger nail is a decidedly undesirable instrument." The artificial finger nail is practically never used.

Of the curettes, the small ring knives are valuable for the removal of limited areas of tissue, especially those left after operation with larger instruments. They are also very useful for operations upon the adult, where, under local anesthesia and with the aid of the mirror, small quantities of tissue can be removed at a time with comparatively little pain and irritation.

The sharp spoon has been justly condemned because of the amount of bleeding which it causes and the difficulty experienced with it in separating the fragments of tissue from the pharyngeal wall.

Of the instruments of this class, Gottstein's knife (Fig. 4736) and its modifications must claim the greatest popularity. There are several things to be said in its favor.

If pain is of no account and speed of more importance than thoroughness, then Gottstein's knife would be ideal. The objections to it, however, are serious, for its use is painful, and

it is seldom that the shape of the instrument is so perfectly conformed to the pharynx, the base of the growth so limited in its extent, and the management of the knife, so well directed, that the necessary thoroughness can be attained. It will often be found that the Gottstein knife has simply cut through the lower part of the growth, or has removed a certain amount from one side, leaving the other side full, or has fairly cleared the vault, leaving abundant deposits upon the posterior and lateral pharyngeal walls.

In the forceps, modified to suit the size of the pharynx and the location of the growth, we have an instrument by which the lymphoid masses can be seized and, by proper manipulation, torn away, much larger fragments than the part caught in the grasp of the instrument usually being separated at each attempt. In skilled hands the forceps can be turned in all necessary directions and its blades made to grasp everything in their way. The pharynx can thus be thoroughly cleared, and with the loss of less blood than is common with sharp instruments. The operation, however, is painful.

It would appear that the prime object of the adenomatome is to enable the operator to remove the whole or as much as possible of the growth at one introduction of the instrument. Many varieties of them are of large size or of improper shape, and are not fit to be inserted into the nasopharynx, while their great strength places at their mercy any object which they may grasp. Even in experienced hands they are probably the most dangerous of this class of instruments. As to their thoroughness, one glance at the construction of their blades will show that there must be certain parts of the pharynx which they cannot possibly reach, while the risk of cutting too deeply or in wrong directions is evident. Such instruments are better suited to adult cases and can hardly be intended to be used upon the child.



Fig. 4735.—Hooper's Palate Retractor.

Of the instruments described, the ones most generally useful are some good modification of the Loewenberg forceps and the sharp curette. A recent addition to the latter consists of an attachment by which the detached fragment of tissue is seized and thus prevented from falling into the patient's throat on the withdrawal of the knife. In general, the instrument used should be adapted as well as possible to the size and shape of the pharynx and to the particular growth to be removed. The importance of the structures adjacent to the pharynx calls for great care and skill in operations in this region.

The other instruments necessary for operating under anesthesia are, a mouth gag and a retractor for the soft palate (Fig. 4735). The latter should be made of hard

rubber, with a shank broad enough to protect the uvula from injury during the progress of the operation.

The position of the patient during operation is of considerable importance. Two methods are in common

practice. In the first, the child is held upon the lap of an assistant in the sitting posture, with the head upright and turned toward a good light. The head is steadied by a second assistant, who also manages the mouth gag. The soft palate may be drawn upward by means of the palate retractor, or it may be secured by tapes passed inward through the nose and outward through the mouth and the ends tied outside after Wales' method. With the head inclined forward in this position the blood caused by the operation will tend to escape from the mouth instead of being swallowed. Moreover, the pharynx can be well illuminated and the steps of the operation better directed by the aid of vision. The position upon the back is preferred by many good operators, requiring, as it does, the services of fewer assistants and being the one to which a large majority of surgeons are better accustomed. It is not so favorable as regards the admission of light to the pharynx, and therefore it requires a greater degree of skill on the part of the operator, whose tactile sense must be highly educated by way of substitute. Blood, instead of flowing out of the mouth, is swallowed into the stomach. This is not a disadvantage, for it trickles down the posterior wall of the pharynx and escapes into the esophagus, almost without making its presence felt, unless the flow excited has been considerable.

A possible objection to the upright position is the additional risk of fragments of detached tissue falling into the larynx and thus causing asphyxia. Such an accident has been reported. It is not probable that it could occur under the use of the forceps, although it is by no means impossible with the ring knife.

The management of the palate retractor as well as of the anesthetic should be intrusted to a skilled assistant, as upon this the convenience, and, to some extent, the success of the operator, will depend. Great care should be taken to place the retractor in such a position that the antero-posterior diameter of the entrance to the upper pharynx be made as wide as possible, and that the most perfect protection be afforded to the uvula. Preliminary examination the most thorough rhinoscopic examination possible should have been made and the situation, form, size, and texture of the growth well studied. Where this is impossible, examination by means of the finger is admissible, and digital exploration of the pharynx should always be made after the child has been anesthetized and immediately prior to the operation. Should the growth be large and its attachments not easily demonstrated by the finger, a curved probe will lend useful aid in mapping them out. By the practice of careful preliminary examination a fair idea of the amount of tissue to be removed may be gained and if, during the operation, the fragments removed be preserved, it will be easy to estimate what part of the growth has been withdrawn and how much of it still remains.

The removal of adenoid tissue from the pharynx is attended with more or less bleeding, and this, while generally of no importance, may sometimes be considerable. It is best, therefore, that the tissue be torn away, rather than cut. This method has the additional advantage of greater thoroughness. Remnants of adenoid tissue left behind by the forceps may

be removed by the finger nail of the operator, by Hooper's modification of the Loewenberg forceps, or by means of a small carefully guided curette. Should the removal of a mass of adenoid tissue be followed by undue bleed-

ing it is well to defer further attempts at operation for a few moments, until the hemorrhage shall have ceased, or, at least, until it shall have suffi-

ciently diminished. Too great force in the separation of a fragment of tissue must be avoided. It is better to release the mass included in the grasp of the forceps and seize a smaller portion, or else, by applying the instrument in a somewhat different position, to separate adherent fragments than it is to attempt to accomplish too much at once. To prevent laceration of the mucous membrane in the removal of a fragment of adenoid tissue the tip of the forefinger should be passed upward and under the jaws of the forceps, and firm pressure made against the inferior attachment of the mass while the latter is being detached. As large masses of hypertrophied tissue often exist upon the posterior wall of the pharynx as well as upon the vault, it is necessary to secure the removal of this with the rest. The corners of the upper pharynx also, immediately above the Eustachian prominences, must be carefully cleared.

The manipulation of the instruments used in this operation as well as the *tactus eruditus* necessary to the clear understanding of what is being done, are accomplishments which, of course, are best gained by practice and experience.

In operating upon the upper pharynx anesthesia is of the greatest possible value both to the physician and to the patient. The almost universal testimony, both from children and adults, is to the effect that the removal of adenoid tissue from the pharyngeal vault is exceedingly painful. Exceptions to this are occasionally met with, and in the case of the strong and phlegmatic, and where the growth is soft, it may be well to dispense with a general anesthetic in favor of cocaine. As a rule, however, patients who suffer from adenoid hypertrophy are

apt to be delicate, nervous, and timorous, susceptible of acute suffering, and likely to undergo much depression as the result of operation. Not only is the comfort of the patient secured through anesthesia, but the convenience of the operator is infinitely increased. With general anesthesia ample time is afforded for careful examination and for the checking of undue bleeding should any occur; perfect control of the operation, as well as of the patient, can be maintained; thorough relaxation of the throat can be secured; the inducement of retching from pharyngeal irritation can be avoided; troublesome remnants of the growth can be recognized and removed; undue excitement can be prevented; and, finally, the whole work can be accomplished without pain and even without the slightest knowledge on the part of the patient of what has been done.

Again, the safety of the surrounding parts is far more likely to be sacrificed when the operation is done hastily upon a struggling child. Serious injury has thus been inflicted upon the posterior edge of the nasal septum, the turbinated bodies, the Eustachian em-

inences, and the lateral and posterior walls of the pharynx. The more humane method of operating, the more will the work of the operator be facilitated and the best interests of the patient secured.

The anesthetics suitable for such cases are, for local anesthesia, cocaine, and bromide of ethyl; for general

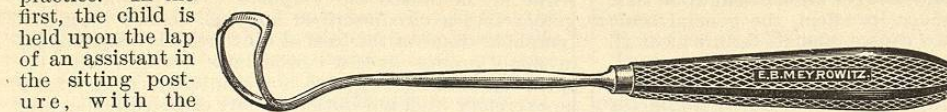


Fig. 4736.—Gottstein's Sharp Curette.

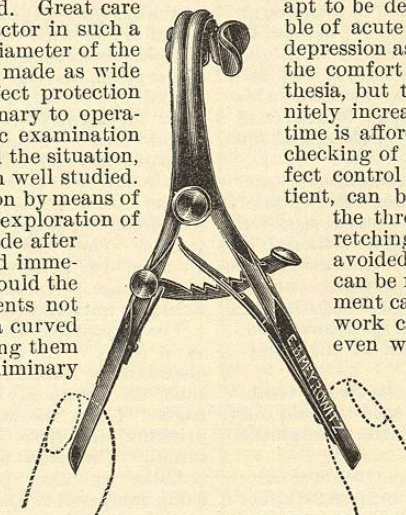


Fig. 4737.—Mouth Gag.

anæsthesia, ether, chloroform, and nitrous oxide gas. The advantages of cocaine are that it renders the introduction of the instrument into the upper pharynx much easier and diminishes the pain and local spasm otherwise sure to occur. Its disadvantages are the length of time which it takes to produce its effect, the general toxic symptoms which it often causes, and its failure after all greatly to modify the actual pain of the operation.

Of the three general anæsthetics, nitrous oxide gas is suitable for short and rapid operations, but it is difficult of administration to a patient who is too young to follow the directions of the anæsthetist, and to those in whom the upper air passages are seriously obstructed. Chloroform is unquestionably dangerous, and, on the whole, not superior to ether. In the hands of a skilful anæsthetist and properly administered, ether will, as a rule, prove most satisfactory. Under deep anæsthesia the pharynx is completely relaxed and ample time is afforded for all the care and thoroughness necessary, the patient meanwhile being free from pain. The theoretical objections that ether is dangerous, that the children are apt to be injured by it, and that its action increases the amount of bleeding at the time of the operation, are not true. If more blood flows with anæsthesia than without, it is largely because under the former condition a much greater amount of tissue is removed.

Much caution should be employed in the after-care of the patient. He should not be at once dismissed, but should be put to bed, and kept there for at least twenty-four hours, and until all signs of disturbance or shock have subsided. Attention to this detail will be amply repaid, for it lessens the possibility of bleeding, prevents infection, guards the patient against taking cold, and greatly reduces the general depression due to the slight shock of the operation.

Meanwhile the administration of tonic doses of iron and quinine will materially hasten recovery. In other words, to this surgical condition the ordinary rules of surgical treatment should be applied.

It must not be considered that with the performance of the operation the case is completed and all possible help to the patient afforded. The general condition should be made as perfect as possible, to which end change of air is often of great benefit, and, most important of all, the patient should be carefully examined in order to determine whether or not the operation has resulted in a thorough and complete success. Should the contrary prove to be the case, further treatment may be called for, and although when properly performed at first, it will seldom be necessary to repeat it, there is no reason why this should not be done when required. Indeed, it is well, in difficult cases, to mention to the parents beforehand the existence of such a possibility.

The pharynx being freed from the offending tissue, such conditions as catarrhal inflammation, relaxation of the uvula, and the general tendency to local congestion can be greatly benefited by topical treatment, although in most instances special interference will be unnecessary.

The second variety of treatment relates to the cure of certain direct results of the naso-pharyngeal obstruction, namely, to mouth breathing, to errors of pronunciation, and to deformities of the chest walls and of the framework of the nose.

When free nasal respiration has been actually established every possible encouragement should be held out to the patient to close the mouth and breathe through the nose, both while awake and when asleep.

The operation for the removal of hypertrophied adenoids is not so simple and easy as many suppose it to be. On the contrary, its successful performance requires knowledge, experience, and skill.

III. TONSIL OF THE TONGUE.

[Glandular (or adenoid) tissue at the base of the tongue.]

This tissue, the existence of which has long been known, is analogous to the structure of the faucial tonsils and of the tissue at the vault of the pharynx. It com-

pletes the circle of glandular tissue which surrounds the pharynx.

Histologically, the principal difference between the faucial tonsil and the lingual lymphoid masses is, that while in the tonsils the lymphoid tissue is collected together into a circumscribed and well-defined mass, the lymphoid tissue at the base of the tongue is disseminated in small groups over a considerable surface. Strictly speaking, these groups are not glands, since they have no excretory duct nor outlet, but are enclosed bodies and belong in reality to the lymphatic system. They are usually three or four lines in diameter, and are loosely embedded in the submucous tissue. Their hilus is covered with a thin mucous membrane. Their sac contains a varying number of follicles, closely resembling those of Peyer's glands of the intestines. The existence of the lingual tonsil, so-called, is a normal condition. The collections of tissue are located between the circumvallate papillæ and the epiglottis. Normally they are not conspicuous, nor is their presence manifest excepting upon irritation, when it will be discovered that the region which they occupy is highly sensitive, and liable to marked reflex phenomena.

In examining the base of the tongue with the laryngoscope there is found, normally, a free interval between the base of the tongue and the epiglottis. When the lymphoid tissue is hypertrophied, this interval is more or less filled up, and the tip of the epiglottis may be seen impinging against the tongue or, apparently, buried in a mass of enlarged and prominent glands. The hypertrophy may extend laterally, and thus shut off the view of the pyriform sinus. It is often more markedly developed upon one side than upon the other. The glands may be seen projecting backward, each one more or less distinct and by itself, and the whole forming an aggregation which is clearly more prominent and conspicuous than is seen in the natural state of the parts. Dilatation of the blood-vessels of the neighborhood is generally present. As to what constitutes the normal condition of the base of the tongue, it may be said that in the vast majority of cases pathological symptoms will be caused only by abnormal enlargement of the lymphoid tissue so pronounced that, when sought for, it can hardly fail of being recognized.

The disease commonly met with in the lingual tonsil is a condition of general hypertrophy, in which the whole gland is increased to double the normal size or more, and its follicles themselves are considerably enlarged. This hyperplasia is very similar to the condition seen in chronic hypertrophy of the faucial tonsil. Associated with the hypertrophy there is often a dilatation of the blood-vessels. Sometimes but one or two vessels may be enlarged and sometimes many of them. It is not uncommon to see it in children.

The causes of the hypertrophy are, to a great degree, identical with those of chronic hypertrophy of the faucial tonsils. They may depend upon disturbances of the circulation due to renal or hepatic disorders, or upon cardiac disease. Among them acid indigestion plays a particularly important part.

The symptoms observed in these cases are many and, as a rule, well marked. They are more commonly observed in women than in men, and are in general such as commonly accompany hyperæsthesia of the parts. Thus, the patient complains of a sensation of pricking, or of the presence of a foreign body in the throat. The pain is usually localized, but sometimes radiates to other parts, these subjective phenomena being increased if the tongue be drawn backward. The explanation of the symptoms is simple. Normally, the margin of the epiglottis is free. When the lymphoid tissue of the tongue is so enlarged as to come in contact with it, then, two parts being in contact which usually do not touch each other, the subjective sensation of a foreign body results, accompanied or not by pain in proportion to the amount of irritation produced. Patients occasionally complain of pain shooting up to the ears, or refer their discomfort to the stomach, larynx, trachea, or

intrascapular region. Pain is also present when the glands are in a state of subacute inflammation.

The effect of hypertrophy of the lingual tonsil upon the voice is marked and disastrous, for fatigue in speaking and singing is a common symptom. When the trouble is not severe the only complaint may be that the patient has pain while talking, without being hoarse, the neighboring parts of the throat being normal. In some cases the vocal fatigue can be traced to deficient innervation. In cases in which the difficulty is more pronounced, the voice may be entirely lost. In some cases the voice is uncertain, being sometimes good and sometimes poor. Sometimes it is unreliable or difficult to control, breaking during the effort to sing. Again, there may be a marked tendency to sing out of tune, and the timbre of the voice may be seriously impaired. In other cases the normal range of the voice is interfered with, the patient not being able to produce two or even three of the highest notes of which his voice is capable.

Some patients suffer from cough, which is observed in two different forms. It is either violent, spasmodic, and almost incessant, or of a hacking character, appearing at shorter or longer intervals. The spasmodic form, as a rule, occurs when the hypertrophied glands encroach upon the epiglottis, and is less frequent than the hacking cough. The latter often gives rise to great anxiety, as the patient fears it to be a symptom of developing pulmonary phthisis. This form of cough is often present when there is merely contact between the glands and the epiglottis, and it is probably due to the friction of the tongue and epiglottis against each other during their movements.

It is a question whether the so-called "globus hystericus," as seen in nervous women, is not often less a matter of the imagination than has been commonly supposed. In patients afflicted with this complaint, hypertrophy of the lingual tonsil has frequently been observed, while in patients of nervous temperament other reflex symptoms of the condition are often severe. On the other hand, the globus hystericus has been seen in patients in whom the base of the tongue was practically normal.

Finally, attacks of dyspnea resembling asthma may occur in patients with enlarged lingual glands.

The prognosis is good, but the length of time required to effect a cure is not always easily determined.

Too radical measures for the relief of this condition are not indicated, and much harm has been done by the free use of surgical methods in cases in which simpler means would have answered the purpose. Thus, in cases depending upon hyperacidity of the stomach, correction of the indigestion will cure the tongue. When Bright's disease is present, or when there is disease of the liver or of the heart, the attempted removal of the enlargements or the obliteration of the dilated vessels can only result in harm.

In the congestive form of enlargement, especially when dependent upon indigestion, relief is often afforded by cleansing and astringent applications made to the base of the tongue by means of a good spray atomizer, attention being paid meanwhile to the constipation, or to the hyperacidity of the stomach, which may be present.

When the hypertrophic masses are permanent, requiring actual removal, surgical means are called for. Many special methods have been suggested for this purpose, from the use of various escharotics to actual ablation by means of cutting instruments. The latter are in general not to be preferred. On the whole, the most satisfactory means seems to be either the galvano-cautery applied by means of a flat electrode, the galvano-caustic snare, or the cold-wire snare. Under cocaine anæsthesia the operation is usually not very painful, and healing takes place in a few days.

Suppurative inflammation of the lingual tonsil is rare. When it is present it is necessary to determine the precise location of the lesion, and to remember that such attacks are sometimes accompanied by œdema of the larynx. Evacuation of the abscess during sleep may prove dangerous. Chronic abscess of this region and retention

cysts have been observed. This condition is sometimes so severe as to suggest Ludwig's angina.

D. Bryson Delavan.

TOPEKA MINERAL WELLS.—Shawnee County, Kansas.

Post-Office.—Topeka. Hotel.

These wells, two in number, are located on Harrison Street, in the city of Topeka. We are informed that a good hotel has been established at the wells for the accommodation of persons requiring treatment. Turkish, Russian, electric, and steam baths may be obtained. The following analysis of the water was made by Messrs. Barnes and Sim, chemists. The estimate was presumably made in grains per United States gallon.

One United States gallon contains (solids): Magnesium chloride, gr. 11.76; sodium sulphate, gr. 19.20; magnesium sulphate, gr. 14.86; sodium nitrate, gr. 1.94; sodium bicarbonate, gr. 35.61; calcium bicarbonate, gr. 22.48; iron bicarbonate, gr. 28.06; ammonium sulphate, gr. 1.50; alumina, gr. 0.40; silica, gr. 10.28; organic matter, gr. 1.76; phosphoric acid, a trace. Total, 147.35 grains.

The baths have been in operation since 1879. They are highly recommended for obstinate cases of rheumatism. The water is also used commercially. The analysis shows a fairly strong saline-purgative water, and it should be useful in cases to which such waters are applicable.

James K. Crook.

TORMENTIL. See "*Rosacea*," under the heading *Roses*.

TORONTO, CANADA.—This city, of about 250,000 inhabitants, the metropolis of the Province of Ontario, is situated in lat. 43° 39' N., and long. 79° 23' W., on the northwestern shore of Lake Ontario. Meteorological observations made here can be taken to illustrate the special climatic features of the northern shores of Lake Ontario, known as that of the "Lower Lake Region." For the following description of the topography of this region, as well as of the city, the writer is indebted to Dr. P. H. Bryce, Secretary of the Ontario Board of Health.

"Lake Ontario is 240 feet above the sea level and lies in a depression produced by glacial erosion, being surrounded by five well-marked lake beaches, extending from the Oak Ridges escarpment on the north, to the Catskills to the south. Northwesterly, these heights form a central plateau stretching to Lake Huron, with a general elevation of 1,000 to 1,300 feet, thereby protecting the Lake Ontario region from the severe storms which move from the northwest plains over the upper lakes, and spend their force on the northwest slopes of the plateau as rain and snow storms. The annual rainfall of Toronto averages 31 inches, with usually a light snowfall. The soil underlying the city and neighboring shores of the lake is a tenacious Post-glacial clay—the Erie clays, geologically—capped, however, in the upper portions of the city with sands and gravels. The combined system of sewerage has converted Toronto from what was "Muddy York" to a paved city, famed equally for its well-kept streets and lanes and for its wealth of residential streets lined with forest shade trees, and its splendid central and suburban parks, with magnificent deep ravines, whose precipitous sides form valleys eroded through the clays by the Humber and Don rivers. Lying in front of the city is an island, which, when the city was founded, was a peninsula formed from the weather-worn cliffs of Scarborough Heights in the east, reposed as a sandbar five miles in length, which bounds a bay some two miles in width in front of the city. This island now forms the summer home of thousands of city dwellers, and on it there is also a lake-side park, visited daily by many thousands. In the midst of the lake, a mile beyond the island, and fully protected against the sewage which is poured into the bay, is the intake of the city water pipe. The breezes blowing over

anæsthesia, ether, chloroform, and nitrous oxide gas. The advantages of cocaine are that it renders the introduction of the instrument into the upper pharynx much easier and diminishes the pain and local spasm otherwise sure to occur. Its disadvantages are the length of time which it takes to produce its effect, the general toxic symptoms which it often causes, and its failure after all greatly to modify the actual pain of the operation.

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The disease commonly met with in the lingual tonsil is a condition of general hypertrophy, in which the whole gland is increased to double the normal size or more, and its follicles themselves are considerably enlarged. This hyperplasia is very similar to the condition seen in chronic hypertrophy of the faucial tonsil. Associated with the hypertrophy there is often a dilatation of the blood-vessels. Sometimes but one or two vessels may be enlarged and sometimes many of them. It is not uncommon to see it in children.

The causes of the hypertrophy are, to a great degree, identical with those of chronic hypertrophy of the faucial tonsils. They may depend upon disturbances of the circulation due to renal or hepatic disorders, or upon cardiac disease. Among them acid indigestion plays a particularly important part.

The symptoms observed in these cases are many and, as a rule, well marked. They are more commonly observed in women than in men, and are in general such as commonly accompany hyperæsthesia of the parts. Thus, the patient complains of a sensation of pricking, or of the presence of a foreign body in the throat. The pain is usually localized, but sometimes radiates to other parts, these subjective phenomena being increased if the tongue be drawn backward. The explanation of the symptoms is simple. Normally, the margin of the epiglottis is free. When the lymphoid tissue of the tongue is so enlarged as to come in contact with it, then, two parts being in contact which usually do not touch each other, the subjective sensation of a foreign body results, accompanied or not by pain in proportion to the amount of irritation produced. Patients occasionally complain of pain shooting up to the ears, or refer their discomfort to the stomach, larynx, trachea, or

intrascapular region. Pain is also present when the glands are in a state of subacute inflammation.

The effect of hypertrophy of the lingual tonsil upon the voice is marked and disastrous, for fatigue in speaking and singing is a common symptom. When the trouble is not severe the only complaint may be that the patient has pain while talking, without being hoarse, the neighboring parts of the throat being normal. In some cases the vocal fatigue can be traced to deficient innervation. In cases in which the difficulty is more pronounced, the voice may be entirely lost. In some cases the voice is uncertain, being sometimes good and sometimes poor. Sometimes it is unreliable or difficult to control, breaking during the effort to sing. Again, there may be a marked tendency to sing out of tune, and the timbre of the voice may be seriously impaired. In other cases the normal range of the voice is interfered with, the patient not being able to produce two or even three of the highest notes of which his voice is capable.

Some patients suffer from cough, which is observed in two different forms. It is either violent, spasmodic, and almost incessant, or of a hacking character, appearing at shorter or longer intervals. The spasmodic form, as a rule, occurs when the hypertrophied glands encroach upon the epiglottis, and is less frequent than the hacking cough. The latter often gives rise to great anxiety, as the patient fears it to be a symptom of developing pulmonary phthisis. This form of cough is often present when there is merely contact between the glands and the epiglottis, and it is probably due to the friction of the tongue and epiglottis against each other during their movements.

It is a question whether the so-called "globus hystericus," as seen in nervous women, is not often less a matter of the imagination than has been commonly supposed. In patients afflicted with this complaint, hypertrophy of the lingual tonsil has frequently been observed, while in patients of nervous temperament other reflex symptoms of the condition are often severe. On the other hand, the globus hystericus has been seen in patients in whom the base of the tongue was practically normal.

Finally, attacks of dyspnea resembling asthma may occur in patients with enlarged lingual glands.

The prognosis is good, but the length of time required to effect a cure is not always easily determined.

Too radical measures for the relief of this condition are not indicated, and much harm has been done by the free use of surgical methods in cases in which simpler means would have answered the purpose. Thus, in cases depending upon hyperacidity of the stomach, correction of the indigestion will cure the tongue. When Bright's disease is present, or when there is disease of the liver or of the heart, the attempted removal of the enlargements or the obliteration of the dilated vessels can only result in harm.

In the congestive form of enlargement, especially when dependent upon indigestion, relief is often afforded by cleansing and astringent applications made to the base of the tongue by means of a good spray atomizer, attention being paid meanwhile to the constipation, or to the hyperacidity of the stomach, which may be present.

When the hypertrophic masses are permanent, requiring actual removal, surgical means are called for. Many special methods have been suggested for this purpose, from the use of various escharotics to actual ablation by means of cutting instruments. The latter are in general not to be preferred. On the whole, the most satisfactory means seems to be either the galvano-cautery applied by means of a flat electrode, the galvano-caustic snare, or the cold-wire snare. Under cocaine anæsthesia the operation is usually not very painful, and healing takes place in a few days.

Suppurative inflammation of the lingual tonsil is rare. When it is present it is necessary to determine the precise location of the lesion, and to remember that such attacks are sometimes accompanied by œdema of the larynx. Evacuation of the abscess during sleep may prove dangerous. Chronic abscess of this region and retention

cysts have been observed. This condition is sometimes so severe as to suggest Ludwig's angina.

D. Bryson Delavan.

TOPEKA MINERAL WELLS.—Shawnee County, Kansas.

Post-Office.—Topeka. Hotel.

These wells, two in number, are located on Harrison Street, in the city of Topeka. We are informed that a good hotel has been established at the wells for the accommodation of persons requiring treatment. Turkish, Russian, electric, and steam baths may be obtained. The following analysis of the water was made by Messrs. Barnes and Sim, chemists. The estimate was presumably made in grains per United States gallon.

One United States gallon contains (solids): Magnesium chloride, gr. 11.76; sodium sulphate, gr. 19.20; magnesium sulphate, gr. 14.86; sodium nitrate, gr. 1.94; sodium bicarbonate, gr. 35.61; calcium bicarbonate, gr. 22.48; iron bicarbonate, gr. 28.06; ammonium sulphate, gr. 1.50; alumina, gr. 0.40; silica, gr. 10.28; organic matter, gr. 1.76; phosphoric acid, a trace. Total, 147.35 grains.

The baths have been in operation since 1879. They are highly recommended for obstinate cases of rheumatism. The water is also used commercially. The analysis shows a fairly strong saline-purgative water, and it should be useful in cases to which such waters are applicable.

James K. Crook.

TORMENTIL. See "*Rosacea*," under the heading *Roses*.

TORONTO, CANADA.—This city, of about 250,000 inhabitants, the metropolis of the Province of Ontario, is situated in lat. 43° 39' N., and long. 79° 23' W., on the northwestern shore of Lake Ontario. Meteorological observations made here can be taken to illustrate the special climatic features of the northern shores of Lake Ontario, known as that of the "Lower Lake Region." For the following description of the topography of this region, as well as of the city, the writer is indebted to Dr. P. H. Bryce, Secretary of the Ontario Board of Health.

"Lake Ontario is 240 feet above the sea level and lies in a depression produced by glacial erosion, being surrounded by five well-marked lake beaches, extending from the Oak Ridges escarpment on the north, to the Catskills to the south. Northwesterly, these heights form a central plateau stretching to Lake Huron, with a general elevation of 1,000 to 1,300 feet, thereby protecting the Lake Ontario region from the severe storms which move from the northwest plains over the upper lakes, and spend their force on the northwest slopes of the plateau as rain and snow storms. The annual rainfall of Toronto averages 31 inches, with usually a light snowfall. The soil underlying the city and neighboring shores of the lake is a tenacious Post-glacial clay—the Erie clays, geologically—capped, however, in the upper portions of the city with sands and gravels. The combined system of sewerage has converted Toronto from what was "Muddy York" to a paved city, famed equally for its well-kept streets and lanes and for its wealth of residential streets lined with forest shade trees, and its splendid central and suburban parks, with magnificent deep ravines, whose precipitous sides form valleys eroded through the clays by the Humber and Don rivers. Lying in front of the city is an island, which, when the city was founded, was a peninsula formed from the weather-worn cliffs of Scarborough Heights in the east, reposed as a sandbar five miles in length, which bounds a bay some two miles in width in front of the city. This island now forms the summer home of thousands of city dwellers, and on it there is also a lake-side park, visited daily by many thousands. In the midst of the lake, a mile beyond the island, and fully protected against the sewage which is poured into the bay, is the intake of the city water pipe. The breezes blowing over