

maining may be removed by subsequent cauterizations. Inclusion of the greater part of the tonsil within the loop may usually be effected by dragging it inward by a forceps or by means of a transfixion needle. Local anæ-

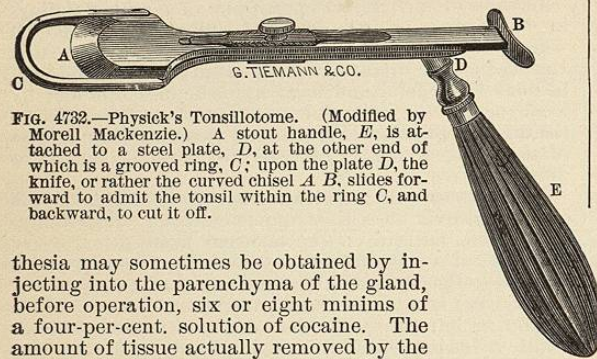


FIG. 4732.—Physick's Tonsillotome. (Modified by Morell Mackenzie.) A stout handle, E, is attached to a steel plate, D, at the other end of which is a grooved ring, C; upon the plate D, the knife, or rather the curved chisel A B, slides forward to admit the tonsil within the ring C, and backward, to cut it off.

thesia may sometimes be obtained by injecting into the parenchyma of the gland, before operation, six or eight minims of a four-per-cent. solution of cocaine. The amount of tissue actually removed by the snare does not represent the total effect of the operation, since the parts remaining are cauterized to a considerable depth.

In certain instances, in which the tonsil is very large and fibrous, and the patient an adult, it may be desirable to use the cold wire écraseur. The operation is tedious and in many cases extremely painful, and, unless it is performed while the patient is under the influence of an anæsthetic, it is not likely that it will be tolerated by any but a remarkably hardy individual. On the other hand, if it be performed under general anæsthesia—as, for example, in the course of an operation for the removal of adenoids and upon a tonsil which is fairly pedunculated—it is the best method at our command. More of the tonsil is removed, the resulting wound is much smaller, and the bleeding is reduced to a minimum. Healing is more rapid and is accompanied with considerably less pain.

Tonsillotomy.—Of all methods hitherto proposed for the removal of enlarged tonsils, none can compare in general popularity, utility, thoroughness, and, on the whole, humanity, with tonsillotomy. As time has gone by, the value of the procedure has become more and more completely established. Meanwhile the instruments for its performance have appeared in large numbers and in great variety.

In the Physick tonsillotome, as made after the pattern represented in Fig. 4732, a high degree of simplicity and perfection has been attained, and although many modifications of this instrument are offered for sale, it is safe to say that, up to the present time, it stands unrivalled.

It is the favorite tonsillotome of nearly every recognized authority. It is absolutely simple in construction, not liable to get out of order, comparatively easy to clean, and, what is far more important, it is a safe instrument to handle, the accidents to which the Fahnestock instrument (Fig. 4733) is liable being with it impossible. With it the danger of hemorrhage is reduced to a minimum.

For the convenient and successful performance of tonsillotomy the aid of a trained assistant is indispensable. With adults and with children old enough to be under good self-control, he will be of use in steadying the patient's head and in supporting the tonsils; while with young children the possibility of operating at all will sometimes depend upon the manner in which the patient is held.

During the operation the patient should sit facing a good light, the operator with his back to it. Those surgeons, however, who are familiar with the use of the head-mirror will generally prefer to use this instrument for illuminating the field of operation. The patient, if an

adult, should sit upright and well back in the chair, the head fixed against a properly adjusted head-rest or supported by an assistant. The latter should stand directly behind the chair, and, while holding the head with both hands, should place the fingers of each hand over the tonsillar region of the corresponding side, that is, immediately below the angle of the jaw. Thus the tonsils may be prevented from receding before the pressure of the tonsillotome when it is introduced, and the operation may be performed with greater accuracy, and, if necessary, with greater thoroughness.

In the case of a child the assistant should be seated in front of the operator, and the patient seated across one of his thighs, facing inward, so that the legs of the latter may be grasped and firmly held between the thighs of the assistant. The body of the child is partly turned so that he faces the operator, and his head is rested against the breast or the shoulder of the assistant, who controls the arms and body of the child by throwing one of his arms across the patient's chest, while with the other hand he steadies the child's head firmly against his own body. The use of a mouth gag is unnecessary. The blade of the tonsillotome is now drawn backward and the instrument introduced flatwise and in the median line, as if it were a tongue depressor, as far back as the pharynx. It is then rotated, by raising the handle outward from the vertical to the horizontal position, until the plane of the blade becomes parallel with the plane of the desired incision. Following this comes one of the most important manœuvres of the whole operation, and one to which too much attention cannot be paid, namely, the engaging of the tonsil in the ring of the instrument. In carrying the tonsillotome outward from the median line, the tendency is for the handle of the instrument to be carried out too rapidly. In other words, the angle of the mouth is used as a fulcrum against which the middle of the instrument rests, and while the handle is carried outward the other end is carried in the opposite direction, or inward, and away from the tonsil. The result is that, instead of squarely grasping the gland at as deep a position behind it as before, the end of the tonsillotome slips over the back of the tonsil, and the operation results in simply slicing off a section from its top. To avoid this it is necessary to observe the rule that the blade of the instrument must always be kept parallel with the median line, and that if any deviation is made it should be to carry its distal extremity outward. Having engaged the tonsil in the ring of the instrument to the required depth, push the blade firmly and steadily through the included tissue, separate the fragment of tonsil, and, withdrawing the instrument quickly, remove the excised gland adhering to it. Then with the greatest possible expedition—and before the patient realizes that there is to be a second operation—before bleeding sets in, and without giv-

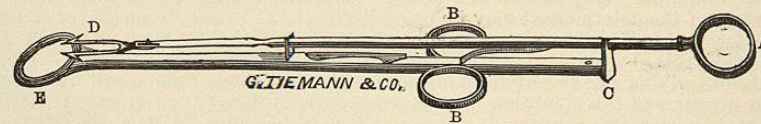


FIG. 4733.—Fahnestock's Guillotine. (Modified.) In the variety shown here the instrument consists of three principal parts: A, A ring made to receive the thumb of the operator, and attached to a rod upon the end of which are the pronged forks D; C, a staff, at the end of which is a ring, E; B and B, two rings made to receive the fore and middle fingers of the operator's hand, and attached to another rod which plays upon the staff C, and at the end of which is a ring-knife which rests within a groove in the ring E. In using the instrument the thumb-piece A is pushed forward for a certain distance, when by the automatic releasing of a spring-catch the rod with the knife attached is drawn forward by the rings B, B, so that the tonsil, already engaged in the ring E, and drawn still farther through it by the forks, is excised.

ing him a chance to cough or clear his throat—reintroduce the tonsillotome on the opposite side and remove the remaining gland. By this means both tonsils may be removed at one sitting, so that but one convalescence is to be endured. Few young patients will submit to a repetition of the operation. Several ingenious modifications of the Physick tonsillotome have been made, by which

the handle may be reversed so that the operator may use it first in one hand and then in the other. A far better plan, however, is to gain through practice sufficient dexterity to change the instrument from one hand to the other, and to operate thus on both sides with equal facility. With a quiet and tractable patient the operation may be done very quickly, from ten to fifteen seconds being ample time in which to complete it.

In most cases the actual pain caused by cutting through the tonsil is very slight, the patient often complaining more of the introduction of the instrument into the pharynx and the consequent reflex than of the operation itself. The injection into the tonsil of cocaine is an undesirable procedure. General anæsthesia, from either chloroform or nitrous oxide, is objectionable, not only because it is, as a rule, unnecessary, but because it is desirable to have the active co-operation of the patient in clearing the throat the moment that the operation is completed. To this rule, however, there are exceptions. When a child is highly irritable, nervous, and timid, and when the operator may be tempted to abandon the case rather than subject the patient or himself to the inevitable struggle which with such children must be undergone, the administration of nitrous oxide will prove of great assistance. If the child is fairly well and strong, the best plan is to be frank with him, place him upon his mettle, and proceed with the operation. If, on the other hand, he is delicate and easily frightened, it will be wise to consider to what extent he may be coerced without producing an undesirable degree of shock; and, as chronic hypertrophy of the tonsils is apt to be associated with these very conditions of nervousness, such children should be managed with the greatest gentleness and consideration.

As hypertrophy of the tonsils is commonly associated with pharyngeal adenoids, the removal of both upon the same occasion under general ether anæsthesia has proved by far the best and most satisfactory way in which to deal with these cases.

According to most authorities, hemorrhage after the operation is usually slight and soon ceases spontaneously. If it persists it may be readily checked, and generally by simple means. Of the latter the most effective is the direct application to the cut surfaces of a mixture consisting of one part gallic acid and three parts tannic acid, reduced to the consistence of cream by the addition, drop by drop, of a small quantity of water. This or the sucking of cracked ice will usually prove effective.

The view taken by most specialists is, that the operation is attended with little or no real danger. On the other hand, there are some practitioners who look upon it with dread.

In reality, during the last twenty years, death from hemorrhage following tonsillotomy in patients under eighteen years of age has been extremely rare. Over eighteen several cases are recorded. Serious bleeding may occasionally occur. Moderate bleeding, requiring means to check it, is, on the whole, uncommon. In hemorrhage after tonsillotomy several varieties of bleeding may occur. These are:

1. Arterial: from the division of one or two comparatively large arterial branches.
2. Arterial: from the division of a large number of small arterial twigs.
3. Venous: from the division of the small plexus of veins which lies below and outside of the tonsil.
4. Capillary from the presence of the hemorrhagic diathesis.

Of the above varieties, the first two seem to be the most common.

Ligation of the carotid, common, external or internal, has generally proved ineffective.

Hemorrhage in general, it is unnecessary to say, is likely to cease during syncope. In bleeding after tonsillotomy, the excitement of the patient and the consequent stimulation of the heart and activity of the brain result in great increase in the general circulatory force and in the amount of blood actually carried to the brain. As

long as this condition lasts bleeding will continue, the tendency being for it to grow more, rather than less, severe, even although the common carotid may have been tied. When, however, the heart's action becomes weak and the brain anæmic through syncope, bleeding from the tonsil will cease. This circumstance would, it seems, tend to prove the futility of ligating the common carotid.

In general, it may be said that the operation of tonsillotomy should not be performed unless ample means are at hand for controlling any ordinary amount of hemorrhage which may occur, and, although the chances of bleeding are infinitely slight, no surgeon is justified in incurring them unprepared. Since the amount of bleeding present may vary from the loss of a few drachms up to a hemorrhage of considerable importance, it follows that the means selected for its arrest must vary with the nature and severity of the case.

In the vast majority of instances, the bleeding, even though sharp at first, will subside spontaneously within a few minutes after the operation. In these cases the patient should be directed to keep the head upright, as far as possible; to refrain from making efforts at clearing the throat; to gargle the throat quickly, and several times in succession, with ice water; or, instantly upon the removal of the tonsils and, if possible, before bleeding has begun, the surgeon should apply to the wounded surfaces the tanno-gallic mixture of Morell Mackenzie, already mentioned, all preparations for the application having been made beforehand.

Should the bleeding continue, grasp a smooth, rounded piece of ice in a pair of long forceps and hold it firmly against the bleeding surface. Or wrap, somewhat tightly, a pledget of absorbent cotton around the end of a suitable rod, saturate it with the tanno-gallic mixture, and then press it against the wound. In any case the pharynx of the patient should be illuminated by the best attainable light, the neighborhood of the tonsil diligently cleared of clots, the cut surface thoroughly exposed to view, and careful search made for the exact source of the hemorrhage. Sometimes this precaution will be rewarded by the discovery of one or two spurring points. These will generally be found low down in the pharynx, corresponding with the inferior part of the tonsil, in which the larger arterial branches seem to be received. Such points, having been discovered and precisely located, should be seized with long slender forceps and thoroughly twisted; or they may be touched with a small galvano-caustic point; or the tip of a probe upon which nitrate of silver has been fused may be pressed into them, the spot having previously been well cleared of blood.

Such hemorrhage is apt to occur in cases in which the incision has been carried low down in the pharynx, and may usually be arrested by the above means. Upon inspecting the thoroughly cleansed wound, however, there may appear innumerable little vessels, none of which is large enough to be seized, but all vigorously bleeding. These are the cases in which the fibrous stroma containing the nutrient vessels is markedly increased and the vessels themselves are large and abundant. Encased as they are in fibrous tissue, it is difficult for them to contract; hence the bleeding, abundant, persistent, and exceedingly difficult to control.

In these cases the ordinary means for stopping hemorrhage are often ineffective. The iron styptics are worse than useless, while the cautery only seems to make the bleeding worse. If the tonsil has been thoroughly removed, there is nothing left around which a ligature may be applied.

About the best suggestion for such a case is that of Levis, who transfixes the bleeding base with the hook of a small tenaculum, performs torsion, and directs the patient to hold the flat handle of the tenaculum fixed between his teeth. By passing a bandage around the head and under the chin this position may be maintained for many hours. The method has proved very effective. Pressure of the common carotid may be maintained,

although in the personal experience of the writer and of others it has often proved useless. Meanwhile, several general measures of great value may be employed.

Since the object desired is to quiet the circulation and allay nervous excitement, the administration of opium is decidedly indicated.

Arterial tension may be relieved by shutting off a part of the supply of blood. This may be accomplished by constricting the patient's thighs, as is sometimes done in hæmoptysis.

Finally, in most instances of tonsillar hemorrhage of the class last described, the bleeding has continued in spite of all efforts to stop it until, at last, the patient has fainted. Upon the occurrence of syncope the flow has promptly ceased, nor has it, with the return of consciousness, recurred. While, therefore, the means which seem best adapted to the case in hand are being applied, any tendency to fainting should be encouraged rather than repressed. Should the above means all prove ineffective, and the question of ligating one of the great vessels be entertained, it should be remembered that ligation of the internal carotid is useless; that ligation of the common carotid has sometimes succeeded, but has often failed; and that the choice of a successful operation lies between tying the external carotid near the bifurcation of the common carotid, or the ligation of both the common and the internal carotid arteries.

The occurrence of a venous hemorrhage is unusual. The writer has seen one such case, which was checked without great difficulty by means of cold and pressure.

Capillary hemorrhage may be stopped by the tannogallic mixture, by pressure, by cold, or, finally, by the gargling of water taken as hot as can be borne.

Of a very large number of cases of tonsillotomy known to the writer, in only one has severe hemorrhage occurred in a child. This patient had hæmophilia. Recurrence of the bleeding was evidently caused by the swallowing of food. The patient was nourished by rectal alimentation for three days, with complete success.

Finally, annoying and persistent bleeding may occur from the accidental wounding of the anterior pillar of the velum palati in the course of tonsillotomy. The adhesions which often exist between the anterior pillar and the tonsil should be broken up before the removal of the gland is attempted.

The after-treatment in tonsillotomy is exceedingly simple. The general condition may be estimated to equal about that of a patient suffering from a mild attack of tonsillitis. He should be kept quiet for two or three days. Solid food should be withheld for thirty-six hours, and then such articles selected as shall produce neither chemical nor mechanical irritation. A gargle of simple borax and water, or containing besides a trace of carbolic acid or thymol or some other good disinfectant, should be used after the first day, unless it causes pain in the throat, in which case the fluid should be used with an atomizer. Gum arabic may be occasionally dissolved in the mouth. The wound usually heals with rapidity and without accident. Sometimes, however, in unhealthy subjects infection from some of the numerous bacteria of the buccal cavity takes place and it becomes covered with a thick, whitish membranous deposit, which may even appear to be diphtheritic, and which may be associated with more or less constitutional disturbance. This, in the majority of cases, soon yields to local disinfectant measures, and the internal administration of iron.

In addition to the healing of the pharyngeal wound, in the case of children, three points at least (in addition to the general tonic treatment sometimes required) should be carefully attended to:—

First, the mouth-breathing habit must be overcome, even when the pharyngeal obstruction has been removed. To this end the patient should be encouraged, while waking, to breathe through the nose. When asleep he may need the benefit of some artificial help.

Secondly, the defects of pronunciation commonly met with in the subjects of enlarged tonsils, become, like the mouth-breathing, matters of habit, and do not always

disappear when the condition upon which they depend has been relieved. This matter should be explained to those having the child in charge, and suitable exercises in reading and pronouncing recommended.

Finally, the deformity of the chest will in many cases need attention. Light gymnastics and, more particularly, the systematic practice of chest expansion, will often bring about a surprisingly rapid and beneficial result.

The results of tonsillotomy are immediate and marked, and the child who was before weak, ill nourished, underdeveloped, will in many cases begin to grow with remarkable rapidity; his whole appearance at the end of several months being greatly changed for the better.

It is not easy to understand why the excision of enlarged tonsils should meet with the opposition which is sometimes brought to bear against it. Still less is it explicable when the ground of the opposition is explained.

Among the principal objections which have been urged against tonsillotomy are the following:

1. That the tonsils will atrophy spontaneously at puberty; or, as some express it, that the child will "grow to his tonsils."
2. That tonsillar hypertrophy exercises a protective influence against infections. Also, that it protects against bronchitis and phthisis.
3. That the removal of the tonsils will injure the voice.
4. That their removal will impair the patient's virility.
5. That the tonsils will be likely to grow again.
6. That milder measures than excision will answer the same purpose.
7. That the operation should be indefinitely postponed because the patient may be weak.

In every one of the seven objections quoted the objection is absolutely and exactly contrary to the truth.

FOREIGN BODIES IN THE TONSILS.—From their peculiar structure and position, the tonsils are prone to the arrest and lodgment of small pointed foreign bodies. These may be found fixed in one of the deeper lacunæ or thrust into the substance of the gland itself. Their presence is characterized by a limited degree of pain at the seat of impaction, and sometimes by slight dysphagia. Occasionally, however, the pain is referred to a point more or less remote.

Commonly, in tonsils which are the seat of chronic inflammation, the secretion of the lacunæ may be increased in quantity and retained within the crypts, as before described in this article. These soft concretions, which are of a white or yellowish color and cheesy consistence must not be mistaken for tonsillary calculi, which are entirely different both in character and in composition, and which are actually of rare occurrence. The composition of such concretions is principally phosphate and carbonate of lime. They are, therefore, not of gouty origin, as has sometimes been supposed. Besides the above-named salts, they contain small quantities of iron, soda, and potassa. Their presence gives rise to few symptoms which may not be observed in any inflamed tonsil. A slight pricking sensation is often complained of, and, when the concretions are large, there is dysphagia. Sometimes small concretions are discharged spontaneously, and sometimes their presence predisposes to severe attacks of quinsy, in the course of which an abscess may form which may be very slow in healing. The presence of a tonsillar calculus may be determined by the discharge of pieces of the calculus, by inspection, a part of the calculus projecting from the lacuna far enough to be visible, or by direct examination with the finger or a probe.

In the treatment of these cases the concretion may be removed by means of a hooked probe, or by small forceps. It will generally happen that the tonsil will be enlarged, and then the extirpation of more or less of the gland will be called for. Indeed, this is the simplest way of relieving the whole trouble. The use of the tonsillotome may be impossible on account of the hardness of the calculus; in which case resort to the bistoury will be necessary.

PARASITES IN THE TONSILS.—Mackenzie quotes several instances in which certain parasites, such as hydatids and

trichocephali, have been found in the tonsils. Dupuytren relates the case of a woman twenty-one years of age, who for eleven months had suffered from attacks of inflammation of the tonsils. The left gland was considerably swollen, and the surgeon having diagnosed an abscess, plunged a bistoury into the tumor. As a result, nearly two ounces of watery fluid gushed out, and ultimately a large hydatid cyst, the size of a hen's egg, was extracted. The patient died soon after, and a hydatid cyst, the size of a child's head, was found attached to the left kidney. A similar case, excepting that the patient was a man, is reported by Davaine, and the same observer relates an instance in which a trichocephalus was found lodged in the left tonsil. The parasite had probably attained this situation through being expelled from the stomach during the act of vomiting.

SYPHILIS OF THE TONSIL.—*Chancre.*—Chancre upon the tonsil is occasionally observed. While chancre of the lips and buccal cavity is not uncommon, its occurrence on the wall of the pharynx is practically unknown. The explanation of its appearance upon the tonsils is plain when the structure and position of those organs is remembered. There are many cases in which, without question, it has been innocently acquired. While chancre of the tonsil is generally unilateral, it has sometimes been observed upon both glands.

The diagnosis of chancre of the tonsil is apt to be difficult, since the symptoms vary considerably, and the situation of the trouble is so remote that it easily passes unobserved or unrecognized.

The signs of infection generally begin with slight redness and swelling, and without perceptible induration. Soon there are pain in deglutition, increased redness, and hypertrophy, which is followed by a superficial erosion, having an indurated base, and more or less glandular involvement of the affected side. The hypertrophy and general tumefaction of the tonsil itself are important signs, and seem to be a constant accompaniment of the disease. The second important symptom is the superficial erosion, increasing to an actively ulcerating surface, generally covered with a grayish-white coating of greater or less thickness, granular in character, and distributed over the surface of the ulcer in a somewhat irregular manner. Sometimes the erosion is very superficial and ill-defined, while in other rare cases it has assumed the phagedenic form, presenting a deep, sloughing ulcer, with a high degree of inflammation and tumefaction of the neighboring parts.

Induration of the base of the ulcer is not a constant factor. In many cases it is conspicuously absent. Ptyalism is an early and marked symptom.

Enlargement of the submaxillary lymphatic glands of the affected side is a constant symptom, the engorgement being hard, indolent, and sometimes extensive. Suppuration does not seem to have been observed. The duration of chancre of the tonsil has been thought to be shorter than that of the same lesion in other places. There is more or less dysphagia, often severe, and, when the ulceration assumes the phagedenic form, pain in swallowing may become very severe.

The immediate diagnosis of chancre of the tonsil is often by no means easy. It will generally be difficult to obtain a history of contagion, through either the reticence or the ignorance of the patient. The unusual situation of the lesion, its diversity of appearance and form, the absence of corroborative evidence, all render the case in many instances obscure. It is necessary to differentiate it from malignant disease, especially epithelioma; from tuberculous ulceration; from psoriasis of the mouth and from the so-called smoker's patch; from mucous patches; from the ulcerating gummata of tertiary syphilis; from diphtheria; and, finally, from gangrenous ulceration of the tonsil.

It is often impossible to arrive at a decided conclusion until the development of constitutional phenomena and the results of treatment unite in confirming the diagnosis. The treatment, constitutionally, must depend upon the views of the practitioner with regard to the manage-

ment in general of early syphilis. Should mercury be administered, the cyanide, one-sixteenth of a grain three times daily, as recommended by Morell Mackenzie, has been found especially valuable by the writer. In simple cases emollient gargles will answer every indication; while, if the sore becomes phagedenic, cauterization with the acid nitrate of mercury and the application of antiseptic sprays or gargles will be indicated.

Erythema of the tonsils is common in early syphilis. It may be general at first, but soon shows a disposition to limit itself by well-defined margins and to assume a symmetrical arrangement.

Mucous Patch.—The occurrence of mucous patches upon the tonsil is very common, especially in cases in which the tonsils have already been hypertrophied and inflamed. They may be slight and barely perceptible, or large, well defined, and extensive, varying in color from an opalescent grayish-white to a dull yellow. In the latter case they are often mistaken for the exudation of follicular tonsillitis and for diphtheria, from which they may readily be distinguished by their chronicity, their appearance, and by the history and coexisting signs of syphilis. The tonsils themselves meanwhile are generally much enlarged and inflamed. Local treatment is best carried out by applications, to the patches, of solutions of iodine, and by cleansing sprays or gargles. For the erythema an astringent spray will hasten resolution.

Gummy tumor may be recognized by the characteristic appearance of the ulceration; by the comparative freedom from pain, which distinguishes it from cancer and from tuberculosis; by the absence of the signs characteristic of tubercle in other parts of the body, including the high evening temperature; and by the fact that in the latter disease the ulcers are smaller and less deep. The best effects may be obtained from the internal administration of the iodide of potassium, while, locally, the progress of the ulcer may be checked by applications of the nitrate of silver or the acid nitrate of mercury. Indolent ulcers may be stimulated by means of solutions of the sulphate of copper, or of the sulphate or chloride of zinc.

TUBERCULOUS ULCERATION.—Tuberculous ulceration occurring primarily in the tonsil is rare. Consecutive to the appearance of the disease in other organs, it is not very uncommon, a fact which may be explained by the position and vulnerability of these organs. The appearance of the ulcer, when not too broken down, presents most of the following characters: The surface is uneven, pale, and devitalized; it is granulated or often covered with yellowish-gray, viscid or coagulated mucus; the edges are sometimes sharply cut, sometimes levelled, seldom elevated, everted, or undermined; the surface is not usually very red, but often more reddened than the surrounding tissue; there is little or no surrounding induration; the shape of the ulcer is not constant, but it is usually ovoid; its depth varies, but it is usually superficial; there is generally ulceration of some of the neighboring parts; pain in swallowing is usually very severe.

As to the local treatment of these ulcers, much will depend upon the stage of the general disease and the condition of the surrounding parts. Primary ulceration is best treated by the destruction of the infected area, either by scraping or by means of the galvano-cautery; this should be followed by applications of lactic acid or of a solution of iodine, the healing process being encouraged by any suitable means. When the ulceration is secondary to general tuberculous infection and to the development of ulceration in neighboring parts, less vigorous means will probably be indicated.

In these cases the best results have been obtained by first spraying the surface of the ulcer with a solution of resorcin of a strength of two or three per cent., or with a weak dilution of Dobell's solution, and then applying to it lactic acid. If cocaine has been previously used the last application is painless. The strength of the lactic acid may be made to vary from thirty to one hundred per cent. In many cases the application of a four-per-cent. solution of cocaine will be found effective in relieving the intolerable pain and dysphagia. Anæsthesine

and orthoform are both good local sedatives, as is morphine, and they are to be preferred to cocaine in many cases. Treatment, to be effective, must be carried out with great thoroughness and regularity, and the general nutrition of the patient must be maintained with care.

PHARYNGOMYCOSIS.—A parasitic disease which affects the tonsils rather more frequently than other parts will be described in the article on *Mouth, etc.*, in THE APPENDIX.

TUMORS OF THE TONSIL.—*Benign.*—Benign growths springing from the tonsil are somewhat uncommon. The varieties most frequently met with are papillomata, fibromata, lymphomata, lipomata, and angiomata. Papilloma of the tonsil is similar to the same growth in other parts of the body. Such tumors are generally of small size. They are apt to spring from the upper part of the tonsil, and to be pedunculated, creating little or no disturbance by their presence until they attain dimensions sufficient to render them mechanically irritating. Their appearance is that of a warty growth, with irregular outlines, their consistence is soft and yielding, and their color usually pink.

Fibromata are very similar to the above, excepting that they develop from the peritonsillar connective tissue, appearing like polypoid growths, or, as happens occasionally, growing in the connective tissue of the gland itself. The surface of the tumor is smooth and glistening, and its consistence is firm. In the case of papillomas and fibromas which are pedunculated, the best treatment is to put the pedicle well upon the stretch and then divide it close to the healthy membrane by means of a galvano-cautery knife.

Lipoma, or fatty disease of the tonsil, is rare. There are no gross features which particularly distinguish it, so that a diagnosis must be made by the aid of the microscope.

Lymphoma, although histologically similar to simple hypertrophy, is generally associated with leucocythæmia and general lymphadenitis. It is sometimes seen as a consecutive manifestation after the neighboring glands have become enlarged. Suppuration of the tonsils in this condition rarely occurs. When thus affected, the tonsils attain such a size that they obstruct the pharynx and are otherwise annoying, they may be excised. The advantages of the operation, however, will be largely mechanical.

Angiomatous tumors of the tonsil and nævus of the same organ, although sometimes observed, are exceedingly rare.

Malignant Growths.—Although not a favorite seat for the development of malignant growths, such tumors occasionally appear in the tonsils, and occurring there they are, from their history and prognosis, of the utmost importance.

Primary cancer of the tonsil is rare. Of the two principal types, sarcoma and carcinoma, the most common is the round-cell sarcoma. In addition to this are found the spindle-cell sarcoma and the lympho-sarcoma.

Of carcinomas the squamous-celled or true epithelioma is the most common. While the sarcomas and spheroidal carcinomas generally form distinct and prominent tumors, growths of the epitheliomatous variety break down more or less early in their course and form deep and sloughing ulcerations. The symptoms of cancer of the tonsil are more pronounced in the carcinomatous varieties. In the latter, pain of an intermittent and lancinating character is usually an early and pronounced sign. Dysphagia soon follows.

In some cases, however, pain is not experienced at the seat of the difficulty, but is reflected to other parts of the throat. Such, for example, are cases in which otalgia, due to reflex irritation from malignant disease of the pharynx, has been treated locally for some time before attention was directed to the difficulty in the throat.

Whatever the nature of the disease, its progress is marked by infiltration of the adjacent structures, most often the soft palate or palatine arches.

The course of the disease is rapid. Both in sarcoma

and in carcinoma the cervical glands are almost invariably involved, and early in the history of the case.

Cancer of the tonsil may be secondary to the appearance of the disease in other organs. In a case of extensive sarcoma of the tonsil operated upon by the writer, the disease was multiple. The tumor of the tonsil was large, smooth, and resisting, and it filled the pharynx and overhung the larynx to such a marked degree that deglutition and respiration became impossible. It had been of slow growth and its removal was attended with marked and long-continued relief. In several cases of sarcoma mentioned by Butlin the immediate cause of death was hemorrhage, both in those not operated upon and in those which were recurrent. In other cases death is caused by exhaustion due to dysphagia and sepsis, or to a combination of various causes, among which the secondary involvement of other organs plays an important part.

Hemorrhage from the ulceration of an epitheliomatous growth is not common.

The diagnosis of malignant growth of the tonsil is, generally, not difficult. It is unusual before middle life. It is unilateral. Pain, either local or reflex, and enlargement of the glands at the angle of the jaw are almost constant symptoms. As between epithelioma and sarcoma, the diagnosis is not always easy. In the former, however, pain is apt to occur earlier in the progress of the disease and to be more severe, while the tendency to ulceration rather than to the formation of a considerable tumor distinguishes epithelioma from sarcoma, which at the same time is slower in growth, much more firm in consistence, and likely to attain a much larger size.

The microscopical findings are often unsatisfactory, as the growth is apt to develop in the deep tissues, so far away from the surface that a specimen for examination cannot be obtained, and long before the surface has become involved the diagnosis may be made from the clinical signs.

The prognosis is bad, especially in epithelioma, as few patients live more than a year. It is more serious, of course, when glandular involvement has taken place, or when the neighboring structures have become infiltrated.

Treatment.—In the treatment of these cases, both the sarcomatous and the carcinomatous, an early diagnosis is of the first importance; and this is particularly the case if the disease of the tonsil be primary. For, while removal of the tonsil by the natural passages is by no means a difficult operation, the reverse is true of the extensive operation required for its removal from the outside. Thus far, neither the x-ray nor the toxins of erysipelas have succeeded in curing cancer of the neck. The application of the x-ray, however, is generally productive of positive results in relieving pain, in diminishing the secretions of the part, and in actually retarding the progress of the disease. For these reasons alone its application seems desirable, especially in cases otherwise beyond remedy. Aside from palliating the condition, little can be expected from any course of treatment which is not surgical in its nature. The local application of astringents and the internal administration of various drugs calculated to delay the progress of the disease, can only succeed to a slight degree in accomplishing the desired result.

For the removal of the tonsil several methods have been proposed. The one selected must depend mainly upon the character of the disease and the presence or absence of involvement of the lymphatic glands. The tonsil may be removed either from within the mouth, or through an opening in the side of the neck. When the lymphatic glands are enlarged, removal of the organ through the mouth can be regarded as only palliative.

Removal through the natural passages may be justifiable under certain favorable conditions, such as a slowly growing tumor, plainly located in the tonsil itself, and accessible through the mouth, and in the absence of glandular involvement. Some of the sarcomas reported as successfully cured have been of this description.

In operating the surgeon should anesthetize the patient through the medium of a tube or some similar apparatus, introduced at the side of the mouth or through the nose; the mouth must be widely separated with a gag, and the patient's head should be slightly raised and turned toward the best light obtainable.

Excision of the affected tonsil may be best accomplished by means of a galvano-caustic knife, a galvano-caustic loop, or a cold-wire éraseur. Of these methods, the galvano-caustic éraseur will probably prove most useful in the majority of cases. While the cold wire may be used, with almost no hemorrhage, the galvano-caustic éraseur accomplishes as much and possesses besides several advantages over it. The amount of tension required for the latter is small, so that the loop is not apt to be dragged from its place, and fixation needles, if they are used, are not torn from the tumor by the pressure of the wire. From the effect of the cautery any remnant of the growth is apt to be destroyed at the time of the operation, and the chances of recurrence are thereby lessened.

Care should be taken not to allow the temperature of the wire to rise too high, for the slower its progress the less will be the liability to hemorrhage. Usually bleeding is slight. Instead of the methods just described, the enlarged mass may sometimes be efficiently enucleated by means of the finger of the operator.

In cases of severe hemorrhage, and when there is considerable obstruction of the larynx from the effects of the tumor, immediate or remote, the performance of tracheotomy may be necessary. Whether or not a tampon-cannula should be used must be determined by the necessities of the case in hand. When the larynx is obstructed to any extent by the growth, or when the rima glottidis has been narrowed by œdema or otherwise, the wisest course will be, probably, to perform a preliminary tracheotomy. No unnecessary time should be consumed in inserting the tracheal tube. Should bleeding occur the best hæmostatic is the galvano-cautery. In operating upon such cases great assistance in illuminating the pharynx may be obtained by means of a small incandescent electric light.

Even in certain cases in which the disease of the pharynx has extended beyond the tonsils to the soft palate and base of the tongue, the operation through the mouth with the galvano-cautery has been successfully employed. In advanced cases, however, and in those in which the cervical glands are involved, the above operation can only be palliative.

Removal of the tonsil through an incision in the neck was first proposed and practised by Cheever, of Boston. Valuable modifications of it have been made by Czerny and by Mikulicz. Unfortunately, recent statistics relating to these operations do not exist. The cases themselves are rare and the unfavorable ones are seldom reported, so that it is impossible to know with any accuracy the actual value of the radical operation. In view of the necessarily fatal termination of the disease, however, if left to itself, it is encouraging that in some cases at least a cure has been effected, McBurney and other surgeons having instances to their credit in which the patient is alive and well several years after operation.

II. PHARYNGEAL TONSIL, OR LUSCHKA'S TONSIL.

Lymphoid hypertrophy in the upper pharynx was noticed by Schneider as early as 1655. Prof. Wilhelm Meyer, of Copenhagen, was the first, however, to estimate it at its true value, and to propose efficient means for its relief. His first article on the subject, published in 1868, is classic.

Luschka's tonsil is susceptible of two classes of difficulty. The first of these is an acute or subacute inflammation, attended with temporary enlargement, the said enlargement subsiding with the disappearance of the exciting cause. While this cannot be called a true

hypertrophy it is a lesion of great importance, both on account of the temporary inconvenience which it causes and also by reason of the tendency which it manifests to leave behind a permanent enlargement of greater or less degree.

This permanent or chronic enlargement in the course of time constitutes a true hypertrophy, and, although its actual degree may vary under the general influences which cause it to grow better or worse, it seldom entirely subsides. Chronic hypertrophy, as commonly met with, is clinically of two varieties. In the first the adenoid element predominates. The consistence of this variety is one of its chief characteristics, for it is soft to the touch, friable, easily broken up, and shows a tendency, when torn away, to separate in large spongy masses.

In the second variety the hypertrophied mass is composed more largely of fibrous tissue elements. Operation upon the latter variety is more difficult than upon the former, as its dense structure offers greater resistance to the efforts of the surgeon, which, when successful, result in the removal of but small masses of firm tissue, in marked contrast to the large fragments which are easily torn away in cases representing the variety first mentioned.

The location of the growth is of practical importance, both as regards its effects and as to the comparative difficulty of its removal. Its size may be so great as practically to fill the retronasal space, or, on the other hand, it may be so slight as to make it difficult to determine whether or not its condition is pathological. The hypertrophied tissue may be confined strictly to the vault, or it may be diffused over the posterior and lateral walls of the pharynx, or upon the posterior wall of the pharynx alone, in a large, well-aggregated, tumor-like mass.

The symptoms have already been described in dealing with the subject of obstructed nasal breathing (page 815).

The diagnosis of lymphoid hypertrophy at the vault of the pharynx is usually easy, the symptoms being sufficiently apparent in most cases to suggest at once the nature of the difficulty. The diagnosis is established by examination of the upper pharynx. This may be accomplished by one of several methods.

1. *Posterior Rhinoscopy.*—The upper pharynx may be demonstrated by the mirror, even in children of four years old, if sufficient patience and skill be exercised. This method is highly desirable, as it does not alarm the child.

2. *Palpation.*—With the tip of the forefinger carefully inserted into the pharynx the presence of hypertrophied tissue can be accurately demonstrated. Great care should be taken not to inflict pain nor cause injury. The end of the finger should be carefully prepared for the purpose, and the mistake of trying to insert a finger-tip too large readily to enter a small pharynx should be avoided.

3. *The Probe.*—In very young children a probe, made of a very small English woven bougie, may be passed into the pharynx and the presence of hypertrophied tissue thus demonstrated.

4. *By Anterior Rhinoscopy.*—A strong light thrown into the nasal cavity may sometimes bring to view the thickened masses at the upper and posterior part of the pharynx.

In very young infants three diagnostic points may be observed, namely, mouth-breathing, snoring, and inability to perform the act of nursing without stopping to take breath. All of the above are due to nasal obstruction.

The symptoms commonly met with in lymphoid hypertrophy have already been described in the earlier part of this article. In addition to them should be mentioned the effect of disease of the faucial and pharyngeal tonsils upon the cervical lymph nodes. These are often caused to become inflamed, to swell, and to suppurate from absorption of various septic organisms originating in the tonsils. When glandular swellings of the neck are found to occur, either in occasional exacerbations or