specific treatment, the season being propitious, the borders of the perforations became smooth.

In regard to the etiology of these cases, I believe it is primarily due to our climate, which during three or four months of the year is extremely cold, the thermometer ranging during this time, from 0 to 30 and sometimes even 40 degrees below, and one who is out any length of time is liable to have the tip of the nose frozen; this is usually considered a very trivial matter. I think this freezing and thawing process has a tendency to produce erosions of the mucous membrane and breaking down of the cartilaginous portion of the septum, or the inspissated mucous adhering to the anterior portion of the septum and the patient's continued picking at it abrades the surface and leaves the sensitive papillæ exposed to a temperature 15 or 20 degrees below zero, which, I have no doubt, freezes them every time the patient exposes himself to this extreme cold.

I have treated a number of cases during my three winters in this section, that were going through the disintegrating process. I at first thought that to destroy or burn over this denuded surface would cause it to heal, but after repeated trials discovered that this mode of treatment was only adding fuel to the flames, and that it was useless to do anything with the view of effecting a cure during the winter months, and I now do nothing more than protect the parts with some simple ointment and have the patient plug the affected side with cotton whenever he goes out of the house if the weather is cold. When the winter is over, which is usually about May 1, I then apply the galvanocautery followed by an antiseptic dressing, which usually effects a cure.

PRACTICAL VS. THEORETICAL TONSILLOTOMY.

Presented to the Section on Laryngology and Otology, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

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I doubt if there is any one subject in medicine and surgery more prolific in the way of literature than that of the tonsil. Hence to claim the addition of anything new to the subject would either savor of presumption or a limited acquaintance with current medical literature. In the past ten years there have been published over six hundred papers on various points relative to the tonsil. When we consider the volumes such an amount of literature means we are driven to the conclusion that either the tonsil is a most important organ, or it is an unusually frequent victim of pathologic conditions. The generally accepted reason is the latter; especially, since if we claimed the former we must of necessity be able to thoroughly establish its functional character and capacity.

A very brief, and necessarily somewhat incoherent, reference to the etiology of enlarged tonsil seems necessary. At the same time we must recognize the fact that any pathology we may seek to establish must be subject to criticism, since an uncertain physiology precludes the possibility of a reliable pathology.

Before inquiring as to what is, or what the cause of, an enlarged tonsil, let us fix in mind an ideal of normality. Opinions on this point are varied as is the

number of observers. Bosworth, Woolen and others claim there is normally no tonsil present on inspection. The greater number of writers, however, admit the existence of a protruding glandular or follicular collection of lymphoid tissue between the pillars of the fauces. Wagner has discussed at considerable length atrophy of the tonsils, but it is difficult to imagine how there can be a question of atrophy unless there was some considerable tissue previously present. In many cases there is not a real hypertrophy, but only an enlargement in the tissues already there; again, there will be a distinct hypertrophy, or actual formation of new tissue elements. It is not the purpose of this paper to discuss the cause of or differentiation of this condition. They do exist, and even hypertrophy and hyperplasia may frequently be seen in the same tonsil. Nor is it always an easy matter to distinguish between the two. Certain it is, however, both are pathologic and both demand and are amenable to surgical interference. A consensus of opinion would seem to indicate that the normal tonsil is a collection of racemose glands or follicles occupying and filling the space between the faucial pillars. Hence, when the tonsil protrudes beyond the pillar it is abnormal and pathologic. Remembering, however, that in very many instances the pillar is firmly adherent to the tonsil, we may then have a decided increase in the volume and yet no protrusion beyond the pillar.

I wish to particularly emphasize a point in the anatomy of the tonsil, the importance of such distinction will appear later. It has usually been referred to as an olive-shaped body. As a matter of fact, which dissection either on the patient or cadaver will demonstrate, it is more nearly almond-shaped, *i. e.*, somewhat flattened and larger at one end. This heavy end is uppermost, frequently buried well up under the pharyngeal aponeurosis.

Many excellent authorities have inclined to the opinion that a constitutional dyscrasia, usually the uric acid, is by far the most frequent and potent etiologic factor. The etiology, even though hypothetical, may be summed up in these two propositions: 1, an underlying constitutional dyscrasia; 2, a micro-organism in the follicles, producing in either case either an hyperplasia or an hypertrophy.

Dr. Stucky has claimed that, "of all diseases of the upper air passages none is more conducive to serious after-effects than pathologic tonsils." In health there is doubtless a certain amount of lubricant furnished by this collection of racemose follicles. But if it be diseased what good can come from its forcing upon the bolus of food or into the stomach an excretion of pus cells, cholesterin, epithelium and the various other products of waste and disease? Dr. Turck, demonstrated that, "the diseases of the mouth, nose and throat do often play a most important part in the etiology of chronic glandular gastritis." He further called attention to the fact that "the oral cavity, especially when infected, is a perfect incubator of disease germs." If such facts are demonstrable concerning the pharyngeal mucous membrane, how much more serious must be the secretions and excretions of the tonsillar follicles and crypts when diseased?

The symptoms and appearance of a tonsil demanding extirpation are matters of such universal knowledge that any further reference to them at this time seems superfluous. Admitting that its true etiology is the uric acid diathesis, the entire lymphatic system

in which we find the tonsils, joints, serous cavities and ileocecal glands is likely to be involved, and hence such admission only emphasizes the necessity for surgical interference. At the same time it should also warn us that pathologic tonsils compel us invariably to look for pathologic complications elsewhere in the system.

This leads us to the further fact, that in case a constitutional dyscrasia does exist it must be treated as such independently of any presumable tonsillar complication. A tonsillotomy, no matter what the method employed, will not complete the cure of such dyscrasia. Nor is there any doubt of the bad effect such dyscrasia or diathesis has upon the tonsil as well as upon the general health of the patient.

The neuroses due to enlarged tonsils are so varied, frequent and positive that it is no longer questioned that such do exist. Respiration is often affected. Phonation is most important, perhaps. I have never seen a case in which phonation was impaired that there did not occur a marked improvement in the voice, by thorough operation, both in its production and quality. Some laryngologists think the pitch of the voice is lowered by ablation of the tonsil. My experience, especially in professional singers, does not corroborate such a statement. I believe the added ease and increased clearness with which the voice is afterward formed will in reality raise the voice register by the same expenditure of effort, but only so in those cases in which the gland has been thoroughly eradicated. I can easily conceive why and how the register might be lowered in case the pillars were not freed from their adhesions, and a stump of hard unyielding, cicatricial tissue is left between the pillars. The ocular and aural disturbances attributable to this cause are frequently met with, and often yield most satisfactory results to the surgeon. Cough, I believe to be one of the most frequent and persistent of all the complications. It is, though not so frequently as formerly, urged by some presumably intelligent physicians, that the tonsil, if left alone, will atrophy later and thus cease to be a source of annoyance. But I scarcely think such advice is general, and could not be when once is seen the almost universal improvement in general health which their complete, and often even partial, removal produces.

A partial destruction of the gland, by whatever method is used, will oftentimes do more harm than good, and can not in any case accomplish all the possible good.

Whether the tonsil be a blood-elaborating organ, as some presume, or an assistant to digestion, or a lubricating fountain, or a leucocyte guard to the system, the presence of a pathologic condition precludes the possibility of its functional activity and demands removal, since no known medicinal remedy can restore that organic or functional capacity as it has become a veritable microbe trap. Though such a statement may seem to be rather sweeping and comprehensive in its compass, it admits of but few exceptions. As such, however, may be mentioned a tendency to or presence of malignancy, and even in the cases where surgical interference is deemed advisable, no other method affords nearly the hope of success of that suggested by this paper. Unusual vascularity or pulsation in the tonsil should be looked upon with suspicion in every instance. An acute inflammatory condition is always an indication for temporary postponement and at the same time is as positive an indication for sub-

sequent operation. A prevalent epidemic would also suggest temporary delay.

I will call your attention to the various methods which have received popular recognition at the hands of surgeons. Celsus was wont to gouge out the gland with his finger, evidently considering it a nucleated structure. This is, however, too barbarous to receive notice further than for its historic interest.

Doubtless the most popular method is by means of the guillotine, in one or another of its many forms. The objections to this instrument are that one can not remove all the gland, except in rare instances; it often leaves a bruised edge, sometimes ending in a slough; again, you are never quite certain of the amount of tissue you are going to remove; the pillars are very apt to be injured by it; the danger of hemorrhage is not insignificant, though not as great as when the bistoury is employed; if the tonsil be of that soft, flabby character often seen, or if it be small and adherent to one or both pillars the tonsillotomy becomes *perforce* practically useless. However, notwithstanding these real or apparent objections, I am convinced there is no method better adapted in case of young children under 8 or 10 years of age. Ignipuncture has attained more or less popularity, but it is an endless process at best, as one is never certain that all of the diseased follicles have been destroyed; it leaves a rough, ragged surface and the capacity for the absorption of toxins practically undiminished; it also leaves a portion of the tonsil to be absorbed, or to act as a focus for future inflammations. The cold wire snare has no advantages that are not possessed by other methods, and is in addition an extremely painful procedure; the danger of secondary hemorrhage is doubtless as great as by any other method. The cautery loop has been highly praised by Knight, Wright and others. It is certainly in many cases an excellent method, though some of the objections urged against the tonsillotome are equally applicable to the cautery snare. The knife as a means possesses such patent and potent objections that more need not be said. In the same category may be placed the use of destructive caustics and strong astringents or interstitial injections of various medicaments, no one of which will more than partially remove or counteract the pathologic condition, and to the extent they fail in this particular, they, as well as any and all other methods, fall short in accomplishing the greatest possible good and are to just that extent impracticable. Every operator sooner or later, plainly or by inference, admits the necessity of removal of the entire gland if possible.

I am convinced that it is possible, for the very forcible reason that experience has demonstrated it most conclusively. Several years ago Dr. Pyncheon of Chicago suggested a method which was original, and which an experience of over two hundred and fifty tonsils in the past two years convinces me, possesses some advantages over all other methods yet suggested. Dr. Pyncheon gave a detailed account of the technique of his operation in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for Nov. 22, 1890. Improvements in some minor points have in that time been suggested by the experience of both Dr. Pyncheon and myself, and I will briefly describe the operation as it is now performed.

The tonsils as well as the pillars have been thoroughly anesthetized by the external application of a 30 per cent. solution of eucain well rubbed in and

the submucous injection of a few drops of a 10 per cent. solution into the upper portion of both pillars and tonsil; the tonsil is drawn well out into the throat and the pillars are both carefully dissected away from the tonsillar body to about one-half its extent. The electrode point being entered cold and burning out, as a usual thing. The upper point of the tonsil is then grasped with an appropriate forceps and employing the same traction as above referred to, the distance from the carotids is not only increased but a much better view of the field of operation is then obtained, then by a slow dissection enucleate the part, much as an ophthalmologist would enucleate an eye. Remembering always that the large end of the tonsil is uppermost and well imbedded high up under the pharyngeal aponeurosis; and further, that any of its tissue left will not only detract from the cosmetic as well as practical results of the operation, but will as well probably be a source of future trouble. After thus completely separating the upper portion to the extent of one-third or one-half of the gland, cut off the loosened part and apply to the surface a solution of silver nitrate, 6 grams to 30 c.c. water, after applying a coating of campho-phenique. The amount to be removed depends on the size and condition of the tonsil as well as upon the temperament of the patient. I have found that there was but little complaint of soreness if not more than one-third or at most one-half of the tonsil was removed at one séance. The remainder is treated in a like manner at a subsequent sitting. The length of time between the steps of the operation differs, but in ordinary cases a week is quite sufficient for the healing process, especially if the patient comes to the office for treatment meanwhile. This inter-operative treatment is not so necessary as it is desirable, as I find a thorough cleansing and dressing of the wound assists materially in its healing, as well as reduces the soreness to a minimum. At these treatments the application of massage with a cotton-wrapped probe will help in giving a smooth surface to the parts after they have healed.

This method seems to be adapted to a larger percentage of cases for removal than any other now in common use. For the reasons already given it is the most practical in securing all of the pathologic tissue. The principal objections to its employment have been that it is not adapted to young children; this I consider the most valid objection that has come to my notice. The youngest patients I have known in which it was used were 10 and 12 years of age. The soreness and pain following the operation are not as severe as one might expect from treatment apparently so heroic. If the daily treatments are given, oftentimes there is no complaint whatever.

Very often the removal of one tonsil will effect a very considerable decrease in the size of the other. It will also have, at times, an almost miraculous effect upon a pharyngitis or other inflammatory action in the contiguous structures. Middle-ear difficulties seem especially amenable to its beneficent influence.

In closing allow me to call attention to several points which experience has taught me, will assist in giving the most desirable results.

1. Do only a small amount at each heating of the electrode—work five seconds and allow the patient to rest fifteen seconds.

2. Burn only where you can see just what you are doing.

3. Use an electrode bent at right angles and having

a fine point. (At least three electrodes are desirable for the operation.)

4. Do not attempt too much at one sitting.

5. A strong solution of silver nitrate is an excellent hemostatic in case there is slight hemorrhage.

6. Be sure the electrode is thoroughly heated when you attempt to burn.

7. Cut off the portion loosened at each séance; it prevents healing by its friction, and is often an annoyance to the patient.

8. Do not operate if the gland be acutely inflamed.

9. Always remember the normal shape of the tonsil; and that one must dissect much more deeply at its superior portion in order to get all of the pathologic tissue.

10. It is sometimes best to cut from below upward while taking out the inferior portion; in this convenience should be the guide.

11. By care, the operation may be rendered almost if not entirely bloodless.

12. The indication in all cases is eventual total ablation.

13. Succeeding steps on the same tonsil should not be more than ten days apart.

14. When hemorrhage occurs, stop the bleeding at once with the heated electrode, and apply a solution of silver 6 grams to water 30 c.c., or stronger.

15. Try the method, in suitable cases, and I feel confident you will concur with me in the opinion that it possesses some advantages not found in any other.

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DISCUSSION.

Dr. GOODALE—I have recently completed some experiments which convince me that the tonsil does absorb through intact mucous membrane. Substances in the crypts are absorbed continually, under normal conditions, into the tonsils.

Frankel, in a paper published last year, stated that he had removed inflamed tonsils without any bad results. I have also removed a large number of inflamed tonsils without harm. I think there is no objection to removing these masses of putrefying material and getting them out of the system. I think my cases have improved and recovered more rapidly than if I had not operated.

Dr. LAUTENBACH—The question of absolute and complete extirpation of the tonsil is probably the most important which will come before this Section. The method which Dr. Coulter has advocated is the best for difficult cases. An important point is to get the tonsil into position. I have an instrument which I find valuable for this purpose, especially in the cases of children. The method I usually adopt is to remove all I possibly can at one time, either by the tonsillotome, the guillotine or the scissors. The fragments can be burned out with the electro-cautery at the same sitting. I think that in this way there is less inflammatory trouble. The patient is usually willing to stand one full rather than several partial operations. This is especially true of children.

Dr. ROE—I do not advocate the use of the cautery for the removal of tonsils, for the reason that I do not regard it advisable to reduce the tonsil or to replace it by scar-tissue. On removing the tonsil with a cautery there must be a very extensive burn, leaving cicatrix behind that often causes much trouble. The plan that I have adopted on removing tonsils is first to enucleate them from all adhesions to the pillars of the fauces. This I do with a slender instrument having a curved but a blunt tip. By so doing we lessen the danger of wounding the pillars of the fauces, which is the main source of hemorrhage after tonsillotomy. After this is done I either excise the tonsil with a bistoury or remove it with a cold-wire snare. By this method it is exceedingly rare that the operation is followed by any hemorrhage, and by the use of the snare it is unusual to have any hemorrhage at all. I always remove at one sitting every portion of the tonsil requiring removal. If you remove the diseased portions at different times, you have a series of sore throats, which is entirely unnecessary. There are many cases of diseased tonsils unattended with hypertrophy, which cause a great deal of disturbance in the throat. This tissue can readily be seen by pressing back the pillars of the fauces or by drawing out the diseased tissue with a tenaculum.

The importance of the removal of this diseased tissue has also been corroborated by Harrison Allen. I have seen a number of such cases in vocalists, in which very marked vocal disability was entirely relieved by the removal of this diseased tonsillar tissue. In the removal of this tissue and the use of the knife and the tonsil punch forceps is much superior to any other method, and especially to the galvanic cautery; for the reason that the cicatricial tissue caused by the use of the cautery interferes with the proper action of the pillars of the fauces, thereby causing more or less rigidity of the parts and consequently seriously affecting vocalization.

Dr. RICHARDSON—I have found that the most unsatisfactory cases were those in which the pillars of the fauces were attached to the anterior surface of the tonsil. I saw Dr. Roe operate in Rochester, and was so delighted with the procedure and with the complete separation of the pillars from the tonsil, that I obtained one of the instruments used by him. I have used the instrument since with a great deal of satisfaction, especially where there were strong adhesions between the anterior pillars and the tonsils. It is in these cases that we have the greatest difficulty and the greatest danger of hemorrhage. In the simple drawing out of the tonsil the pain is not very great and there is little or no bleeding; while we know that by the galvano-cautery method the pain is exquisite for hours and sometimes days afterward.

Dr. WOOLEN—As to the use of the cautery, I think the truth was well formulated by an assistant of mine who said: The difference between the galvano-cautery and the scissors or other cold instruments is that with one we have a wound, and with the other a wound *plus* a burn, a distinction always worthy of special recognition.

Dr. DALY—There is no operation for the removal of tonsils that can not be well and efficiently done with four instruments, two knives proper length, a tenaculum, and the curved rat-tooth forceps. An enlarged tonsil is not part of a normal throat. First, remove the tonsils; second, do it quickly and effectively by the most painless method you can adopt; but last, and most important of all, leave the throat and fauces in the anatomic condition in which nature intended them to be.

Dr. CLINE—I have made liberal use of the actual cautery, and have found it valuable in certain cases. It does no harm if you use it in the proper manner. I have never had any serious results from a burn, provided I did not burn anything I had no business to. This is true also in regard to the nose. I separate the tonsils from the pillars, and then use the tonsillotome instead of dissecting out the tonsil. Unless you have the patient anesthetized, or well cocainized, there will be difficulty in removing the tonsil by enucleation. Take the tonsil out with one stroke of the tonsillotome and then if after that there are any of the crypts left remove with the actual cautery. I see no objection to taking out an inflamed tonsil, particularly if it is hypertrophied.

Dr. GIBBONS—I approve of Dr. Roe's method of separating the pillars. In doing this I use a tonsillotome that is not sharp. I generally take a small piece of pine wood and twist it around the edge to dull it. The cold snare requires a strong hand. I have seen Bosworth find difficulty in using it. I have often thought that the snare could be improved by using hydraulic force. I use electricity very seldom, except sometimes to separate the pillars. I sometimes use the snare.

Dr. RICHARDS—The Leland tonsil knife answers very well in certain of the flat tonsils, where the ordinary tonsillotome is inadmissible. This knife, which is short, curved, probe pointed, set at right angles to the handle and made right and left, is introduced into a crypt and pushed along the curve and allowed to cut its way out. This is successively done until all the crypts are entered. The resulting tabs of tonsillar tissue are readily removed with curved scissors. Originally I followed the use of the knife with the galvano-cautery point, carrying it to the bottom of each crypt operated on. This was rather painful and followed by more or less inflammation, in one case by peritonsillar abscess, so that I now rarely use the galvano-cautery for this purpose. With this method the operation is almost painless and can be completed in one or two sittings.

THE CHAIRMAN—I have removed tonsils by all methods, and am satisfied with none of them. There is something to be said in favor of each method, and each has its disadvantages. I have adopted the expedient of selecting my cases. In those where I think hemorrhage is liable to result the cautery in some form is selected. In children the tonsillotome is the best instrument. As to Frankel's statement that he had had no bad results from the excision of acutely inflamed tonsils, I do not understand that he advises the operation in this condition. He used it as a means of securing specimens for bacteriologic investigations, not as a remedial measure.

In reference to the separation of the pillars from the tonsils, if there is any muscular substance involved, I separate it, but if there is simply mucous membrane, I do not think it is necessary to subject the patient to this additional procedure. In many cases the membrane is reflected from the anterior pillar and makes an envelope for the tonsil, it contains no muscular substance and I see no objection to making the ablation through this structure.

Dr. COULTER—I think that Dr. Goodale misapprehended my ideas in reference to the absorbent power of the tonsils.

After the removal of tonsils in an inflamed condition, you necessarily add to an already dangerous condition if you then apply the cautery. My ideas of pathology would not lead me to operate on an acutely inflamed tonsil.

The tonsil is a gland, not made up of any part of the pillars but distinct anatomically from them, and you can use the cautery without fear of producing any cicatrix. If you do not destroy any muscular tissue, you have no cicatrix. With the knife you can not do this. If you have hemorrhage, you can not see where you are operating, and will either destroy muscular tissue or leave some of the tonsil, either of which is undesirable.

A CASE OF CHRONIC ABSCESS OF THE TONGUE.

Presented to the Section on Laryngology and Otolaryngology, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

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I offer this single case of chronic abscess of the tongue for your consideration, on account of the infrequency of its occurrence and the peculiar train of symptoms which attended its final termination. A chronic abscess of the tongue is a small rounded or oval tumor situated deep in the base on the dorsum of the tongue, anterior to the circumvallatæ papillæ, filled with pus in which fluctuation is present or absent according as the pus is, or is not, tightly pocketed and of several years' duration. According to Butlin this disease is a very uncommon one, and is most frequently observed in adults. Butlin states that the commencement is insidious, and that there is seldom any history of inflammation preceding the onset. In the case which I report I knew of the existence of the abscess for over a year before the pus was liberated or any acute symptoms developed, and the patient states that she had known of its existence since early childhood.

During the fall and winter of 1889, I was treating a young woman 18 years of age for a nasal and post-nasal catarrh. On the paternal side there was a strong tubercular history. The patient had the usual diseases incident to childhood. At the time of her first visit I noticed a prominent oval elevation in the center of the dorsum of the tongue just anterior to the circumvallatæ papillæ. This mass was about two centimeters long, about one centimeter in breadth, and projected above the surface of the dorsum of the tongue about one-half centimeter at the most elevated point. The mucous membrane over the mass was paler than over the remaining surface of the tongue and was very tense. The tumor seemed tense, deeply seated and no fluctuation could be detected. The woman stated that this mass had been noted in her tongue since early childhood, and as it had caused her no inconvenience she did not care for surgical interference. As the growth seemed in no way to interfere with functions, and offered no obstruction to the proper treatment of the throat I respected her wishes. I diagnosticated the growth to be either a dermoid or a simple cyst.