disappeared, and the urine was normal. This case is interesting as showing the effects on the urine, of three suture tracks in one kidney.

So far as the occurrence of nephritis without albuminuria is concerned, it seems to me that this has been demonstrated, and it also is quite clear that many cases of this form of disease where albuminuria is present are frequently overlooked. In the majority of instances the cause for this is the injudicious employment of light. If the test-tube is held before the window, the trace of albumin is frequently overlooked; but where it is held against a black background, and the light passes through the urine obliquely downward, the smallest trace may be detected. This particular technic is of practical importance.

Dr. SCOTT of Indiana—I wish to express satisfaction with the use of Esbach's instrument; its estimation of albumin depending on the specific gravity. As stated by Dr. Purdy, the alkaloids and other substances are thrown out and measured when the picric acid is added, which makes an erroneous reading of the sediment. It is the sentiment of the society that a uniform radius and uniformity, at least to a certain extent, should be obtained. The centrifuge is indispensable. It seems to me that in the analysis of urine, there is too little attention paid to it. Two things should be considered, the analysis and the interpretation of the analysis. It is important to determine just what the result of the analysis will be. In the question of urea, there is no positive way of estimating the urea. The instruments are all erroneous because they depend so much on the barometric pressure, which varies so. Doremus' ureometer is a good instrument, but it is open to objections.

Regarding the question of albuminuria of adolescence, it is certainly not always true that we have disease of the kidneys or a nephritis. In any case it is impossible to tell which individual illness may not give rise to a nephritis from simple irritation or congestion of the kidneys. And yet it certainly is not wise to report to companies that a true albuminuria is present without determining, by means of the microscope, whether there is present blood or epithelial cells, which would call attention to a diseased condition of the kidneys. Albuminuria alone should not be considered evidence of a nephritis.

Dr. GEORGE W. WEBSTER, Chicago—I wish to record two interesting observations. I have recently had two internes who had been assigned the duty of giving anesthetics. They were employed from four to seven hours each day in the administration of the anesthetics, and usually ether was the one given. In one assistant there appeared a large percentage of albumin, blood and casts. After resting for ten days, all this entirely disappeared. On resuming his duties at the hospital, he worked seven hours, and at the end of that time there appeared a large percentage of albumin, together with blood in the urine. After another absence from the hospital, for one month, he again reported and the albumin and blood had disappeared. It is a difficult question to tell where irritation ends and inflammation begins. The explanation may be the same as in typhoid fever, where albuminuria occurs in 25 per cent. of all cases examined.

Dr. ARTHUR R. ELLIOTT, Chicago—I do not think Dr. Minor is warranted in arriving at his conclusions in reference to Dr. Purdy's paper. Dr. Purdy has said that he has endeavored to supply us with an accurate and simple mechanical means by which the results can be arrived at in the short space of fifteen minutes. To substitute a simple mechanical means for a complicated and tedious chemical procedure is certainly not calculated to introduce any confusing element into clinical work.

Dr. CHARLES G. STOCKTON, Buffalo, N. Y.—I feel with Dr. Daland that, as a rule, the albumin found bears a relation to the amount of pus present. This is not invariable, but is the rule. One peculiar feature in cases of spurious albuminuria is that, in traces, albumin is frequently found associated with ureteritis. The intense acidity of the urine and the increased irritation exercised on the tissues of the ureter explain the occurrence of albumin in that condition. It is small in amount but important enough to call attention to it. Cases called nephritis are often not true nephritis, but simply albuminuria arising from the ureters. I would like very much to discuss the general subject of albuminuria, but I feel it would not be right to discuss it when the chief papers on that part of the topic have not been read.

IN A RECENT charge to the grand jury, convened in Newark, N. J., a justice rendered a decision in the case of accidents due to bicycle riding that: "The law does not create the ringing of the bell as a signal that will exonerate from responsibility."

OBSERVATIONS ON TONSILLECTOMY*

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CHICAGO.

There is yet a lamentable uncertainty and want of precision in the terms used generally by the profession in reference to the pharynx and larynx, this, too, notwithstanding the great amount that has been written and spoken on this particular subject. Such indiscriminate use of terms is not alone by the general practitioner, but in many cases by those who in other respects maintain their standing as specialists in the line of nose and throat work. These facts are in all probability due to the comparatively short history of the specialty as a distinct line of work, and the consequent somewhat limited amount of original investigation that has been made. We note as an instance that many presumable authorities indiscriminately use the terms tonsillitis and quinsy; or that the removal of any portion or of the entire gland is alike termed a tonsillotomy; how little is positively known of the function of the pillars, or indeed of the tonsillar gland itself.

I wish in the beginning to posit as the most important element in the following argument and deductions the opinion that a pathologic tonsil demands entire removal. The exceptions to this rule are few, and are ordinarily not difficult to differentiate. We may maintain as most important exceptions, some cases of malignancy; cases of known or strongly suspected hemophilic tendency; the rare but possible condition of aneurysm in the region of the tonsil; in unusually severe cases of tubercular or syphilitic infection, with special manifestations in or about the tonsil. These, however, it will be observed, are only such conditions as would naturally be inhibitory indications to any operations at any time, and consequently very proper exceptions to the rule laid down above: admitting that there are oftentimes conditions and circumstances which make the case a rule unto itself in a surgical aspect.

I maintain that the above rule is one strictly in consonance with the best practice of the most successful surgery, and that its violation is, as of any other well-established fact in medicine or surgery, unwarranted, injudicious, unscientific and unsurgical. What would be thought of the modern surgeon who would voluntarily and without further excuse than that they were difficult to reach, amputate a breast and leave enlarged axillary glands, or of one who would do a simple mastoid and leave untouched a severe middle-ear involvement, or one who would remove pus tubes and leave a retroverted uterus in situ because the adhesions were difficult to get at or break loose? Yet I believe such argument is applicable to the cases under discussion.

Dr. Goodale, in a recently published monograph on the pathologic histology of acute tonsillitis, has conclusively demonstrated that there are quite sufficient bacteria and other pathologic conditions present to warrant the conclusion that the doubtless resultant chronic condition is one not only demanding careful attention, but also is necessarily a pathology more or less diffused throughout the entire gland. The process of natural or spontaneous repair in cases of acute tonsillitis is yet to be demonstrated conclusively. Certainly, however, the almost universal experience would lead us to anticipate that the acute condition was quite likely an impor-

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tant etiologic factor in the various chronic pathologies met with so frequently.

It is unfortunate that as yet we do not know what is the function of the tonsillar gland. A dissection will demonstrate little beyond the fact that there is not a very intimate relation, anatomically, between the gland and the surrounding tissues; aside from the blood and lymph-vessels none of the fibers from the palatoglossus or palatopharyngei muscles leave the striations of those muscles and branch off into the body of the tonsil, nor do they anastomose with each other until they have passed below the triangular space occupied by the tonsil, thus apparently favoring as much as possible the enucleation of the gland when desired. The conclusions arrived at by Goodale in his extensive and careful investigations may be again referred to: "1, absorption exists normally in the tonsils, and takes place through the mucous membranes of the crypts; 2, the path of the absorbed substances is in the interfollicular lymph channels in the direction of the larger fibrous trabeculae at the base of the organ; 3, during the process of absorption, foreign substances encounter phagocytic action on the part of the polynuclear leucocytes situated in and adjoining the mucous membrane."

Admitting these deductions of Goodale as true, it does not alter the truth of the statement that the crypts quite frequently extend almost the entire depth of the gland; indeed, enucleation of pathologic tonsils will in more than half the cases demonstrate the existence of abscesses and other debris in the depths of these crypts, quite on the other side of the tonsil from that presenting in the throat. If the lymphatics of the tonsil do anastomose to any great extent with those of the lateral and posterior pharynx, then might we not expect that more frequently an infection in the tonsils would be conveyed to the peritonsillar tissues? Or if the action of the tonsillar lymphatics was not alone absorptive, but expulsive as well, would it not be expected that the bacteria would become lodged deep in the plexus within, and we would much more frequently anticipate a phlegmonous condition therein in evidence of the correctness of our etiologic theory? The comparative absence of these evidences, however, must indicate that either the lymphatics in the so-called "lymphoid ring" are not very ready bearers of bacilli, or else the intimate connection, presumed by some authorities between the lymphoid tissue at the base of the tongue, between the pillars and in the vault of the pharynx is an imaginary one.

If it be true, as some have claimed, that the normal secretion of the tonsil is one of nature's leucocytic antiseptics, destroying each microbial intruder within the precincts of the crypts, then we are not warranted in removing a tonsil which is capable of producing this secretion. But I do not apprehend such surgery will be advocated by any member of this ASSOCIATION. It is not the question at issue once in a hundred cases, as to whether or not the tonsil is a pathologic one; it is rather the character and extent of the pathology, or the method of removal which we consider.

A careful and studious dissection of a number of pathologic tonsils will, I believe, prove the truth of the following statements:

1. The most violent pathologies are not always presented in the most hypertrophied tonsils. An overlapping pillar may so confine pyogenic germs as to force them into the surrounding areolar tissue. These pillars are then often hypertrophied to a considerable extent; the tonsil projects but little if any above the pillars, is firmly attached to them, and we have the so-called "sub-

merged tonsil." This leads me to the additional fact that:

2. Such continuity of tissue formed by the pillar overlapping the tonsil, is distinctly pathologic, and being such, demands surgical interference, theoretically at least, in all cases, excepting only those mentioned earlier in this paper.

3. In all probability the gland has an absorptive action, but it is a much more popularly known fact that many pathologic tonsils do constantly emit from the mouths of the diseased crypts and follicles quantities of odoriferous pus cells, pyogenic germs and cheesy masses of debris into the throat; so also will be found numerous abscesses usually emptying into the lacunae, to be conveyed to the throat and stomach.

4. It will furthermore be observed that the force and action of the muscles in deglutition has kept the surface of the gland well freed from these products of decomposition, and that consequently the most serious condition is to be found in the deepest crypts. The truth of this statement can only be determined by a considerable number of post-mortem dissections, or by a bloodless process of enucleation on the living.

5. The tonsil will frequently be found firmly adherent to both pillars, and when so, either from repeated inflammatory conditions or as a result of a previous tonsillotomy, or from any other cause leaving a cicatricial bridge, they will be found firmly bound together, their independent action being prevented. The importance of such inhibition of function will be the better appreciated if our experience has led us to observe the results obtained by the removal of such cicatricial stumps from the throats of professional vocalists. The unanimous testimony of such patients, whom I consider much above the ordinary in intelligence and whose judgment must in a large measure be competent, is to the effect that they can, after the removal of these stumps, by the same effort at vocalization produce a much better quality of tone than before.

6. A more perfect incubator of disease germs can not well be imagined than is found in a pathologic tonsillar crypt. The chances are that the very fact of its being pathologic precludes to a great extent, if not entirely, the possibility of the antiseptic action of the leucocytes. We have here warmth, moisture and mechanical protection; can it be a matter of wonder why so many cultures can be so easily made from the deep crypts of a pathologic tonsil?

7. It will be found that the larger end of the gland is uppermost, frequently quite imbedded beneath the pillars, although to the casual observer the opposite would seem to be true. This can be easily demonstrated by having the patient gag, when it will be seen that the gland bulges out prominently from underneath the pharyngeal aponeurosis. I desire to call attention at this time to two points: one is, that it is often in this hidden portion of the tonsil the most serious pathology is found; and a second is that in such a condition a tonsillotome or any similar instrument, short of one adapted to a dissecting process, will fail of success to the extent to which it leaves a portion of the pathologic gland remaining in the throat.

What then are the general results of tonsillectomy, as compared with those obtained by the usual operation of tonsillotomy, as is ordinarily done by the general practitioner or most specialists as well?

1. It gives a cosmetically perfect throat. It gives a throat practically precluding the possibility of a return of the tonsillitis. It gives a throat in which there can

be no absorption of the toxins or bacilli into the lymph-channels at that point; at the same time it certainly offers to the patient a better chance for recovery should they subsequently be subject to an attack of any disease affecting the throat, such as the exanthemata, diphtheria or quinsy.

2. It liberates and allows a perfect action of the pillars and soft palate, the same result holding whether the pillars were adherent from inflammatory action or bound together by a cicatricial stump the result of a former tonsillotomy.

3. It removes a mechanical obstruction to the sound waves. This, in the case of those professional people who are compelled to use the voice in singing or speaking, is a matter of no little importance.

4. The operation, thoroughly and properly done, is more likely to be effectual in relieving a reflex disturbance when such neurosis is due to a pathologic tonsil than is the more simple operation of tonsillotomy.

5. If thoroughly and properly done, and the case receives the proper subsequent care and treatment, it will leave a perfectly smooth surface in place of the tonsil, which result can not as certainly be attained by a tonsillotomy, and with ignipuncture it is a practical impossibility. With singers this becomes an important matter.

6. Pillars, which were for any reason previously hypertrophied, will ordinarily, after this operation, promptly retract to a more normal contour and size.

7. It is in some cases a practical operation where another would be almost or quite impossible; for instance in those tonsils which on the surface are so soft and degenerated that a firm hold on them can not be obtained by any instrument; to obtain satisfactory results these must be dissected out entirely.

I take it as a sufficiently established fact which practically every operator will admit, sooner or later, plainly or by inference, that total ablation of the entire gland is the indication in all cases where malignancy, lues or tuberculosis is eliminated with a reasonable degree of certainty, and even in these cases such is very frequently highly advisable. It is equally axiomatic that in chronic pathologic conditions of the tonsils local applications are practically useless, and that constitutional treatment, aside from those cases in which a special and well-pronounced indication for such treatment exists, is a wasted effort.

In a large number of cases where complete removal is performed, those evidences of follicular involvement which are so frequently seen in the pharynx and about the base of the tongue, and even an old adenoid, will disappear as if by magic. Indeed, it would seem that the marked improvement which so universally follows a tonsillectomy, or even very often a tonsillotomy, should be sufficient confirmation of the baneful influence such a pathologic condition may and usually does produce. It is not unusual for patients to voluntarily speak of the relieved condition of the throat even after the removal of a single gland has been accomplished.

The dangers of tonsillectomy, as compared with other operations for the relief of tonsillar hypertrophy, are greatly exaggerated by the profession generally. In an experience reaching over three and one-half years past, during which time I have removed the entire glands, by cautery dissection process, over three hundred times, I have not been unfortunate enough to meet with a single untoward accident. One of the most frequent objections urged against the removal of the entire tonsil has been the added dangers of hemorrhage; I am convinced, however, that this is a danger more imaginary than real.

I have thus far had but one single case which required the least attention on account of hemorrhage. In that case ordinary styptics served to control the bleeding quite promptly. Such result I attribute, aside from a kindly fate, to the care taken in avoiding the wounding of the muscular tissues in the least possible degree, and as well to the fact that the cautery was always the instrument employed in effecting the removal. I have in this way fearlessly removed a number of large fibrous tonsils which I confess I would have long hesitated before attempting with either the guillotine or knife. I have on a previous occasion referred at some length to this process of operating, and I will consequently not enter into the details of the method as now employed.

To me a most convincing proof of the value of tonsillectomy as an operation is the unanimous satisfaction it affords the patients; and that after all is the ultimate criterion which must be the measure of our success in any practice.

That the removal of enlarged tonsils in children is advisable is a generally admitted fact, and requires no argument; but that even in these cases a partial removal of the gland is often advisable I must deny. If no other means be possible, then thoroughly curette the same after the use of the tonsillotome, scissors or knife.

The object of the paper is to call to your attention the fact that we will get by the removal of the entire gland when pathologic, in adolescence and adult life even more marked and surprisingly satisfactory results than in childhood. We will in addition be more closely following the precepts of consistent scientific surgery.

103 State Street.

DISCUSSION.

DR. F. J. QUINLAN, New York City.—As the essayist detailed the results of his observations, it occurred to me that we could mention the use of the cold snare, which I think a very valuable and safe adjunct to our present armamentarium. Some years ago Dr. Roe of Rochester gave us a very excellent paper in which he spoke of an affection of the tonsil unattended by hypertrophy, which is likely to at times give us much trouble. This small amount of glandular tissue gives rise to inexplicable symptoms and it is difficult to get at the cause. It is only by repeated examinations and by carefully separating the pillars that we can see this stroma, or rather this hardened tuft of tissue. This is the kind of tonsil that affects not only phonation, but frequently deglutition, and throws the soft tissues out of gear, so to speak. This small lymphoid collection, unless it is removed, may bring about acute and subacute conditions. The cold snare is of value in removing this, more especially since the introduction of the suprarenal extract, which we are all using today for its hemostatic effect. The use of the galvanocautery does not seem to me justifiable in these cases, but by simply throwing this tonsillar mass in view and getting the cold wire well down, then drawing it forward with the forceps, you can with this loop excise this tissue. The greatest amount of benefit often follows the enucleation of these little fibrous tufts. It is in these cases that you may inspect the fauces and be able to detect the cause of the trouble. The little crypts are often visible only on ablation of the tonsil. I only wished to mention the cold snare, though my experience in tonsillectomy does not warrant me in emphasizing its use and advocating it when other measures can serve us with safety.

DR. A. DEVILBISS, Toledo, Ohio.—I would like to ask whether the gentleman could make a tonsillectomy, as suggested by the Doctor, with the cold wire.

DR. QUINLAN—I referred to tonsillotomy, Mr. Chairman.

DR. C. M. COBB, Lynn, Mass.—The snare that is made for tonsillectomy is rather large and heavy. It carries a No. 10 wire, and it is quite possible to do a tonsillectomy with it if you bend the wire around so you get a curve that falls behind the tonsil, and then work it carefully in. The caution I wish to give is that this instrument being so heavy, you are very likely to make some traction on the tonsil with it, and if you do you are very likely to have the neck filled with extravasated blood. The instrument is heavy and has to be handled with care.

DR. T. R. CHAMBERS, Jersey City, N. J.—If I understand the gentleman correctly, all his cases are tonsillectomies now in-

stead of tonsillotomies. I have done a great many tonsillotomies and a few tonsillectomies. After tonsillotomy I find many of these patients have as good singing quality as they had before. And I think issue may be taken with the writer in regard to all the tonsils that are hypertrophied being pathologic. I think it is very doubtful whether we can say that a tonsil, because it is a little enlarged, is a diseased tonsil. If it cuts off so much space that it gives us difficulty in breathing, then tonsillotomy is indicated. The operation of tonsillectomy, Dr. Coulter says, is not a serious one, but there are conditions under which I think it might be a serious operation. The tonsil must be put there for some purpose, and if it is partly taken away it still may serve its purpose, but that is not true if it is entirely removed.

DR. H. W. LOEB, St. Louis—This paper is an exceedingly timely one, especially in view of the work that has been done in the past three or four years, by which demonstration has been made of the fact that certain diseases enter the body through the tonsils. I believe it is claimed that muscular rheumatism as well as the acute articular form is due to toxins that find entrance in this way. There are cases going around the country to-day in which partial tonsillectomy has been performed and acute attacks of tonsillitis have been observed for years afterward. I recall a case of tonsillitis that occurred after every vestige of the tonsil was supposed to have been removed, and finally a small mass of tonsillar tissue was found to be remaining. In this case the dissection of the small remaining mass and the removal of practically all of it has caused the attacks to be lessened in duration and number, so that the patient has had only one attack in four months, whereas before they occurred every ten or twenty days. I found the only portion of the throat affected was the portion on which the small mass still remained. In 1892 I presented to this ASSOCIATION the first snare which I had the opportunity of devising. Since that time this electrocautery snare has been very much improved, until the present snare, mentioned by Dr. Coulter, which should be used whenever it is practicable, uses only a No. 5 wire. A complete tonsillectomy can be made without any particular danger to the patient. I thus save my patients, or think I do, not only the possible tonsillitis in the future, but also those diseases which may find entrance through the tonsils. It is only necessary to use a pair of forceps and pull the tonsil from its bed and take out the entire mass with the snare so the whole bed is as smooth as the rest of the palate. The healing is rapid. I am sure if this operation were more often used with instruments that have sufficient precision to warrant their use, the condition Dr. Coulter mentions would not be seen so often. I rise at almost every meeting of this ASSOCIATION to say about the same thing, and I have not had any reason for changing my opinion.

DR. J. A. STRUCKY, Lexington, Ky.—I have been trying to agree with Dr. Coulter for two or three years. I have only done two or three tonsillectomies, and have not had the courage to do any more, for I have seen two or three people who have had the operation performed by men far more skilful than I, and they are sorry that they had it done. They complain of soreness and stiffness, and one declares that his voice is not of as high register as before. Whether there is anything in that I do not know. But I have found that when all the tonsil that could be engaged in the tonsillotomy was removed, that has given relief. But I have not met any cases of recurrences when the gland was thoroughly removed with the guillotine. It does seem to me that we run some risk in removing the entire gland, and when there are adhesions I question whether we can do it without harm.

DR. JAS. H. FARBER, Dayton, Ohio—In many cases of enlarged tonsils, in fact those which most commonly present themselves to us, we find the tonsil scarred from repeated attacks of quinsy, irregular in form, its outline lost in the pillars, and adjacent structures hypertrophied so that it is difficult to determine which is tonsil and which is pillar. On close inspection we find several crypts; these I remove with scissors, trimming out as much tissue as the case will warrant. I would like to ask Dr. Coulter whether or not he believes there is a place for the snare in the cases.

DR. G. V. WOOLEN, Indianapolis, Ind.—I had the temerity to say before this Section, at the meeting of the ASSOCIATION in Cincinnati, in 1888, that I did not believe there was any such thing, anatomically or physiologically speaking, as a tonsil. I have since thought that I might have been mistaken at that time. I have made a persistent study of this subject. When we met in Philadelphia I again announced my belief that there was normally no such thing as a tonsil. Some gentlemen from Philadelphia took me to task and said that comparative anatomy taught that there was such a thing. The statement was rather a "stunner" to me, because I had not made a study

in that direction. I am doing so now, and I do not know where they find proof unless possibly it be from a more extensive study of embryology than I have made. But in the study of comparative anatomy and physiology, which I am prosecuting now, I am becoming confirmed in the belief that we do not have, physiologically speaking, such a thing as a tonsil. If this dictum be true, then there can be no objection to tonsillectomy. As a matter of fact, I have yet to regret once having made a tonsillectomy. It has been my practice to remove all of the tonsillar tissue. I do not always succeed in removing all of it, but I always feel disappointed if I do not. All the ill effects supposed to be due to removing the tonsil are attributed to, and result from, disease in the nose. Thus, we often have pharyngeal trouble after removal of the tonsil, which has no relation whatever to the removal of the tonsil. If the nose is first put in good condition, we will not have any difficulty with these patients, if tonsillectomy is subsequently made.

DR. E. J. BERNSTEIN, Baltimore, Md.—I was rather surprised to hear the Doctor say that he did tonsillectomy with a guillotine and had no return. Am I right, Doctor?

Answer: Yes, sir.

DR. BERNSTEIN—Well, I have done the operation with the guillotine a number of times, and I have had a number of recurrences. I believe the tonsil to be an unnecessary and dangerous organ, and then the fact that the tonsil may be a focus of infection has been brought home to me in a very terrible manner during the past winter. I had a patient with a very mild tonsillitis, so mild in fact that she would hardly have paid attention to it at the time if I had not been treating a relative of the family. All that could be seen on one tonsil was only a slight erythema. I treated it with nitrate of silver. In a day or two she returned, saying the throat was as bad as ever. I made a culture and found the streptococcus. That is not surprising, for we often find the streptococcus when the throat is normal. But the young woman developed a streptococcus infection in a short time, and notwithstanding the use of the antistreptococcus serum, she died in a few days. In Baltimore, Dr. William Welch said, "There are streptococci and streptococci, as far as antistreptococcus serum is concerned;" the fact I got very little benefit from the antistreptococcus serum is not surprising, since it is usually prepared from the streptococcus of erysipelas, and the streptococcus we had in this case was not of that variety.

DR. A. DEVLBISS, Toledo, Ohio—The essayist said that tonsillectomy should not be made with the knife. I do not believe the operation can be made complete with the cold snare, and I believe that tonsillotomy will usually suffice.

DR. L. C. CLINE, Indianapolis, Ind.—I would like Dr. Coulter, in closing, to explain what he means when he says that his method will never cause bleeding. If there is a method not occasionally followed by bleeding, I would like to be familiar with it. In either operation we should group our patients and not rely on any single method, but select the method that best fits the case. We can often get good results with tonsillotomy followed by the use of the cautery knife to destroy any crypts that may be left; at least, that has been my experience.

DR. J. C. MCALLISTER—I wish to ask the age at which that was done.

Answer: Seven years.

DR. MCALLISTER—It is perfectly proper to do a tonsillotomy as well as a tonsillectomy. I find many persons who need a tonsillotomy or tonsillectomy, where there are adhesions between the tonsil and the anterior pillars. One of the speakers spoke of the use of the hot snare in removing these. I can not imagine, for my part, how he is going to do the snaring without previously dissecting the tonsil from the anterior pillar. For myself, I have a set of knives for use in these cases, to dissect the tonsil from the anterior pillar, and then I do a tonsillectomy.

DR. J. F. BARNHILL, Indianapolis, Ind.—It seems to me that the diversity of opinion as to whether we shall do a tonsillotomy or a tonsillectomy can be greatly simplified by remembering what we do the operation for. To my mind we do it to accomplish two things, viz., remove the obstruction that may be present, and remove the crypts that are always present. When the obstruction is great, or even considerable, and we wish to free the upper air tract, there is no other method simpler, safer or certain in results than tonsillotomy. The patient is almost certainly cured. In the second class of cases requiring the operation, where the tonsil is small, the kind that has been particularly referred to by the essayist and some of the speakers, we do not remove the tonsil on account of obstruction, but for the purpose of getting rid of the crypts. Any other method, as I take it, that will remove the glands beyond the bottom of these crypts will do all the good that can be done. I do not believe,

as has been intimated by some of the gentlemen, that it is necessary to leave any part of the tonsil in place. The tonsil is simply a part of the system of lymphatic glands, of which there are five or six hundred left if we remove this completely, and they are freely able to perform all the work that is done by the tonsil that we are at work on. So I always feel satisfied, and that my patient is cured, when I go to the bottom of these crypts and remove them.

DR. J. H. COULTER, Chicago—If I undertook to answer all that has been said it would occupy much more than my allotted time. In regard to the remarks by Dr. Barnhill, which I believe are positively incongruous with his practice and with his ideas of surgery, in that he says he will get perfect results by destroying a diseased crypt or portion of the tonsil, when the crypt runs up well under the pharyngeal aponeurosis, where you often find your greatest pathologic focus, how can you destroy that thoroughly, and yet leave a smooth pillar that will be free in its action to perform its function well, either in voice production or deglutition? I can not accomplish it. It would require a man with greater dexterity than I can display. Dr. Loeb and one or two others rather misinterpreted the purport of my paper, inasmuch as I had intended and had hoped that little or nothing would be said concerning the method to be employed. I am simply contending for a surgical principle. I do not use the snare very frequently. Dr. Loeb uses the snare, and uses it successfully. I have seen some of his patients, and he does get beautiful results from it. But certainly Dr. Loeb does not attempt to use the snare without first separating an adherent tonsil from the pillars.

You can not draw the tonsil into the snare if it is adherent to the pillars; it must first be loosened and made to stand out as a separate gland. I thoroughly agree with Dr. Woolen that normally there is no gland discernible. I can show you in this city, although I do not live here, a person on whom there has been no knife used, and yet I defy any of you to discover a gland there.

A MEMBER—You can see that in my throat.

DR. COULTER—Well, there are two instances. If now our proposition be true, and I believe it is, then if that tonsil does become discernible it is hypertrophied, and hypertrophy is a pathologic condition. One of the speakers asked if all enlarged tonsils are pathologic? I say yes, emphatically, because even if the crypts are not diseased the tonsillar tissue itself is diseased. I do not want to enter into a lengthy discussion of the method at this time, but Dr. DeVilbiss and Dr. Cline have forced the question so that I must say a single word. My method of doing tonsillectomy is with the cautery blade, because by that method I have an absolutely bloodless operation. By this process in over three hundred cases I have never yet had a very serious hemorrhage, and only one requiring attention. Time and time again I have removed an enlarged fibrous tonsil almost reaching the median line of the throat, and not had twenty drops of hemorrhage.

I remember all the objections to tonsillectomy, and I appreciate the criticisms that have been made, because they have brought out the fact that tonsillectomy is the proper surgical procedure if we adhere to the very first principles of modern surgery. There is no question about it. There is not a member present here who has advocated tonsillectomy, who would be willing to go before the surgical section and advise leaving a portion of the pathologic tissue intact in the body where it can produce such deleterious effects, as it is almost certain to do if left. I repeat it as a perfectly practical and feasible proposition that every operator who will begin the practice of removing the entire gland when pathologic will get results surprising to himself and gratifying to his patient, and will not soon return to the unsurgical operation of tonsillotomy.

DISEASES OF THE ANTRUM OF HIGHMORE: A STUDY OF ONE HUNDRED AND FIFTY CASES*.

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My apology for presenting the often discussed subject, "Diseases of the Antrum of Highmore," is the confusion among observers regarding the etiology and pathologic conditions found in these cases, as well as the discrepancy of opinions as to treatment. After an experience with

150 cases, 140 of which were in my own practice, I feel warranted in calling attention to a few points noted under my observation.

My cases have all occurred between the ages of 20 and 70. Forty-eight occurred in females and 102 in males. The disease did not predominate with any particular class of people—doctors, lawyers, ministers, teachers and tradesmen—in fact, all the callings and conditions in life were represented. Of the 140 cases, 6 had sarcoma, 3 in women and 3 in men. Two of these were operated on by the late Dr. J. W. Marsee, and in one of them the entire superior maxillary bone was removed, the other only partially, which gave only temporary relief from pain. The other four, when apprised of the nature of the disease, refused operation and finally succumbed to the malady. These cases all gave a history of suffering from their teeth prior to the development of the disease, which fact leads me to believe that the long-continued irritation from an abscessed root discharging into the antrum is a factor in the production of sarcoma.

Four cases of empyema of the antrum have come under my observation. The symptoms were the same as those described by Dr. D. B. Kyle in his cases—that of escaping gas from abscessed and carious teeth into the antrum, producing a sense of nasal pressure with paroxysms of a dull, heavy, sickening headache. These were all relieved by extracting or treating the diseased teeth.

The etiology of my cases could all be fairly well traced to three sources, viz: dental, nasal and la grippe. As nearly as I can estimate, 50 per cent. were due to diseased teeth, 40 per cent. to sequelæ of la grippe and teeth combined, and 10 per cent. to ethmoiditis and the various nasal obstructions. Probably a greater percentage should be assigned to la grippe complications. My estimates have been placed on the clinical history as given, which is often misleading.

Twenty cases were acute, complicated with influenza, and all subsided without operation. Of the other 120 all were chronic, suppurative cases of from two months' to seven years' standing. Operation revealed a marked swollen edematous condition of the mucous lining of the antrum in 16 of these. In none did I find true polypoid growths, as described in some of the text-books. Curettage was done in 6, and packing with iodoform gauze in 4 cases. The others yielded to hot astringent douches. Five cases were bilateral. Of the rest, 75 per cent. were on the right side. In trying to account for this, dentists and dealers in dental supplies tell me that a large percentage of the teeth and plates that are broken occur on the left side, which goes to show that there is more biting and chewing on the left side, thus favoring decay on the right. Ethmoiditis was observed as a complication in 11 cases, all of which were preceded by la grippe. Two cases that were carefully diagnosed would not submit to operation, and, so far as I know, they are still suffering from the disease.

The zeal of some of our dental brethren in crowning, building and maintaining bridge work, I am led to believe, is a cause of empyema, in some cases at least. The thought was suggested in 6 under my observation, having had to remove diseased roots under expensive bridge work before a cure could be effected. A purulent discharge from the antrum, when due to dental origin, is carious and fetid, but when its cause is from other sources, like the ethmoid and frontal sinuses, it is creamy and almost without odor.

For diagnosis I rely principally on the use of peroxid of hydrogen and the position of the head. After cleans-

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