TRANSACTIONS

OF THE

TWENTY-FIRST ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION

HELD IN THE CITY OF CHICAGO, ILL.

MAY 22, 23, AND 24

1899
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TRANSACTIONS OF THE TWENTY-FIRST ANNUAL MEETING OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION,

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THE PRESIDENT'S ADDRESS.

BY WILLIAM E. CASSELBERRY, M.D.

Fellows of the American Laryngological Association: In response to an invitation by Dr. Frank H. Davis, of Chicago, this association was organized at Buffalo as early as June 3, 1878, the first annual meeting having been held in New York in 1879. Years of progress, honor, and success have elapsed, and we are now assembled on Lake Michigan's shore to open our twenty-first annual congress in the city of our founder. I extend to you on behalf of the residents, on behalf of the medical profession, and especially on behalf of your own colleagues of Chicago, a most cordial welcome to the Garden City of the West.

These have been active years; a long series of volumes, each containing the transactions of an annual meeting, attest the scientific and progressive value of our labor. Many of the names therein contained are those of men who caused American laryngology, for a time, to lead the world. I feel constrained to mention thus the brilliancy of our record for two reasons: First, that it may serve as a stimulus for the years to come.
See to it, fellows, that our exertions now and in the future equal those of the past. Let not the light of our enthusiasm be dimmed and ever cherish a loyalty to this association, which will induce you to present before it the results of your best endeavor. I mention it, secondly, in order that you may realize my own appreciation of the honor which you have bestowed in asking me to serve for the year as your presiding officer.

The honored custom of an address from the chair affords opportunities for suggestion looking to the welfare of our organization and of the department of medicine which it represents which would not find expression in any set paper or formal discussion. All are doubtless conscious of recent changes wrought in laryngological practice by the advance of nasal pathology and by the inclusion of the ear in the sphere of work. From a physician treating affections of the throat and chest the laryngologist is fast becoming a surgeon with a routine of practice limited to local measures as applicable to the upper respiratory tract alone. While freely conceding that progress has been realized along local surgical lines, I deprecate the tendency of the day to deal with the throat and nose exclusively in a mechanical way, as if they were organs detached. I believe it engenders narrowness of thought, and that, through habitual disuse, there is gradually lost to the physician much of that fundamental knowledge of pathology and applied therapeutics which is so essential to the welfare of the patient. Not quite two decades ago my attention was attracted to diseases of the throat and nose, in part by reason of the neglect which they at that time suffered, but more because of their intimate relationship to general medicine, affording an opportunity to specialize and yet to remain in touch with the practice of medicine as a whole. In practice at that time the consideration of laryngeal conditions was closely linked with pulmonary diseases and internal medicine.

A few had even then awakened to the real importance of nasal pathology in connection with certain
throat symptoms, and ere long the nose had many devotees, its importance in laryngology being signalized, unnecessarily, perhaps, but without protest, by the twin designations "throat and nose," "laryngology and rhinology." But soon there were nasal enthusiasts whose idea of the subject, entire, seemed to consist in the establishment of a wide patency of the nostrils. They introduced the reversed designation "nose and throat," meaning to emphasize thereby a subserviency of throat affections, which I think scarcely exists to the degree implied. Perhaps you may recall Michael's parody, a humorous song, written for the Berlin International Medical Congress of 1890:

"Es tröstet über manches Leid
   Uns die Philosophie,
   Doch heilen kann zu jeder Zeit
   Nur die Rhinologie.
   Stets wird die Nase angebrannt,
   Denn das hilft immer, wie bekannt."

In derogation of our specialty one is occasionally reminded by cynical friends that "there is nothing to it but boring a hole through the nose," a grotesque misconception which is quite widespread in the profession, and for which, I fear, these same nasal enthusiasts are largely responsible.

The intimacy of the ear with the throat and nose is conceded. Acute suppurative otitis and chronic suppuration, through recurrent acute attacks, are so often complications of primary nasopharyngeal infections, and chronic otitis media is so far an outgrowth of rhinitis, septal deformities, "adenoids," etc., that the laryngologist has the treatment of aural affections actually thrust upon him. Even the patient's discernment convinces him that the laryngologist's skill and equipment are the means best adapted to the end. And having appropriated the ear, one should cultivate an exhaustive knowledge of the organ, but as an addition to laryngological lore, not as a substitute for a part thereof. Aural enthusiasts have developed among laryngologists whose commendable studies of the ear have been a help,
but who centre their attention so forcibly upon that organ as to convey the impression of neglect of fundamental laryngological precepts. Their disposition to subordinate the throat is evinced by such "departmental ditties" as "ear, nose, and throat," "otolaryngology," "otorhinolaryngology," etc.

Add to these our confrères in smaller towns who find it expedient to group together the eye, ear, nose, and throat, and we encompass numbers who to-day are posing as laryngologists whose education, interests, and restricted routine of practice put them out of touch with important medical and systemic phases of the subject.

Do latter-day laryngologists as a class habitually endeavor to establish the real diagnosis in the earliest demonstrable stage of pulmonary tuberculosis? Are not such patients liable to come first before us with their irritable throats, hacking cough, tendency to hoarseness, and inclination to rhinitis? Suppose they are ready to believe, and sometimes even to insist, that they have only "throat trouble" or "catarrh," are they not entitled to an exhaustive examination with a view to the earliest possible discovery of tuberculosis when present, or are they to be satisfied with the conventional spray, laryngeal injection, or series of nasal cauterizations? I recall instances in which failure to deal adequately with such cases became a reproach to the laryngologists consulted, and unnecessarily so, for the requisite knowledge and skill are only exceptionally lacking; but a disposition is shown to become enchained by a limited office routine and to permit the haste incidental to the crowded hours of the day to serve as an excuse for deferring a more searching investigation extending to the organs of the chest.

Now, it is not alleged that the laryngologist need embrace in his practice the whole broad field of chest diseases, but it is urged that he be ready to apply all the arts of diagnosis and that he be conversant with every resource known to medicine in the treatment of pulmonary conditions for the benefit of cases of laryngo-pulmonary tuberculosis, laryngo-bronchitis, bronchial
asthma in association with ethmoiditis, and other conjoined pathological conditions of the upper and lower respiratory tracts.

For the purpose of diagnosis, he should acquire and retain by practice a perfection in the art of physical examination of the chest, should possess ready means of establishing the ratio of height to weight and the relation of height to thoracic perimeter and vital capacity. He should note the conformation of the chest, the temperature, and pulse rate, be familiar in a practical way with the bacteriological technique for tubercle bacilli, and ready with the use and interpretation of the tuberculin test. Familiarity with the upper respiratory tract serves as an aid in the diagnosis of pulmonary states. Slight laryngeal infiltration, disclosed only by the laryngoscope, may afford the earliest suspicion of pulmonary tuberculosis; the presence of nasal polypi and polyoid degeneration of the middle turbinated bodies, unassociated with sinus empyema, will aid in the exclusion of tuberculosis in favor of bronchial asthma or chronic broncho-pneumonia; while a critical inspection of the throat will at times afford a satisfactory explanation of symptoms, such as cough or hemorrhage, which might otherwise be attributed to lung disease. Hence, the laryngologist is naturally qualified best of all to disclose the earliest stage of tuberculosis, or to exclude it, if he will but embrace his opportunities and look below the larynx as well as above it.

Nor will it answer to omit attention to the heart, aorta, and mediastinal contents. Paralysis of a vocal cord through pressure on the recurrent nerve by an aneurysm is a simple proposition, but more complicated ones which require a high degree of diagnostic skill are continually encountered.

Regarding the treatment of pulmonary conditions, especially tuberculosis, cases which are not complicated by affection of the throat are naturally claimed by the department of internal medicine. It is not possible, nor even desirable, to draw an absolute line at this point between laryngology and internal medicine; in practice
they are bound to overlap; but, conceding that if drawn anywhere it would be here, there remains a considerable proportion of pulmonary cases in which the upper respiratory tract is so far implicated that they fall naturally under the care of the laryngologist. Hence, as before said, he should be conversant with every resource known to medicine in the treatment of pulmonary states for the benefit of cases of laryngo-pulmonary tuberculosis, laryngo-bronchitis, bronchial asthma in association with ethmoiditis, and other conjoined pathological conditions of the upper and lower respiratory tracts. He should be a good systemic therapeutist, and continue to cultivate the art of prescribing, realizing the uses as well as the limitations and abuses of internal medication. As yet only disappointment is the fruit of serum therapy in tuberculosis, but one should follow closely the literature, for every day fresh knowledge and a deeper insight are gained into the subject of immunity, and the discovery of an effective tuberculosis antitoxine may yet be hoped for. But, above all, one should study the conditions of natural immunity and susceptibility in order that, having made an early diagnosis, one may direct the mode of life and place of abode best adapted to arrest the disease and overcome the susceptibility. This implies a ready familiarity with sanitation, hydrotherapy, climatology, and sanitarium resources and methods. From the Alps, the Adirondacks, and the Rocky Mountain region come encouraging reports of the curability of incipient pulmonary tuberculosis, reaching as high as seventy per cent.* under a sanitarium régime which secures abundance of fresh air, sunshine, and suitable food; but we get little convincing information concerning climatic effects upon laryngeal tuberculosis. While Heryng, Krause, Gleitsmann, and others have demonstrated the value of surgical measures in suitable cases of laryngeal tuberculosis, there are yet so many which are unsuitable for this line of treatment that one turns with gratification to

the reports of Solly * and Levy † from the Rocky Mountain region to find that unmistakable laryngeal tuberculosis in the proportion of twenty per cent. recoverers in that climate, and that another twenty per cent. lives along indefinitely, greatly improved. That dryness and altitude were formerly thought to be inimical to laryngeal tuberculosis was probably based upon the unfortunate fact that advanced cases do badly under any conditions. Carefully studied reports from other resorts would be welcome and laryngologists at large should thoroughly familiarize themselves with the principles of climatology, in order intelligently to serve their patients who in despair beg for advice, and who otherwise will wander over the face of the earth on recommendations of lay friends and at the behest of hotel agents and railroad advertisements.

In connection with bronchial asthma, studies in nasal pathology have furnished gratifying information concerning the associated polypoid changes in the ethmoid region, and they tend inferentially to establish a vasomotor defect as the common cause of both the nasal and bronchial symptoms. Pronounced relief, and often a practical cure, may be effected by nasal treatment, but the ethmoiditis tends to recur, and prolonged observation and repetition of radical measures are essential to the best results. This the laryngologist is much more likely to secure if he show himself willing and ready to assume full charge of the case, attending not only to the nasal surgery, but exhausting the pharmacopeia and climatic resources to bring the fullest measure of cure or relief.

For a familiarity with bacteriological technique there is a constant need in the practice of laryngology. F. de Havilland Hall, in the Lettsomian Lectures, and others have emphasized the importance of the throat and nose as portals of entrance of the micro-organisms of infectious diseases. The scientific application of bac-

* Solly. *Medical Climatology*, p. 147.
† *New York Medical Journal*, July 20, 1895.
teriological principles enabled Behring and Roux to snatch from Nature herself the crowning achievements of the century—diphtheritic antitoxine. The hunt for the Klebs-Loeffler bacillus is already popularized and its importance in the diagnosis, especially of tonsillar infections, duly recognized. The search for the Cannon-Pfeiffer bacillus of influenza and for the microorganisms of pneumonia should be reduced to the same practical basis. The patient who applies for treatment feeling ill, together with sore throat or cold in the head, and who receives the routine spray and perhaps some rhinitis tablets, only to become bedridden in a day or two with severe influenza or lobar pneumonia, has a just complaint against the laryngologist for failing to make a more searching investigation into his condition at the start. In the words of the late Harrison Allen, "We shall be raised in our esteem in the degree that we add a little more science to our art."

All laryngologists are familiar with the many throat conditions which appear as salient features of underlying systemic states, and yet, in the overswing of the movement toward localism, general pathological data, systemic therapeutics, and hygienic aids are not always utilized to the utmost. I have only to mention briefly the difficulty of controlling the excessive secretion of simple chronic nasopharyngitis without hygienic aids; the systemic defects, especially digestive derangements, which commonly underlie chronic pharyngitis; the laryngeal lesions of arthritis deformans, and the pharyngeal discomforts of rheumatism, diabetes, and gout. How often is œdema of the larynx merely secondary to chronic nephritis, and laryngeal ictus simply the forerunner of locomotor ataxia! Indeed, I might enumerate indefinitely associated throat and systemic states, but I have said enough, I think, to support the contention that the laryngologist should continue, as of old, to be first of all a good physician, and after that something more, a specialist.

Nor need a man with this breadth of view be any less skilled in the operative technique of amygdalotomy,
in the correction of deviated septa, the surgery of the collateral sinuses, and the mastoid operation. He can appreciate the disadvantages of nasal obstruction just as well as another who perceives that only.

Gentlemen, we are assembled here to aid one another in the search for more truth; let us profit by each other's experience, search along liberal lines, and endeavor to realize Emerson's conception of power: "A cultivated man, wise to know and bold to perform, is the end to which Nature works."

Paper.

IS THE SO-CALLED AMERICAN VOICE DUE TO CATARRHAL OR OTHER PATHOLOGICAL CONDITIONS OF THE NOSE?

By JOHN W. FARLOW, M. D.

The so-called American voice is so often referred to that I think we are justified in making inquiry as to its nature and cause. It is never spoken of in complimentary terms—quite the contrary—and our liability to nasal catarrh is considered to be the determining cause. I think we are all agreed that it is the exaggerated nasal quality, the production of the voice in the nose, the twang, which is its most noticeable characteristic, and we can omit consideration of the larynx and fauces as factors. It is not the thick, muffled voice of weak carrying power, such as occurs in cold in the head, but the high, penetrating, vibrating voice, indicating an openness of the nasal chambers, so that the voice made in the larynx finds its way into the nose.

Any condition which hinders the passage of air into the nose, such as large tonsils, adenoid disease, post-nasal polypi or tumors, enlargement of the posterior ends of the turbinals, tends to diminish the nasal resonance, and hence should not be considered as contributing to the production of a nasal voice. When we say we "talk through the nose," we mean that we do not
The marked nasal sound we should expect might be produced when there is obstruction in the anterior part of the nose, as by deviations or spurs of the cartilaginous septum—which impede the free escape of air, which is thus made to vibrate abnormally in the nasal chambers. A blocking up of only one nostril might be sufficient. A nose very small and narrow at the tip, especially if this bends sharply downward, might produce the same effect. Again, enlargement of the anterior ends of the turbinals or anterior polypi might act, to a less extent, in a similar manner. As regards obstructions in the posterior portion of the nasal cavities, their effect would be to hinder the entrance of air into the nose, and thus prevent nasal vibration. The same may be said of adenoid or other hypertrophies in the postnasal space, the well-known effect of which is to deaden the voice.

Let us now consider the effect of chronic catarrhal conditions of the mucous membrane of the nose without hypertrophy, so often associated with a similar disease of the postnasal space. In severe cases of long standing there may be anaesthesia and paresis of the soft palate, which would diminish the proper activity of the muscles which shut off the fauces from the postnasal space, and thus some of the tones which should be made in the mouth are involuntarily formed higher in the nose and acquire a nasal character. This is well known to occur, temporarily, immediately after the removal of a large adenoid, before the palate has regained its proper strength.

Apart from the effect of the incomplete movement of the palate, I do not see that an atrophic condition of the nose tends to make a nasal voice if the method of speaking is correct. If it is incorrect, the nasal char-
acter should be more marked, owing to the greater opportunity for vibration.

For purposes of study, we may divide our patients roughly, according to age, into—

1. Children up to twelve years.
2. Those from twelve to thirty years old.
3. Those above thirty years.

I think there can be no question that the nasal voice is very common in our first class. The voices of young children at play or in the class room are often very noticeable for their nasal quality. But if we refer to the list of conditions which I have enumerated above as possible factors in the production of the nasal element we shall find little justification for it. Deviations of the sæptum are decidedly uncommon in young children, polypi are almost unknown, the paretic condition of the palate hardly exists, and hypertrophies of the turbinates, although common enough, are more likely to occur as enlargements of the whole length of the turbinals, together with hypertrophy at the pharyngeal vault. So that we are allowed to infer that an age which furnishes very many examples of nasal voice has but little in the nose to cause it.

From twelve to thirty years of age we find an increase in the number of cases of obstructing sæpta and anterior turbinal hypertrophies. Polypi are more common, and atrophic rhinitis, with some paresis of the palate, is also more frequent. I should say that the nasal voice was met with very often at this age, but not more frequently than in the preceding period, and certainly not proportionately to the increase in the causative conditions.

After thirty years of age the various pathological conditions continue, and the sclerosing inflammations of the mucous membrane become more marked. About the frequency of the nasal voice, my impression is that it is rather less common than earlier in life, perhaps in the sense that there is a larger proportion of voices with no nasal intonation, although there are many very marked examples of the nasal twang; while in
the young those who speak without any nasal twang are decidedly fewer.

In a general way, I should say that, considered from the standpoint which I have referred to above, we were not justified in thinking that the condition of the nose was the important factor in determining the nasal voice. In fact, I feel sure that the members of this society would be unable to classify their patients' voices into nasal and non-nasal by mere examination of the nose, unless, perhaps, in some cases of marked sæptal deviations. I do not, of course, allude here to the kind of voice produced by acute coryza, marked general turbinal hypertrophies, etc., where the voice is deadened and nasal respiration obstructed.

If we are correct in the opinion that the condition of the nose is not the principal factor in causing the faulty voice, we should certainly expect to be able, in many cases, to improve the manner of speaking without medical or surgical treatment of the nose. Many excellent singers have throats and noses which are far from normal, and pathological conditions have more to do with the range and power of endurance of the singing voice than with its proper quality in the medium registers and when used in moderation.

A boy eight or nine years old was brought to me for a very nasal, twangy voice. There was some deflection of the sæptum nasi, but otherwise the nose was in excellent condition. I was asked if correction of the sæptum would take away the disagreeable quality of his speech. I knew a number of his playmates and noticed that nearly all spoke in the same way. I told his mother that if his companions continued to speak as they now did it would be only natural for him to imitate them whether his sæptum was straight or crooked. The following year he went to a school in another country, and when I next saw him I found that his nasal voice had almost entirely disappeared, while his sæptum remained as before.

A theological student from a small country town consulted me with reference to the removal of a sæptal
The So-called American Voice.

spur which caused him some discomfort in breathing at night. His voice had quite a marked nasal twang, and he tried to get me to assure him that after the removal of the spur his voice would improve very much. I told him I could relieve his breathing, but would have to resort to other measures about the voice. The removal of the spur was followed by freer breathing, but no particular change in his voice took place until after a course of exercises in the proper manner of placing and using his voice in speaking.

These are merely examples to show, one, the effect on the boy, without operation on the nose, of removing him to a school where he had no nasal voices to imitate, and the other, the effect of voice training in the young adult after an operation had failed.

On the other hand, if we examine some of our best speakers and actors we shall find that they very often suffer from the same pathological conditions of the nose as those who have poor voices. I have in mind a public speaker with clear voice of great carrying power without effort. I had always supposed that he was the possessor of unusually good vocal organs, but I found a very bent septum, and also a number of polypi.

A clergyman with absolutely no twang and a wonderfully good speaking voice, had a very marked obstructing ridge of the septum with turbinal hypertrophies. He had learned to speak well before these latter appeared, and their presence, although causing him some discomfort in breathing, were without appreciable effect on his voice. Such cases are common in the experience of you all, and are not exceptional cases of the few who are able to surmount what most are unable to overcome.

The anterior obstructions of which I have spoken are common in all civilized races, and there is no reason for thinking that any peculiarity in the American voice is due to what is possessed by others equally with ourselves. The parts of our country where are the oldest centres of civilization and education should be the places where most attention is paid to both the singing
and the speaking voice, and this is probably the case. But in our old country villages, distant from the populous centres, the voices of the natives are well known to have the nasal twang without regard to the conditions of the inside of their noses.

It is not at all surprising that the presence in many parts of our country of so many recent immigrants from Europe, many of them entirely uneducated, should make us so accustomed to all sorts of pronunciation of English that we are, to a certain degree, indifferent to the importance of correct methods of speaking. There is plenty of evidence that pathological conditions of the nose are very common, but they are not more numerous in places where the voices are nasal than elsewhere, and there is no question but what training of the voice, especially in childhood, will do more to improve the speech of the coming generation than treatment of the nose. In September our daily papers are filled with notices of singing teachers, but for every one who aspires to sing there are one hundred who use the voice for conversation only. These latter are content to speak after the manner of the community in which they live, and no thought is given as to whether this is a proper manner or not.

Discussion.

Dr. G. Hudson Makuen, of Philadelphia: I was greatly interested in Dr. Farlow’s paper. The subject is one to which we, as laryngologists, should give more attention. It is a common belief among teachers that doctors know very little about voice and speech, and it would seem that specialists in our line should give at least a sufficient amount of attention to the subject to be able to direct the training of the human voice. The high-pitched, nasal American voice, as has been said, is often commented upon, and I believe that one factor in the cause of the high pitch is our American energy and push. Professor William James has written an article on the Gospel of Relaxation, and if we were to follow the precepts that he advocates there would be less of this quality of voice. He says that we pride ourselves on our ambition, but instead of its being
a matter for commendation he believes that it is fast growing to be a national calamity.

I suppose that the direct or immediate cause of the nasal voice is a low-hanging palate during speech; the vibrations rise into the postnasal space and nasal chambers, and the result is a nasal voice. Obstructions in the anterior part of the nose have very little to do with it. If I am right in supposing a low-hanging palate to be the direct cause of nasal voice, then the proper treatment would be that which would stimulate the levator muscles of the palate and cause it to be drawn upward and backward against the pharyngeal wall during vocalization.

It is an easy matter to teach the voluntary control of the levator palatini muscles, and thus by repeated voluntary contractions to so develop these muscles and their nerve supply as to bring the palate into correct position during speech, and thus shut off the vibrations from the nose and diminish the nasal character in the voice.

Dr. T. A. De Blois, of Boston: One is perhaps led to believe that in the tone of the voice there may be a great deal in racial conditions. We all speak of the guttural German or Russian voices; of the vibratory nasal tones of the French, and the high-pitched Yankee voice. We also hear a great deal of the beautiful, low English voice, and yet apparently mouth-breathing is so prevalent among the English that it is a favorite subject for caricature by the French illustrated papers, and in almost all of these papers you will see my lord and lady (English) marching through the continent with their front teeth exposed like those of a rodent. Among the English, the nose of the higher classes is very long, and probably very little air passes through it except in the act of sneezing. Many of the English people take snuff, and notwithstanding all this the English voice is very sweet in contradistinction to that of the American. This bears out what Dr. Farlow has said as to the little effect the condition of the nasal passages has upon voice production. It would therefore seem largely a matter of education, or the fact that the child grows up among people who all use their voices in the same way.

Dr. John O. Roe, of Rochester: The influence of the accessory sinuses on the voice has not been mentioned by Dr. Farlow and other speakers, yet these cavities have much to do with the tone of the voice. They are the resonant chambers of the head, and the
character of the voice depends to a great degree upon their size, shape, and position. Any one studying these cavities with reference to their influence on the voice will be impressed by their lack of uniformity, and will readily see the explanation for the modification of the voice which the great variations in these resonators cause. The reason, therefore, why obstructions in the anterior nasal chambers have so little effect upon the voice is that they do not cut off the resonance of the accessory sinuses; whereas obstructions in the posterior nares cut off the resonance of these sinuses and very materially alter the tone of the voice, as illustrated by the effect of adenoid growths. As the essayist has said, the aptitude of children to imitate the sounds they hear, and particularly the voices of those they are accustomed to associate with, will have a marked influence on the character and intonation of their own voice; and, furthermore, I believe that the language used has also a great deal to do with the infonations of the voice. The continental languages, the German, for instance, in which the guttural sounds and consonants predominate, tend to produce voices that are, as a rule, pitched on a lower key and deeper in tone than others, whereas those languages in which the enunciation of the vowels predominate, the French, for instance, tend to produce voices that are pitched higher and are not so deep and resonant.

Dr. Makuen: It seems to me the best proof of the fact that obstructions in the nasal cavities have little to do with nasal voice is that one may easily imitate the nasal voice without changing the anatomical condition of these cavities. We can use the nasal voice without changing these structures. The change is entirely in the musculature of the vocal and oral mechanisms of speech. (Here Dr. Makuen gave an example of nasal twang in his own voice by relaxing his levator palati muscles.)

Dr. A. W. de Roaldes of New Orleans: The results we obtain in changing some voices that have been acquired largely by faulty habits are strong proofs of what can be done by proper vocal exercises and careful training, either in changing or lowering the tone of the high-pitched voice that Dr. Farlow has been talking about. Certainly, the high-pitched falsetto voice can be changed in the course of a few hours by proper vocal training. There is no question but that the American voice is due largely to faulty habits, which can be overcome by proper vocal exercises and such treatment, re-
gardless of any local effect of the nose, mentioned by
the essayist, and understanding that it is the result of
imitation. In many communities we have important
reasons for this habit in fast living and in the way that
people have of forcing and impressing their views on
others in a loud manner. This is a question largely of
race and education. In the South we do not hear the
high-pitched voice very frequently, and I think it is the
result, to a great extent, of miscegenation, a mixing of
the races, and of habits of life. We do not rush as much
as you do up North, and I do not think we meet with
so many of these voices in the South. Besides, I do not
think the negro race is much addicted to the use of these
tonalities. So I think it must be a question of race
and oflocalities due to education. To repeat: Proper
vocal exercises and careful training ought to overcome
or at least improve this defect, which seems to be a
characteristic in certain parts of our country.

Dr. Thomas Hubbard, of Toledo: I am surprised
to have heard nothing in regard to the influence of
noises, especially in our cities. This is an age in which
one half of the population resides in cities, and it is re-
markable how we tolerate loud noises. We are forced
to cultivate the shrill, carrying voice in speaking on the
streets and on street cars, and too often in our very
homes. The ear becomes less sensitive to and less criti-
cal of the more delicate qualities of the voice in the
constant presence of a noisy environment.

Dr. Farlow: With reference to what was said by Dr.
Makuen as to the low palate being a factor in the pro-
duction of the nasal voice, it seems to me that it is due
to the lack of use of the palate, and not that the low-
hanging palate originally caused the nasal voice; but
the nasal voice persisting, the palate, being little used
in helping to form the voice, gets out of function, as it
were, and consequently the voice becomes more nasal,
and continues so.

As regards the accessory cavities, referred to by Dr.
Roe, I hardly feel that they have any influence, for the
reason that nasal voices are so common here in young
children in whom the accessory cavities are prac-
tically undeveloped. The frontal and maxillary sinuses
are developed but little in young children, in whom the
nasal voice is marked. Another point referred to by
Dr. Roe is the question of language. The English lan-
guage is spoken in Canada, India, Australia, England,
and the United States, but it is in our own country al-
most exclusively that the nasal voice is found.
As regards what Dr. Hubbard said about noise having to do with the nasal voice in our cities, I will say that the twangy voice is quite as common in small country New England towns as in the noisy cities.

Dr. Roe: Would not a lack of development of the accessory sinuses in children account for the peculiar high-pitched voice, and as the sinuses developed the voice would become lowered in tone; the peculiar twangy voice would disappear with the enlargement or development of the accessory sinuses? Furthermore, would not nasal obstructions also account for cutting off the nasal resonance in the accessory sinuses?

Dr. Farlow: American children do not have smaller accessory cavities than the children of other countries, but my paper endeavored to show that they are more prone to nasal voice than children of other nations.

Paper.

ADENO-CARCINOMA OF THE NOSE. REPORT OF A CASE.

By JAMES E. NEWCOMB, M. D.

Two years ago, at the congress of this association held in Washington, cases of this nature were reported by Dr. Hopkins and Dr. Leland. Appended to the paper of the former, as published in the Transactions, are some pertinent remarks by Dr. Wright on the general topic of nasal carcinoma. Dr. Hopkins was able to collect up to the date of his paper the authentic records of twenty-three cases of the different varieties of this form and site of new growth. Of this number, three were undoubtedly adeno-carcinoma and one other doubtfully so. From the conviction that all such cases should be placed on record, I am influenced to report briefly an additional case, and to add a few words on two matters relevant to the subject—viz., cases reported during the last two years, and a modification of one of the surgical measures followed in these cases which has commended itself to my judgment.

Mrs. Caroline C., aged sixty-one years, widow, of American parentage, was referred to me by my friend
Adeno carcinoma of the Nose.

and neighbor, Dr. William C. Gardner, January, 1899, on account of severe and persistent nosebleed. Her family history was negative, and her previous history was without apparent bearing on her condition when seen. In June, 1898, she began to have almost daily bleeding from the left naris. She had been subject for many years to severe colds in the head, and was inclined to attribute her troublesome symptom in some way to this fact. The bleeding always stopped of its own accord, and no operative interference had ever been necessary. On two occasions the flow had been quite severe, but on all others it had been a mere dribbling. In September she had blown from the nose what she described as a "fleshy bean," which was in all probability a polyp of the usual variety. She had lost some flesh and strength during the few preceding months, but no more than could be accounted for by the continual though slight bleeding. At times there had been a slight watery discharge with an offensive odor. None was present at the time of examination.

The latter showed a woman of large frame, but with a rather worn and debilitated appearance. Pharynx, nasopharynx, and larynx presented nothing especially noteworthy. The right naris showed commencing senile changes. The left was considerably occluded. The middle turbinate was considerably enlarged, and the mucosa covering it appeared to be in a condition of polypoid degeneration. About it were two or three fleshy proliferations, which bled rather easily upon manipulation with the probe. No glandular enlargement could be found and there were no manifestations of pressure symptoms.

Under ten per cent. cocaine a portion of one of the fleshy masses was removed and sent to Dr. Wright for examination. His report was "adeno-carcinoma." Removal was followed by a little more bleeding than is the case with an ordinary polyp, but it was easily checked, and there was no unpleasant reaction.

The patient was seen again in two or three weeks, when it was noticed that the mass had reproduced itself in the same situation. A second piece was removed as before. There had been no bleeding in the interim. The report upon the second piece was to the effect that it consisted of oedematous tissue with some newly formed and imperfect glandular structure—all of it granular and degenerate-looking—nothing definitely malignant, but certainly suspicious. Patient was seen
again for the third time on March 13th of the present year. The same reproduction of tissue was noted as before, but none was removed at this time. There had been two spontaneous hæmorrhages during the week preceding this visit, one of them quite severe. The patient was made acquainted with the gravity of the situation, and the question of a radical operation was submitted fairly to her. Thus far she has been unwilling to undergo the ordeal.

She was last seen early in the present month (May, 1899). During the last few weeks the daily dribbling hæmorrhages have continued, and at times there has been a perceptibly offensive odor. The occlusion of the nostril is gradually increasing. Her general condition seems to be about as before.

I have made a careful search through current literature issued between the date of Dr. Hopkins's paper and the 1st of March of the present year and have been able to find records of the following cases:

Schotte * reports the case of a woman, aged forty-five years, who presented a growth of the left inferior turbinate with polyps of the middle turbinate on the same side; removal; microscopic diagnosis, “papillary epithelioma.” This form of neoplasm is now regarded as closely allied to adenoma, and has been called by Billroth Zottenkrebs. A specimen is figured by Dr. Wright in the American Text-book of Diseases of the Eye, Ear, Nose, and Throat, and some remarks made upon this form of growth.

Thorner, of Cincinnati,† reports a case in a man of forty-seven years. The tumor grew from the left middle meatus. Dr. Thorner notes that most authorities regard pure adenoma of the nose as among the rarities. Simple polyps sometimes undergo malignant degeneration, and malignant growths may lurk behind simple polypi. Hence the stage at which the case comes under observation must be considered in any attempt to unravel the problem in each individual. Newman has quoted the opinion that two thirds of carcinomatous

* Jour. de méd. sci. de Lille, 1897, i, p. 519.
† Archiv für Laryngologic, Bd. viii, p. 380.
tumors of the nose are epitheliomatous, and the remaining third adenomatous. But from any histological point of view it must be remembered that the exact demands of modern diagnosis render earlier statistics very unreliable.

Thorner also reminds us that while we may not be able to positively deny the transformation of a primary benign tumor, a pure adenoma, into a malignant growth — adeno-carcinoma — it must be remembered that there are certain forms of adenoma which are malignant from the beginning, and should be termed "adenomata maligna," although it may well be that for a long period they can not be distinguished in anatomical details from the benign variety. Some tumors, originally innocent in type, pursue a course of extreme malignancy, and in a certain percentage of cases microscopical examination is unable to determine whether a given growth will prove innocent or malignant in its development.

Saitta * mentions a case of adenoma of the left nasal fossa, the exact site of which could not be determined. It occurred in a woman of sixty years. The later history of the case was not obtainable. Microscopical examination led to a diagnosis of adenoma with incipient carcinomatous metamorphosis.

Tissier, in the course of an elaborate article upon Tumors of the Nasal Passages,† notes that cancer of the nose is very rare. He quotes the statistics of Gurit to the effect that only four cases were found out of a total of nine thousand five hundred and fifty-four cases of cancer of all organs. He can not see in an antecedent rhinitis anything more than a coincidence. Erysipelas and trauma have both been invoked as exciting causes. There is nothing, he says, but mere coincidence between the association of polyps with the malignant growth. He does not regard the epitheliomatous transformation of simple polyps as ever having been defi-

† Ann. d. mal. de l'oreille, etc., 1898, t. xxiv, p. 1.
niture proved. But he adds that what we know about the aetiology of nasal polyps explains their occurrence in a cancerous nasal fossa. He believes the ethmoidal labyrinth to be the most frequent seat of carcinoma, a fact which tends to explain its most frequent extension toward the orbit and cranial cavity. Next in frequency as to site comes the septum. Ganglionic infection is rare and relatively tardy. The average duration is not more than one year in cases of non-interference, but it may extend to four years. He gives quite a full bibliography, but apparently does not include any cases which are not mentioned in the table appended to Dr. Hopkins's paper.

Hellman* narrates a case which is of interest as illustrating the transformation of a hard papilloma into carcinoma. His patient (male) had been observed as far back as 1886, being at that time thirty-seven years old. The mucosa over the left middle turbinate was thickened, of yellowish-white appearance, and covered with fine mamillations. The intervening areas were apparently healthy. No enlarged glands or adhesions were present, but the growth completely occluded the naris. Removal by galvano-cautery was followed by quick recurrence. For the next nine years he was under the care of various physicians and had an annual crop of polyps removed. At the end of this time Schech removed a mass of fine papillary growths, suspecting cancer, but no examination was made. In July, 1895, Seifert removed some of the growth, which he pronounced to be hard papilloma. Two months later further masses were removed by Hellman and found to be true carcinoma.

Bronner† reports a case of tubular epithelioma removed from the nasal mucosa of the lower turbinate in a man of forty-seven years. There was a history of slight nasal obstruction and frequent hemorrhages. Removal was effected by scissors, and the base cauter-

* Archiv für Laryngologie, Bd. vi, p. 173.
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ized with the galvano-cautery. Microscopical examination showed that the growth was malignant and of an epithelial type. At the periphery, beneath the mucosa, tubules with a definite lumen could be seen. There is some doubt as to whether this tumor was anything more than an adenoma. There had been no recurrence after ten years.

Martuscelli* alludes to a case of tumor of the cartilaginous septum supposed to be a fibroma or chondro-fibroma, but examination showed it to present some features of epithelioma and some of lupus. A perusal of his report does not persuade the reader that the case belongs in the category now under consideration.

In a recent number of the British Medical Journal, Hunter Mackenzie, in reporting a case of sarcomatous degeneration of a nasal polyp, brings up the question of surgical trauma inflicted in the removal of polyps as a possible factor in causing such malignant degeneration. Plicque is on record as stating that "it must be remembered that it is, unhappily, pretty frequent after ablation of numerous benign polypi—adenoma or myxoma—to find new polypi appearing, composed this time of epitheliomatous tissue." While these notes of warning are not to pass unheeded, it can not be believed that the propositions they advance, especially the latter of the two, are true, except in a very small proportion of cases. Otherwise, considering the great number of cases of nasal polypi and the crude methods often employed in the removal of the latter, nasal tumors presenting malignancy would be much more frequent than is actually the case.

With the case reported in this paper there are thus five new cases to be added to those enumerated in Dr. Hopkins’s table.

In regard to the surgical measures for radical interference, I beg to add a word. Up to the present time two general operative plans have been followed: First, removal of the superior maxilla with more or less

of the surrounding structures, and, second, attempted starvation of the growth by shutting off its blood supply. In pursuance of the latter end the external carotid has been ligated. I have been interested to learn of a modification of this procedure, first made, I believe, by Dr. R. H. M. Dawbarn, a well-known surgeon and expert anatomist of New York. He found, upon studying the anastomotic circulation, that after simple ligation of the external carotid there were fully twenty channels through which collateral circulation could be established. With a view, therefore, of still further cutting off the blood supply, he conceived the idea of ligating, one after another, the eight branches of the external carotid, and then, as the trunk of the vessel was thus rendered useless, of resecting it entire. He has done this operation sixteen times upon eight patients, a two-weeks' interval elapsing between the two operations in each case. It has been done once or twice by others. While the period covered by this work is too short and the number of cases thus operated upon too few to allow of decisive conclusions, he believes that time will demonstrate the logic and effectiveness of this operative modification.

**Discussion.**

Dr. G. V. Woollen, of Indianapolis: I wish to briefly narrate a case that came under my observation last winter. I feel a little embarrassed in speaking of it because of failure of the microscope to determine the true condition. In this case nasal polypi had been removed by a rhinologist a number of times. The child was only eight years of age. The physician was apparently competent to determine that the growths he removed were polypi. In the mean time an effort had been made by a competent microscopist to determine whether the disease was malignant or not, and he declared it was benign, and that the disease was mucoid in character. I was impressed with the malignant appearance of the patient when brought to me. There was some exophthalmia, with deep ethmoidal trouble, stenosis, and possible sepsis. The masses in the posterior naris were finally removed after proper preparatory treatment. I saved a specimen for microscopical exam-
Discussion on Paper of Dr. Newcomb.

FLETCHER INGALS, of Chicago: I was surprised at the small number of malignant tumors of the nose mentioned by the author. I might have reported half a dozen, if I had thought them of special interest. So far as the macroscopical appearances and clinical histories could determine I have reason to suppose they are not very infrequent. I have had microscopical examinations made in but one case, and in this the findings were not typical, though the examination was made by an expert, but the clinical history justified the diagnosis very promptly.

J. L. GOODALE, of Boston: In the discussion of
Dr. Newcomb's paper I wish to mention briefly a case which I have had under my care since last year of epithelioma of the ethmoid region in a man, fifty-one years of age, who had polypi for over twenty years. These were removed semiannually by one or more physicians. He came to me in May, 1898, with a history to this effect, that during the preceding five months he had a bulging left eye, which was attended with great pain in the ethmoidal region, and blocking the nose much more so than it had done for some time previously. I found the left nostril completely filled with a friable, easily bleeding mass, a portion of which was removed, and showed on microscopical examination a connective-tissue stroma containing nests of epithelial cells. During the next five months I removed a large amount of similar tissue. Recurrence was rapid, and the man died a few months ago.

Dr. Thomas Hubbard, of Toledo: I wish to place on record the case of a farmer in whom the cause of the disease was a suppuration of the antrum. Syringing was carried on by the patient for a period of seven years, resulting in the formation of a growth undoubtedly within the antrum. When I saw the man the whole naris was filled with a mass of what I believed to be carcinomatous tissue, and my diagnosis of adenocarcinoma was confirmed by an expert microscopist.

While this may be classed as a carcinoma of the antrum, yet the fact is that the growth probably originated near the ostium maxillare and developed simultaneously in the nose and in the antrum.

Dr. D. Braden Kyle, of Philadelphia: I desire to say a word or two in defense of the microscope and of the microscopist. The specimens of tissue taken from the nasal mucous membrane in cases of tumors are not sufficiently large to enable the microscopist to make a positive diagnosis. In a number of instances in which I have examined small specimens, I have sent a report back to the effect that the piece of tissue was not sufficiently large to make a microscopic diagnosis. You know that the mucous membrane of itself is a one-sided affair, backed up by bony structure, and a microscopist can not arrive at a positive diagnosis as to the malignancy or benignity of a tumor when such a small section is sent to him for microscopic examination. In all of these cases physicians should see to it that they remove larger pieces of tissue by going down deeper into the structure. Frequently the specimens are not large
enough to warrant any one in making an accurate diagnosis. The microscopic examination should always be associated with the clinical history.

Dr. Newcomb: I have only a word or two to add. I was interested in the case related by Dr. Woollen, in view of the early age at which the polypus manifested itself in this child. Personally, I have never seen a polyp in a child under eleven.

In regard to the interesting and instructive case of Dr. Hubbard of an adeno-carcinoma starting from the antrum, I have endeavored in this collation of cases to limit myself strictly to malignant tumors of the nares. There are one or two cases of carcinoma reported as having started from the antrum, then running outside, one case through a tooth socket, and in one or two other instances spreading inward through the nasal fossa. I purposely omitted those cases from the category.

I am not a microscopist in the technical sense of the term, although I agree to what Dr. Kyle has said in reference to the importance of furnishing larger pieces or sections of tumors to the microscopist to enable him to confirm the diagnosis. Furthermore, I think we should furnish the microscopist with specimens removed at different times, particularly when we have reason to believe that we have to deal with a new growth. There is a good deal we do not know with reference to the change in the characteristics of new growths. These changes are as obscure to the microscopist as they are to the clinician.

Paper.

REMOVAL OF A FOREIGN BODY FROM THE BRONCHIAL TUBE THROUGH THE TRACHEAL OPENING. REPORT OF A CASE.

By A. Coolidge, Jr., M.D.

The presence of a foreign body below the larynx is a serious accident, and one in which prompt and proper action may be rewarded by saving the patient's life. Such cases commonly come under the care of the general surgeon, who, if there is marked obstruction to breathing, or if he is persuaded that there is something in the trachea, often does tracheotomy at once. The danger from tracheotomy is slight in comparison with
The danger from a foreign body impacted in a bronchus. A body loose in the trachea often flies out of the tracheal wound; a body impacted in the larynx can be reached easily from below, but if it is in a bronchus it is only with good luck that it can be got out unless it can be seen.

Reflecting mirrors and angular instruments introduced into the tracheal wound are difficult or impossible to manage. It is possible to introduce a straight speculum into the trachea, and by bending the upper part of the body and head backward and to one side, to push the speculum downward, so that its axis is a continuation of the axis of the lower part of the trachea. This has been described by Schroetter,* and worked out in detail by Pieniazek,† who has removed foreign bodies and also treated locally the mucous membrane of the trachea. By proper light, not only the trachea, but often the whole length of the right bronchus and much of the left can be seen. This is made easier by a modification by Killian ‡ of the methods and instruments of Kirstein. Killian introduces straight specula well into the bronchi, taking advantage of the mobility of the lower trachea and bronchi, which permits considerable straightening, or bringing into line, of the bronchus under investigation. In cases where there has been no tracheal wound he has passed a long straight tube through the mouth and larynx, and even into a bronchus.

The case which I report simply illustrates the ease with which a foreign body, that without this method would be extremely difficult to find, can be removed from a bronchus:

T. J. D., aged twenty-three years, a teamster, was admitted to the Massachusetts General Hospital May 11, 1898, in the service of Dr. A. T. Cabot, who kindly turned the case over to me. The patient had worn a

* Krankheiten der Luftöhre.
‡ Münchener medizinische Wochenschrift, No. 27, 1898.
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tracheotomy tube for twenty years on account of stenosis of the larynx. His last tube was made of hard rubber, and was several months old. Twelve hours before admission the tracheal tube had become detached from the shield and had been inhaled, causing severe coughing and distressed and noisy breathing, which, although less severe, was still present when he was admitted.

Examination by X ray was negative. The patient was etherized and put on his back with the shoulders over the end of the table and the head held downward and rotated to the right side. The tracheal opening was enlarged downward. Not having any other straight tube of the proper calibre on hand, I used a urethroscope half an inch in diameter and three inches long, a little short for perfect examination. This was passed through the tracheal wound with the stylet in place, turned downward, the stylet withdrawn, and the speculum without any difficulty pushed down the trachea to within about an inch of the bifurcation. For illumination a head mirror was used with reflected sunlight, and this illumined the field perfectly.

The foreign body was seen in the right bronchus, the upper end about half an inch below the bifurcation; it was seized with a long pair of alligator forceps introduced through the speculum and removed without difficulty. The patient suffered no ill effects from the operation.

During the whole time respiration was carried on easily through the speculum, except for attempts at coughing at first, which soon subsided. There was no inconvenience from secretion.

The trachea in the adult is from four to four inches and a half in length and from three quarters of an inch to an inch in breadth, being distinctly larger in the male than in the female. A low tracheotomy will cut off perhaps an inch, leaving from three to four inches to the bifurcation.

The histories of cases of foreign body in the air-passages treated expectantly show so large a mortality, especially from septic pneumonia, that I venture to suggest the following rules for discussion:

In case of a foreign body of a size large enough to make it improbable that it has got lower than a primary bronchus, immediate tracheotomy and explora-
tion by means of straight tubes, as large as possible, with good illumination, offers by far the safest course to pursue. If the foreign body is of smaller size, and the physical signs point to its presence in a secondary bronchial tube, operative interference is justifiable if there is a good chance of reaching it after illuminating the primary bronchus, as would be the case especially on the right side.

It should always be borne in mind that a body loose in the trachea is much less dangerous to the patient than the same body impacted in a bronchial tube, and consequently everything which excites violent respiration should be carefully avoided. On this account it is much better to do tracheotomy with cocaine than under an anaesthetic. Neither is it necessary that the patient should be anaesthetized for the introduction of the tracheoscope. In special cases it may be possible to avoid tracheotomy by introducing straight tubes through the glottis from above, but if the foreign body is being rattled to and fro in the trachea it would hardly be justifiable to run any additional risk of its being inhaled. Even when the foreign body is in the larynx, in such a position that there is considerable danger of pushing it downward in attempts to get it out, it may be safer for the patient to do tracheotomy and reach it from below than to run the risk of its being inspired and impacted low down.

It should be added that thorough surgical cleanliness is of vital importance where the principal danger lies in septic pneumonia.

Discussion.

Dr. T. A. de Blois, of Boston: I was very much interested in Dr. Coolidge's paper, in which he intimated that this first operation for the removal of a foreign body in the trachea was successful. I desire to relate an accident which occurred a good many years ago at the City Hospital in Boston in which the foreign body was not removed. It was a case of a child in whom the tracheotomy tube was retained. It seemed as if the vocal cords had become very flabby, and whenever the
tracheal tube was removed the dyspnoea would increase. It was therefore suggested that an O'Dwyer tube be placed in the larynx. This was done, and the child got on very well, but the tracheal wound was still kept open. It seemed as if the O'Dwyer tube was rather small, for the reason that it did not stay in place well, and the next larger size O'Dwyer tube was inserted in its place. The nurse had left the room, when the child appeared to be easy, but had not been gone three minutes after the second O'Dwyer tube was put in before they were alarmed by the coughing of the child, and on examination the tube had disappeared. I made an examination, first with a probe, the child being only half etherized and tossing about a good deal, so that it was impossible to differentiate the sensation of the probe's touching the tracheotomy tube, or whether it touched the O'Dwyer tube in the trachea, because on percussion dullness was elicited about the bifurcation. An oesophageal forceps was introduced, but it was impossible to bend it at a sufficiently acute angle to go through the tracheotomy tube and to get down to where the object was supposed to have lodged; and we were not at all sure that the O'Dwyer tube was in the trachea. The child grew weaker and weaker until efforts at removal were abandoned. The child was about two years old. It rallied a little; pneumonia came on, and death followed at the end of twenty-four hours. It was a very distressing case to me. I believe if the proper instruments had been obtainable and a careful search had been made for the foreign body in the trachea the life of the child might have been saved. I am very glad indeed to hear of the successful removal of a foreign body through the tracheal opening, as in this case of Dr. Coolidge's.

Dr. Henry L. Swain, of New Haven: I am personally very much obliged to Dr. Coolidge for enlightening me on a matter so important to us, and especially to the individuals who are brought to us for our opinion in this line of accidents. We are called upon to decide, when a foreign body is inhaled into the trachea, whether operative interference is necessary to remove it or not. I think what he suggests is a step decidedly in advance of anything I am cognizant of—namely, that with a tube we can look down and see and remove the foreign body from the primary bronchus. I should be inclined to do a little differently in the case I am about to report if I had known of this method of investigating
and operating. A boy, fifteen years of age, while playing with an ordinary putty blower, started to laugh and sucked a dart into his trachea. The accident occurred in a town near to New Haven. The boy was sent by the next train to the city, and I saw him twenty-four hours after the accident. On the evening of the day before the physicians who saw him felt very sure that the body was in the right bronchus. During the night, in a violent fit of coughing, the dart became dislodged, and on the following day, when I saw the case, it had shifted from the right bronchus. There were no auscultatory signs present or anything to determine the presence of the foreign body in that locality. But we located a body on the left side. After going over the case carefully with consultants, we decided that the object was not in the trachea nor in the primary left bronchus, but probably in the middle of the three secondary divisions. Subsequent developments proved the correctness of this interpretation. We had to decide whether an attempt should be made to remove it through a tracheal wound, or whether to allow the foreign body to remain in situ. A third alternative was to open the chest from behind, resect two ribs, get down to the posterior surface of bronchi, and remove the foreign body in that way. The surgeon decided that he did not care to do this. So the case was allowed to go on. After five months, during which the young man twice had consolidation of certain parts of the left lung, which cleared up again, he, in a fit of violent coughing one morning on rising, expectorated the dart, a photograph of which I pass around. Since then he has been gradually recovering from a chronic bronchitis which had become established, and I think he will soon be entirely well. If I had another such case I should be tempted to try the method of Dr. Coolidge, for I believe it might thus be possible to remove the body.

Statistics as to foreign bodies show that by far the majority of them become expelled, either immediately or after a longer time, without operative interference. Dr. Roe pointed this out very clearly in the article he wrote for Burnett’s System.

The case I have cited is merely another of those cases which recover by simply coughing up the foreign body. Probably ulceration had taken place and had dislodged the foreign body from its first situation where it was impacted.
I recall another case which has been told me by some medical friend. A young man had swallowed a shingle nail, which had gone down into the windpipe. He suffered the most excruciating asthmatic attacks for years. One day he was going through a railroad cut utterly oblivious of the fact that trains were approaching in two directions. He stepped out of the way of one train and was quite severely hit by the other, being knocked senseless against the side of the cut. When he recovered consciousness, he discovered that the force of the blow had caused him to eject the nail from which he had for many years suffered, and he is now well.

Dr. C. E. Bean, of St. Paul: Upon hearing the case cited by Dr. Coolidge, I am reminded of the case of a child, three years of age, that I saw two years ago, who had inhaled half of a peanut. I was called in consultation forty-eight hours after the accident and found pneumonia had already developed. The peanut had evidently lodged in the second division of the right bronchus. I performed a tracheotomy, searched for it to the best of my ability, and was unable to find it. I left the tracheal wound open, and treated the resultant pneumonia in the ordinary way. The child had quite a severe attack of pneumonia, which lasted for two weeks, at the end of which time expectoration began rather freely, and one day the piece of peanut suddenly came out. The child made a good recovery. From my experience with two similar cases just before this I had given an unfavorable prognosis to the parents, stating the child would die in probably twenty-four hours after the operation. There has been no recurrence of the pneumonia, and no appearance of any foreign body.

Dr. F. E. Hopkins, of Springfield: If it is in order to report cases in which no operation was done, I will mention that of a child, three years of age, who came under my observation three months after the supposed inhalation of a foreign body, a fragment of a chestnut shell. No one had observed the accident, and the presence of a foreign body was doubted by the medical attendant. The history, however, pointed pretty clearly in this direction; and physical examination located the obstruction in the left bronchus. I advised tracheotomy, to which the parents would not consent, and nothing was done. Four months later—that is, seven months from the date of the accident—the fragment of shell was coughed out.
Dr. John O. Roe, of Rochester: On writing an elaborate article on foreign bodies in the air-passages a short time ago, I started out with the generally accepted belief that a foreign body in the trachea was a very serious thing. But after studying the results in a great many of such cases I came to the conclusion that a foreign body in the trachea was not such a very grave thing after all, and that when it was causing no active or alarming symptoms nor in danger of leading to serious conditions, the best results are generally obtained by letting the foreign body alone, allowing Nature to expel it. This rule holds good in those cases where a body is smooth and round and not of a corrosive nature, for in a short time the foreign body almost always becomes loosened and expelled during the act of coughing. The parts also frequently become very tolerant of such foreign bodies. I found records of cases where foreign bodies were lodged in a bronchus for twenty-five or thirty years, and expelled at the end of that time without any ill effects to the patient whatever.

I recall an interesting case that I saw some time ago, where a child had swallowed a Punch-and-Judy whistle, which became impacted at the lower part of the trachea. It was not small enough to enter a bronchus, and every time the child breathed it blew the whistle. I performed tracheotomy, and with a long curved forceps fished out the whistle.

Dr. M. R. Ward, of Pittsburgh: I wish to emphasize the statement made by Dr. Roe, that the best results in these cases are often obtained by non-operative treatment. I recall a case in point that came under my observation at the Mercy Hospital, Pittsburgh, during the Christmas holidays, a year ago. A child, six years of age, had placed in its mouth a small, hollow glass ornament, globular in shape, such as is commonly used in the decoration of the Christmas tree. By accident it was drawn into the trachea, and in spite of the most violent paroxysms of coughing it could not be dislodged. The foreign body could not be located either by laryngoscopic or physical examination. As there were no urgent indications for an operation, the patient was kept under close observation, when on the third day after admission, much to our surprise and delight, the foreign body was expelled in one of the paroxysms of coughing. I am sure we would have experienced great difficulty in extracting, by operative procedure, such a
fragile body from the trachea or bronchi, even had we been able to locate it.

Dr. A. W. de Roaldes, of New Orleans: Dr. Ward has just made a remark that I can not agree with—namely, in calling our attention to cases getting well generally without operative intervention for the removal of the foreign body. I do not think we should advocate this let-alone policy. I perfectly agree with him in the case of certain foreign bodies which may be so situated that we know a priori they will be difficult to remove; but in a number of cases opening the trachea immediately after the accident gives excellent results. I must confess that in an experience of eight cases I have never failed but once to remove the foreign body. This child had broncho-pneumonia, and the chances were the foreign body could not have been removed by surgical measures. The patient died. The seven other patients were operated upon immediately and made good recoveries. Sometimes it is astonishing how, in a sudden spell of coughing, objects will be thrown out through the tracheal wound by keeping the lips of the trachea opened with threads passed on each side maintaining it wide open. I do not think we ought to place ourselves on record as advocating non-intervention in these cases. I understand very well, and can agree with Dr. Roe and Dr. Ward; that statistics show that a great many patients left alone have recovered; at the same time, when we remember the anxiety of the family, the excitement all around, when a child is brought to us after having inhaled a foreign body, I think it is more prudent to make an effort to remove the foreign body by surgical measures, if necessary, even if the attempt is followed by failure. I really believe now that with the aid of such means of examination as Dr. Coolidge has presented, with which I am not very familiar, an attempt should be made to extract the foreign body, if possible.

Dr. E. Fletcher Ingals, of Chicago: I rise particularly to emphasize the statement made by Dr. de Roaldes, because it seems to me that it would be a great misfortune if this society should place itself on record as favoring the do-nothing policy in cases of a foreign body in the trachea. It seems to me that the laryngologist who does not attempt to remove the foreign body is not doing his duty by his patient, unless the body is very small and smooth. In the case of a small, smooth button, or something of the kind, there would be a good
excuse for delay. But in the majority of cases I think
that laryngologists should adopt the general surgeon's
precepts and open the trachea as soon as possible.

Dr. John O. Roe, of Rochester: I do not wish to be
misunderstood in reference to this matter. I do not
believe in letting all foreign bodies in the trachea alone.
I had reference in my previous remarks to small, smooth
foreign bodies not irritating or corrosive and not pro-
ducing active symptoms. Almost invariably such ob-
jects are sooner or later expelled, resulting in no harm
to the patient. Of course, in a case like that which Dr.
Coolidge has reported, the foreign body should be re-
moved by surgical interference, and I desire to con-
gratulate the doctor on his skill.

Dr. M. R. Ward, of Pittsburgh: Like Dr. Roe, I do
not wish to be placed on record as being unqualifiedly
opposed to surgical intervention in the removal of all
foreign bodies within the trachea. The remarks of
neither of us could be interpreted in that light. We sim-
ply have counseled conservatism, and I wish to reassert
that meddlesome surgery is not unknown to this por-
tion of the anatomy. My own case, and that reported
by Dr. Swain, will bear me out in the statement that
the best interests of the patient are often subserved by
non-intervention. The idea of resecting two or three
ribs, and wholesale mutilation of the lung, in the fruit-
less search of a foreign body that could not be located
previous to operation, does not appeal to the judgment
of a conservative and conscientious physician.

Dr. G. V. Woollen, of Indianapolis: Dr. Ingals
brought out the essential idea in this discussion—namely,
what are the indications for operation?—and this
appertains to any department of our calling. I had a
case just about this time last year of a child who swal-
lowed a grain of corn, the foreign body being lodged in
the right bronchus, and, excepting paroxysms of vio-
lent coughing with some dyspnœa, there was no dis-
turbance. I was called by a competent surgeon who
had all the arrangements made for performing tracheot-
omy and attempting the removal of the foreign body.
I opposed operative intervention, founding my opposi-
tion upon three facts: First, there were no immediate
symptoms; second, the foreign body would probably be
expelled sooner or later; third, we could operate if in-
dications developed demanding it. I therefore declined
positively to operate. The child carried the grain of
corn six weeks. One argument advanced in favor of
operation was that the corn would germinate and swell from moisture and heat and would impact itself more strongly and set up septic trouble. I could not agree to that, although I do not know what the experience of the profession is as to sprouting corn in the larynx. At the end of six weeks the corn was expelled. The germinal portion of the corn had malted, otherwise the grain was as perfect as it ever was. An interesting feature of the case, predicted by me, was that the patient was threatened three times with broncho-pneumonia, but it was easily controlled. I do not believe, however, in the do-nothing policy in all these cases. This point was emphasized by Dr. Ingals. A substance such as Dr. Coolidge removed in his case could not, I think, be expelled by any coughing efforts.

Dr. G. A. Leland, of Boston: I should like to ask Dr. Coolidge if he could see beyond the bifurcation, so that if he had a small foreign body to deal with he could locate it by his instrument.

Dr. G. Hudson Makuén, of Philadelphia: I should also like to ask if the tracheotomy was a recent one, if there was haemorrhage connected with it, or whether he did it through the old tracheotomy wound.

Dr. John W. Farlow, of Boston: Perhaps I can answer the question of Dr. Leland, as I saw the patient before he came under the observation and care of Dr. Coolidge. I saw the larynx plainly, and with a small mirror could see through the tracheal wound. A tracheotomy had been done many years before, and through the tracheal wound with a mirror I could see down into the left bronchus. Without a tracheal tube, such as Dr. Coolidge advocates, it is hardly possible to see beyond the bifurcation. The patient had no symptoms of a foreign body at the time I saw him.

Dr. Coolidge: In this case the tracheotomy was an old one, and for that reason it was perhaps easier to extract the foreign body through the wound; but I see no reason why a tracheotomy done just previously to the exploration should much increase the difficulty or danger. In most cases it could be done deliberately, the bleeding stopped, and everything done aseptically.
EXHIBITION OF A CASE OF STAMMERING, WITH DEMONSTRATION OF THE METHODS EMPLOYED IN TREATMENT.

By G. HUDSON MAKUEN, M. D.

The patient, A. A., referred to me by Dr. Swithin Chandler, of Wilmington, Delaware, is an American, twenty-nine years of age, a college graduate, and a contracting engineer by profession. He has stammered with varying severity since childhood, and he has noticed but little if any improvement during the last few years. His general health is fairly good, although, as you see, he is of the neurasthenic type. He had no acute infectious disease prior to the beginning of his trouble, and he did not have a fright or receive an injury of which he has any recollection. His hearing is good, and there is only a slight ocular irregularity. He had some catarrhal condition of the nose and throat, with small adhesions between the tonsils and palatal folds. There is no history of parental consanguinity, and there is in the family no consumption, insanity, idiocy, deaf-mutism, or other nervous affection.

The chief characteristic of his defect was a spasmodic contraction of the muscles of the soft palate and tongue, resulting in sudden closures, during attempts at vocalization and articulation, of what I have called the posterior palato-lingual chink. These spasmodic contractions were of variable frequency and duration, and they came at the most unexpected times. They gave the speech a peculiar jerky character and sometimes blocked it entirely. Moreover, the defect was more pronounced in reading than in speaking, and he says that when he stammered most in reading or speaking he stammered also in other things. For instance, there was a kind of mental hesitation, and he sometimes could not think connectedly. The affection would seem to be a neurosis and to bear a close resemblance to the diseases known as hysteria and chorea. The location of the neurosis, if we may so name it, varies in different individuals, and therefore it can be determined only by a close study of each individual case, of the kind of stammering presented, and its external manifestations in the peripheral organs of speech. Whatever may be the location of the neurosis, however, it is truth to say that no part of the nervous system...
employed in the use of speech and language can be entirely exempt from its influence; and to a lesser degree, perhaps, it affects the general nervous system.

The question of ætiology in this case is an interesting one. We have no history of stammering ancestors, of association with others who stammered, or of nervous shock as the result of fright, injury, or the infectious diseases of childhood. In fact, there seems to have been no incident in the early life of the patient or in the life of his ancestors to which we can trace the origin of the affection. It began with the inception of the development of speech and under no apparent extraordinary conditions of environment. The child was either born with a neurosis of the motor speech tracts in the central nervous system, predisposing him to the development of the affection, or he must have acquired it between the time of birth and the beginning of the formative speech period. The theory that this neurosis was congenital is strengthened by the fact that a younger brother was saved from being a stammerer only by the most careful management. We may suppose, therefore, that both were born with a predisposition to stammer, and that this predisposition may have been transmitted by inheritance through several generations. In substantiation of this theory, it is not necessary to elicit a history of stammering ancestors, but only a history of an ancestral tendency to stammer. This history is difficult to get, although there are probably few people who have not experienced at some time or other a more or less well-marked tendency toward hesitation in speech. The disposition to stammer is more general than we suppose, and it is quite possible that more of us would yield to it if our powers of resistance were less strong.

The younger brother was successfully guided over the critical period and thus helped to escape the development of the affection; while our patient, with the same treatment, perhaps, but with less powers of resistance, succumbed to it and was held in its grasp for almost thirty years. He has been set free, but the disposition to stammer still remains, and for him to eradicate it entirely may require years of patient effort.

While the characteristic spasm of stammering was most marked, as I have said, in the posterior palato-lingual chink, the primary neurosis was located in the nerves supplying not the muscles in the region of the pharynx, but the muscles supplying the respiratory or-
gans; and the pharyngeal spasm was secondary or reflex and due to an overflow of nervous energy from the respiratory and vocal mechanisms. A certain amount of breath is always required for the production of voice, and it is only by the accurate control of the breath that the vocal element so essential to speech can be supplied synchronously with the articulatory effort.

There was in the case under discussion what Dr. Wyllie has called a lack of promptitude in the vocal element of speech, and the stammering was the result of an attempt to articulate something which at that particular instant did not exist. It was as if the bow hand of the violinist should suddenly cease to operate simultaneously with the string fingers; and as if the string fingers should try, by increased energy of action, to compensate for the delinquent bowing. This forced and unnatural fingering has its counterpart in the spasmodic action of the articulatory and other muscles of the stammerer. In both cases there is an overflow of energy into the nerves supplying the overacting muscles, and this overflow of nervous energy is the result of an attempt to do the impossible—namely, to discourse music after the bow hand has ceased to work and to articulate voice when no voice is forthcoming. It is the effort to play, in the one instance, and to speak, in the other, that causes this overflow and its resultant spasm. The stammerer is struggling to speak, and the amount of muscular spasm is in proportion to the degree of the struggle.

In normal speech the action of the muscles is entirely automatic, and when, for any reason, one or more of the three mechanisms employed fails to perform its functions, this automatic action becomes impaired, and it is the effort to control the lagging mechanism and to bring its action into harmony with the other mechanisms that constitutes the chief difficulty of the stammerer.

In the case before us the respiratory mechanism was at fault. There was an irregular and spasmodic action of the muscles that control the breath (this could be seen, of course, only by stripping the patient to the waist), and to restore these muscles to their normal action we resorted to what may be called direct nervemuscle training. The method generally employed has been an indirect one. They both have in view the development and establishment of correct automatic muscle action. The indirect method aims to do this by
leading the patient unconsciously, by means of approximately correct speech, to use the muscles properly; while the direct method endeavors to single out the muscles, the action of which is faulty, and then by voluntary exercise of these muscles establish correct action.

The advantage of the latter method over the former is that it tends to develop the nervous as well as the muscualr system and to establish a volitional control over the faulty mechanism. The method by indirect muscle training leaves the patient with no sure ground to stand upon. He may be led either by judicious exercises, or even by the tricks of the charlatan, into smooth and untrammelled speech, but the slightest accident may destroy his confidence and cause a return of the trouble. Thus it is that so many relapse after having been apparently cured.

Barring some organic lesion or the development of some new aetiological factor in the case, the patient before you will never stammer again, because he knows how to control that particular mechanism of speech that has hitherto been responsible for all his difficulty. He can use the respiratory mechanism with as much precision and accuracy as he can flex his forearm, and not only so, but he can will to do this. Occasionally we find one who learns to control the various mechanisms of speech, but who can not learn to will to do it at the right time; and unless this volitional faculty can be restored or developed the case is hopeless.

The essential parts of the respiratory mechanism are, first, the bony thorax, or cage, as it has been called, consisting of the ribs on either side, articulating posteriorly with the dorsal vertebrae and anteriorly with the sternum; second, the muscles regulating the size of the thorax; and third, the nerves supplying these muscles.

The muscles may be divided into two sets, according as they elevate or depress the ribs; the action of one set being in direct opposition to that of the other. The levator muscles are inspiratory and the depressor muscles expiratory, and in order that there may be a sufficient and prompt supply of breath to meet the demands of the vocal element in speech, there must be a perfect balance between these two sets of muscles, just as for good vision there must be a perfect balance in the action of the extraocular muscles, and for good voice, in the action of the extralaryngeal muscles.

In the case of our patient there was a decided lack
of extrathoracic muscle balance, resulting in an irregu-
lar and intermittent breath supply. In other words, 
the motor power for the running of the vocal machinery 
of speech was defective; and it was to the mechanism 
supplying this motor power that our attention was 
directed. It was the action of the diaphragm that 
was specially faulty, and the first step in our treatment 
was an effort to bring this muscle under control of the 
will. Ordinarily, its action is involuntary and auto-
matic, but a very little effort suffices to render it vol-
untary, and thus by practice to bring its action into 
harmony with that of the other important muscles of 
this mechanism. It must be remembered that the 
function of the diaphragm in the control of breath for 
vocal purposes is somewhat different from its function 
in ordinary breathing. Its slight contraction in nor-
mal automatic breathing serves to enlarge the thoracic 
cavity in a vertical direction, and thus it may be called 
an inspiratory muscle; but its stronger contraction, in 
addition to slightly depressing its arches, serves to pull 
down the ribs to a marked degree, and thus it becomes 
for voice production one of the chief expiratory muscles.

The downward pressure of the diaphragm upon the 
viscera is checked by the contraction of the abdominal 
muscles, and therefore these latter muscles must be 
trained to oppose the action of the diaphragm, and it 
is the perfect balance between these two opposing forces 
that controls the breath supply to the vocal mechanism 
with so great accuracy. The patient was taught, there-
fore, to compress the abdominal viscera by means of a 
voluntary action of the diaphragm and abdominal mus-
cles and to make this compression greater or less ac-
cording to the strength or intensity of the tone required. 
Exercises were given also for the voluntary control of 
both the levator and depressor thoracic muscles inde-
pendently of voice or breath; that is to say, the patient 
was taught to pull the ribs alternately up and down by 
volitional effort; and then the same exercise was prac-
tised with the use of the breath, care being taken to 
use only one set of muscles at a time, the other set 
being wholly relaxed. For instance, in inhalation, only 
the up-pulling muscles should be used, because the con-
traction of the down-pulling muscles at this time would 
ot only interfere with a rapid and full inhalation, but 
it would also increase unnecessarily the required mus-
cular effort.

The next step was to combine this newly acting
mechanism with the vocal mechanism. In this process the inhalation is the same as that described above—that is, it is caused by the contraction of the up-pulling muscles only—but the exhalation, when the vocal element is added, is the result of the combined action of both the up- and down-pulling muscles, and the coordination of these two sets of muscles must be such as to regulate the breath with the greatest nicety as regards both its quantity and its strength.

When the patient was able to control the muscles of the respiratory mechanism in this manner and coordinate it with the vocal mechanism in the production of elementary sounds, he was instructed to carry the same principle into the enunciation of syllables and to use in all his speech what Alexander Melville Bell has called the method of syllabication. By one voluntary impulse for each syllable he was enabled to throw the entire machinery of speech into correct physiological action, and then, by frequent repetitions of this process, the ability to enunciate any syllable was acquired; and as soon as the patient learned by experience that he could do this he was practically cured. It only remained for him to make the entire process easy and natural by persistent practice. As you will see, he has not only overcome his difficulty, but he has at the same time acquired a more effective manner of speech.

Paper.

ACUTE SUPPURATIVE PROCESSES IN THE FAUCIAL TONSILS.

By J. L. Goodale, M. D.

In January, 1899, the writer read before the Boston Society of Medical Sciences a preliminary communication concerning a pathological lesion found in four out of sixteen cases of acute amygdalectomy, characterized by the presence of intrafollicular abscesses, occurring as complications of the usual proliferative changes. Since then four additional cases have come under personal observation. In the paper referred to the histological lesions alone were described in detail. The purpose of the present communication is to review the eight cases
that have thus far come to hand with regard to their main clinical and pathological phenomena. It was hoped that a study of them might throw some light upon the following subjects:

I. The aetiological relationship of these intrafollicular abscesses to special micro-organisms.

II. Their relationship to peritonsillar inflammation.

III. Their prognostic significance and the possibility of recognizing their presence from clinical appearances.

In each case notes were made with regard to the following points:

1. The clinical history.
2. The macroscopic appearance of the tonsils.
3. The micro-organisms cultivated from the surface of the tonsil previous to excision.
4. The histological phenomena, with special reference to (a) the intensity of the proliferative phenomena, (b) the number and size of the suppurative foci, (c) the amount of fibrinous exudate in the crypts, and finally (d) the number and character of the leucocytes in the interfollicular lymph channels and connective-tissue spaces near the base of the organ.

Technique.—The tonsil, after excision, was immediately cut vertically to its base into a series of slices, each of about five millimetres in thickness. Each slice was laid between two strips of paper in order to preserve its outlines during the process of hardening. The slices were then placed alternately into Zenker's fluid and alcohol. The Zenker specimens were stained by eosin and alkaline methylene blue, which differentiates the various cells better than any other stain known to the writer. The lymphoid cells become deep blue; the endothelioid cells of the reticulum and the endothelial cells of the blood-vessels are stained a pale pink; the epithelioid phagocytes are conspicuous through their digestive vacuoles, incorporated substances, and deeper pink cytoplasm. An abscess in the centre of a follicle can be immediately recognized by the bright red color
of the cytoplasm of the polynuclear neutrophiles, forming a sharp contrast with the light pink cytoplasm of the surrounding endothelioid cells. If, however, alcohol or corrosive hardening be employed in place of Zenker’s fluid, the cell outlines are so altered and the selective affinity of the cells for the stain rendered so poor that it is often difficult to recognize small abscesses or even to differentiate the endothelioid cells and the epithelioid phagocytes. In staining for bacteria by Gram’s method, alcohol hardening remains preferable, since Zenker’s specimens do not permit a satisfactory decolorization of their nuclei.

Case I.—A lad, twenty years of age, amygadalitis of six days’ duration, with moderate constitutional disturbance. Tonsils moderately reddened and enlarged with considerable exudate in the crypts. Circumtonsillary region showed no reddening or swelling. Cultures showed streptococci and staphylococci equally abundant. Histologically one of the tonsils exhibited a marked proliferation of the endothelioid and lymphoid cells, an occasional small intrafollicular abscess, and a slight amount of fibrinous material in the crypts. The interfollicular lymph channels and the fibrous-tissue spaces near the base of the tonsil showed an increased number of lymphoid cells and polynuclear eosinophiles, but few or no polynuclear neutrophiles.

Case II.—A lad, twenty years of age, came with acute reddening and swelling of the tonsils, associated with moderate constitutional disturbance of two days’ duration. A small amount of exudate was present in the crypts. The peritonsillar region was normal. Cultures showed numerous colonies of Streptococcus pyogenes, with a few of Staphylococcus pyogenes aureus. Histologically, the tonsil exhibited marked proliferative lesions, with an occasional suppurative focus in the interior of a follicle. A moderate amount of fibrin was present in the crypts. No multinuclear neutrophiles were seen in the interfollicular lymph spaces or in the connective-tissue spaces near the base of the organ.

Case III.—A man, twenty-five years of age, subject to recurrent and severe attacks of amygadalitis, came with fever, joint pains, and general prostration of two days’ duration. The tonsils were enlarged, red-
dened, with dilated crypts filled with exudate. The peritonsillar region appeared normal. Considerable swelling of the angular cervical lymph glands was present. Cultures showed numerous colonies of *Streptococcus pyogenes*. Histologically, the tonsil exhibited marked proliferation of the endothelioid and lymphoid cells, with a considerable number of small intrafollicular abscesses. A moderate amount of fibrin was present in the crypts. No multinuclear neutrophiles were seen in the interfollicular lymph spaces or connective tissue near the base of the tonsil.
Case IV.—A girl, fifteen years of age, with fever and constitutional disturbance of several days' duration, showed considerable reddening and enlargement of tonsils, with exudate in the crypts and several subepithelial white streaks and spots. The circumtonsillar re-

Fig. 2.—(Zeiss, planar objective, twenty millimetres, No eyepiece.) Section through tonsil near base from a case of intrafollicular abscess formation, associated with circumtonsillar suppuration. The interfollicular lymph spaces are crowded with multinuclear neutrophiles in company with a smaller number of lymphoid cells. Endothelial proliferation is markedly increased, as shown by the numerous large phagocytes in the interior of the two follicles at the top of the figure.

gion was normal. Considerable acute cervical lymphadenitis was present. Cultures showed colonies of *Streptococcus pyogenes* and staphylococci. Histolog-
ically, the tonsil showed marked proliferative changes, with a moderate number of intrafollicular abscesses. The crypts contained unusual numbers of streptococci and considerable fibrin. The lacunar mucous membrane showed extensive necrosis. No multinuclear neutrophiles were seen in the interfollicular lymph channels or in the connective-tissue spaces near the base of the tonsil.

Case V.—A girl, fifteen years of age, came with fever and sore throat of two days' duration. The right tonsil showed considerable swelling and reddening, with much exudate in the crypts. The circumtonsillar region was normal. Cultures showed colonies of *Streptococcus pyogenes* and staphylococci. Histologically, the tonsil exhibited marked proliferation with numerous small foci of suppuration in the follicles. A moderate amount of fibrin was present in the crypts. No multinuclear neutrophiles were found in the interfollicular lymph spaces or in the efferent lymph channels.

Case VI.—A boy, twelve years of age, came with constitutional disturbance of four days' duration, and showed reddened and swollen tonsils, with exudate in the crypts and subepithelial white spots. The peritonsillar region was normal. Cultures showed numerous colonies of *Streptococcus pyogenes* and staphylococci. Histologically, numerous intrafollicular abscesses were seen, some small and others discharging their contents into the crypts. The crypts contained a large amount of fibrin. No multinuclear neutrophiles were found in the interfollicular lymph spaces or efferent lymph channels.

The two following cases showed in addition to the amygdalitis also circumtonsillar inflammation:

Case VII.—A man, twenty-five years of age, came with pain in the right tonsillar region of five days' duration, associated with constitutional disturbance. The right tonsil was much enlarged and reddened, with exudate in the crypts. The circumtonsillar region was reddened and slightly swollen. The right angular cervical lymph glands were enlarged. Cultures showed numerous colonies of *Streptococcus pyogenes*. Histologically, the tonsil showed numerous foci of suppuration within the follicles, some small, others discharging into the crypts. The efferent lymph channels contained a considerable number of multinuclear neutrophiles in addi-
tion to the lymphoid cells and multinuclear eosinophiles ordinarily found there.

Case VIII.—A man, twenty-four years of age, came with pain and swelling in the tonsils of four days' duration, associated with constitutional disturbance. The circumtonsillar region on the left was reddened but not distinctly bulging. The left tonsil was markedly reddened and swollen, with a moderate amount of exudate in the crypts. In the centre of the exposed surface of the tonsil was a circular excavation about five millimetres in transverse diameter, with ragged, gray, necrotic-looking margins, containing much puriform foetid mate-
rial. The left cervical lymph glands were swollen. Histologically, the left tonsil showed marked proliferative changes, together with a number of intrafollicular abscesses. In the region corresponding to the macroscopic excavation was a collection of polynuclear neutrophiles, lymphoid and plasma cells, with much unrecognizable detritus extending from the free surface of the tonsil to its base, bordered laterally by the greatly swollen endothelioid cells of the reticulum. In the deeper portion of the tonsil, and communicating with the area just described, was a dense collection of multinuclear neutrophiles. The condition appears to be a deeply seated intratonsillar abscess of considerable size, discharging chiefly externally into the throat, but also to a certain extent into lymph spaces running to the base of the tonsil.

The phenomena of these eight cases may be summarized thus:

I. In cases with numerous intrafollicular foci of suppuration the Strep tococcus pyogenes was found to be more abundant than forms of staphylococci.

II. The intratonsillar abscesses were found in two cases with and in six cases without circumtonsillar inflammation.

III. The cases represented clinically a severe infection, as shown by the fever, constitutional disturbance, joint pains, and acute cervical lymphadenitis. They unquestionably showed as a whole more disturbance than was present in twenty cases of simple proliferative amygdalitis observed by the writer.

IV. The tonsils in most cases presented no clinical appearance that would enable one to determine the presence of the intrafollicular abscess. In a few cases subepithelial white spots were seen, which were conjectured to be abscesses situated immediately beneath the epithelium of the exposed surface.

V. Histological phenomena:

1. The suppurative foci were few in some tonsils and numerous in others. They varied often in size in the same specimen, being in some follicles small and barely recognizable, in others occupying most of the interior of the follicle, while in still others the abscesses
Acute Suppurative Processes in the Fauclial Tonsils. 51

were seen to have already broken through the lymphoid ring and to have discharged their contents into the adjacent crypts.

2. The amount of fibrinous exudate in the crypts was more marked in these cases than generally exists in simple proliferative amygdalitis.

3. In the six cases not attended by circumtonsillar inflammation, the interfollicular lymph channels and connective-tissue spaces near the base of the tonsil con-

Fig. 4.—(Zeiss, apochromatic objective, eight millimetres. No. IV projection eyepiece.) A portion of Fig. 2, more highly magnified, showing the multinuclear neutrophiles in the lymph channels, which are lined by swollen and proliferating endothelium.
tained few or no polynuclear neutrophiles. On the other hand, in the two cases accompanied by peritonsillar inflammation the connective-tissue spaces and adjoining reticulum were crowded with polynuclear neutrophiles, and in one of these cases these cells were seen to extend in direct continuity from an abscess situated in the interior of the tonsil toward the base of the organ.

The number of cases thus far observed is too small to justify definite conclusions regarding their ætiology or significance. Nevertheless, the following hypotheses suggest themselves as possessing a reasonable degree of probability:

I. The pyogenic infection of the follicles is probably secondary to a previous infection of the crypts by the *Streptococcus pyogenes*. This assumption is based upon the results of the cultures, upon the different age of the abscesses, as observed in the same tonsil, and also upon the fact that a marked proliferative inflammation may exist for several days and the tonsil show on excision only a few incipient abscesses. If the follicular infection were of embolic origin we should expect the abscesses to be more nearly alike in size and to antedate the proliferative inflammation.

II. In the two cases accompanied by circumtonsillar inflammation this complication may have been due to the discharge observed of an abscess into the efferent lymph channels.

My thanks are due to Dr. J. H. Wright, director of the laboratory of the Massachusetts General Hospital, where the histological portion of this work was done.
In the spring of 1893 it was my privilege to present a paper to one of the medical societies of Boston on Recurrent Tonsillitis,* in which was elucidated a method of reduction of the tonsils, and especially of the large (or small) lacunal (B. Fraenkel) variety, by the method of "discission," first suggested by Hoffmann, who performed the operation by means of a stiff probe. One of the cases there reported was of recurrent abscess, in which for many years the patient, a woman of thirty or thirty-five years, had suffered untold misery lasting over a period of weeks at every attack. After having reduced the tonsils by the above-mentioned operation to the normal size, at about the regular expected time, another attack occurred. A large crypt, evidently not previously reached, was involved and the tonsil was slightly enlarged in a circumscribed area. This crypt offered some resistance to the right-angled knife, but a small amount of pus was evacuated. Nine hours after a messenger appeared, saying that the old trouble seemed to be coming on. The incision was found but partly open, with a very little pus exuding, the whole region taking on more marked inflammatory action. The incision was enlarged, and with some persuasion the patient allowed me to introduce my finger into her mouth for the ostensible purpose of determining the extent and consistence of the swelling. The opening was found with the tip of the finger, which with some pressure made its way into a cavity as large as a filbert, whose walls were hard and resisting, like those of a small rubber ball. On withdrawing the finger, the opening was torn downward as much as possible and thus greatly enlarged, and the contents of the cavity

* Boston Medical and Surgical Journal, October 12 and 19, 1893.
thoroughly evacuated, much to the distress of the patient, it may be added.

Judging from her former experiences, she expected several weeks of dire illness, and insisted that she be visited on the following morning; when, instead of finding her in bed with saliva drooling from open mouth, muffled voice, and great constitutional disturbance, she was up and about, attending to her household duties as usual, having slept well during the night, and very comfortable. And she has not had another attack from that day to this—i.e., since May 31, 1893.

The experience in this case has led me to use this instrument of Nature, the sterilized index finger, to make many clinical observations in cases of tonsillar or circumtonsillar suppuration, with observations which, in the absence of autopsies in such cases, where death does not often occur and where the lesions are in such a locality that careful dissection can not easily be made, not only appear to be interesting, but which may be turned to valuable account.

This method of digital exploration has thrown some light on the aetiology of this affection; it seems to show conclusively that circumtonsillar inflammation most frequently starts from within the tonsil, in one or more of the lacunæ, and is an extension of the supplicative process in the direction of the least resistance, as is the case with abscess formation in other localities. This conclusion I had arrived at some years ago, and am glad to see it confirmed by Moritz Schmidt in his edition of 1897,* lately come to hand, where he says that, according to his experience, it (peritonsillitis) arises almost only from tonsil plugs; that these take on suppuration from streptococcus infection, and that the products find their way outward into the peritonsillar tissue.

This process is further elucidated by Dr. G. Finder, of Berlin,† in his article Zur pathologische Anatomie der

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* Die Krankheiten der oberen Luftwege, p. 289.
† Fraenkel’s Archiv für Laryngologie und Rhinologie, Band viii, Heft 2, p. 354.
Tonsille, when he shows that by swelling of the epithelial lining of one or more of the crypts and by other changes the outlet may be closed, so that it may not be found even by microscopic examination; that then the contents of the crypt, consisting of epithelia, lymph corpuscles, mucus, and micro-organisms, go on increasing till the crypt becomes an encysted abscess. The disease first appears then as a tonsillar abscess, which may burst or be evacuated inward into the faucial space, or it may extend outward into the peritonsillar tissues.

In the case mentioned at the beginning of this paper, the extreme severity and long duration of the attack, extending through a period of many weeks, make it certain that from tonsillar it became circumtonsillar, and this course is described by A. Rosenberg.*

Formerly, and even now, exposure to cold, rheumatism, etc., were, and are, mentioned by most English-speaking writers as the principal cause of this disease, but since bacteriology has opened up its new fields and given new aspects to pathological processes the septic origin is recognized as the proper explanation and the former causes put down as simply reducing the resistance of the tissues.

Now, by the use of the finger tip after the tonsil has been split by the sickle knife, the enlarged and distended crypt can be frequently made out and the sinus followed upward and outward through the tonsil into the circumtonsillar cavity, which may be found either to be small above it or enlarged downward outside of the tonsil and even below it. And I have frequently been able to determine the exact size of the abscess cavity in this way; and in large ones to pass the tip of the finger down outside of the tonsil to its lowest limit; and then, in order to give proper exit for the pus at its lowest level, to complete the operation by tearing through the tonsil inward into the throat, thus passing the finger nearly around and through the organ. Of

course, if the cavity has not begun to bag downward, such a large wound is not necessary, the exit being made only large enough to empty the abscess from the bottom. I have tried a blunt stiff probe for this purpose, but have not been so well pleased with it.

After having repeatedly punctured the velum palati, according to the universally recommended method, many times in the vain search for pus (in one case twelve times), much to my own embarrassment and the patient's discomfort, the success of this method in finding the pocket, be it small or large, has given me the greatest satisfaction. With it there is no danger of wounding the branch of the ascending pharyngeal artery in the anterior pillar of the fauces, the carotid lying outside of the abscess cavity not being within reach.* To be sure, this method is productive of a great deal of pain, though its addition to that already being suffered by the patient may not be great. And when desirable or demanded by the patient, a whiff of ether may be given, in the proper (Rose) position, to relaxation of the jaws (an important consideration), when the operation may be conducted without pain even before complete primary anaesthesia has been attained.

Another advantage may be alleged for this method —viz., that it drains the abscess from the bottom. The usually advocated method of opening at the place of pointing, even though the incision be enlarged by the probe, as advocated by Bosworth and others, or by the finger, as mentioned by Stoerk (which Max Thorner says is certainly a very painful procedure †), must frequently, if not always, open the cavity at or near the top. This operation may sometimes leave an objectionable scar, but especially does it leave problematical the complete granulation of the cavity from the bottom, which may be an ætiological factor in the recurrence of this distressing affection. In the cases operated upon which I have been able to follow there has been

† Article on Acute Pharyngitis, Burnett's *System*, vol. ii, p. 264.
no recurrence, and though their number is too small for definite conclusions, and the time since operation too short, still it is a satisfaction that with some the usual period has elapsed without an attack.

Another advantage possessed by this method is the very quick recovery. True, the evacuation of pus is the turning point in almost every case by whatever method; but, as a rule, the patients thus operated upon are able to swallow liquids in six hours and solids in twelve, and some of them have been well enough to be discharged from the hospital the next day. This saving of time is of much value to those in all walks of life where time is of importance, not to mention the suffering entailed on waiting for several days or even weeks for the abscess to burst, when numerous and frequent proddings have failed to locate pus.

A newsboy, sixteen or eighteen years of age, came to the clinic last fall presenting the unmistakable facies and attitude of a sufferer from this disease. He was a Hebrew from the White Czar's dominions, and so prone to make a great disturbance. The tonsil was quickly split under illumination, and the patient placed in a firm chair. One assistant was stationed at each extremity to be ready to hold it firmly, and one behind to get on to his shoulders and hold him in the chair. I then got his head in chancery, and, the mouth being held open with a gag, the finger was made to thoroughly traverse the course of the suppuration and was then torn out through the tonsil. Considerable pus and blood were evacuated. After gargling freely with hot water, he left the clinic expressing himself as much more comfortable.

The second morning after I met a lively boy on the street corner, unrecognizable as the patient of two days before. He came up and said, "Good morning, doctor. Throat all right to-day. Have a paper?"

A student, G. T. S., twenty-three years of age, came to my office on November 10, 1897, with the unmistakable attitude of faucial phlegmon, this being the sixth
attack since he was fourteen years old. The previous March an attack involved both tonsils, each lasting a week. Both tonsils were found enlarged, the left, the seat of the greatest swelling, with pus bathing the inner surface and exuding from the lacunæ. The attack began three days before; the patient was much reduced, and the jaws could be but very slightly separated. Hence the left knife was used to enter the tonsil, and the right knife to enter this incision and to cut upward into the substance of the velum between the pillars, where it seemed to enter a cavity, from which and from the tonsil a moderate amount of pus was evacuated. Instead of waiting two or three days for the subsidence of some of the swelling, as advised, he appeared the next day to have it thoroughly opened up. The tonsil was then split from top to bottom, and the left index finger introduced into the incision passed upward and outward into a large cavity which extended downward outside of the tonsil, seemingly below its inferior boundary. The finger was then twisted inward through the substance of the tonsil into the throat and all the tissues torn through down to the bottom of the cavity. Hæmorrhage was quite copious, perhaps two or three ounces, and from four to six drachms of pus evacuated.

The patient expressed himself as much pleased that for once the abscess had been thoroughly opened, saying that it never had been before, though it had often been punctured; and although it was somewhat severe at the moment, that he felt immediate relief and could open the mouth much wider than before.

On the fourth day after he again appeared, the change in his appearance being most marked, and said that he had never had such a quick recovery. The other tonsil had also subsided. On the ninth day after the operation the cavity was nearly obliterated, it having been treated by application of equal parts of tincture of iodine and glycerin. Sometimes this after-treatment is of service to insure healing from the bottom, the application being made with a stiff cotton-wound probe well into the bottom of the wound.

A gentleman of forty-five (?) years of age, in a hotel near my office, had an alveolar abscess from a dead tooth. His dentist, in treating it, found also antrum disease. During a course of syringing of the antrum by the dentist a circumtonsillar abscess developed. After a week or ten days of extreme suffering from pain, starvation, and insomnia, till he was a perfect
wreck, I was called. The faucial space was nearly obliterated by the swelling of a right-sided peritonsillar abscess. The jaws could scarcely be separated. Under illumination the sickle knife evacuated through the tonsil a large quantity of fetid pus. The finger was then introduced, and the cavity extending far outside of the tonsil was torn through from the bottom. He slept considerably that night, went out to get a shave the next day, and rapidly recovered; and a month afterward the parts had healed so that there was no sign of the disease or operation; and it sometimes seems strange how so much destruction can be so completely repaired.

Sometimes, after passing through the tonsil, the finger brings up against a tensely filled cavity, which it is impossible to enter; this, however, may often be opened in the same way the next day or so, or the probe point of the knife can be forced through by pressing it upward and outward. This starts the pus, which makes subsequent procedure easy, and the pus may be reached before the extreme swelling usually seen is attained. One case of fatal termination should be mentioned in this connection:

Five or six years ago I was called in consultation to a case of this nature of extremely aggravated type in a large, strong Irishman, who had suffered about a week. With his attending physician's help he was etherized, the tonsil split, and the finger introduced. It was impossible to break through the abscess wall. He was much more comfortable afterward, probably from the depletion and reduction of the tonsillar swelling. Against orders, he was removed from his boarding house to a suburb, out of our reach. The next night, twenty-four hours after our operation, he retired, expressing himself as very comfortable and thankful for what had been done. About an hour afterward a relation entered his chamber and found him breathing heavily. Five physicians were summoned: death ensued before they arrived. There was no autopsy. I am perfectly confident, in the light of subsequent cases, that the sac could have been entered the morning after we saw him.

In a series of cases at the hospital treated by this method, the house officer, Dr. Fitzgerald, finds that if
opened at the start they were discharged as "well" on the following day, and that other cases averaged two days; while in those cases treated by the old method on other services, four opened spontaneously, and one case is mentioned where, after prodding by the old method, it yet opened spontaneously—all after days of tedious and painful waiting.

It is not asserted for this method that it is new or original, for one of our older surgeons, Dr. W. P. Bolles, told one of my volunteer assistants that the surgeons of fifty years ago always used to open circum-tonsillar abscesses with the finger, in all likelihood not through the tonsil, however; but it is maintained that it is thorough, that it can be made painless under slight general anesthesia, that the opening is made through diseased tissue, that the pus tract and cavity can be found earlier than by the old methods, and that thus much time and suffering are saved.

Paper.

SEPTIC THROMBO-PHLEBITIS AS A COMPLICATION OF PERITONSILLAR ABSCESS. REPORT OF TWO CASES.

By M. R. WARD, M. D.

Peritonsillar abscess or quinsy is a common throat affection, and the almost universally favorable prognosis given by the physician in the treatment of this disease is my excuse for presenting the subject for our discussion on this occasion. In fact, so great a medical authority as Trousseau has said, "In my lengthy medical career I have never seen a death from this affection; this fact sufficiently indicates its slight gravity."

While the natural tendency is for the disease to run a favorable course, my personal experience, together with a study of the literature on the subject, has impressed me with the possible fatal complications that may arise in any case, and with the necessity of a more guarded prognosis.
Bosworth has given us by far the most complete account of the rare complications of this disease. He inclines to the belief that the most frequent fatal complication is rupture of the abscess during sleep, the pus entering the air-passages and producing death by asphyxia. The literature, however, would indicate that haemorrhage is the more common fatal complication, and that septic thrombosis, or thrombo-phlebitis, is exceedingly rare. It is to this latter condition that I wish to call your special attention.

It is only within the last decade that pathology in medicine has received a proper recognition. The intelligent physician of to-day no longer speaks of pyaemia as a disease per se, but rather as the result of a well-recognized pathological condition. This being true, I doubt not that many fatal cases of pneumonia accompanying septic processes in other portions of the body were considered simply incidental, regardless of cause and effect.

It is the exception rather than the rule for the specialist to be called upon to treat a case of peritonsillar abscess or quinsy. This disease by custom belongs almost exclusively to the domain of the general practitioner of medicine, where the treatment, if instituted at all, is purely symptomatic; surgical interference is condemned as extra-hazardous; medical, as inefficient; and the patient is usually dismissed with the comforting remark that “the abscess will rupture in a few days, when his suffering will be at an end.” This is usually true, but occasionally a pneumonia intervenes, when the physician is again summoned, and the disease then receives the full measure of his attention and skill. The patient dies, and the death certificate reads, “Death from pneumonia.” The peritonsillar abscess has been entirely overlooked as an aetiological factor in the death of the patient.

This, you may say with Trousseau, does not occur once in the lifetime of a physician. But when I tell you I have to report at this meeting two fatal cases of septic thrombo-phlebitis as a result of peritonsillar abs-
scess, and both occurring within a period of four months of each other, you will doubtless agree with me that the usual favorable prognosis given in this disease should be distinctly qualified.

The evolution of sinus thrombosis, cerebral and cerebellar abscess, as a result of mastoid suppuration has been slow but sure. To-day the aurist and neurologist are fully awake to the possibilities of such complications, and, judging from the number of published cases during the last few years, the condition is not of infrequent occurrence.

An infective process in any portion of the body is liable to produce a general infection. This takes place either through the lymph or blood channels. When the infection is conveyed through the blood channels we generally have to deal primarily with a thrombosis or thrombo-phlebitis. The thrombus is usually found in the veins, in close proximity to the seat of the primary infection, though not necessarily so.

The conditions favorable to thrombosis are alterations in the blood current, change in the vessel walls, and alterations in the blood itself. Any one or all of these conditions may be present in a given case.

The slowing of the blood current from narrowing of the vessel by pressure from the inflammatory products without predisposes to the formation of thrombi.

The infection may be conveyed either along the lumen of the vessel or by contiguity of tissue through the inflammatory process. The walls of the vessel become inflamed and thickened, the blood coagulates and adheres to the vessel walls, and the thrombus is thus established. The clot, when infective, does not become absorbed but soon disintegrates, producing a fluid of a greenish-brown color and abounding in living organisms. These may enter the general circulation by the disintegrated particles being swept on in the blood current, or they may spread through the walls of the vein into the neighboring parts and be again taken up by the congested vessels. Metastatic abscesses are then formed wherever the infected material finds lodgment. The
lungs are most frequently involved owing to the intricate arrangement of the pulmonary circulation. Infarctions form and give rise to septic pneumonia and, not infrequently, to gangrene of the lungs. The liver, kidneys, spleen, brain, in fact any portion of the body, may become the seat of a secondary infective process.

The number of published cases of infective thrombosis or thrombo-phlebitis as a complication of peritonsillar abscess is exceedingly small. Bosworth,* in his exhaustive treatise on Diseases of the Nose and Throat, devotes a paragraph of five lines to this rare complication, and refers to cases having been reported by Rigal, Didelot, and Kiemann.

A careful review of the literature at my command adds nothing to the list referred to by Bosworth. Breton † gives a published account of these cases, which are of such importance in connection with the subject under discussion that I trust I may be pardoned for giving a brief résumé of each case:

Rigal's case: "Patient, aged twenty-two years, entered hospital November 17, 1882, after an illness of five days. The previous health had been good. The disease began with chilliness, fever, pain in the throat, followed by slight submaxillary adenitis. Examination of the throat showed the left tonsil to be enlarged and glistening. No fluctuation present. Pulse rapid. Temperature, 40.9° C.

"Next day the tonsillar abscess ruptured and discharged a considerable quantity of pus, which was followed by amelioration of pain and decline of temperature. The patient, however, remained markedly prostrated, with persistent high temperature and symptoms resembling typhoid fever.

"Death occurred on the third day after admission, having been preceded by sweats, dyspnœa, and physical signs of pulmonary involvement.

"Autopsy: Both lungs studded with metastatic abscesses. Retromaxillary glands enlarged and purulent. Purulent phlebitis of the deep veins of the neck—viz.,

† Thèse de Paris, 1883. Rare Complications of Phlegmonous Amygdalitis.
the internal maxillary, the internal jugular, and the inferior pharyngeal. The other organs of the body were found in a healthy condition."

Didelot's case: "A soldier, twenty-two years old, admitted to the hospital at Nancy after an illness of nine days. On admission, marked swelling of the right parotid and submaxillary region and of both tonsils, especially the right, so that the isthmus of the fauces was almost completely obstructed. No fluctuation in the tonsils; respiration labored; voice suppressed. A beginning jaundice."

"The symptoms grew rapidly worse, and on the second day after admission the patient died, apparently from asphyxia, though marked evidence of sepsis was present."

"Autopsy: General icterus. The tonsils, especially the right, very much enlarged. Some of the crypts contained a sanguineous pus. No distinct abscess cavity was noticed. The cellular tissues of the palate were infiltrated with pus. Uvula edematous. Posterior section of the tongue show several small collections of whitish pus along the course of the hypoglossal nerve. Purulent phlebitis of the right internal jugular vein, which condition, on dissection, was found to extend into the common trunk of the facial and lingual veins and to the tonsillar plexus.

"No metastatic abscesses of the other organs of the body. The spleen enlarged to three times its normal size."

Kiemann's case:* Under title of Tonsillar Abscess; Death from Pyemia, the following account of the case is taken from the yearly report of the Rudolf Hospital, Vienna, for the year 1881: "R. F., twenty-two years old; single. Had applied for treatment at outpatient department on April 12th. The attack began on previous day with chill, difficulty in swallowing, and general malaise. Examination showed right tonsil enlarged, somewhat swollen, covered with grayish-yellow exudate, easily removed. In one spot a small brown crust, from beneath which, on pressure, a yellow, odorless pus escaped. Cervical glands not enlarged. At this time patient refused to enter hospital as advised.

"On April 15th patient presented himself for the second time at out-patient department suffering from high fever, and in a condition of extreme prostration. Only after long argument was he induced to enter hos-

* * Wiener medizinische Presse, 1882, p. 1520.
Thrombo-phlebitis and Peritonsillar Abscess.

On admission, late in the afternoon, temperature 40.6° C. During the night he was delirious and somnolent.

"Treatment: Quinine, one gramme, and ice pellets.

"Status, April 16th.—Pulse, 120; temperature, 40° C. Patient of medium height, muscular physique, yet extremely weak, somnolent, and delirious. Conjunctiva as well as skin jaundiced. Left tonsil much enlarged, without any covering of exudate, red, glistening, and tense. On pressure, a yellow pus escaped. The cervical glands on left side swollen. At the apices of both lungs faint inspiratory murmur, with full percussion note. At the right base dullness on percussion, and bronchial breathing over an extent of two fingers' breadth.

"Over the left base, for three fingers' breadth, marked dullness on percussion, with feeble breath sounds. Sputum white. Spleen much enlarged. Temperature normal; abdomen soft.

"On account of constipation was given infus. senæ; quinine, one gramme; pellets of ice. Rupture of left tonsil, whereby some yellow odorless pus was emptied. In the evening temperature 40° C. Urine, no albumin, tinged with bile.

"17th.—Delirious during night, very weak and somnolent, responded only to loud words. Marked general icterus of skin and mucous membranes. Pulse fluctuating between 108 and 128, yet powerful. Respiration fluctuating between 24 and 48; temperature, 39° C. From the ruptured tonsil on pressure some odorless yellow pus was discharged. The right tonsil somewhat swollen, yet without any croupous exudate, being only covered with mucus and easily removed pus. The lymph glands on left side of neck decidedly swollen. On right side, posteriorly from the middle of the thorax to the base, percussion note somewhat tympanitic, and marked increase of vocal fremitus. On the left side flatness, for three fingers' breadth, and much weakened breathing. No expectoration. Spleen markedly swollen. Abdomen retracted and soft. Three stools discharged in bed. Urine also passed involuntarily.

"The patient died at 12.15 noon in stuporous condition.

"Autopsy: In the bronchi, sero-mucous fluid. The laryngeal mucous membrane dark red in color, exhibiting occasional ecchymoses. The mucous membrane of pharynx extremely hyperæmic and swollen. Both ton-
The American Laryngological Association.

Tonsils distinctly enlarged; in the left, an abscess about the size of a small nut. The tissues in the neighborhood of the tonsil, as well as the submucous and intermuscular connective tissues of the pharynx and the lymph glands on the left side of the neck, infiltrated with pus. In the left pleural cavity two hundred cubic centimetres of purulent exudate. The left pleura thickly enveloped in a lamellated exudate. In both lungs, especially in lower lobe of right, numerous small abscesses the size of a nut. The spleen about twice its normal size.

"Remarks.—The favorable prognosis, which, on a priori ground, is usually given in cases of tonsillitis and quinsy, and which, on account of the slight local and general manifestations, was given by us in the out-patient department on April 12th in this case, was here ignominiously confounded, for a rapidly developing pyæmia which arose from an abscess cavity scarcely the size of a hazelnut quickly led to extensive lobular suppuration in the lungs, and, being complicated with an extensive phlegmon of the tissues of the neck, terminated in a few days in death.

"It is in this rare case of special interest that only an initial chill marked the onset of the tonsillar abscess, but the rapidly developing pyæmia ran its course entirely without any chill, and only marked by very high temperature, together with an enlargement of the spleen of rapid growth."

The cases I wish to add to the above list are as follows:

Case I.—Mrs. M., aged thirty years, entered Mercy Hospital, Pittsburgh, on February 17th with the following history—viz.: Mother died of tuberculosis. Father, brothers, and sisters living and in good health.

Personal History.—Patient states she has always enjoyed good health until three weeks ago, at which time her present illness began. First noticed pain and soreness in the region of her left tonsil. There was no distinct chill, although she experienced chilly sensation during the first two days of her illness. The pain and swelling in the left tonsil gradually subsided, and after a lapse of three days the right tonsil became similarly affected. Besides the swelling in the throat, there was marked tumefaction and pain in the right side of the neck. She was admitted to the hospital in this condition.
Examination of the throat showed the left tonsil to be apparently in a healthy condition. Pharynx and larynx normal. The right tonsil inflamed, swollen, and having the characteristic appearance of a peritonsillar abscess. There was no exudate on the tonsil, nor could the presence of pus be detected by palpation.

External examination showed a tumefaction of the right side of the neck, extending from the angle of the jaw to the clavicle, exquisitely tender, and to all appearance like a cellulitis. The postcervical glands on the right side were enlarged and tender. The patient could not move the head without great pain, owing to the swollen and rigid condition of the muscles of the neck.

Her temperature on admission, February 17th, was 102° F.; pulse, 112; respiration, 34. Patient complained of pain in right side of chest, had a cough, and expectoration tinged with blood.

Physical examination showed a pneumatic condition of the lower lobe of the right lung, which had probably existed for one or more days. There were diarrhea, vomiting, and symptoms of sepsis. Spleen enlarged. Examination of sputum and urine negative. Patient was perfectly rational and solicitous as to the gravity of her illness. Voice whining. She took liquid nourishment with difficulty.

During the night of the day on which she was admitted there was a distinct chill, after which her temperature rose to 104° F.; pulse, 120; respiration, 40.

February 18th.—No apparent change in the patient's condition.

19th.—Had another chill, after which her temperature was 105° F.; pulse, 126; respiration, 36. Examination of the neck showed the presence of pus beneath the superficial fascia of the neck. An incision was made, and from two to three ounces of greenish-brown offensive fluid were evacuated. The cavity was flushed out with distilled water and packed with iodoform gauze. The patient continued to grow worse, had another chill during the night, and on February 20th an incision was made through the anterior tonsillar pillar and a small quantity of pus evacuated. No communication could be established between the abscesses of the tonsil and the neck.

Bronchial breathing over the middle and lower lobes of the right lung. Expectoration dark brown and fetid. Urine and faeces passed involuntarily. No de-
lirium. Patient still solicitous as to the prognosis of her case.

February 25th.—Other foci of infection in the right lung. Had chills at frequent intervals. Prostration progressive, and patient died February 26th, on the ninth day after her admission to the hospital.

Autopsy: No icterus. Tumefaction of the neck, right side in the submaxillary region, extending as low down as the clavicle, and well behind the ear. Mastoid not involved. Periosteum of the styloid process, axis, and atlas denuded. Cellular tissues of the neck disorganized and broken down. On dissection there was found a thrombosis or thrombo-phlebitis of the internal jugular and the veins leading upward to the tonsillar plexus. A small peritonsillar abscess cavity on right side. Metastatic abscess in middle lobe of right lung. Other foci of infection in the apex and the base of the right lung. Spleen enlarged to three times its natural size. Other organs of the body were found to be normal.

Case II.—H. K., German, aged forty-two years, and shoemaker by occupation, was admitted to the West Penn Hospital, Pittsburgh, October 15, 1898, and assigned to the service of Dr. J. H. Anderson, who has kindly furnished me with the report of the autopsy, as the patient suddenly expired four hours after being admitted to the hospital.

From Dr. Blackly, the family physician, I have obtained the following account of the case:

"I was called to see Mr. K. on October 9th, and found him in bed suffering from a left peritonsillar inflammation; temperature, 102° F.; pulse, 90. On the following day the temperature was 102.5° F.; pulse, 100; fluctuation detected; tonsil incised, and a large quantity of pus evacuated. This was followed by marked improvement, and the next day (October 11th) the patient went out to attend to some business, was caught in the rain and completely drenched. This exposure was immediately followed by a chill and a temperature of 104° F. Throat painful, and an increased swelling of left tonsillar region and tissues of the neck, resembling a cellulitis. Patient delirious and insisted on getting up and going out on the street. Evidence of sepsis from repeated chills and persistent high temperature.

"On October 15th the neck was enormously swollen; temperature, 106° F.; pulse, 160; and in this condition the patient was allowed to travel in a street car a dis-
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tance of eight miles to the West Penn Hospital, where he arrived in an exhausted condition, and expired four hours after admission.

"Autopsy: Abscess in the left peritonsillar tissue which had perforated the palatal muscles, the superficial cervical fascia, and sheath of the jugular vein. Thrombosis and thrombo-phlebitis of the internal jugular vein. Multiple small abscesses of the kidneys. No other evidence of metastasis. Brain not examined."

The case of Blachez, referred to by Bosworth,* is omitted from the above list, on account of the possibility of its being a case of acute infectious phlegmon of the throat. It is published under the title of Phlegmonous Angina, and no mention is made in either the history or autopsy of any distinct peritonsillar inflammation or abscess.

Kiemann does not speak of any venous thrombosis in the report of his case. The history and course of the disease, however, would point strongly to the existence of such a pathological condition, which was in all probability either overlooked or omitted in the report of the autopsy.

Septic thrombosis or thrombo-phlebitis is not a complication which we ordinarily anticipate in connection with a peritonsillar inflammation. This report, however, will serve to show not only the possibility but the serious nature of such a complication, and of the necessity of a more guarded prognosis in the treatment of this disease.

Paper.

REPORT OF CASES OF PERITONSILLAR ABSCESS ASSOCIATED WITH DIPHTHERIA.

BY THOMAS HUBBARD, M.D.

The pyogenic bacteria, streptococci, staphylococci, and pneumococci, are found in the throat in frequent association, singly or in a group, with the Klebs-Loeffler bacilli. The physiological inhibitory processes against

invasion by these bacteria are in striking contrast to each other. The pyogenic cocci are resisted by phagocytosis and the distinctive end product is abscess. Coagulation necrosis is characteristic of the invasion of diphtheria bacilli and the end product is the false membrane.

When we take into consideration the frequent association of these bacteria in apparently pathogenic quantities it is very remarkable that the end processes so rarely coexist. In cases of diphtheria of the mixed infection type the initial inflammatory reaction of tissues of the throat and lymphatic system is frequently such as to lead us to expect deep suppuration or peritonsillar abscess. There is frequently undetected superficial pus formation along with coagulation necrosis, but peritonsillar abscess is a rare complication of diphtheria. In fact, phagocytosis is not a process of tissue resistance characteristic of diphtheritic infection. It occurs incidentally, and is due to bacteria associated with the Klebs-Loeffler bacilli.

It is possible that a mild diphtheritic condition may be entirely masked by a severe attack of quinsy. The clinical records of quinsy throat pareses suggest this, but certainly the occurrence is very rare, as it is not a feature of the literature of the much-studied disease, diphtheria.

Two cases exhibiting both diphtheria and quinsy at the same time came under my observation within a year and seem worthy of record.

Case I.—A farmer, aged thirty years, of temperate habits, and living in healthful surroundings, his home being about five miles from a neighboring town, consulted his physician on May 12th on account of acute amygda litis. He was out and at work in a few days, but his throat again becoming painful, and having had an attack of quinsy a year previously, he remained at home and applied domestic remedies.

He called his physician again about the fifth day after the first visit. The right tonsil was incised and some pus evacuated. He did not improve, and the next day both tonsils and the pharynx were found to be cov-
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pered with false membrane. He was given thirty-five hundred units of diphtheria antitoxine in divided injections. The membrane rapidly invaded the nasopharynx, nares, and larynx. Laryngeal stridor was apparent on the evening of the sixth day and increased alarmingly during the night. He had little fever at that time.

I saw him in consultation about noon on the seventh day. The dyspnœa was so great and had persisted so unremittingly for nearly eighteen hours that he was well-nigh asphyxiated. It was impossible to inspect further than the fauces. A purulent discharge was escaping from somewhere in the throat, and an ichorous discharge came from the nares. The anterior cervical region was much swollen, and even as low as the fourth rib on the right side there was oedema, suggestive of a deep phlegmonous process.

As a preliminary to tracheotomy, to which he eagerly consented, a hypodermic of whisky and strychnine was given. Our preparations for the operation were abruptly cut short by the patient ceasing to breathe, and he fell back on to the bed, apparently lifeless. He was lifted to a table and tracheotomy was quickly performed. Even the free incisions through the congested tissues and thyreoid isthmus bled very little. With the tracheal dilator in place about fifteen minutes of artificial respiration restored the heart's action and respiration, and at the same time a copious hæmorrhage began, which was controlled by packing with gauze, saturated with an iron solution, which he had also been taking internally.

The trachea was in the same condition as the throat —decidedly òedematous and covered with diphtheritic membrane.

His temperature gradually mounted to 104° F., and about eighteen hours later he died, the immediate cause being apparently pulmonary òedema. The thoracic swelling had increased, but the free incisions in the neck had somewhat relieved the swelling in this region.

The wife and two children developed typical diphtheria, were treated by antitoxine, and recovered, one exhibiting throat paresis. In this case suppuration had already taken place when diphtheritic invasion began. The disease then assumed the phlegmonous type, and there was undoubtedly septic phlebitis and rapid extension to the thoracic veins, as well as a descending cellulitis with involvement of the mediastinal lymphatics.
Case II.—The second case presents a general clinical history that very clearly demonstrates the vagaries of mixed infection, the different members of the family exhibiting types of infection ranging from simple sore throat to abscess and fatal diphtheria.

The eldest son of a large family had "sore throat" and remained at home for a few days. Two younger children had attacks of mild amygdalitis, as described by the mother. No physician was called. A few days later a younger daughter developed typical diphtheria and another had quinsy. About four days later the one was moribund from diphtheritic toxæmia and the other had a large peritonsillar abscess with pseudo-membrane over most of the throat. The abscess was incised and a large quantity of pus evacuated. The toxæmic patient died within an hour of my first visit. The other received four thousand units of antitoxine and recovered after a very severe sickness.

A baby sister developed diphtheria of most virulent type and died within two days of the diagnosis.

This series of cases of mixed infection suggests that the virulence of the different bacteria, together with the age and natural resisting power of the patient, determines which type, false or true diphtheria or peritonsillitis, shall predominate.

In cases of this character, where pus is confined beneath tissue covered with a diphtheritic membrane, the question as to the propriety of early incisions is an important one. The more the surface is abraded the deeper will the diphtheritic infection penetrate, and the greater will be the absorption of toxine. We should be guided by ordinary surgical principles and first locate the pus accurately. It should be evacuated only through tissue already devitalized by softening, and vascular tissue should if possible be avoided.

Discussion.

Dr. Cobb, of Boston: I will not take up the time of the society in reading the paper which these photographs illustrate, but will give a brief résumé of it, and then show the photographs. The object of the paper is to call attention to a space lying just outside the fascia on which the tonsil rests as a possible seat of peritonsil-
Discussion on the Last Four Papers.

lar abscess. This space is called by anatomists the pharyngo-maxillary space, and was first brought into clinical prominence by Zuckerkandl in an essay on the relation of the great vessels to the tonsil. Chiari was, I believe, the first to attribute the location of peritonsillar abscess to this space. My attention was called to the study of the location of the peritonsillar abscess by the immediate closure of the punctures, which often occurred in attempting to relieve the condition. It was noticed that punctures, even when successful in obtaining a free flow of pus, often failed to evacuate the abscess, which only reformed to rupture elsewhere. The existence of a deep location for the pus covered by muscles and fasciae running at an angle to each other, so as to close any aperture made by transfixing two or more muscles at a time, would explain this. The depth at which the pus must often be sought strengthens this view, as does the infiltration of the pus into the region of the great vessels, as reported by Dr. Hubbard. To ascertain the direction of the infiltration of the pus if contained in the pharyngo-maxillary fossa, hot wax was injected into the fossa through the tonsil on the cadaver, and, after allowing time for the injection to cool and harden, sections were made through the head at about the level of the palate. These sections were then photographed, and they show the wax penetrating the soft palate and the space both above and below the tonsil. This photograph from Testut’s Anatomy shows the normal appearance of the space, while the others give the appearance of the space when filled with wax. It will be observed that the great vessels are situated in the rear of the space, which is divided into two portions by the styloglossus and stylopharyngeus muscles. It is this partition which usually protects the great vessels from infiltration in peritonsillar cases. Dr. Hubbard’s paper has shown us that it is not always a good protection.

Dr. Swain, of New Haven: I have had the pleasure of looking over the pictures of Dr. Cobb’s and think they are excellent. They impress upon us the points he makes. We see by the photographs that have been passed around what a large space is easily formed by the introduction of wax; consequently, it is easy to assume that this space would readily admit the index finger; and the proposition Dr. Leland makes, of introducing the finger in the manner described by him certainly shows a radical method for breaking up the wall which forms the anterior and inner surfaces of the triangular space, thus aiding in the complete evacu-
ation and cleansing of the abscess. I can readily see that if the operation described by Dr. Leland is done under an anesthetic, nothing more thorough and successful could be undertaken in the way of opening up these peritonsillar abscesses. I have recently had four or five cases come under my care in which the ordinary methods were not very successful, at least as regards locating the abscess cavity.

Dr. T. A. De Blois, of Boston: I can bear witness to the thoroughness with which Dr. Leland does this operation, but I must say that it takes considerable boldness to go thoroughly through the tonsil in this way. There is always some doubt in the patient's mind as to what has been done. He is uncertain in his mind whether it is the finger or the whole arm that is inside of his mouth. (Laughter.) I remember assisting Dr. Leland in one case where the lady said Dr. Leland "got his finger into my mouth and passed it down until it reached almost to my collar bone." This woman had a recurrent tonsillar abscess, and these abscesses recurred for many years until this most thorough operation. I am glad to bear witness to the fact that peritonsillar abscess never recurs after it has been done. I do not think then that there is any part of the tonsil left.

Dr. James E. Newcomb, of New York: Speaking of the clinical side in connection with Dr. Hubbard's paper, it recalls a case which, I presume, many of you have seen reported in the last number of Fraenkel's Archiv by Sendziak, of Warsaw, in which an attack of diphtheria was complicated by a succession of tonsillar and peritonsillar abscesses. One of the faucial tonsils had suppurating tissue around it, then the other; next, the nasopharyngeal tonsil underwent the same process, also the lingual tonsil, and finally the antrum of Highmore became completely inflamed. The point of interest to me was the spontaneous opening of the abscess in front of the lingual tonsil, attended by very profuse haemorrhage. That seems to be a very unusual complication in cases of this kind.

Dr. Swain, of New Haven: I wish to refer to the excellent work of Dr. Goodale in connection with the finer pathology of this subject. I am sure we were all very much interested in his paper; yet it is a difficult one to discuss adequately with impromptu remarks, and I wish I might do greater justice to it. I have frequently wished that, as we follow out our cases clinically, we might be able to say what cases were going to be severe and what cases were going to be comparatively mild.
merely by the surface injection or the amount of membrane on the exterior. But even with all our advances we are frequently compelled to remain uncertain until time permits a definite development. It is pleasant to know that we may operate on acutely inflamed tonsils and not only get as good results as when they are in a quiescent stage, but also that we do not add to the patient’s suffering.

Dr. Goodale (in closing the discussion on his part): I have very little to add. I can only hope that other members of the association will carry on this investigation. The removal of the acutely inflamed tonsil during life appears harmless and comparatively painless when done with the sharp guillotine. It is easier than the removal of the uninflamed tonsil, and the process of healing is quite as rapid as if the tonsil were not inflamed. The reason for this would seem to be that we have got rid of the septic material, and the tissues left behind being comparatively healthy heal rapidly. I have had a number of patients who have asked me why I did not remove the other tonsil, because the side on which excision had been done got well first.

Dr. Hubbard (closing the discussion): I think Dr. Ward’s paper is very valuable. Septic phlebitis seems to be a better expression than septic venous thrombosis, for the reason that in many cases the process is so virulent that there is no thrombosis. It offers an explanation of the rapid extension of virulent septic throat disease into the thoracic cavity. I have in mind cases where the rapidity of transmission of the process resulting in the formation of metastatic foci in the lungs can be best accounted for by the supposition of septic phlebitis. In this connection the question of incising abscesses through sound tissue assumes importance. The negative tension in veins in this region encourages quick infection at the site of the incision.

Paper.

A REPORT OF TWO CASES OF ACCESSORY THYREOID GLAND AT THE BASE OF THE TONGUE.

By ARTHUR W. WATSON, M.D.

The occurrence of tumors at the base of the tongue composed of thyreoid tissue is sufficiently rare to make of interest a report of the following two cases:
Case I.—Mrs. Elizabeth D., aged fifty years, came to the Howard Hospital in May, 1898, complaining of great dyspnoea and difficulty in swallowing. She stated that there had been a lump in her throat for eight or ten years, but it had given little trouble until recently, when it had begun to enlarge, producing the symptoms for which she sought relief. The patient's general health was not good. She was weak and somewhat emaciated. Direct inspection of the throat showed a rounded tumor rising behind the arch of the tongue, having a whitish patch on the top (Fig. 1). With the laryngeal mirror it was seen that a large, smooth tumor occupied the base of the tongue from the epiglottis, which it pressed backward, to the circumvallate papillae. To the finger it felt smooth and firm. It was about an inch and a half long, an inch wide, and an inch thick. It was ulcerated on the top, the ulcer being covered by a white slough or membrane. An attempt was made to remove the growth with the galvanocautery snare, but, the current not being strong enough, the loop slipped over the tumor, removing only a portion of membrane. A second attempt having no better result, further effort at removal, on account of the patient's conditions, was deferred. A small, rather superficial piece of the tumor was removed and given to the pathologist for examination. The patient was put to bed and carefully watched, and in about ten days the growth had become reduced in size sufficiently to remove the immediate necessity for interference, and as I was ignorant of the nature of the tumor I thought it better to wait. The microscopic examination at the time was not entirely satisfactory, and it was not until after having found the second case, four months later, that a reexamination of the specimen revealed its true nature. The pathological report at the time was as follows:

"Microscopically the sections consist in great part of tissue the seat of excessive inflammation and necrosis, without tangible evidence of tuberculosis. In one corner there is a small circumscribed area, of about half the
Accessory Thyroid Gland at Base of Tongue.

size of a split pea, surrounded by an area of hemorrhage, consisting of cells arranged in alveoli, supported by a rather delicate stroma of connective tissue. The alveoli are irregular, narrow, and tortuous. The cells are distinctly epithelial and stain well, both nuclei and nucleoli. The cells are usually in but a single layer. There is a distinct membrana propria. Sections were stained for tubercle bacilli in tissue, but none were found.”

Case II.—Anna E., a colored girl, aged sixteen years, came to the Philadelphia Polyclinic in September, 1898. She complained of something growing in the throat that interfered with swallowing. A lump had been present, to her knowledge, for five years, but had only of late given much trouble. Examination showed a smooth, rounded, firm, and elastic tumor on the base of the tongue, in the median line, between the epiglottis and the circumvallate papillae. It resembled in every respect the first case, except that it was not ulcerated.

Under cocaine anaesthesia the growth was surrounded by the electric-cautery snare and removed. Subsequently the wound healed promptly, leaving a smooth and apparently normal tongue. The tumor, after removal, measured an inch and three eighths in length, an inch and an eighth in width, and three quarters of an inch in thickness (Fig. 2). It was submitted for examination to Dr. H. L. Williams, who gave me the following report:

“Macroscopic appearance: The growth is surrounded by a fibrous capsule. It is soft, spongy in appearance, and a delicate reticulum of fine filaments extending all through is clearly apparent to the eye. The surface is reddish, and in some areas whitish, glistening in appearance, and resembles the structure of the thyroid gland.

“Microscopically, the growth presents a meshwork
of acini which are separated by an exceedingly delicate reticulum of connective tissue. The acini are almost universally dilated and cystic and filled with colloid material which contains many vacuoles. In some of the acini the granular débris contains leucocytes, and partially disintegrated red blood-corpuscles are also found. Lining the acini is found a single band of epithelial cells whose nuclei take the stain deeply. The outline of the cell substance can not be clearly distinguished. The nuclei appear granular and without caryocineti2c figures, the epithelium being decidedly flattened by pressure. In some areas the epithelium is profusely proliferated and scattered throughout the stroma. The stroma for the most part is made up of fibrous tissue with few nuclei, and contains numerous well-formed blood-vessels filled with blood. The diagnosis of cystic thyroid tissues undergoing colloid degeneration is easily established." (Figs. 3 and 4.)
In a careful search through the literature it appears that very few such cases have been reported, and that the condition is probably quite rare. In 1892, at a meeting of the American Surgical Association, Dr. J. Collins Warren, of Boston, reported a similar case in a woman aged fifty-two years. In his article Dr. Warren mentions the report of two similar cases by Mr. Henry T. Butlin in 1890, who also collected six other reported cases. I have been able to find only the two following cases reported since 1892:

C. H. McIlraith (British Medical Journal, 1894). This was in a girl aged seventeen years. A tumor at the base of the tongue of the size of a small walnut. It gave no trouble except that speech was rather thick. The larger part was on the right side. Under chloroform, the mucous membrane around the base was cut

Fig. 4.—Case II. Low-power objective. Showing acini cystic, dilated, and filled with colloid material.
with scissors, the tumor caught with tenaculum forceps and separated, partly by raspatory, partly by snare. Bleeding profuse but controlled by pressure. Recovery.

J. H. Reintjes, Nymegen, at a meeting of the Laryngological, Rhinological, and Otological Society of the Netherlands, held May 22, 1898, reported a case of like nature. A man, twenty-five years of age, who had had several severe haemorrhages, was found to have a swelling, dark brown, smooth, elastic, covered with enlarged veins, occupying the base of the tongue, between the circumvallate papillae and the epiglottis. Electrolysis having been unsuccessful, operation was performed. A Trendelenburg's cannula was introduced into the trachea, the tongue was pulled forward, and the anterior pillar of the fauces was divided. The capsule of the tumor was split horizontally, and the mass shelled out without much bleeding. Recovery was excellent. This is the only case occurring in a male that I have been able to find, all the others being in females.

Strange to say, these tumors are not mentioned in any of the works on diseases of the nose and throat with which we are most familiar, including those of MacKenzie, Cohen, Browne, Bosworth, Ingals, and Sajous. McBride, in his last edition, mentions "thyreoid-gland tumors" among others that may occur in the tongue.

Thyroid tumors in this position are developed from a persistent upper part of the thyreoglossal duct, which is formed in the development of the thyreoid gland, and opens at the base of the tongue at the position of the foramen caecum. The thyreoglossal duct is usually obliterated after the eighth week of foetal life, but may persist, in whole or in part, throughout life.

For the microscopical examinations and reports in both cases, as well as for the photomicrographs of the tumors, I am indebted to Dr. H. L. Williams, pathologist to the Philadelphia Polyclinic.
Paper.

A CASE OF FIBRO-LIPOMA OF THE TONSIL, WITH MICROSCOPIC SECTION.

BY THOMAS AMORY DEBLOIS, M. D.

On the morning of March 8th of the current year a male patient, James Battaglia, appeared at the Throat Department of the Boston City Hospital for treatment.

It was his first appearance, and he merely stated that a kind of a lump had been hanging down in his throat for some time—for several months he had noticed it. He was about forty years of age.

On examination a small tumor, of about the size of an undersized peanut, was seen hanging by rather a thin pedicle, which appeared to grow from a crypt in the patient's left tonsil, near the top.

On my showing this to Dr. Leland, he remarked that I had better jerk it out and see what it looked like, for we neither of us had ever seen anything similar in that locality. I said I would take it off with the loop. This I did. After making two applications of ten-percent. cocaine solution, I slipped the platinum loop over and then drew the growth out as much as I could with forceps. I pushed the loop up until it touched the tonsil, and, putting on the current, cut through the pedicle without pain, in two seconds.

The little tumor was sent to the pathological department and several sections were made, one of which I have the pleasure to present to the association, and it is now under that small microscope. I regret to say that the growth itself was lost.

The report from the pathological department states as follows:

S. 99–89.

James Battaglia. Throat Out-patient Department.

Polypoid growth from left tonsil. No subjective symptoms.

Microscopical examination shows a section bounded completely, except for one sixth of its periphery (the pedicle), by dermis. Within is a coarse, irregular network of fibrous tissue, the fibres of which are somewhat separated (œdematous), the network bearing, most deeply in the mass, areas of large fat globules.

Anatomical diagnosis, fibro-lipoma.
Lipomata have generally been considered rare growths. Mackenzie (vol. i, p. 93) states that large growths of fibrous structure of fatty tumors have also been met with in the region of the pharynx. Bernard Holt has recorded a case in which a fatty tumor, springing from the left side of the epiglottis and pharynx, hung down into the esophagus for nine inches; and in two other cases cited it is stated that they appeared to be fibrous. Mackenzie apparently did not come across any.

In de Schweinitz and Randal’s symposium, Jonathan Wright states that lipomata have been reported by Farlow in the Transactions of the American Laryngological Association, 1895.

In Burnett’s symposium, by Lennox Browne, he quotes Bruns as reporting one case, in 1868, of lipoma of the pharynx.

Moritz Schmidt has seen one case in the pharynx on the upper limit of the posterior wall of the velum.

Those observed on the tongue are rich in fibrous tissue, and then are termed fibro-lipoma.

This gentleman further states that Kuenne has collated forty-nine cases, of which three were in the nose, thirty-six in the mouth, three in the fauces, and seven in the larynx. They are found mostly in old persons, and more in men than in women.

Since Kuenne, Duerbeck has reported one on the tongue, and Vergely has reported multiple lipomata of the tongue developing unnoticed by the patient.

Discussion.

Dr. John O. Roe, of Rochester: I recall a case of fibro-lipoma of the pharynx, a report of which I published three or four years ago, occurring in a woman about fifty-five years of age. It was a large tumor of about the size of a hen’s egg and extended down behind the posterior wall of the pharynx, between it and the vertebral column, to a point opposite the arytaenoid cartilages. It caused no ulceration nor breaking down of the tissues, but bulged forward so prominently that it very seriously interfered with deglutition. Liquids
only could be swallowed with difficulty. I removed the tumor by making a vertical incision through the central wall of the pharynx, enucleating it, partly with the finger, partly with a slender curved instrument. The large cavity left after the removal of the growth was kept packed with gauze until it closed, and the patient made a rapid recovery. I had this tumor examined by an expert microscopist, who confirmed my diagnosis of fibro-lipoma.

*Paper.*

**THE RELATION OF PATHOLOGICAL CONDITIONS OF THE ETHMOID REGION OF THE NOSE TO ASTHMA.**

*THE PATHOLOGY.*

By HENRY L. SWAIN, M.D.

The title assumes that either such a relation is supposed to or does exist, and if the latter, the question arises, What sort of a relationship is it? Shall we consider that the nasal condition produces the asthma, cause and effect, or is the ethmoid condition an accidental complication of the asthma, or are they both the outcome, the result, of some depraved condition of the general system which has its outward expression in these two diseased processes; and, if this latter is the case, what is the exact rôle of the nasal disease in the asthmatic complex?

In order to define the position from which this sketch of the pathology is taken we must explain our conception of the condition called asthma. An accepted theory is that there must be first an irritability of the bronchial structures which makes possible the explosion of energy known as asthma. This hyperæsthetic condition is frequently the result of disease, and the multiplied and oft-repeated attacks always induce chronic inflammation, and consequently greater irritability. Secondly, we usually find that some other structure is diseased or oversensitive. An irritation or disturbance of it sets into motion the spasm of the bronchial apparatus. Thus we find that one asthmatic has a nose, another a stomach, another a kidney, or even an
ovary, and if to these vulnerable organs certain stimuli are applied an explosion results. But to connect the nose, stomach, or kidney with the bronchial tubes a third element must be brought in—namely, the vasomotor system, or, as it is more often put, the neurotic habit.

Now, setting aside with only a word the very broad question as to the explanation of all the phenomena of asthma, we find that the nose can be considered in this sketch as only one of the diseased conditions, although a very frequent one, which can initiate an attack of asthma. This is the case whether we view the final explosion as one purely of vasomotor effects, or whether with greater probability we believe both a vasomotor paralysis and contraction of the bronchial musculature are necessary to the phenomena.

The question now stands, then, with diseased nose, irritable or diseased bronchial tubes, and neurotic or irritable vasomotor nerve fibres assumed as existing, What is the initiatory of the attacks, and why do they occur? What is there peculiar in the nasal conditions which brings on these distressing results, and what happens to the nose to make the affair begin? In some cases the way is plain—namely, the pollen of the hay-fever patient or emanations from animals give the start through the existing nasal conditions. In other cases our evidence is not so clear. Take a case where the patient has a few polypi, and every morning at three or four o’clock, especially after an evening dinner, he is awakened suddenly by an asthmatic attack, and, his polypi being removed, his condition gradually improves and the asthma disappears. What is there different in the nose other than the absence of a little tissue, and what did the polyps do to make the trouble? Evidently one link in our chain has been broken, and thus its power destroyed. Now, if the polyps were not causative of the asthma, then it must follow that if we could break any of the other links of our chain we could also destroy its spell. Does not this happen when we give our patient potassium iodide, or send him to Colorado, and he has no more asthma? His polyps do not necessarily dis-
appear, and we have often learned that the moment he returns to the East he has his trouble over again. I have thought that the rarefied air in these cases either helped the bronchial condition, or the change of environment, with fresh air and exercise, improved his neurotic habit, or both, and thus other links were broken than the nasal. Whether this is true or not, however, it is evident that the mere presence of the polyps does not explain the attacks—the environment and life of the patient have much to do with it.

Now, what shall we say of so subtle a difference as exists, polyps and all, in a case such as I beg Dr. Rice's pardon for relating before he has read his paper on Clinical Phases. You have probably all seen exactly similar cases. This patient, to relate the case most briefly, had the ordinary symptoms of sneezing catarrh. Every morning, with greater or less regularity as to the hour, he would awaken with attacks of sneezing and have a most violent coryza for two hours, during which period, for a few weeks previous to my seeing him, he had begun to have a little asthma. He came at the suggestion of an eminent specialist in another city who wished me to remove the polypoid tissue, anticipating a speedy relief to the symptoms. The patient was a very healthy looking young man of twenty-eight years, engaged in business in the city. The conditions which obtained in his nose were hypertrophies of the edematous type on both middle turbinates and the usual pale swelling on the inferior turbinate. On the left side a spur from the septum with a septal hypertrophy anterior to it were also present. The most irritable areas existed on the left side. The regulation treatment was instituted. The spur was removed, the edematous tissue first snared off as far as possible, and then the galvanocautery applied to it and to the inferior turbinal and septal hypertrophies. He stopped smoking, a most heroic task for him, and took exercise. He was also more out of doors, and, in short, did everything he was told, only to find that he was benefited for a time by each of the many procedures, and that later his edematous tis-
sue in a measure returned. He discovered that when he was occasionally in the country and slept away from home he escaped his attacks, which had continued less in degree from the start. On one occasion a whole week elapsed without an attack, and the first night at home he had a short one, and the second a very severe one. Something led me to inquire as to the arrange-ment of his bed and room, and I found the usual equipment. I suggested a hair pillow. He used it, and from then on he was free from trouble, being able to sleep on any other pair of pillows in the house except his own, which had a musty smell. Now comes the curious part of it—namely, that, being free from the irritation, his middle turbinates, without any treatment whatever, diminished in size, and since then I have seen him a number of times during the three years that have elapsed. He can exercise violently without short-ness of breath, and smokes inveterately. Evidently irri-tation of irritable nerve fibres had something to do with the formation of œdematous tissue, and hence with asthma, and the case shows the excessive and, withal, elective irritability of the nerve fibres supplying the respiratory tract, and especially that of the middle turbinate region. But it must be remembered that therapeutics were of no avail until the feathers were changed, and that there was certainly, as the result of the subtle but powerful influence of that particular brand of feathers, not only an irritation to the nerves, but the irritation, being long continued, caused œdematous tissue to develop, and thereby the contact and pressure sufficient to induce asthma. Hence we have plainly one cause of nasal disease assured—namely, that cer-tain irritations applied to certain nerve fibres will pro-duce congestion and chronic inflammation with swelling and watery discharge. This leads to the soaking of the tissues of the middle turbinate region, œdematous hypertrophies appear, and later these assume the form of polypi. This may be said to be true not only of the hay-fever subject, and cases like the one related, but occurs also with many dusty occupations, such as, for
example, bakers and workers in grain elevators. But back of all is one factor—namely, the peculiar hypersensitiveness of the nerves which will allow of such results. This is to be referred to either inherited or acquired peculiarities. The latter may result from disease, but once present seem persistently operative, and are sometimes well-nigh irremediable. Whether inherited or acquired, there seems always to go hand in hand with this, certainly locally, and, I am led to believe, frequently all over the whole body, a thinness or flabbiness of the blood-vessel walls and a vasomotor responsiveness to irritation which make possible the explosions which are the bane of the existence of these afflicted mortals.

On another occasion I have ventured to suggest that this might be considered as always the inherent peculiarity of the neurotic subject. These supposed conditions would explain the headache, the asthma, the neuralgias, the dyspepsias, and the nervous prostrations, all of which at the start are but explosions, the vagaries or spasms of one or another set of blood-vessels. Later, by excessive distention and oft-repeated stretching, the blood-vessel walls in the afflicted areas become permanently stretched and flabby, and thus actual organic lesions are possible. This will apply most aptly to the pathology of the subject under consideration.

In the main the lesions of the ethmoid or, generally speaking, middle turbinate region are of an edematous nature. How rarely if ever does one see a case of genuine atrophic rhinitis with asthma! The lesions are therefore hypertrophic in character, and at first confined to the mucous membrane. In something more than sixty cases, purulent ethmoid disease has only existed three times, and in these it was secondary to long previous existence of edematous tissue. Marked disease of the bony structures occurred in these sixty cases some six or eight times without purulent conditions, and was here also due to inveterate polyp formation, which latter I am led to believe is always the rule —i.e., that the disease of the mucous membrane pre-
cedes that of the bone. Septal spurs and bends seem to keep up middle turbinate disease and increase the possibility of pressure, which seemed in a great many cases to explain asthma. But in all, whether complicated or not, there was hypertrophic disease always present, and usually of the oedematous type. Very often these oedematous hypertrophies were polypoid in form.

We have, therefore, in our cases merely to explain the production of hypertrophies, oedematous and otherwise, to have our pathology of nasal lesions clearly discussed. The explanation as I view it is something like this: We have as a result of our environment and the conditions obtaining in the bony framework of the nose in any given individual an hypertrophy of the middle turbinate. Such a condition usually gives a pretty definite microscopical picture. Suppose that the patient has hypersensitive nerve development, and the slightest variations of temperature, or the mildest forms of irritation on this hypertrophy, produce congestion with consequent increase in volume. With vasomotor irritability these congestions are more stormy and more often repeated than in simple hypertrophy, and the stretching of the venous trunks occurs. In simple hypertrophies and in non-neurotic subjects these latter are well supplied with muscular coats, and soon contract down again to their normal size. But given locally in one small area, or inherently in the whole membrane, a lack of tone to the muscular coats, vasomotor ataxia, or the deficiency in the amount of muscle fibre inherent to the neurotic habit, and the result is inevitably permanent stretching and flabbiness. Just as inevitably in time there follows the possibility of filtration, and some waterlogging of the tissues results.

Now, an oedematous hypertrophy always distinguishes itself microscopically from the more healthy variety by thin-walled blood-vessels and the existence of a material exuded into and between the fibres of the connective tissue. This forces the fibres apart and destroys the function of the smooth muscle cells which are
always present in a healthy mucous membrane, and they disappear, making it still more impossible for the tissue to contract. Into certain depending areas there would naturally occur more soaking, and, some weak fibres having given way, we should have bulging of certain areas, and anon the polyp bud comes forth to increase and wax great as it depends more and more.

All this simply explains oedematous tissue. How does it produce asthma? All such processes as the above seem to be favored by pressure, which adds to the passive congestion and growth of the thickening, and brings into existence contact areas and increase of pressure. With the latter present, the initiative of the asthmatic attack is easy, if at the same time the bronchial apparatus is also diseased or susceptible. With cooling off of the night air, for example, such as always occurs toward morning, and the recumbent position favoring flux of blood to the head, the sensitive nerves in the oedematous areas are suddenly stimulated and an increased flow of blood to the nose causes swelling and immediate increase of pressure. We have assumed excessive nerve sensitiveness. Hence, the pressure which a normal nerve would receive, and by which it would not be annoyed, is to the sensitive individual a sufficient cause to bring into play the reflex action in the bronchial tract, and the latter consequently has its vasomotor equilibrium disturbed. Some swelling of the bronchial mucous membrane undoubtedly takes place, and in the same way there is a stimulation to the pneumogastric which immediately causes a spasm of the bronchial musculature to take place, and then our asthmatic is in the toils. Pressure in the nose seems, therefore, to be necessary to the causation, and explains why many cases are so much relieved by the removal of the main mass of the offending tissue in the nose. Often, however, we are unable to get cessation of attacks even after apparently most complete removal, and this would perhaps be explained by the fact that the avenues having been once established, it takes only the slightest
irritation of the hypersensitive nerves to start an impulse sufficient to set the bronchi into a spasm without actual pressure on the contact areas. Such is the persistency of the convulsive habit; also we must consider that by the same line of reasoning as explained in nasal pathology, the bronchial structures not only become more easily convulsed, but are by virtue of these attacks actually diseased, becoming distended, congested, and thickened.

The pathology in brief, therefore, involves step by step the following sequence, it being understood that the whole process may take years to develop, or it may occur in a much shorter time. We conceive first the existence of a simple hypertrophy in the nervously hypersensitive individual. The vasomotor instability and the nerve irritability cause further development of the lesions in the middle turbinate region, and produce in time waterlogging of the tissue. This becomes then an oedematous hypertrophy, and this latter may become a polyp. These lesions produce pressure over sensitive areas, which through constant irritation from pressure become more sensitive, so that reflexly there is produced a bronchial vasomotor disturbance. If once the reflex avenue has been opened it is easy to conceive that the disturbance, which is felt first as a sort of oppression or weight in the chest, becomes later a genuine obstruction to breathing, and, there being added to this a spasm of the bronchial tubes, we have a full-fledged asthma.

This explains the genesis of those cases of asthma which are essentially nasal in type. Now there are asthmatics whose attacks are not apparently nasal, but who are nevertheless made very much better, and sometimes entirely relieved, by removing any existing nasal disease. These people have their disturbance only under peculiar conditions, such as overindulgence in food or drink, disturbed kidneys, a cold, a rheumatic explosion, or the onset of a menstrual epoch. These apparently work through the vasomotor link in our chain. There are cases which baffle us entirely and in which
our pathology is hazy because we do not get at the cause; but oftentimes our reward comes by the discovery, as in the feather case, which is by no means an exceptional one, of an ætiological factor quite outside of our ordinary conception of the causation. Occasionally we find our only remedy is change of environment, and then we remove one or another of our causative factors.

The deduction is plain, therefore, that when treating many of the pathological conditions in the nose, whether asthma exists or not, we must often look outside of the nose, and many times outside of the body, for the causes which lead up to them.

Paper.

THE RELATION OF PATHOLOGICAL CONDITIONS OF THE ETHMOID REGION OF THE NOSE TO ASTHMA.

CLINICAL PHASES.

By CLARENCE C. RICE, M. D.

The first division of this relationship—namely, its pathology—seems to us to be far the most important, and it easily covers the more difficult portion of the field. To trace an intimate relationship, pathologically, between two disorders at first sight so far apart as ethmoidal disease and the disturbance in the bronchial tubes known as asthma is not an easy task. When we shall have arrived at a thorough understanding of the pathological relation between these two affections it will be comparatively easy to state their clinical expressions, because, although diseases of the ethmoid present numerous objective forms, the symptomatology is not so varied.

We had expected that the description in the preceding paper of the pathological conditions to be found in ethmoidal affections would be most attractive, and we have not been disappointed. More progress has been made during the past five years by this association in the investigation of the various forms of inflammation
which attack the ethmoidal region than in any other affection which we have studied. This is true not only because so much attention has been paid to it, as can be seen by consulting the last six volumes of the *Transactions*, but because, also, the paucity of our knowledge regarding ethmoidal disease has afforded a great stimulation to this investigation. We are certainly obtaining a very clear insight into the pathological manifestations here, and shall soon be able to accurately diagnosticate not only the kind of inflammatory process, but also appreciate the stages through which it has passed and predict its future behavior.

I find the division of the subject which has been assigned to me a difficult one to treat. It would not be a hard task to present to you the clinical phases of the different varieties of ethmoidal disease, nor to describe an asthmatic attack, but to present a true picture of the symptoms of both in their relation to each other is not an easy matter. When this subject was first presented to me I reviewed my recent cases of ethmoidal disease—many under treatment at the present time, perhaps numbering as many as twenty-five—and I was disappointed to find that not a single one had ever been complicated by asthma in any form.

I can not positively state that bronchial asthma depending upon nasal disorder is more rarely seen now than five years ago, when so much was written in regard to this relationship, when your attention was so often called to it, and it was so freely discussed by your society, but I certainly have seen far fewer cases during the past two or three years. I should say that without exaggeration I had seen two dozen cases of ethmoidal disease during the past two months, and not one of them had ever had an attack of asthma. But it should be said that in only two of these cases was there any appearance of myxomatous degeneration. There was no pedunculated polyp. So that, in looking for data on which to base the relationship between ethmoidal disease and asthmatic symptoms, I am obliged to refer to cases which have occurred in practice longer ago.
Looking at the subject from the asthmatic point of view, it seemed apparent that where a clinical relationship was to be traced between it and intranasal disease, in the very large majority of cases there was present either marked myxomatous degeneration, so called, or well-developed polypi. If my clinical experience is correct, hay-fever asthma does not bear an intimate relationship to chronic ethmoidal disease except where either sessile or pedunculated polypi are present. We should expect this to be the case, because ethmoidal disease sufficient to produce attacks of asthmatic breathing would probably be of an aggravated chronic type, and the production of asthma would more reasonably occur at any period of the year, and not during the summer months alone; so that where there exists the relation of cause and effect between ethmoidal disease and asthma, the asthma would be likely to be of the *perennial* rather than the *periodic* type. Undoubtedly during an exacerbation of what MacDonald calls "paroxysmal sneezing" (preferring this title to that of hay fever, because the former is a constant symptom), the ethmoidal region is as acutely congested as other portions of the nasal passages, and probably affords its proportion of the causation of reflex bronchial spasm. It can not be proved, also, that swelling in the ethmoidal region does not produce greater irritation than congestion farther forward. But it is all problematical. As I have said, however, chronic ethmoidal cases other than those with polypi or myxomatous degeneration have not been hay-fever cases or periodical asthma patients. So true is this that I have felt at times that chronic ethmoidal disease afforded some degree of immunity to the various reflex phenomena which are associated with very sensitive nostrils. We certainly do not see extreme sensibility in the nasal passages of chronic ethmoidal patients. It is particularly true when suppuration and necrosis are present. I do not find, in looking through our *Transactions* and examining the cases of ethmoidal disease recorded by members of this association, that they frequently allude to asthmatic com-
plications. I am not speaking now of general statements, but of reports of clinical cases. Many of our writers, speaking of the symptomatology of ethmoidal disease, allude to various reflex phenomena, but certainly the frequency of asthma as a symptom does not seem to have impressed them.

This one exception must be made to the statement that ethmoidal diseases are not often associated with periodical asthma, for we all know of frequent instances where we have seen acute attacks of asthma during the hay-fever period in patients whose nostrils were filled with polypi, which is one of the manifestations of ethmoid disease. But patients with this condition of the nasal passages are apt to be affected by asthma at any time of the year, and we think are more subject to such attacks during cold, damp weather than during the summer months. In my cases of hay asthma, or periodic asthma, I have much more frequently found no nasal disorder more grave than the ordinary small degrees of deflection of the septum or of exostosis, or moderate turbinated swellings, which we see in the nostrils of nearly all our patients.

Bosworth says, in speaking of the nasal lesions in his asthmatic cases, that they were either nasal polypi, deflections of the septum, or hypertrophic rhinitis, and consequently does not mention ethmoidal disease except as manifested by polypi. Although he says that in considering a hundred and fifty cases of ethmoidal disease between ninety and one hundred of them showed marked symptoms of vasomotor disturbance, either in the form of hay fever, asthma, or nasal hydorrhea, he does not state what form of ethmoidal disease was present in these cases; but, taking into consideration his first statement, that his cases of asthma were associated with polypi, we suppose that the ethmoidal disease presented itself in this form.

If a close clinical relationship existed between asthma and simple enlargement of the middle turbinated bone, either with or without suppuration and necrosis, it certainly could not have escaped our observa-
Diseases of Ethmoid Region and Asthma.

tion, because ethmoidal disease in nearly all its pathological forms is, I believe, a very common affliction. But we do not often find asthma with a simple chronic enlargement of the middle turbinated bone, no matter how great this enlargement may be, so that it would seem necessary for the production of asthmatic breathing that there should be present either the extra irritation of vegetable emanations, the result being so-called nervous asthma, or that, on the other hand, for the production of perennial asthma, it is necessary that the nostrils should be quite thoroughly blocked with polypi and that there should be present the usual profuse catarrhal discharge, not only in the nose but also in the pharynx, larynx, and bronchi. Under such conditions it will, I believe, be exceedingly difficult to prove that asthmatic symptoms are not rather an exhibition of a catarrhal bronchitis than that they are reflex exhibitions of nasal disturbance.

Since asthma is more frequently associated with nasal passages blocked with polypi, we are led to reflect whether the coexistence of asthma and ethmoidal disease is not due largely to mechanical obstruction which necessitates mouth breathing, and to the supervening chronic catarrh of the entire respiratory tract. If this were true, why should we not have a chronic asthmatic condition so long as the nasal passages remain closed? We undoubtedly do have sometimes the production of a chronic bronchitis and emphysema by reason of completely blocked nostrils. The temporary character of asthmatic symptoms associated with nasal obstruction is to be explained in a number of ways. They are more likely to occur during the acute congestive exacerbations which are common to nasal obstruction of all kinds during rapid changes in atmospheric temperature; and, in fact, may be due to any derangement of the circulatory or digestive apparatus. All or any of these may be adequate to furnish just the additional irritation to the chronic process sufficient to develop the asthmatic attack. That it is the amount of nasal obstruction rather than the form has to my mind been
emphasized within the last few weeks, because where I found only one case of asthma out of fourteen cases of ethmoiditis in all forms excepting that of myxomatous degeneration, I have, on the other hand, found that two cases out of five patients having polypi have had numerous asthmatic attacks. I do not believe the proportion is usually so large. I may state it as an interesting fact that I have a record of asthmatic symptoms in two out of six cases suffering from what later was found to be adenosarcoma of the nasal passages.

MacDonald says: "There is no manner of doubt that a considerable number of asthmatic patients suffer from intranasal disease, the majority of which are polypi usually associated with suppuration." The question naturally arises, Why should polypi be more frequently associated with asthma than other conditions of the ethmoid unless it is on account of the greater nasal obstruction and the large amount of general catarrh, and the greater degree of interference with the nasal respiratory function? Certainly the conditions are as favorable for producing nervous irritation and vasomotor disturbances where the entire middle turbinate body is so large as to be wedged between the outer wall and the septum.

MacDonald makes another remark which I am quite in accord with—namely, that it by no means follows that the nasal disease is the cause of the asthma. He believes that the two regions are simultaneously involved in a chronic inflammatory process which finds its expression in the production of polypus in the nose and a bronchial catarrh and spasm in the lower respiratory tract.

MacDonald also makes this significant remark—significant because I have always believed that it is exceedingly difficult to determine whether asthmatic symptoms should be considered a reflex exhibition of nasal irritation or a symptom of an existing acute bronchitis. He says:

"It must be mentioned that polypus is by no means uncommon in patients of middle or past middle life who
suffer from bronchitis, and who are, consequently, said to be asthmatics.”

Dr. Roe, in a discussion on this subject some years ago, remarked that in all cases of asthma caused by disease of the nasal passages we should distinguish between those in which the asthma is dependent upon diseased conditions in the nasal passages alone and those in which there is also a diseased condition of the general respiratory passages.

I have already said that the probability of an asthmatic attack occurring with nasal disease seems to be in proportion to the degree of nasal obstruction. The nasal passages are not much obstructed in any form of ethmoidal disease except where myxomatous degeneration is present or polypi are developed. In a chronic ethmoiditis which expresses itself in such enlargement of the middle turbinated bone that it extends from the outer wall to the septum, unless there also exists deflection of the septum or an enlarged inferior turbinated bone, we seldom have noticed asthmatic symptoms. And here it seems to me that the complicating asthma is due to a combination of these several obstructing elements rather than to the irritation produced by the enlarged middle turbinated alone. My feeling is that irritations emanating in the anterior part of the nostrils in the way of contact between the septum and acute enlargement of the inferior turbinated bone are more potent in producing reflex phenomena in the respiratory tract generally than enlargements in the region of the ethmoid.

Speaking of a simple chronic enlargement of the middle turbinated bone without polypi, I recall but two instances in which there were asthmatic symptoms, and both of these occurred at any time during the year. There was a general laryngeal catarrh, and I cannot say that there was not a chronic bronchitis in both. MacDonald speaks of this pathological condition as occurring in anemic women. I have seen this class of patients principally in dispensary practice, and have always felt the condition was largely dependent upon
unwholesome living. Nor has my attention been called to any special relation between ethmoidal disease and asthma, even where the middle turbinate extended downward sufficiently to come in contact with the inferior turbinate bone. These conditions of the middle turbinate all represent a very chronic process, and we may more reasonably expect to find such phenomena as asthma during a more active inflammatory condition. For it can not be denied that the greater the sensitiveness of the mucous membrane, as indicated by color, sneezing, spasmodic cough, and lacrimation, the greater will be the opportunity of producing asthmatic attacks. We are able during an attack of asthma to trace the abnormal congestion present not only through the nasal passages, but down into the trachea as far as we can see. I produced an asthmatic attack not long ago by applying chromic acid to the anterior surface of both enlarged middle turbinate bones.

I do not know that it would be of any service to this paper to call your attention for a moment to the classification of ethmoidal disease which Dr. Bosworth has presented to this association. His first division is a myxomatous degeneration without purulent discharge; second, an extracellular myxomatous degeneration with purulent discharge. Both of these, it seems to me, are one and the same process. The third division is a purulent ethmoiditis with nasal polypi, and I do not see why this can not also be considered a later stage of the first and second varieties. The fourth variety, intracellular polypi without pus discharge, is hardly to be dignified as a different kind of inflammatory process, but simply explains that for some reason the pathological process has begun in the internal rather than in the extracellular portion. And the fifth variety, intracellular polypi with pus discharge, differs from the fourth only as to the matter of suppuration.

I believe it to be unwise to complicate the study of inflammatory action in this region by endeavoring to subdivide it into many varieties, or even into many stages of the same variety. I am in full accord with
one of the conclusions of Dr. John Mackenzie,* in which he says, speaking of the pathological changes in the ethmoidal region, that they represent successive stages of the same affection, and therefore divisions and subdivisions of ethmoiditis tend to introduce elements of confusion into our pathological conception of the disease.

We should not lose sight of the great frequency of the non-suppurating, chronic hypertrophy of the middle turbinated bone. With great enlargements of the middle turbinated bone there is probably always a chronic inflammation of the ethmoid as well; perhaps the process begins in the ethmoid—the whole perhaps—the result of frequent acute inflammatory attacks in this region. It is quite possible that in nearly all severe acute coryzas the ethmoidal region is as much affected as other portions of the nasal passages. We speak of this chronic hypertrophy of the middle turbinated because it is so common, but we have not often found it associated with asthma. We see it in patients where the inferior turbinate is atrophied, and where there is present, if not a general atrophic rhinitis, at least a dry mucous surface. I have thought that enlargement of the middle turbinate under these conditions might perhaps reasonably be called a compensatory hypertrophy which to some extent stood in the place of the atrophied inferior turbinate process.

There will always be difficulty in deciding whether in a given case the middle turbinate bone should be considered hypertrophied, for as with the inferior, these bony processes do and should bear a certain relation to the size of the nasal passages. But when the middle turbinate has become so enlarged as to press upon the septum and produce nasal obstruction and neuralgic pains, it is safe to assume that the pathological condition is going too far.

When we approach the other forms of ethmoidal clinical disease we encounter great difficulty in any attempt at a classification, and I do not believe that the

*Transactions of the American Laryngological Association, 1896, p. 266.
pathological conditions which are found here always follow any regular sequence, as we might wish in order to thoroughly appreciate the behavior in each and every case. Certainly the presence of polypi is not necessary to the production of suppuration and necrosis, because all the time we have suppurating ethmoiditis without the slightest tendency to the formation of so-called myxomatous tissue. It is true that where polypi do exist there is usually purulent discharge. But this may have existed before the development of the polypi. Simple suppurating ethmoiditis is in my experience much more common than where it occurs with the existence of polypi. In other words, taking into consideration the very large number of cases of ethmoidal disease which we see, those in which myxomatous degeneration has taken place are comparatively rare, and, since this is the form of ethmoidal disease which is usually associated with asthma, it can not be said that the coexistence of ethmoidal disease and asthmatic symptoms is very common.

In the many discussions by this association regarding the relation between intranasal disease and asthma two expressions of opinion have usually been apparent. One, that bronchial contraction was a nervous phenomenon, thoroughly reflex in its character, probably produced by some derangement of the vasomotor system. The other opinion has been that this relationship is not nearly as subtle, but that the complication of the bronchial irritation with the nasal disturbance was rather to be explained along the more usual process of an extension of congestion and inflammation. I think we can safely add that where the nasal passages are largely obstructed and the nasal function is for the time being abrogated, it is quite possible that the evil effects of mouth breathing and the contact of unsuitable air with the bronchial mucous membrane are competent to be additional sources of irritation. It is much safer to give to each one of these causes due credit than to hold the opinion that nasal disease of any variety always exerts its influence in a reflex way.
Where asthma occurs with badly obstructed nostrils, the first irritation to the bronchi may be reflex, or nervous, and transient; but if the nasal obstruction remains for a long time unrelieved, and especially if this nasal obstruction is due to polypi, and there exists suppuration, there will very soon develop a general catarrhal bronchitis, which in itself may produce asthmatic symptoms.

It may be that we as specialists see comparatively few cases of asthma other than the hay-fever variety, and it is quite possible we should find ethmoidal disease in the perennial asthmatic cases which consult the general physician.

I have not endeavored to cite the clinical phases of either asthma or ethmoidal disease, because you are all so familiar with them, and so have, I fear, succeeded only in presenting to you a few desultory observations in regard to the relationship of diseases of the ethmoid to disturbances of the respiratory region.

From what has been said it would seem necessary that where asthmatic symptoms coexist with ethmoidal disease there should be present either nasal passages blocked with polypi, and hence mouth breathing, with a general catarrh, or else very acutely inflamed conditions which would produce a neurotic asthma by vasomotor disturbances.

*Paper.*

THE RELATION OF PATHOLOGICAL CONDITIONS OF THE ETHMOID REGION OF THE NOSE TO ASTHMA.

**CLINICAL PHASES.**

**By E. FLETCHER INGALS, M. D.**

I had no thought of saying anything upon this subject, but Dr. Casselberry this morning said to me that it was necessary for some one to take the place of Dr. Rice on the programme, and I consented to do so.

We are all familiar with the peculiar clinical phases of this disease. I was much interested in the pathological conditions as presented by Dr. Swain, and it
seems to me there is much food for thought in his paper, and that it may aid us frequently in the scientific treatment of this affection. I have not so frequently observed as others the connection of this disease with affections of the nose, although I have seen it occasionally. I have seen some cases of asthma relieved promptly by removing polypi, or relieved more slowly, as suggested in the paper, the patient gradually improving for a few days or weeks, and suffering no recurrence of the attacks until the polypi had returned.

As bearing upon the causation, the inhalation of various substances is a well-known factor. I have seen several cases in which the patients were affected with asthma as a result of riding behind a horse or caring for horses. I had one peculiarly unfortunate patient whose business was teaming, and whenever he went near the stables he had an attack of asthma. I have known patients who could ride on a dusty road behind oxen, or who could ride a bicycle, no matter how much dust there might be, but who could not ride behind a horse. So the emanations from various animals cause peculiar cases, which are familiar to all of you. One especially interesting feature I have noticed in two or three patients who have assured me that they had asthma in one lung only. They were all intelligent patients whom I could rely upon as making correct statements, but I did not see them at the time of the asthmatic attack.

A physician, who practised in this city until a few years ago, told me that he had for many years been subject to asthma in almost any part of the city, but that when he came downtown and went to the sixth story of a hotel he experienced complete relief. At that time the buildings were not so high as now.

I recall one patient who suffered terribly from asthma for several years. She lived in a brick house, which was in every way healthful, so far as we could discover. She moved three or four blocks away into another brick house and her asthma disappeared and did not return again for many years.
A still more interesting case than the one just narrated was related to me by one of my colleagues. It was the case of a patient who suffered from asthma when sleeping in one part of the house and not in the other. The beds were the same, also the pillows. One part of the house was built of brick, the other of wood, and the material used in the construction was in some way the cause of the asthma.

An interesting instance of asthma and the indifferent means by which it may be stopped was told me by another of my colleagues, whose daughter had been under my care for obstruction of the nasal passages. She had asthma at certain times of the year, but the relief of the obstruction did not, in her case, cure the asthma, as I have seen it do in other cases. However, it gave her considerable relief. This girl was about fourteen years of age. She seldom had asthma when in the city, but in the country she had frequent attacks. One night this hard-working physician went to his country home to take a little rest. During the night the baby began to cry, the mother began to scold, the girl began to wheeze terribly, and the physician was called upon to get up and straighten matters out. He got some water to quiet the child, but in pushing by the side of the bed the springs were loosened and fell with a great crash, which stopped the baby's crying, the mother's scolding, and so frightened the eldest daughter that the attack of asthma was cured instantly.

In some patients with obstruction of the nares, cocaine, by taking down the swelling, will promptly relieve the asthma. I have been interested also in the relief of asthma by the inhalation of a spray containing cocaine. The question arises whether or not its effects are the same as in the nares, in taking down swelling of the pulmonary tissues; or does it act simply as a stimulant of the vasomotor system? I have known patients to obtain great relief during the asthmatic attacks of hay fever from inhaling the spray of a nostrum which analysis shows contains about three per
cent. of cocaine and five per cent. of nitrite of sodium, with other ingredients which seem to be of no consequence.

**Paper.**

**THE RELATION OF PATHOLOGICAL CONDITIONS OF THE ETHMOID REGION OF THE NOSE TO ASTHMA.**

**TREATMENT.**

**By F. H. Bosworth, M. D.**

This whole matter, it seems to me, depends upon a proper appreciation of the great respiratory function of the nose and the necessary and very intimate connection between the nasal apparatus and the bronchial mucous membrane. At best, we can make little out of the bronchial tubes excepting as mere conducting tubes. We find no special functionating apparatus until we get to the air cells, and these are not involved in an attack of asthma. This has a decided bearing on treatment, in that any disturbance of the nasal mucous membrane constitutes a disturbance of the great respiratory function of this membrane, which has to pour out from twelve to sixteen ounces of watery fluid upon the surfaces of the turbinated bodies to saturate and moisten the air which passes into the bronchial tubes. This presupposes an intimate connection between the mucous membrane of the nose and the mucous membrane of the bronchial tubes. The disturbance of one part means a disturbance of the other part; that is to say, a congestion of the nasal mucous membrane creates a marked tendency to a like congestion in the bronchial mucous membrane, while a healthy functionating condition of the mucous membrane of the nose tends to a like healthy condition as that of the bronchial tubes. A diseased condition of the mucous membrane of the nose tends to produce disease of the bronchial mucous membrane. It seems to me that in this fact, established by clinical observation, lies the basis for our consideration of the relation between asthma and disease of the nasal cavities. If we acknowledge this, it seems to me we are ready for a clearer comprehension of what
the true relation is between these two regions in this neurotic disease we call asthma.

Dr. Swain, in discussing the pathological aspect of the question, now considers it edematous hypertrophy and polypoid degeneration, which I think in this disease must be a vasomotor paresis, a dilatation of the blood-vessels. I am glad to hear less talk of muscular spasm. He is the only man in my presence who has disturbed my conviction that an attack of asthma is a vasomotor paresis of the blood-vessels of the mucous membrane of the bronchial tubes rather than a spasm of the bronchial muscular fibres. We know that an attack of hay fever is a vasomotor paresis of the blood-vessels of the mucous membrane lining the nasal cavity. In my previous writings I have designated hay fever as a vasomotor rhinitis. This establishes their intimate connection, and if I am correct in this view of it, it therefore follows that the treatment which is indicated in these cases becomes notably clearer. We talk about edematous hypertrophy, polypoid degeneration, and nasal polypi as intimately associated with asthma. Clinical observation has taught this, and there can be no question of the fact, but I think, and my conviction has been for a number of years, that we can go still further. I believe polypoid degeneration of the mucous membrane of the nose, edematous hypertrophy of the mucous membrane of the nose, and nasal polypi all indicate and are clear symptoms of ethmoiditis. We oftentimes see cases of asthma that are relieved by the removal of polypi, yet the asthma recurs. Why? Because we fail to recognize the fact that the polypi present in the nose are only symptoms or manifestations of disease in the ethmoid cells, and in removing simply the polypi we have not fully carried out the clinical indications. We have neglected to do our whole duty when we remove the polypi alone. We must accept the existence of polypi as indicative of ethmoiditis, a chronic inflammation of the mucous membrane lining the ethmoid cells. By making the radical operation we not only remove the polypi and protect the patient
from further recurrence of them, but we cure the asthma. How shall we do that? It requires pretty radical treatment, and I have tried various methods. There are two ways in which ethmoiditis manifests itself in the nose. The first and early indication is in the polypoid degeneration of the mucous membrane covering the middle turbinated bone. This I have come to recognize as almost pathognomonic of the existence of a similar degeneration of the lining of the ethmoid cells. If we go over the plates of Zuckerkandl we shall find many cases of cross sections of the head in which there is a great hollow middle turbinate, a great egg-shell, so to speak, projecting into the cavity of the nose, bulging out the septum, and establishing contact between the turbinated body and the nasal septum. The ethmoid cells become distended and burrow out, as it were, into the middle turbinate in such a manner that the middle turbinate becomes the outer limit of the ethmoid cells. In another series of these plates we observe the ethmoid cells distended in such a manner as to crowd the middle turbinated body out en masse into the cavity of the nose and cause it to impinge upon the septum.

These two conditions are the ones which, from clinical observation, I recognize as constituting ethmoiditis, as evidenced by the fact that the middle turbinated body is covered by cedematous hypertrophy. Why does this occur? I take it, it occurs simply because the normal orifices of the ethmoid cells have become occluded by a mild inflammation. This mild inflammation may be the result perhaps of clots. My impression has been for a long time that clots are a symptom rather than a result. I think that in most instances it is one of the adventitious results of simple chronic hypertrophy of the nasal mucous membrane, causing occlusion of the anterior and posterior orifices of the ethmoid cells. The result of this occlusion is the establishment of a mild chronic inflammation which, in these closed cavities, takes on a certain cedematous character. An inflammation within the closed cavities or accessory cavities becomes practically a polypoid degeneration of this mucous
membrane. The closure causes intracellular pressure, which in turn causes distention of the soft, flexible parts and extension of the ethmoid cells, crowding the middle turbinated body into the nose and against the sâæptum. We now have a curious chain of symptoms developing. Why neurotic symptoms are so closely associated in so large a number of cases with ethmoid inflammation I do not know, nor do any of us know, I take it. We have ample clinical evidence for the statement that the nerve centres which preside over the vaso-motor nerves must be in close proximity to the ethmoid cells. The first thing that occurs with swelling and distention of the ethmoid cells in so many cases, especially if there is a neurotic habit, is something which disturbs that control which the vaso-motor centre exercises over the blood-vessels of the nasal membrane, and we have sneezing, we have asthma, we have a disturbance of that nice relation which exists between the mucous membrane of the nose and the bronchial mucous membrane, upon which the integrity of the bronchial mucous membrane depends. However that may be, and whatever the train of symptoms that is set up by this distention of the ethmoid cells, certainly the indication is clear. We have to cure the ethmoiditis, the disease in the ethmoid cells, and it has been my firm conviction for a number of years that the prominent indication is to relieve intracellular pressure. How is this to be done? It is simple enough, but it must be done radically. When it shows itself in the form of polypi in the nose, we must not content ourselves simply in removing the polypi, which are but a small portion of the disease. We must go further than that and attack the cell cavities. If we have a mass or masses projecting into the nasal chamber, we fit a snare around them and thoroughly remove them, uncapping them, and thus open up the cavity. We thus remove all points of contact; yet mere points of contact in the nose I regard as harmless. We should remove these points of contact because they are the result of encroachment on the normal nasal chamber, and by removing them
we reestablish the normal nasal lumen. I say we should go further and open up the cells of the ethmoid. How? I know of but one way. I can not easily or efficiently manipulate round cutting forceps in the middle meatus of the nose. Well, you may say, we should use curettes or gouges.

In this region we are operating in a very delicate part, and I can not manipulate gouges with any satisfaction. We have not only got to gouge out more or less of the ethmoid cells, but to break up the little trabecular walls, all of them. We must relieve the intracellular pressure, and we have this pressure in a large part of the ethmoid cells, and consequently the indications are to break down these trabecular walls. My experience teaches me that by all odds the most delicate, truest, and safest instrument with which to do this is a burr. I use a series of burrs, from the sixteenth of an inch in diameter to about a quarter of an inch in diameter, rounded and ovoid in shape. They are mounted on a dental engine, or they may be attached to an electric motor, if you want to be modern and scientific. When you get cases in which the turbinated body has protruded into the nasal cavity you can not snare them so easily, and I prefer to use the burr. By means of the burr you are able to grind down these trabecular walls. I have not met with any accident in any of a large number of cases on which I have operated by this method.

A word or two with reference to those cases where the polypi are situated in the superior meatus. These cases trouble us and are difficult to deal with. Those are the cases which show clearly that the polypoid tissue was developed, or rather that the intracellular pressure was developed, in the posterior ethmoidal cells which have become occluded, and the polypi have made their way out of the posterior ethmoidal cells into the superior meatus. Thus the ethmoid cells are distended where the superior meatus is exceedingly narrow, and you never get large polypi. I have rarely seen in this region polypi larger than the size of a lentil or a small split pea. These cases are difficult to deal with. It is
the anterior ethmoidal cells which are involved in probably nine cases out of ten, and it is these, in which polypi are projecting well into the nasal cavity, that we can treat most easily. I am an earnest advocate of the use of the burr, which I find a most efficient instrument for breaking down the trabecular walls of the ethmoid cells. It is the safest way to do this work, and the burr does its work more thoroughly and more safely than any other instrument with which I am familiar.

Inflammatory disease of the ethmoid cells, or ethmoiditis, is a common affection. It is vastly more common than we have been taught to suppose. A great many cases of colds in the head are really attacks of acute ethmoiditis. Chronic inflammatory diseases of the ethmoid cells and non-purulent disease of the ethmoid cells are affections which nowadays are easily recognized by us. Such conditions being recognized in connection with cases of asthma, especially if the attacks are relieved temporarily by the local application of cocaine, we have every reason to give such patients a fairly good prognosis, and to promise a cure by the treatment of the ethmoid cells. Furthermore, we should always bear in mind that in those cases in which we remove the polypi and do not cure the asthma, the polypi are simply a local manifestation of the disease farther on, and we must not only remove these polypi thoroughly, but treat the ethmoid cells as well. We can remove the polypi and relieve the asthma in most cases, unless we have those intensely neurotic patients to deal with who can get up an attack of asthma on the slightest provocation, and from even trivial disturbance of any of the other organs of the body. These are the cases which tax and baffle us. The ordinary case of asthma occurring in connection with recognized intranasal disease I regard as curable in the large majority of instances, and I am confident that many of the cases which have failed of relief at our hands heretofore have failed because we have not sought the source of the disease deeply enough.
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Dr. E. L. Shurtle, of Detroit: On account of the complexity of the physiology of the vasomotor and ganglionic nervous system, I suppose it is almost impossible to settle exactly the etiology of asthma and hay fever. I was very much interested in Dr. Swain's paper, which I think is excellent. He presented the subject in a very concise and lucid manner. It seems to me that we should go further back than ethmoiditis or œdematous rhinitis in considering the etiology and pathology of these cases. Recent researches have shown some strange anatomic and physiologic conditions of the nervous system that were never before dreamed of. One of the most striking things in connection with this subject is the fact that the diverse fine fibrillae or filaments going from cranial nerves or spinal centres are carried together in the cables, so to speak, and in these little insulated cables there are found sensory, motor, and specialized filaments. It has also been discovered that in different animals, and in different individuals of the same race of animals, there is a great variation in the nature of communicating branches from the several nerve trunks. These anatomic variations, which we can scarcely call abnormal, may account in great measure for many cases of asthma and hay fever, aside from the ordinary physical results of local disease. It is easy to imagine changes in the nasal apparatus, and, by the way, the nasal apparatus has another function than that of respiration—namely, the function of olfaction. In civilized man olfaction is almost rudimentary, and if you study this region in the lower animals you will find it is a highly perfected complex apparatus. The arrangement of the olfactory blood-vessels and nerves is more direct in animals, while in man they are in a rudimentary state. Supposing we have a psychic or physio-psychic habit established—a tendency to the transmission of motor impulses along sensory filaments; supposing there be abnormal breaks in the insulation of these special nerve bundles, would it not account for a hyperæsthesia or a paræsthesia? The fact that some human individuals present this thing in marked form is rather confirmatory of the theory. We find some individuals who are analgetic, and others who are hyperæsthetic. I suppose you have all seen so-called freaks whose mucous membranes and skin are entirely insensitive. I had the good fortune three years ago to have one of these freaks under my personal observation for
three days. He allowed himself to be put through any sort of reasonable manipulation. I tested the different mucous membranes with all sorts of agents, and certainly the study of this man was quite edifying. You could thrust pins and needles through the skin and he would not feel them. Another strange thing was the effect upon the vasomotor system. We could open small vessels and the hæmorrhage would be trifling; and yet this man otherwise was a healthy, muscular young fellow. He allowed us to open two or three superficial veins, and I was astonished to see so little hæmorrhage from them. I had specimens of his blood examined, and no change from the normal could be found, excepting perhaps a slight increase of the so-called albumins. There were no changes found in the cellular elements of the blood; hence I concluded that all of the phenomena presented by this man were in a large measure neurotic.

Now, from this point of view, must we not recognize two distinct classes of cases of asthma—those which may be due to local disease, as pointed out by Dr. Swain and Dr. Bosworth, such as oedematous disease of the mucous membrane of the nose or an ethmoiditis, and another distinct class located on the psychic borders in which there are abnormal physiologic and anatomic conditions of the nerve distribution? The respiratory organs are very sensitive in such people. I have to differ a little bit with my friend, Dr. Bosworth, about the bronchial tubes being such negative or passive organs. He is willing to ascribe to the nasal passages respiratory functions of considerable importance. We have also important vascular and glandular systems in connection with the bronchial mucous membrane, and the adenoid tissue of the bronchial mucous membrane, which has not been studied much until of late years. It is quite as important an apparatus as the nose, and one which we ought not to continue to pass by lightly. The bronchial mucous membrane has its special regions of lymph nodes and nerve nodes. It has special nerve distributions and communications, and special epithelium, which, according to recent observations of physiologists, give importance to the trachea and bronchial tubes. The cilia differ from cilia of other parts distinctly in that they have a special function for aiding respiration and taking care of the secretion. Aside from this, there is another special function which belongs to the bronchial tubes—that is, the production of a secretion peculiarly fitted for reducing the friction of the air passing through them. The physiologic chemistry of the secretion of the
trachea and of the bronchial tubes also differs materially from that of other mucous membranes. Therefore, I am inclined to think that it is quite as important, if only secondary, toward the performance of the function of respiration as that of the nose.

With reference to the remarks of Dr. Ingals, what he has said brought to mind the case of a friend and patient of mine who would have an attack of asthma from cats. I said to his brother-in-law that I thought it was mental. But he did not think his asthma was mental. However, to use a vernacular term, his brother-in-law and myself "put up a job on him." He was accustomed to go to his brother-in-law's on Sundays for dinner, and I said to his brother-in-law that we would get a couple of cats, give them an anodyne so that they would not mew, put them in a closet near the dining-room without his knowledge, and then see if John would have an attack of asthma. Accordingly, the cats were given a full dose of urethane and placed in the closet. The man with his wife and little girl went to dinner as usual, and soon John began to sniff, then to sneeze, and finally wheeze. He remarked to his sister-in-law, "Have you any cats here?" She replied, "You know very well that we do not keep any cats in the house." Finally, John was obliged to leave the table on account of excessive coryza, wheezing, etc. He had no knowledge whatever of the cats being in the house, and the animals were as quiet as mice on account of the drug which had been given them. This incident very forcibly corroborates what Dr. Ingals said of some people being subject to attacks of asthma after riding behind horses.

One more point, and then I am done. It must be obvious to all, especially those who have been engaged in general practice, that the majority of the cases of asthma are not accompanied by any sensible structural derangement of the nasal passages. When I say sensible derangement of the nose I mean this: Undoubtedly, the nasal passages secrete more than may be considered normal in our northern climate. It is Nature's means of guarding the respiratory apparatus from cold air and the other changes due to our artificial mode of living. Too frequently we sit in a room heated at a temperature of 80° F., and then go out into a temperature of 32° or 40°. This sudden change produces changes in the vascular system, and I have come to regard a certain amount of asthma as a sort of physiological process established by Nature for the protection of the individ-
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...ual or the protection of the lower mucous membranes. We find a large number of these cases without any disease of the nasal passages that we can discover, and, of course, we must not go so far as to assume that because we do not discover any disease of the turbinated bodies, or of the outlying accessory cavities, that it must be there. I do not think that would be a fair argument or a rational way of thinking. The fact is being thrust upon us almost daily that there are persons of a neurotic type who are peculiarly sensitive; they are super-sensitive. On the other hand, there are persons who are abnormally insensitive, and when we take into consideration recent biological and physiological discoveries relating to the nervous system, it seems clear that we have two distinct types of hay fever and asthma, the one depending entirely upon a peculiar condition of the nervous system, and the other depending upon a peculiar neurotic condition plus some local disturbance somewhere in the body.

Dr. J. N. Mackenzie, of Baltimore: This subject allows of the utmost latitude of discussion, and I shall only ask your attention to a few points that have come up during the reading of the papers. Dr. Swain's remarks agree in the main with the views which I have held upon this subject, and with which I have flooded the Transactions of this and other societies for the past sixteen years. I wish to call your special attention to a paper of mine, prepared and read before this association in Philadelphia in 1885, in which I covered in a very elaborate way the pathology of this class of diseases. I think one fact is established beyond the possibility of peradventure, and that is, that the primary cause of these affections does not reside in the nose, nor does it reside in any special peripheral organ, but lies in the individual himself. When we come to explain what the primary cause is, we enter the domain of the purest speculation, whatever may be the theories that have been advanced to account for it. The theory of so-called idiosyncrasy is possibly one of the most fashionable and the most convenient refuge of acknowledged ignorance. While we may acknowledge a vasomotor irritability, the fact remains beyond doubt that the primary cause of the trouble is as yet undiscovered. Dr. Swain's remarks support very forcibly the law which I laid down in the paper referred to, that the area in which the nerve explosion occurs will depend upon the seat of the local pathological process. In a neuras-
thenic or hysterical individual a nasal polypus may induce attacks of asthma, a polypus in the rectum may create a disturbance of the lower bowel, and so on.

We have to speak in a general way of three classes: One, in which the primary irritation undoubtedly starts in some peripheral organ, which in our case is the nose. Another class of case may originate in some distant organ, as disease of the uterus or of the uterine appendages. Another class of case may originate in some systemic condition, as, for example, gout, rheumatism, and allied affections. The primal cause is, however, a matter of the purest speculation. I have sometimes thought that a localized hysteria might account for some cases of so-called reflex nasal neurosis that we meet with in practice.

I do not believe in the theory of pressure contact. While in most cases there is present contact or pressure, as in cases of hypertrophy or oedematous fibromata, in another class of cases, by no means very rare, the opposite condition prevails. In my original experiments on the subject of nasal cough, I made the statement that these reflexes rarely, if ever, occurred in cases in which there was atrophy of the nasal mucous membrane. I have since been compelled to change my opinion in that regard. I have not only seen it in cases of pronounced atrophy, but other cases have been reported by other observers.

Dr. Ingals's cases all point to one moral—that is, they point directly to the nervous apparatus as the essential factor in the evolution of this trouble. The explanation of these cases is not to be found in the so-called respiratory functions of the nose or of the bronchial tubes: we must go deeper than that. All the hypotheses which have been advanced on this line of reasoning are inadequate; they all fail to come up to the requirements of a logical hypothesis; all violate some one or more criteria. Asthma is more frequently a symptom of disease of the respiratory tract than any other tract of the body; but it is nevertheless a symptom, and it, and the vasomotor phenomena which we observe, are simply external signs, are simply outward and visible signs of something unknown within, which is, up to the present time, entirely beyond our ken.

I can not fully agree with Dr. Bosworth that all polypoid degeneration is due to ethmoiditis. I do not base my opinion upon clinical observations alone, but upon pathological examinations made in this class of
cases. I think we all agree with him as to the great importance of changes in the middle turbinated bone as establishing the presence of disease in the ethmoid cells. Ever since Grünwald called attention to changes in the ethmoid region as heralding the approach of disease deeper down, I think all of us who have had considerable experience have come to attest the value of his observations in that direction. I do not think intracellular pressure has anything to do with this class of cases. It is true, we have intracellular pressure in most cases of suppurative ethmoiditis, yet only in a small proportion have we asthma and other reflex manifestations.

In regard to the treatment of ethmoiditis, when we find the disease firmly seated in that region, I partly agree with Dr. Bosworth, but I disagree with him as to the use of the forceps. I have never had any difficulty in the use of it even in operating on the deeper parts of the nasal passages. Also with regard to the gouge. I have operated with great facility, after the obstruction had been removed in front of the diseased cavity, with the gouge. In the last case of sphenoidal disease which I operated on I removed as much of the ethmoid structures as possible, when from the small orifice which led into the sphenoidal cavity there came a little cascade of pus. All in front had been cleaned out thoroughly, with the exception of this little space from which pus was discharging. I enlarged the opening with a burr drill, introduced a curette, and curetted the sinus out, and the last time I saw the man the probe went into the bony structures twelve centimetres, yet I had no difficulty in curettting the greater part of the sphenoidal cavity. I think it is useless to temporize with curettement and other mild measures of the sort in the presence of extensive disease of the ethmoid cells; we have got to get the middle turbinated body out of the way. My method is to remove as much of the middle turbinated body as possible with the snare, depending, of course, upon the extent of the disease, and then clean out the remainder of the cavity with forceps and curettes. I agree with Dr. Bosworth in his estimate of the use of the drill; I am fond of it in intranasal surgery. We can polish off rough surfaces, we can make a cleaner job with the drill than with any other instrument at our command. I use the drill at the latter stage of the procedure, first removing the anterior end of the middle turbinate body, which is a simple thing
to do with the snare, then removing the diseased portion as far as possible with cutting forceps and curettes, and polishing up and getting rid of the irregular surfaces left after forceps and curette work with the drill. So far, I have had no accidents, but the possibility of an accident should always be borne in mind.

Dr. G. Hudson Makuen, of Philadelphia: The discussion of this subject is most interesting to me, and it would seem that asthma, whatever may be its remote cause, depends directly upon a faulty neuromuscular action. This faulty action may depend on any one of a dozen different things. As has been shown, the remote cause may be in the presence of animals, such as cats, horses, or dogs; and their removal has prevented the manifestations of the disease; or it may be in intra-nasal pressure, because in some cases the removal of this pressure has cured the disease. The remote cause may be adenoid vegetations in the vault of the pharynx, for I have seen cases of long standing absolutely cured by their removal and the removal of the bronchial catarrh that has been the result of the adenoids. Asthma, it seems to me, has some analogy to the disease known as chorea and even stammering, if we may call that a disease, and the physician who treats these cases successfully is the one who can determine and remove the exciting cause of the faulty nervomuscular action.

Dr. Thomas Hubbard, of Toledo: Autotoxæmia undoubtedly plays a part in the causation of ethmoid disease and asthma. Its importance is underestimated. We have autotoxæmia of two general types, that which originates from the gastro-intestinal tract and that which is due to faulty elimination. The effect of the toxic influences of the different types of leucomaines is exhibited by the vasomotor system and also diseases of mucous membranes through vicarious elimination. Ethmoid œdema may be directly caused by lithæmia, and persistent disease of this region may result. Systemic conditions must be constantly in mind in studying asthma even from the standpoint of laryngology.

Referring to the treatment, the fact that potassium iodide is of such usefulness in the treatment of asthma is one evidence that the practical way to attack this disease is by elimination, and that a study of auto-toxæmia is the most practical way to reach the solution of the treatment of asthma. In my experience, local and operative treatment of certain disease conditions of the ethmoid and contiguous structures fails lamentably un-
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less it be supplemented by systemic treatment of the kind that checks injudicious indulgence in heavy foods and stimulants, lessens suboxidation due to sedentari-

ness, and increases elimination.

Dr. Swain: The question for discussion was the rela-
tion of pathological conditions in the ethmoid region of the nose and asthma, and in discussing the pathology I tried to confine myself to those considerations. Dr. Bos-
worth, in his remarks, leads one to suppose that he thinks every case of polypoid degeneration of the middle turbinated region is associated with what he calls "eth-

moiditis." From conversations I have had with other physicians, the majority of them are inclined to think that when the word ethmoiditis is employed, it means a purulent disease of the ethmoid cells, which Dr. Bos-
worth does not intend. If he believes that in all such cases there is disease of the bone and the cavities of the ethmoid, I wish to be a little at variance with him, because I know from actual microscopical examinations that such oedematous hypertrophies may exist for a long time on the outside of these thin trabeculæ of bone which separate them from the cavities of the ethmoid, and the mucous membrane lining these cells may be absolutely healthy, as much so as any I have removed from known healthy subjects or have ever seen; conseq-

sequently, it must be stated in plain terms that polypi can exist without the involvement of the ethmoid bones.

Dr. Shurly has touched upon a subject in which I have taken a great deal of interest, and seems to throw some light upon the actual disease which takes place inside the bronchial tubes, and this phase of the sub-
ject is of very great importance in considering the pathology. In examining pathological changes of the middle turbinated region among the first things we find to disappear are the ciliated extremities of the cells which cover the surface. Immediately after the cilia have disappeared the mucus tends to adhere. The cilia are necessary in order to expedite the mucus, and give health to the surface. The same thing is true of the bronchial mucous membrane in a more marked degree. I have only a few data to substantiate these remarks, but in one or two asthmatic cases where I have examined the bronchial tubes they have lost their cilia over large areas. Such a condition must profoundly influence the ability to get rid of mucus from these areas, for the office of the cilia is essential in expediting the secre-
tion from a lower to a higher level, and may account for
the distressing difficulty these patients sometimes have in expectorating. Of course, I am not unmindful of the dilating and stiffening of the tubes, which always accompany prolonged existence of the spasms of the asthmatics.

Dr. Bosworth: What I am about to say I say with a great deal of hesitation. I am a firm believer in clinical observation. The honored men of our profession from the time of Sydenham down to Trousseau, Flint, Loomis, and others of our day have taught us to base our facts to a certain extent on the study of disease at the bedside, rather than to be governed and directed by the dead-house student, with his microscope. In saying this I do not decry the use of the microscope, because it is a great aid in diagnosis. However, the microscopist sometimes tells us we are wrong when in carrying out certain clinical deductions, and certain treatment based on those clinical deductions, we know we are right in that our treatment is attended with success. With all due respect to the laboratory, I still hold up my voice for clinical observation. If ethmoid disease is not indicated by poly-poid or oedematous degeneration, that peculiar condition of the middle turbinated body, and is not found after death by the microscope or by deadhouse observation, I question in my own mind if the student of the dead-house has taken into consideration the post-mortem changes which occur in the mucous membrane. There are certain changes in what we call vasomotor paresis in the mucous membrane which disappear at death. I will not give up my clinical observation, which tells me that when I relieve intracellular pressure by operating on the ethmoid cell it cures my case. The microscope tells me I am wrong, but my patient gets well from operative interference.

Dr. Casselberry: Will you be a little more explicit in describing to us the manner in which you use the burr—that is, using it as a probe first, then with downward pressure? It is the observance of little things that makes the method safe.

Dr. Bosworth: The advantage of the round burr is obvious in that you are able to grind off the walls and edges of the trabeculae. You grind for a while, then stop. You simply feel your way with the burr—you feel the edges and slowly cut farther. You feel the little trabecular walls; you burr against them until they are off. You feel again, then burr six or eight seconds, and stop, and so on. Use the burr as a probe or investigator, go
Pemphigus of the Larynx and Mouth.

The following brief sketch of a case of pemphigus chronicus vulgaris affecting only the mucous membrane of the larynx and mouth is of interest on account of the rarity of this affection.

In this country, at least, it must be extremely uncommon, for I am familiar with only one or two reports of cases by American authors, the most noticeable one being by Dr. Lewis H. Miller, of Brooklyn, who, in the *New York Medical Journal* for July 3, 1897, reports one case.

The foreign literature is, however, much more replete, especially that of the Germans. The younger Schrötter, however, does not consider it such an uncommon affection, having had a personal experience of five cases.

Mrs. —— consulted me in October, 1898, for the first time, complaining of certain indefinite sensations in the region of the larynx, and stated that for six months or more she had had trouble with the throat. The attacks were frequent, but not of long duration, the principal sensation being that of a foreign substance in the larynx.

She has always enjoyed good health, save for occasional attacks of muscular rheumatism, which have not been severe enough to occasion her much inconvenience.

Her appearance gave me the impression of a well-nourished person, although a little paler than usual.
The examination showed the nose, nasopharynx, and pharynx in good condition; but with the mirror a small white membranous deposit, about a quarter of an inch in diameter, was observed on the laryngeal surface of the right half of the epiglottis.

While in the act of making a local application with a cotton-tipped applicator, this deposit was detached and brought away on the cotton. The membrane beneath was red, but it did not show any loss of substance such as is met with in the various forms of ulceration that affect mucous surfaces. I sent this piece of membrane, which was of considerable thickness, to Dr. Jonathan Wright, requesting him to make an examination of it for me, at the same time venturing the opinion that we had in all probability a case of simple membranous laryngitis to deal with. I tried also to reassure the patient her affliction would soon be a thing of the past. In less than four days she returned to the office saying the trouble had returned, and she felt it on the left side of the throat, referring to the larynx. On examination a deposit of membrane of the same character, and about the same size, was observed on the left half of the laryngeal surface of the epiglottis—the seat of the former deposit looked perfectly normal.

About this time I received a statement from Dr. Wright, giving it as his opinion the case was one of chronic pemphigus vulgaris, and also giving me the results of his microscopical and bacteriological examinations, which were as follows: Under the microscope the membrane showed a fibrinous deposit containing numerous round cells, but no epithelium; staining with Gram's method showed a large number of cocci, but no bacilli.

I am free to confess that up to this time I was not familiar with this condition, never having seen a case before. There have been frequent outbreaks since the original observation, the membranous deposit making its appearance on one half of the epiglottis, disappearing in a few days to reappear on the other half of this cartilage.

The patient denies ever having had any cutaneous disease. About three weeks ago she complained of feeling much worse, especially of being very nervous and weak. The examination revealed a small deposit on the epiglottis, and for the first time the gums were noticed to be quite red and swollen. There was a membranous deposit on the upper left half of the gum about an inch in length, and a smaller deposit on the lower gum just
below the incisor teeth. She was a little more anæmic looking, and she complained of a slight swelling of the lower extremities.

An examination of the heart showed nothing abnormal, except that the sounds were not quite as clear as they should be in a vigorous person.

A urinary analysis showed a slight trace of albumin with a few blood-corpuscles and pus cells, and a few granular hyaline casts.

An examination of the blood showed nothing abnormal.

Pemphigus is a varied form of skin affection characterized by the formation of bullæ, and whether it be of the benign or malignant variety dermatologists consider it a very rare disease. The eruption on the mucous membrane of the upper air-passages is noticed in all forms of the disease, being more common in the chronic than in the acute variety. It is generally secondary to the skin eruption, gradually extending into the mouth, pharynx, larynx, and into the trachea and bronchi; and also occasionally affecting the conjunctiva. There are, however, a number of instances in which the eruption makes its appearance on the mucous surfaces primarily, as in my case; and cases are cited by Mesnard, Bleibtreu, Penrose, Carré, and Miller. Generally the appearance of the eruption on the mucous membrane is characterized by the formation of a bleb, which is filled with a yellowish fluid such as we find in the bullous formations on the skin. This bleb finally ruptures and a milky white membranous deposit remains. It is questionable whether the appearance of the eruption on the membrane is always accompanied by the formation of bullæ. In my case I have never been able to recognize them, although the patient is able to determine the time of the appearance of the eruption on the membrane by a pricking sensation in the larynx, and she has been in my office within half an hour of this time.

According to Chiari, the bullæ are the result of a rapid exudation, while in a slow exudation it simply causes a raising and discoloration of the epithelium,
giving the grayish deposit the appearance of a diphtheritic membrane. Acute pemphigus of the mucous membrane is always accompanied by a high fever, while the chronic variety is generally without fever, and occurs in those who feel otherwise well.

The diagnosis of pemphigus of the larynx, when it is secondary to the skin eruption, offers little or no difficulty, but it is quite another matter when it makes its appearance primarily on the mucous membrane. It is to be distinguished from diphtheria, tuberculosis, syphilis, herpes of the larynx, and finally the caustic effects of acids or lye.

The etiology of pemphigus is extremely obscure, the majority of authors holding to the tropho-neurotic theory. Microscopic and bacteriological examinations have been made in Mandelstamm's, in Miller's, and in my case, all of which were of a negative character.

This is essentially a chronic disease, and may last months before disappearing or wearing the patient out.

Local applications have no influence whatsoever, alkaline washes probably giving the patient some relief from the constant irritation in the mouth and larynx.

The only remedy which is supposed to have the slightest influence on the disease is arsenic, either in the form of the Asiatic pill or Fowler's solution carried to the point of tolerance. This latter remedy has acted well in my case. The patient at the time of writing has not had an outbreak either in the larynx or mouth for two months.

Paper.

A CASE OF HYSTERICAL LARYNX.

By F. E. HOPKINS, M.D.

I am led to present this case because it possesses some elements of entertainment, and it will not be amiss in so serious a programme to introduce an item of diversion. The case is also a rare one.

Miss V., fifteen years of age, a large, rapidly growing, anaemic, nervous girl, but not appearing like a hys-
terical subject. She was ambitious as a student and took good rank in school. She was brought to my office September 25, 1897, because of a peculiar, not to say terrifying, spasm of the larynx. Aside from the symptoms connected with the larynx there were no hysterical manifestations. At the time of the school examinations of the preceding June she began to suffer from an attack of pertussis. The whoop in these paroxysms was much more marked than usual, and this increased in intensity so that by the middle of August the ordinary whoop was replaced by a high-pitched, piercing sound produced by strong inspiration with the vocal cords tense. It was a squeal—the squeal of a sizable and badly hurt pig. The cough ceased, but the squeal remained, and ultimately became both inspiratory and expiratory. The paroxysms were preceded by a sense of tickling and irritation in the throat, which caused first a slight cough, then followed the terrifying sounds. These occurred many times during the day, though but rarely at night. Each paroxysm was followed by an interval of perfect rest. Examination revealed no local excuse for such explosions. There was a small mass of adenoids and some lymphoid hypertrophy at the base of the tongue. It seemed possible that the latter might induce some congestion of the larynx, but I regarded the case as hysterical, gave a favorable prognosis within the patient's hearing, and said if she did not improve we could burn the redundant tissue at the base of the tongue. The use of the laryngoscope, the favorable prognosis, or the promise of the hot electrode made a proper impression, for the paroxysms ceased, and for a few weeks did not return. November 6th she was brought back because of a recurrence of the spasmodic seizures. The galvano-cautery was applied to the base of the tongue, and this also was followed by an interval of improvement. Paroxysms began again suddenly and severely on March 1, 1898. So violent and continuous were they at times, the family physician informed me, that general anaesthesia had been resorted to on three occasions, all other means having failed to control the seizures. I can, perhaps, give you no more convincing proof of the horror-producing effect of these unearthly sounds than to say that they frightened a traveling drug vender from my waiting room.

On March 18th she was taken to the New York Postgraduate Hospital, where she came under the care of
Dr. G. M. Hammond. He considered the case as probably hysterical; yet, because of the absence of the stigmata of hysteria, the sudden onset and termination of the symptoms, and the facts that the paroxysms were always limited to the same set of muscles, and that there was always a distinct interval of rest between the seizures, the case resembled one of convulsive tic, and he prescribed fluid extract of conium in increasing doses, which she took up to fifty minims three times a day together with morphine sufficient to keep her from completely depopulating the ward. She remained in the hospital but a few weeks, though continuing the treatment for four months, utterly without avail. During the later part of this period the family physician advised spraying the throat with cocaine solution, and this for a time appeared to shorten the attacks. On September 30th she was brought to my office, and while there had several violent seizures, which quite demoralized business for the time. Determined to give the larynx as well as the community a rest, I intubated, and though the tube—a medium-sized adult tube—was retained less than an hour, the result was indeed a happy one. It seemed just the suggestion needed, for there has been no recurrence since, and the patient's general health has greatly improved.

Paper.

RECURRENT OF THE TONSIL AFTER EXCISION.

By F. E. Hopkins, M. D.

No monograph has appeared upon the subject of recurrence of the tonsil after excision, and what I have to offer may perhaps be regarded as curious and interesting rather than as possessing practical value; yet I present it for what it is worth. I am the more inclined to bring the subject to your attention since it is one on which far less has been said by laryngologists than by others. The former, operating usually under general anaesthesia and possessing the skill which goes with constant practice, do better, more thorough work; hence the possibility of recurrence with them is reduced to a minimum. The subject has attracted little discussion,
probably for the sufficient reason that few cases have been observed. A recent case coming under my notice has led me to make some investigation, and I present the subject to you with the hope and expectation that the discussion will bring out suggestions which will help to make recurrence even more rare, as well as to make clear the conditions under which it might be looked for.

My own case came to me as a surprise, since a considerable clinical experience and the silence of most text-books, as well as of current papers, had led me to accept the belief that recurrence in simple hypertrophy did not take place. A careful search of the literature of the subject discloses several cases, and one meets the statement from the laity that recurrence is at least occasionally to be expected. I have tried to trace some of these statements to the source of their authority, with but little success; yet the fact that they are made proves the existence of the impression, and it would be a satisfaction to learn on what basis of truth this rests.

I recently operated on a boy of six whose mother remarked that in childhood she had had large tonsils, but her mother would not allow their excision because of personal experience, she herself having been operated upon for removal of the tonsils, which had, however, recurred. This and similar statements can carry little weight, for one has no idea of the thoroughness or lack of it in operation. Some years ago it was common among general practitioners to speak of slicing off a portion of the tonsil, and one still occasionally hears the suggestion from the older men. Such imperfect work may often have been done and passed for excision. I will report my own case, following it with others which I have gathered.

Miss M., thirteen years old, American, of good family history, and living under conditions which assured hygienic surroundings. On December 28, 1896, the tonsils and some adenoids were removed under ether. Counter pressure was made over each tonsil upon the application of the guillotine; the excision was considered thorough, and examination three weeks later justified
this opinion. The child’s general health was not of the best, and previous to the operation she had suffered repeated attacks of severe amygdalitis. After operation attacks of a similar character continued, though they were of less severity. On April 27, 1897, four months after the removal of the tonsils, I saw the patient while she was suffering from what appeared to be an acute amygdalitis, and the left tonsil was considerably enlarged. This was removed on June 1, 1897, with the guillotine. To the eye it seemed like the usual hypertrophied tonsil in form and size. There were, however, cicatrices caused by the earlier operation. Dr. Wright examined the specimen and pronounced it simple hypertrophy.

When I was gathering material for a paper upon recurrence of lymphoid tissue in the nasopharynx, Dr. Emil Mayer kindly gave me some notes and incidentally mentioned a case of recurrence of the tonsils which came under his notice. I do not know that microscopical examination was made in this case, nor that the patient was free from specific taint.

The Journal of Laryngology, Rhinology, and Otology for August, 1898, makes mention of a case of recurrence in a young woman. The patient’s history showed that she was tuberculous and had suffered from specific infection.

Burnett,* speaking of excision of the tonsil as a remedy for the relief of deafness, says: “I am furthermore convinced of the futility of the excision of tonsils for hardness of hearing, because the largest tonsils I have ever seen were the successors of excised ones. They might almost be regarded as recidives of a morbid growth.”

John Nottingham,† having related a case of amygadalotomy for deafness, states that “there has been no new growth on the side where the operation was practised.” Further on he says: “Unfavorable occurrences may follow such an operation (amygdalotomy) if the cases for its practice be not judiciously selected. One is a second or new growth of the part operated

* Diseases of the Ear, 1884, p. 40.
upon. A patient may have his tonsil excised, and in less than twelve months' time the tumor on the side of the throat may be found prominent, spongy-looking, and as large, if not larger, than before. This seldom occurs except in patients of strumous constitution, and may, in some instances, be averted by the employment of the solid nitrate of silver applied daily for some weeks after the operation.”

J. Mason Warren,* in his paper on excision of the tonsils, read before the Boston Society for Medical Improvement, does not mention the subject of recurrence, but in the discussion which followed his paper he was asked whether the tonsil had ever been reproduced after excision. He replied that he had been obliged to repeat the operation four or five times in about five hundred cases. Homans, in discussing the above paper, said he had two cases in which the operation had to be repeated. In one of these the operation, while thorough at first, required to be repeated five years later. In the other case, in which both tonsils were removed, one was now again in condition to require removal.

Stapleton,† in the discussion of a paper by Martin on amputation of the tonsil, said he had known of cases where it was necessary to remove the tonsil more than once. It might be urged that removal had not been thorough, but in his experience the cases were examples of pure reproduction.

Ruppaner,‡ in enumerating popular objections to cutting, includes this one; that “the tonsils after being cut grow again.” He remarks: “Strange as it may seem, this claim is often made on the authority of the family physician.”

W. H. Daly says:* “As to the question of the liability to grow again, the answer can be included in this

† Dublin Medical Press, April 19, 1863.
# Medical Record, February 10, 1883. Paper entitled Some Questions relating to Tonsillitis.
remark: that with every badly treated or neglected cold affecting the throat there will be some tendency for the tonsils to increase in size again; but this tendency is not marked by any means, and may be prevented altogether with ordinary care and proper treatment by local applications."

W. Porter says: * "It has been urged as an objection that there may be recurrence of the hypertrophy. In over a hundred and fifty cases I have had to do a second operation but twice, and in one of these cases the operation had not been thorough. As hypertrophy is largely due to retained secretions, it seems reasonable to believe that when the crypts are removed hypertrophy can not take place."

J. G. Carpenter,† in a paper read before the American Rhinological Society on the abuse of uvulotomy and amygdalotomy, speaks of the common practice of removal of the tonsils, and says that as tonsillar disease is kept up by nasopharyngeal catarrh, hypertrophied tonsils will enlarge again and again after removal until this catarrh is cured.

Behrens,‡ in the course of an article on one hundred and twenty-seven amygdalotomies, says: "As to the common pretext that tonsils operated upon again hypertrophy, this is not valid with physicians of experience. Even if they do return, it is no argument against operating."

Lennox Browne says: * "Very rarely indeed is there a redevelopment of the hypertrophy; but as such a circumstance is not outside of my experience, I always endeavor to remove as much of the gland as may be pressed into the guillotine." The above would appear to be the only mention of the subject of recurrence of hypertrophy in any standard work which includes diseases of the tonsils.

‡ Western Medical Reporter, January, 1889.
# Diseases of the Throat, third edition, p. 255.
The following controversy between B., an anonymous contributor to the *Medical Times and Gazette*, and Dr. Mackenzie and Dr. Semon bears upon the subject. In this journal for March 8, 1884, B., evidently a general practitioner, sent a letter to the editor on chronic amygdalitis and amygdalotomy. He asks: "Is amygdalotomy a complete cure for amygdalitis?" and answers it as follows: "The experience of those patients, probably well known to all physicians and surgeons, who have had their tonsils taken out again and again would return a negative answer. If by the ordinary operation we could insure the completeness of the work and enucleate the whole gland, there would probably be no recurrence." The writer seeks to blame the amygdalotome for the lack of thorough removal. He then says: "If a tendency to hypertrophy exists it is sure to manifest itself even after an almost complete obliteration of the gland." He concludes by saying that "the feebly hypertrophied stumps rise in judgment upon the mistaken zeal of the operator." Mackenzie, in reply, through a letter to the editor of the same journal, March 15, 1884, writes as follows: "B. is evidently possessed of the idea that tonsils grow again and again after removal. This view is actively opposed to my experience. Among the many hundreds of cases in which I have operated, I recall but two in which there was any sign of subsequent enlargement. In one of these, I believe that I performed the operation incompletely, perhaps insufficiently. In the other a severe attack of inflammation, occurring long after the tonsils were removed, left a little enlargement behind." B. made a short rejoinder in the same number of the *Times and Gazette*, accepting Mackenzie's dictum.

F. Semon, in the course of an article on The Throat Department of St. Thomas's Hospital, 1883, published in vol. xiii of the hospital reports, asks, "Will not the enlarged tonsil grow again?" and continues as follows: "An affirmative reply has been recently given to this question in the *Medical Times and Gazette* by an anonymous writer, B." He then quotes from this article and
proceeds: "Could this fact of recurrence be readily established, that after properly performed tonsillotomy in a large number of cases the glands enlarge again, the performance of the operation might be objected to. In B.'s case, however, the premises are weak." Semon quotes Mackenzie's reply to B.'s letter as being a complete refutation of B.'s views. He then says that he very strongly suspects that the recurrence of which B. speaks was merely insufficient removal. Out of many hundred cases Semon saw but one considerable re-enlargement, and thinks that the struggles of the child may have interfered with the completeness of the operation. He admits that what B. calls a "feeble hypertrophy of the stump" may take place at times. He concludes with Mackenzie that the recurrence of any considerable enlargement is by no means as frequent as B. would fain make us believe, and that when it does occur it is almost always due to an insufficient removal in the first operation.

The foregoing represents all that could be found in the library of the New York Academy of Medicine and of the surgeon-general's office at Washington. It is seen that a wide variety of opinion is represented as to the frequency and cause of recurrence, as well as of its prevention. We can not accept all the conclusions of the various writers, but the facts observed are none the less of interest to us. It is noticeable that few cases are alluded to by laryngologists, and that most of the references are of cases which were published some years ago. The inference is that under general anesthesia, now so commonly employed, a more thorough operation is performed and recurrences must be even more rare than formerly.

It would appear that among the causes of recurrence, aside from imperfect operation, are a tuberculous or specific dyscrasia and an acute inflammation of the stump. It would naturally be supposed that this acute inflammation of the stump must take place soon after operation in order to result in recrudescence of the tonsils, as occurred in my own case; yet Mackenzie men-
tions a recurrence following acute inflammation long after operation. My purpose is served in simply calling your attention to the subject, and I refrain from more extended comment.

Discussion.

Dr. John W. Farlow, of Boston: Unless the tonsil has been completely removed there may remain in its deep-lying tissue a certain amount of follicular inflammation which keeps up a decided irritation and thus leads to enlargement and regrowth of the tonsil. This is particularly so in the lower part of the tonsil near the base of the tongue, where small prolongations are not removed. These extra projections or lobes often remain behind in the ordinary operation with the guillotine. This is a most useful instrument, but often requires to be supplemented by the scissors, snare, or punch. The object should be to remove as much of the tonsil as possible, and the anterior pillar is not by any means the external limit of diseased tonsillar tissue. We can do much more thorough work and have fewer recurrences if we give up the idea that all that is necessary in amygdalectomy is to make one cut with the guillotine, with the anterior pillar as a guide. In adults, but not often in children, there is a marked development of the so-called tonsillar fold, which spreads over the lower part of the tonsil and conceals it. This may be mistaken for the anterior pillar and the part of the tonsil behind it escapes removal.

Dr. James E. Newcomb, of New York: I quite agree with what Dr. Farlow has said, and Dr. Hopkins has done a wise thing in calling our attention to this subject. It seems to me that without this perfect technique which Dr. Farlow has described and demonstrated there is a certain amount of lymphoid tissue left at the bottom of the tonsil. I think that frequently among the dispensary class of patients, those coming from tenement houses and going back to the same bad, unhygienic environment and the same conditions which have originated the original disease, are very often apt to return with a recurrence of the tonsil after excision. I have had some cases in which I have done what I believed to be a thorough operation, satisfying myself by inspection of the case three or four weeks afterward that the tonsil had been completely removed, yet I have seen such patients reappear with enlarged tonsils. This re-
occurrence is not so striking in the better class of patients.

I should like to ask Dr. Farlow if he ever uses the snare in cutting out these tonsillar fragments.

Dr. Farlow: I have removed many tonsils and fragments with the snare. In those cases I have sometimes been able to remove the tonsillar tissue so completely that there has been no possibility of recurrence. The cases have been examined subsequently and no tonsillar tissue has been left, the tonsil having been entirely enucleated.

Dr. G. V. Woollen, of Indianapolis: A tonsil can not recur if it has been thoroughly enucleated. That is a fact which I think we all must recognize. I had the temerity to say at the American Medical Association in 1887 that there was no such thing as a tonsil, physiologically or anatomically speaking; that it was a pathologic product, pure and simple. I have yet to retract that assertion, and I always look upon a tonsil as I do upon a wart or papilloma, or any extraneous growth, not always needing removal. When I have a tonsil which demands removal, I try to do it thoroughly. I have seen, at home and abroad, indications that would lead to just such reports as we have here—namely, that so long as we have a part of the tonsil left we may have a proliferation of tissue, just as we had originally. I have discontinued the use of the word removal or the word excision, or any such words as applied to the tonsil. The enucleation of the tonsil can be done with the guillotine; not, however, with the guillotine furnished by the instrument makers. One of the most misleading things in this surgical appliance is the elevator of the fork attached to the amygdalotome. I have taken this off; I use the French amygdalotome. I have the patient hold the tongue depressor, as it is desirable to engage his attention as much as possible. I raise the tonsil with a volsella, so as to determine what amount of tonsillar tissue I wish to remove and see where its attachments are, drawing it out from behind the pillars, through the ring of the guillotine previously adjusted, then by means of the guillotine I seize the tonsil and cut where I desire. It should be a most deliberate operation. Since adopting this procedure I have not had many cases of recurrence. After I have taken the tonsil out, I examine the lacunae with a probe to see whether they are perforated or not, and thereby I determine whether there is any tonsillar tissue left to give further
Whether my decision to prior project more important and leave you fold not trouble. I have been surprised how by this procedure I could enucleate the tonsil, simply taking it out of its bed and leaving the pillars intact. Some of the worst cases of peritonsillar abscess that I have ever seen have arisen from small portions of tonsil left behind.

Dr. D. Braden Kyle, of Philadelphia: Whether we have to deal with the tonsil as a physiological or pathological structure it matters little. Where it is of a low grade gland structure, and in at least the majority of cases, I agree with Dr. Woollen that it is pathological, and I also believe that it is more of a benign growth—a hyperplasia. In some cases there is no doubt that the tonsil recurs after excision. I have a number of sections in my laboratory showing various pathological alterations in tonsillar tissue, and I find in the few in which recurrence has taken place that the tissue largely resembles that of an adenoma. I think in some cases this fact possibly explains why we have recurrence—we are dealing in such cases with a benign growth and not a simple tonsillar structure.

Dr. G. Hudson Makuen, of Philadelphia: In my experience the tendency for the tonsil to recur after operations has been rare, and in this respect my experience differs from that of Dr. Hopkins. The chief cause of recurrence, as has been said, must be a lack of thoroughness in its removal. The general surgeon amputates the tonsil and, as Dr. Farlow has said, part of it is left in behind the pillars; thus the last condition is worse than the first, because it leaves room and an opportunity for secretions to gather and cause further trouble. I think that the reason why amygdalotomy is looked upon with such disfavor is that the operation is not properly done. I would remove the operculum or fold referred to by Dr. Farlow as well as the tonsil. If you dissect the tonsil out from behind the fold you will leave a cup-shaped pocket for the collection of secretions and particles of food, and this becomes a source of irritation and infection.

I have devised a set of instruments for dissecting the tonsil away from the anterior and posterior pillars prior to the operation for amygdalotomy. This is a very important thing, for it enables the operator to do a more thorough operation.

Dr. Hopkins (closing the discussion): My only object in presenting this paper before the association was to have the matter of recurrence of the tonsil after excision take its proper position. With one exception our
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text-books are silent on the subject, and current papers do not refer to it. Recurrence does occasionally take place, and I thought that what the members of the association might have to say on the subject would tend to give it proper recognition and an authoritative position.

Paper.

THE EARLY DIAGNOSIS OF ANEURYSM OF THE ARCH.

By WILLIAM PORTER, A. M., M. D.

My subject is one that in its entirety is not within the limits of the definite work of this association. So important, however, are the laryngological symptoms in many cases of aneurysm that it is now well understood that a diagnosis in cases of suspected arch lesion is not complete without laryngeal investigation. Thus it is that I do not hesitate to speak of this subject here, and even to emphasize some methods of interrogation not wholly within our special domain. Those of us who have much to do with the physical examination of the chest well know that there is nothing more difficult than to make a conclusive diagnosis in some of these cases in which the lesion of the aorta is comparatively small, and yet there is no class of cases in which the prognosis is more important.

It is not my purpose to review the whole field of physical exploration, or even to note very fully the more easily recognized symptoms, often so apparent in well-developed aneurysm, but rather to refer to some special points not made prominent in the text-books and to mention one or two suggestions that are almost, if not altogether, new.

While many signs are more or less important, and several of these, combined, may warrant a diagnosis, yet there is only one phenomenon positively characteristic of thoracic aneurysm, and that is the presence in some part of the chest of a pulsating tumor other than the heart, which beats isochronously with the heart, and at least as forcibly, and which at each impulse expands in every direction (Balfour). In this connection it
may be well also to remember that the aneurysmal pulsation is usually more forcible than that of the heart.

In the study of the evidences as presented by the average case of aneurysm, the laryngeal symptoms will naturally interest us at first. Let me at the outset recall the fact that pressure upon the recurrent nerve from aneurysm or thoracic tumor does not necessarily produce aphonia. I deem it of value to mention this because it is to be noticed that in many clinical reports the statement is made that the laryngeal evidence was negative because there was no aphonia.

The phenomenon of compensatory arytenoid movement (which formed the basis of a paper by the writer before this association in 1895) is now sufficiently established. The laryngeal image may be seen to be normal in appearance and function except in one respect—where there is paralysis of one recurrent nerve, most frequently the left, the corresponding cord may be seen in the cadaveric position, while the opposite cord may cross the median line and phonation be possible.

In such cases, however, it is impossible that equal tension be made on both cords, and the unequal vibration will produce decided change in the voice—a hoarseness (W. T. Porter), a monotone, and inability to reach a high note (Newman, Mulhall). One or all of these symptoms may be present. Sometimes at the beginning there is not even a loss of movement, but a congestion, consequent, doubtless, upon laryngeal irritation. The only subjective symptom at this stage may be a more or less constant laryngeal cough. In some of these cases, the pressure upon the nerve being increased by the growth of the aneurysm, complete aphonia results.

It has been noticed that a bilateral adductor paralysis may be present when only one recurrent nerve is involved. It is possible (Dr. George Johnson) that one recurrent centre takes on increased and compensating action when the other fails, and, being stimulated beyond the normal, it too may, in time, fail in its function.
The dyspnœa of aneurysm, though not a constant symptom, presents many phases and should not be overlooked. When it is distinctly laryngeal, it is associated with and dependent upon motor paralysis of one or both sides. Sometimes the narrowed glottis is still sufficient for easy respiration during quiescence, but exertion produces greater inspiratory demand, and during the effort the paralyzed cords are drawn violently downward and inward, with resultant apnoea.

There may also be dyspnœa (as so well demonstrated by Newman), not only from direct pressure upon the trachea and bronchi, but from pressure on the bronchial plexus, with consequent bronchial spasm. In one case this was the only form of dyspnœa present that I could discover, and this was increased in certain recumbent positions.

Tracheal tugging and tracheal pulsation as well as dysphagia may appear, the latter varying in intensity at times, but generally at a stage when there is other and more positive evidence, and these have received as much prominence in our books and journals as, in the present state of our knowledge, they are entitled to. The Röntgen rays give us an interesting field for study and may be of more use in the future. So far, the best pictures are, of course, those of advanced cases in which the ordinary methods of investigation are adequate, but I believe that we will have better results and definition in much earlier cases.

Pain in the region of the aorta is frequently referred to as a characteristic of aneurysm, but I have not found it a valuable or constant indication. The pain of pressure and tension, so often mentioned in the books, is not only often absent, but is almost exactly simulated in many cases of neurasthenia—in fact, in the latter condition it is of frequent occurrence. One of the most prominent physicians of my acquaintance has borne the burden of the fear of aneurysm for three years on account of the presence of the so-called characteristic pain, while the most careful physical examination has failed to find one confirmatory sign.
Far more indicative and just as frequent, in aneurysm of the arch, is a pain in the region of the fifth or sixth dorsal vertebra. I well remember a case in which this was the only symptom, so far as I could learn, though I had no personal knowledge of the history, the patient, a man of forty years of age, dying from rupture a few minutes before my arrival. He had been treated by a noted neurologist for spinal irritation, and the autopsy showed vertebral caries from pressure. This pain may also be found in the neurasthenic, but in these cases it is lower, opposite the solar plexus, or, as a point of second selection, about the fifth cervical.

Passing the mention of the evidence to be gained by percussion and palpation and much of what is already formulated as the results of auscultation, I wish to call attention to two points which should be remembered in every suspected case. Auscultation of the left interscapular space may reveal an arterio-diastolic murmur not heard elsewhere, or there may be here or in the neighborhood a systolic murmur, due to the beating of the aneurysmal sac on the left brachus (Gerhardt). It is heard at the same point as the pain above mentioned.

The second auscultatory phenomenon, not as yet prominently mentioned in the text-books, is the presence of a systolic sound or thud in the brachial artery, synchronous with the systole of the heart (Glasgow). Skoda and Clark have both called attention to this sound as significant in aortic insufficiency, and Dr. Glasgow well says that the same factors which are necessary to produce it in aortic regurgitation are equally necessary and often present in aneurysm.

I now wish to put on record a method of examination with which I have been experimenting for about three years. Remembering the close proximity of the aorta to the esophagus, and that the latter is exceedingly elastic and compressible, it occurred to me that a large bougie, with the lower end made very distensible, could be passed down opposite the site of suspected aneurysm, and the impulse conveyed to the distal end
of the tube and measured. The procedure is a very simple one. The ordinary oesophageal bougie can be covered at the end with gold-beater's skin, and, after a little spraying of the pharynx with a weak cocaine solution, it can easily be passed without danger of violence to any thoracic lesion.

The tube is then distended with water and connected with a U-tube, which is also filled with water. A few drops of coloring matter will add to the demonstration of the experiment. If the tube is passed down near the cardiac orifice, the heart impulse is sufficient to produce some vibration in the tube, especially if there is hypertrophy; but if the tube is placed approximately opposite the aortic arch, very little impulse is noted in the normal case.

Where there is aneurysmal distention and impulse at this point, it is not difficult to get a more or less distinct vibration, which can be seen and estimated in the bent glass tube. In five out of seven cases under observation during the last three years the impulse could be noted by this method. I need not weary you with the details of the histories except to say that in three of these cases there was a doubt at first, even after repeated investigation by the usual methods.

I had hoped to be able to claim originality for this, but I have just found, through the kindness of Dr. Abrams, of San Francisco, that Schnell (Münchener medicinische Wochenschrift, July 23, 1889) has written of a method which, though not exactly the same, is certainly entitled to precedence.

More recently I have been experimenting with the auscultation of aneurysm of the arch by way of the oesophagus, which, so far as I can learn, is original, although my former experience makes me hesitate to say even this. A solid oesophageal sound with a cylindrical end, something like the well-known dilator, but with a much longer tip, is passed in the usual way. To the outer end a hard-wood disc is screwed. To this disc is applied a stethoscope. or, what I have found much better in every way, the autoscope devised by Dr. Outten
and recently given to the profession. In this little instrument the sound vibration is caught and magnified by tightly stretched animal membrane, inclosed in an aluminum case, open on one side, with rubber tubes attached to aural tips. It promises to be an improvement on the stethoscopes in that there is not only a better conduction of sound but a clearer definition. Through the dense medium of the solid bougie the bruit is conveyed to the disc with great plainness. The vibrations of the latter are then determined by the autoscope. The procedure is not difficult, but, having used it only during the past winter, and in but three cases, I am unwilling as yet to compare it with the usual media of auscultation through the thoracic wall. In two of these cases the arterial bruit was certainly more distinct and positive.

Paper.

FIBRÓ-LIPOMATOUS TUMOR OF THE EPIGLOTTIS AND PHARYNX.

By E. FLETCHER INGALS, M. D.

Mr. S. W., aged twenty-eight years, a farmer, was referred to me early in February, 1899, on account of difficulty in breathing, speaking, and swallowing. He stated that in 1894 he had noticed a little difficulty in breathing at night; that some time later his voice became muffled, and that in 1896 he began to have much trouble in swallowing because of some obstruction in the throat, which, however, was not painful. In September, 1896, a growth, said to have been upon the base of the tongue, had been cauterized several times and efforts had been made at its removal with scissors and snares by which small pieces had been taken off. This had given him some relief for a few months, but afterward he had gradually grown worse. During the two months preceding the time when he first saw me the throat had been gradually filling up, causing more and more difficulty in swallowing, but interfering especially with breathing when he was lying down. His voice was much muffled at the time I saw him on account of some obstruction which was not visible on inspection of the
throat with a tongue depressor. He was breathing fairly well when sitting quietly, but had much difficulty when lying down. He had not suffered from previous disease, excepting rheumatism in 1890 and 1894, and some of the diseases of childhood. There was no evidence of hereditary predisposition to any disease. His weight was normal, pulse and temperature normal, appetite and digestion good. There was a little cough for the purpose of clearing the throat, but no expectoration. There was no evidence of pulmonary disease. The nasal cavities were normal; oropharynx, tonsils, and palate also natural. Upon examination with a throat mirror I found a large tumor with a smooth, somewhat congested surface nearly filling the laryngopharynx and apparently attached to the right two thirds of the base of the tongue and to the right side of the pharynx. This left only a small chink about a quarter of an inch in width at the left side of the laryngopharynx when the throat was in a passive condition. It was impossible to see anything below this tumor excepting the pyriform sinus and the pharyngo-epiglottic fold of the left side. I suspected that we had to deal with a fibrous tumor attached to the base of the tongue and side of pharynx. The patient was presented at my clinic in Rush Medical College, where the parts were anesthetized by a spray of a ten-per-cent. solution of cocaine and a No. 5 steel wire loop was passed about all of the tumor that could be engaged, which seemed to be the greater part of what was visible. The wire was tightened with the snare, but when the milled wheel was turned down to cut off the growth, the resistance was so great that the wire broke. Twice subsequently similar wires were used and both of them broke, so that the operation had to be given up for the time being. I became satisfied that the ordinary polypus snare would not be strong enough to remove the tumor, therefore, a week later, with a uterine écraseur, which I had bent at nearly a right angle, and which was armed with a No. 8 piano wire, I again engaged the upper part of the tumor, that had been formerly caught, and I had no difficulty in cutting it off, removing at the first operation a mass about an inch and a half by an inch in its various diameters. This was covered with a smooth mucous membrane, was firm, and had all the physical characteristics of a fibrous tumor. Immediately afterward I removed another piece, about a third as large, which had the same characteristics, but I found that
there was still a large mass lower down, so that the operation gave the patient only partial relief. The effects of the cocaine having worn off, the patient wished to defer further operative procedures for a few days. His throat was necessarily quite sore for some days afterward. He returned to me in about ten days, when I removed another mass an inch and a quarter by half an inch in its various diameters. This had all the appearance of a fatty tumor. A week later I removed two masses each about half an inch in diameter, and a week still later another not quite so large. As the lower masses of the tumor were removed, it was found that it had been attached to the upper portion of the right side of the epiglottis, to the right pharyngo-epiglottic fold, to a part of the base of the tongue, and to the right side of the pharynx. The lower portion of the larynx was now found to be normal, and all the uncomfortable symptoms had disappeared; but a small bit of the tumor remained in the right valicula, which I could not engage in a snare. This I cut away with cutting forceps and cauterized the part thoroughly with the galvano-cautery; thus the growth was entirely destroyed. The patient was discharged, but agreed to report a month later. The growth was examined microscopically by Professor Hektoen and his assistants in the pathological laboratory of Rush Medical College. The first mass removed was found to be a typical fibrous growth, another part had the mixed fibro-lipomatous characteristics, and the last large mass was a distinctly lipomatous tumor.

May 24th.—The patient came into my office this morning, the first time since his discharge, and I have the opportunity of showing the sequel. The right side of the epiglottis is shown adherent to the side of the pharynx and partly to the base of the tongue, but there has been no return of the growth. The adhesions of the epiglottis would appear to prevent it from closing the larynx in deglutition, but Nature has adapted the parts to the new conditions, so that he has no difficulty in swallowing.
FIBROUS TUMOR OF THE NASOPHARYNX. SEQUEL.

By E. Fletcher Ingals, M.D.

I desire to make a supplementary report of a case which, if I remember correctly, was presented to this association some years ago:

A man, now twenty-eight years of age, came to me when a boy of thirteen years with a fibrous tumor in the nasopharynx. I removed the tumor as thoroughly as possible, but some part of it which was attached to the vertical plate of the palate bone could not be eradicated. Finally, it began to crowd out beneath the zygomatic arch. The late Professor Gunn made an incision in the cheek from the angle of the mouth to the ear and attempted to remove it, but the haemorrhage was so profuse that he was obliged to check it as best he could without removing much of the growth. Not long afterward the boy became somewhat wild and was running about the city with no friends to care for him, so, fearing he would get into bad company, I sent word to his father to take him home. When he went home some of the growth was still present. This was fifteen years ago, and the patient now tells me that the growth continued to increase after he reached home for about a year, by which time the right naris was completely closed, the right malar bone had become very prominent, and he had lost the sight in the right eye. For many months the tumor continued without any considerable change and he had no treatment. In the course of a couple of years he again began to breathe a little through the nose. Afterward he steadily improved, until at the end of a couple of years the nasal cavity appeared perfectly free, and now he says the right cheek is growing smaller. His right eye appears nearly normal, but is blind.

A very interesting feature in this case is that the fibrous growth, which occupied the nose for four years, has disappeared. The right nasal cavity is now an inch in its lateral diameter, the septum is crowded away over to the left side, and the turbinated bodies have been destroyed by the pressure. There is a large opening into the sphenoid cells into which the growth for-
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merly extended. The case is especially interesting as showing not only the tendency to recurrence of fibrous growths, but also a disappearance of this tendency as a person advances in life toward twenty-two years of age, and a possible tendency to complete atrophy, as in this case, in early adult life.

Paper.

CONFINED SUPPURATION OF THE FRONTAL SINUS, WITH SPONTANEOUS RUPTURE. INCLUDING THE REPORT OF A CASE.

By D. BRADEN KYLE, M. D.

While there is nothing unusual in the fact that a suppurative process occurred in the frontal sinus, yet the case which I wish to report to you is of such interest, not only in the course pursued by the disease, but in the symptoms produced, the age of the patient, the history of slight clinical phenomena, together with the external necrosis and spontaneous opening, as to render it worthy of report. The history is as follows:

Mrs. A. L. C., aged sixty years. In January, 1898, after being indisposed for a few days, she experienced a sensation of fullness on the left side of the nose, opposite the inner angle of the orbit. There was no pain, only a sense of uncomfortable fullness. There was a considerable discharge from the nose of a thin, watery secretion; the character of the secretion varied slightly in the morning, when it was thick and tenacious. There was a great deal of swelling over the face, especially between the eyes, which gave a peculiar facial expression, as though the eyes were wide set. There was not much tenderness on pressure over the swollen area. There was, however, some soreness at the inner angle of the eye over the region of the ethmoid cells. During the month of February the patient had quite a severe attack of epidemic influenza or la grippe. She was confined to her house about a month. During this attack there was practically no change in the condition of the forehead. The swelling remained about the same, and there was possibly a slight increase in the clinical phenomena. However, after the patient was able to be up, which was about the 1st of April, the
swelling became more marked, especially under the eyes and on the left side in the region of the nasion, about an inch and a half above the base of the nose. There was considerable discharge from the nostril, possibly more puslike, although nothing more than would be from an ordinary continued rhinitis. There was more soreness at this time, although not painful; the patient complained of malaise and a peculiar sick feeling; there was marked general debility, and the patient seemed to be falling very fast in general health. Prior to this attack she had been in the best of health—had never up to that time even suffered from a headache. During the month of May the patient developed marked swelling in the limbs—in fact, all the symptoms were aggravated; there were sore spots here and there over the limbs, with some petechiae and slight inflammation. There was constant, shifting of these spots. There were pronounced aching about the joints and symptoms of a decided rheumatic condition or gouty diathesis. There was very little change in the swelling of the face; if any difference, it was more marked. At no time was there any acute pain, the prominent symptom being the edematous condition. The history as given was furnished by Dr. Brouwer and Dr. Schurman. The patient had lost over thirty pounds in flesh, and was quite weak and debilitated. The last of June she consulted me, when I found the following conditions present:

The tissue on the forehead was so swollen that it hung down over both supraorbital ridges, with marked swelling under both eyes, especially the left, giving the patient's face a most peculiar appearance. In the
median line, about an inch above the line of the supra-orbital ridge, was a marked projection, almost tumor-like, with distinct redness, and somewhat pitted in the centre, with a small spot on which there was some dried secretion. On examination of the nose I found practically no discharge on the right side, only a slightly catarrhal inflammation; the left side was markedly oedematous; the mucous membrane was covered with a thin, glairy discharge, with tendency to accumulation. The upper part of the nostril was so oedematous and swollen as to completely occlude the cavity. This tissue was depleted by the local use of an eight-per-cent. solution of cocaine, and after retraction of the tissue I could elicit no discharge from the openings of any of the accessory cavities. After the use of the cocaine there was perfect breathing through the nostril. There was practically no pathological alteration within the nasal structure, the septum being almost straight, and there was no enlargement of the turbinal bodies or lining membrane. Transillumination was resorted to, from a diagnostic standpoint, and the antra showed a perfectly clear outline. I was unable to make any satisfactory illumination of the frontal sinus or of the upper portion of the nose; however, I believed I had to deal with a confined suppuration in the left frontal sinus, or possibly involving both sinuses. In passing a probe over the skin at the point of bulging with pitting, on removal of the slight crust formation I found that the necrotic tissue had given way and the abscess was already opened externally. On pressure, and by the patient leaning forward, there was a discharge of foul-smelling thick pus, and by slight digital examination I found that there was a necrotic area, almost circular, about three fourths of an inch in diameter. I then passed a probe into the opening, and, allowing it to follow the line of least resistance, it passed down without any force whatever, until it lodged against a soft material. By tapping it gently I felt that it was necrotic bone. With a little pressure the probe passed through into the nasal cavity. At the same time light was reflected into the nostril, and the point of the probe could be seen on the septum side of the middle turbinate, about the middle third. I then had free drainage. After the discharge of pus the sense of fullness at the inner angle of the orbit, which had continued from the first, entirely disappeared. The cavity was flushed out with warm boric-acid solution.
followed by hydrogen peroxide, cinnamon water, and aqueous extract of hamamelis, equal parts. Within forty-eight hours the swelling had entirely disappeared from the face. The time from the spontaneous opening of the abscess until the complete closure of the wound was about two months. Occasionally the external opening would become occluded with dried secretion with slight return of the facial swelling; on reestablishment of drainage this quickly disappeared. The patient's general health was improved by internal medication. Urinary examination showed no structural lesion of the kidney, but some leakage of serum albumin, possibly from relaxed blood-vessels. The internal medication consisted of Basham's mixture in drachm doses, as well as a sixteenth of a grain of the double sulphide of arsenic with a thirtieth of a grain of the nitrate of strychnine.

From the anatomical relation and histological structure it would seem more likely that the necrotic process would have involved the inner plate of the frontal bone instead of the outer; as to why in this individual case the necrosis involved the outer plate I can not explain. The edges of the necrosed bone were quite smooth and the opening almost a circular one, three quarters of an inch in diameter. The only surgical interference was the passing of the probe from the base of the cavity down into the nostril. It is my own opinion, and from the history of the case, that this began as a suppurating catarrhal inflammation, and that in the inflammatory process the opening into the nasal cavity was occluded, for in passing the probe from the sinus into the nose I met with no bony structure, but simply granular and necrotic material. I had very little difficulty in keeping this passage open. Occasionally it was occluded by the accumulated dried secretion. My reason for nonsurgical interference was this, that if in the process of a confined suppuration the inner plate of the frontal bone and the other structures involved had resisted invasion to such an extent as to allow necrosis of the outer plate of the frontal bone there was no danger now of systemic infection from that source, and that if this structure had offered resistance during the
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confined suppuration, it was still a good protecting agent, and I reasoned that if the surface was freed from infection the sinus formed would fill in with granulations, and that by surgical interference I might only open up the lymphatics and blood-vessels and make an open way for systemic infection. The termination of the case proved my theory to be a correct one, for after thorough cleansing with antiseptic solutions and getting rid of all infection the opening healed by granulation, the bony part forming through the proliferation of the osteoblasts new bony structure, which, of course, obliterated the frontal sinus and gave a firm, solid wall. Whether there was an irregularity in the formation of the frontal sinuses I can not state, but either the left frontal sinus was abnormally large, or else the sinuses communicated, as the abscess cavity extended well to the right of the median line. The treatment consisted in the thorough syringing, first with a warm alkaline solution, followed by hydrogen peroxide, cinnamon water, and aqueous extract of hamamelis, equal parts. Suction was then applied and all this material drawn off. This was followed by a saturated solution of boric acid. By cleansing thoroughly the nasal cavity the solution would pass from the sinus into the left nasal cavity, showing the direct communication with the nose. After the first twenty-four hours I had little difficulty in keeping the sinus open, thus permitting through-and-through drainage. There was then blown into the cavity by means of an insufflator equal parts of boric acid and aristol. In the beginning I packed for three or four days, removing the packing each day, with gauze saturated with aristol. The nasal condition cleared up as soon as I was able to get rid of the infection in the sinus. This infected material of course flowed down over the nasal mucous membrane, producing marked irritation. The nasal discharge entirely ceased with the closure of the sinus, and now the patient is free from any catarrhal secretion, the nasal mucous membrane presenting a very normal appearance. The bony structure has filled in to such an extent that it leaves
a very little depression and there is a very slight scar, as shown in the photograph.

You are all familiar with the recent literature on the subject, and many able articles on empyema of the frontal sinus have been published, but by a careful search of the literature I was unable to find a case identical from all standpoints. Morell Mackenzie (1) quotes a case reported by Richties in 1737 in which there was spontaneous discharge of caseous matter through the external table of the frontal bone and through the middle of the upper eyelid, which resulted fatally, evidently confined suppuration of the frontal sinus. Armstrong (2), in 1886, reports two cases of confined suppuration, but in neither spontaneous rupture; also a case of necrosis of the orbital plate of the frontal bone, following acute abscess, in which there was necrosed bone, but the discharge came through the nostril. He also reports three other cases of confined suppuration, but in all operative interference was instituted. Lennox Browne (6) reports a fatal case of suppuration of the frontal sinus, in which, on post-mortem examination, it was found that the abscess had penetrated inward, and pus was found between the dura mater and the inner table of the frontal bone. C. Ramage (7) also reports a case of necrosis of the outer layer of the frontal bone, in which, however, the abscess was reached by incision. In all these cases there was a continuous discharge of pus from one or both nasal cavities, and there was not spontaneous rupture. Lawson (10) reports a case in which there was no discharge from the frontal sinus into the nose, and the abscess formation followed an injury. In his case the sinus was tapped through the nostril. Wells (11) reports a similar case of confined suppuration. Hodges (12) and Bousquet (13) both report cases of confined suppuration. Bousquet's case resulted fatally, and the autopsy showed the right frontal sinus full of caseous material, discharging through two openings, one into the cavity of the orbit and the other into the anterior lobe of the brain. Nicolai in 1724, and
Runge and Richter in 1776, give the first clearly defined history of abscess of the frontal sinus. While the literature of abscess of the frontal sinus is replete with reported cases, yet, as I said earlier in the paper, I find practically none identical with the case above reported.

Literature.


14. C. S. Bull. Abscess of Both Frontal Sinuses. *Medical Record*, vol. xxviii, 1885, p. 120.


**PRESENTATION OF SPECIMENS ILLUSTRATING ABNORMALITIES OF THE FRONTAL AND MAXILLARY SINUSES.**

Dr. Roe presented six or eight human skulls, which were most beautifully prepared, to illustrate the presence of partitions and diverticula in the antrum of Highmore, and he pointed out how effectually these would retard recovery in the case of empyema of these sinuses. There were also demonstrated several striking anomalies of the frontal sinus.

**Discussion on the Paper of Dr. Kyle and Dr. Roe’s Specimens.**

Dr. Henry L. Swain, of New Haven: When Dr. Kyle sent me the title of his paper, stating that he had a case of confined suppuration of the frontal sinus to report, I thought of this skull, which was at the college. It shows an anomaly, there being only one frontal sinus for the two sides of the head. In using this skull for the purpose of illustration in lecturing to medical students, I tried to show them the opening from the frontal sinus of the right side into the nose and found there was none. The specimen is of interest to us, for if in life the head had symptoms of double frontal sinusitis there would only have been a left-sided discharge, and one might have experienced a great deal of trouble if he had attempted to open the natural passage in the right nos-
tril. I believe this explains a very obscure case which I once had, when I felt that I ought to do a radical operation on the non-discharging side, but found it unnecessary, as the case went on to spontaneous cure. I believe it to have been like this specimen—a frontal sinus, occupying both sides of the skull, with no partition between, opening into only one nostril.

We are indebted to Dr. Roe and Dr. Kyle for having called our attention to these interesting subjects. We are sometimes defeated in our therapy as applied to these cases of malformations, and we often let them drag along in such a way that they become one of the opprobria of our work. Certainly we can but feel very grateful to Dr. Roe for having brought these beautifully prepared skulls. They are striking illustrations of these malformations.

Dr. John N. MacKenzie, of Baltimore: This is an exceedingly interesting subject, both from an anatomical and clinical point of view. Of course, we all know that the existence of these diverticula or septum formations in the antrum has been familiar to all anatomists and surgeons who treat antral disease for many years back. In recent times the clinical researches of Zuckerkandl have given a tremendous impetus to the study of this class of phenomena. The beautiful skulls which have been passed around illustrate very well these septum formations and inequalities in the floor of the antrum; but I would right here impress upon you the necessity of looking before you leap in this class of cases. Mere inequalities in the floor of the antrum do not justify surgical interference for their removal. In many cases we can get along with the treatment of our patients without interfering at all in a surgical way with these small ridges and diverticula which we see in prepared skulls. It is only when the ridges or diverticula assume larger proportions, and when they either produce division of the antrum into separate cavities or otherwise markedly interfere with a thorough cleansing of the antrum that we are justified in going in and breaking up the partitions. I think in a great many cases surgical operations have been needlessly done and harm has resulted. I do not wish to be understood as depreciating surgical interference in that class of cases in which the diverticula assume considerable proportions. Abnormities of the antrum are of especial interest, especially with reference to the location of the ostium maxillare. Occasionally the ostium maxillare is located very high up and the discharge is most con-
spicuous in the posterior image, and may be confounded with a discharge from the posterior ethmoidal cells. In this event it may not be seen anteriorly, and our attention therefore may be possibly diverted from the antrum. We are all familiar with the fact that the dull pain of sinus disease can be entirely dissipated by the inflation of the parts by politzerization, a point which Hartmann, of Berlin, was the first to call attention to. When we have a closed sinus in the nose we know what occurs. There is a disturbance in the aerostatic equilibrium, a sagging of the membrane, and pain is the result. If we can open the ostium maxillare, or open the other sinuses by means of forced politzerization, the pain disappears, and this is the only way in which we can often determine the source of pain of this kind, simply by the restoration of the aerostatic equilibrium in the sinus by means of politzerization. In some cases forcible politzerization does not accomplish any result, and I have found that where failure is the result, if we first thoroughly cocainize the diseased side so as to contract the erectile tissue to reduce the resistance of the soft parts to the minimum, and afterward drive air through the nose by means of a strong current of compressed air, we shall often accomplish what we failed to do by simple politzerization.

With regard to drainage tubes, sometimes we can not avoid their use. We are obliged to drain, but their use should be avoided whenever it is possible to do so.

Dr. Thomas Hubbard, of Toledo: I can not agree with Dr. Mackenzie with reference to the use of drainage tubes. In my practice the tubes remain in for a considerable time, and even when retained from a year to a year and a half did not seem to add any complicating features. If the tubes are made of gold and platinum, they may be permitted to remain in the antrum for many months at a time, and when removed are found free from accumulated material or any corrosive agents. The persistence of suppuration and formation of granulation tissue around the tube is due chiefly to the pathological conditions within the antrum or other sinuses. The drainage tube, properly constructed and diligently cared for, aids so materially in douching the antrum and making applications and insululating powders that it seems to me to be an important feature of the management of many of these cases.

Dr. D. Braden Kyle, of Philadelphia: I would like to say a word or two in regard to the specimen showing teeth penetrating the antrum. I have a specimen which
Frontal and Maxillary Sinusitis.

shows teeth extending into the antrum very much the same as in Dr. Roe's specimen, but in which the teeth were diseased. I reported, I think, five or six cases in the International Medical Magazine. December, 1898, in which diseased teeth extending into the antrum caused accumulation of gas and simulated ozaena. This gas formation arose from decomposition of tissue. The patient was treated for some time; there were intermittent attacks of the ozaena, and sometimes the opening would close up, gas accumulate, and the ozaena would almost disappear and pressure symptoms return; then by pressure the gas would force itself out at the point of least resistance and escape through the nose.

Paper.

A REPORT OF THE OPERATIVE TREATMENT OF SEVERAL CASES OF FRONTAL AND MAXILLARY SINUSITIS.

By FRANK WHITEHILL HINKEL, A.M., M.D.

The operative treatment of chronic purulent inflammation of the frontal sinus has still enough freshness of interest to warrant a report of the details of a case upon which I have operated successfully. Briefly stated, the history is as follows:

Mr. B., aged thirty-eight years, was attacked by epidemic influenza in February, 1898, with severe pain over the left eye, followed by free purulent left-sided nasal discharge, at times of an offensive odor. For a number of years he had been subject to hay-fever symptoms in the summer time, with occasionally wheezy breathing, especially if in the country. When first examined in September, 1898, there was free offensive purulent discharge from the left nostril. There were left supraorbital pains and tenderness at times of the left eyeball. The general health was somewhat impaired.

Examination showed some crusts and muco-pus beneath the left middle turbinate. There was slight tenderness on pressure over the left antrum and left frontal sinus. Antral translumination showed relative darkness of the left malar region. An imbedded root of the left superior second bicuspis was extracted and found sound and not penetrating the antral floor. The
floor of the antrum was broken through and the alveolar opening enlarged, after which a large amount of very offensive pus was syringed from the antrum. This treatment was kept up for a month by the patient at his home at a distance from Buffalo. There was then a very little flocculent discharge from the antrum without offensive odor, but pus continued to drain from the extreme anterior portion of the left middle turbinate immediately after the antrum was syringed clear. The anterior extremity of the left middle turbinate was then removed. In another month the patient reported with an increase of discharge from the left nasal chamber, and occasional left supraorbital pain, followed usually by increased nasal discharge. There was slight tenderness on firm pressure over the left frontal sinus. Frontal translumination was excellent on the right side and revealed a large sinus. There was darkness over the left supraorbital region. The left antrum contained a large amount of pus and presented the usual signs of antral empyema.

Opening of the frontal sinus was now recommended. In January, 1899, the patient, who had lost weight and whose general health was beginning to fail, consented to the operation. On January 25th, at the Buffalo General Hospital, after shaving the left eyebrow, an incision was made along the inner half of the left supraorbital ridge to a little beyond the middle of the glabella, the soft parts and periosteum were retracted, and the anterior wall of the left frontal sinus opened with a small trephine. The sinus was found filled with a greenish, offensive pus. The incised tissues were protected by a dam of iodoform gauze and the sinus flushed with normal salt solution until pus no longer welled up. The sinus was large, extending far over the left orbit. Its walls were thoroughly curetted and the nasofrontal canal, located by a curved probe, was enlarged with a trocar and curette until an ample opening communicated with the nasal chamber, presumably through the anterior ethmoidal cells. A strip of iodoform gauze was introduced into the nasal chamber through the enlarged infundibulum, as suggested by Brycan, and the external incision closed by silk sutures. A dressing of gauze and cotton was applied and retained by bandages. Intranasal insufflations of iodoform were made every three hours, after gentle spraying of the nose with normal salt solution. No other treatment was given. There was no rise of temperature. The gauze drain was removed on the third day. On January
30th, the sixth day, the wound was redressed and the stitches were removed. There was good union. On February 1st, the eighth day, the patient was discharged from the hospital. The left antrum on syringing was found entirely clear and no subsequent unusual discharge occurred from the left nasal chamber. There has been no return of symptoms of disease.

The points of interest in this case history are the masking of the primary frontal empyema by the symptoms and signs of the secondary antral abscess; the persistence of the antral discharge despite drainage and cleansing of the antrum, and its immediate cessation as soon as drainage of the frontal sinus was secured. I dressed the wound after suturing with cotton pad and bandage in preference to any form of collodion dressing. It seems to me that the difficulty of securing good union after evacuating so infected a cavity is increased by any dressing that confines the exudate about the wound and prevents evaporation. As there were no indications for intranasal interference after the operation, no syringing of the frontal sinus was employed. Thorough drainage having been secured, the parts were left to Nature, the nose alone being gently sprayed and its mucous membrane kept under the influence of iodoform.

I wish to report three operations for chronic antral empyema in which I followed the method of Luc, with the details of which I was first made acquainted through a communication of Dr. de Roaldes's.* Each of these cases was of great chronicity, and one presented a double empyema. As I wish to present for discussion only the operation employed, I give the case histories but briefly. In each case I followed the usual steps for laying bare and opening the anterior wall of the antrum, and I will confine the descriptions to the novel features of the operation—the opening of the nasal wall of the antrum beneath the inferior turbinate and the immediate closure of the gingivo-labial incision. I found the hemorrhage following the incision into the gingivo-labial conjunctiva lessened by an injection of a one-per-

* Considerations of the Radical Cure of Chronic Empyema of the Antrum of Highmore. New Orleans Medical and Surgical Journal December, 1898.
cent. solution of cocaine hydrochloride beneath the mucous membrane just as the anaesthetic was about to be administered. In one case, in which I had been treating the antrum through Freeman's cannula beneath the inferior turbinate, I was able to reduce the haemorrhage, that is so profuse when the antrum is opened, by injecting into the antrum just before the operation about a drachm of a solution of suprarenal capsule.

Case I.—Miss S., aged thirty-seven years, empyema of left antrum, marked by moderate discharge and at intervals deep-seated pain in the malar region. On February 9, 1899, at the Buffalo General Hospital, with trephine and bone forceps I removed part of the anterior wall of the left antrum. There was no particular difficulty in breaking down the nasal wall beneath the inferior turbinate. I passed a curved trocar within the nostril and beneath the anterior extremity of the inferior turbinate and readily broke down the thin antral wall. Using the point of the trocar as a guide through the freely welling blood within the antrum, I enlarged the opening freely with a sharp spoon. I encountered great difficulty in endeavoring to pass an iodoform-gauze drain from the antrum through the nasal chamber and out at the nostril. I closed the gingivo-labial incision with silk sutures. The escape of air through this aperture for several days when the nose was blown showed that the closure was imperfect. However, by the fifth day, when the stitches were removed, the incision was closed. A small area of numbness about the left angle of the mouth was noticed for several days after the operation. After the fifth day the antrum was flushed by means of a Eustachian catheter through the opening in the nasal wall. A slight amount of muco-pus escaped at each washing. After several weeks the nasal opening contracted so that a small cannula could not be introduced and there was some return of pain. Under cocaine I cut away the anterior dependent portion of the inferior turbinated bone and with a sharp spoon enlarged the opening into the nasal wall of the antrum. This procedure was followed by relief, and on April 27th the patient was discharged apparently well.

Case II.—Mr. B., aged twenty-one years; double antral empyema, with chronic cough, expectoration, and naso-pharyngeal hypersecretion. At the hospital.
on February 13, 1899, I opened the anterior walls of both antra. The haemorrhage was very free; the anterior antral walls presented an unusually small area for operation, and they were unusually thick. In consequence I was not able to secure entirely satisfactory access to either antrum. I was unable to pass gauze or drainage tube through the perforation in the nasal wall, and, as the haemorrhage was very free and the patient's condition not first rate, I did not carry the operation beyond as thorough a curettage of the antral walls as was possible. I persevered in the original plan of the operation, however, closing one side with stitches and allowing the other to fall into place without stitches. The unstitched side healed apparently as firmly and as speedily as the other. A large area of numbness on the right side followed the operation, extending from the lower margin of the orbit to the upper lip as far as the median line and somewhat over the labial mucous membrane. This gradually disappeared. The patient was compelled by business engagements to go to his home in a neighboring town soon after the operation, and I was able to see him only at rather long intervals. The nasal openings rapidly contracted so that I was unable to flush the antra satisfactorily through the nose. Had drainage tubes been introduced the patient could probably have irrigated his antra himself. The result of the operation has not been satisfactory and I await an opportunity to repeat it.

Case III.—Miss M.; left antral empyema, operated on at the Buffalo General Hospital, on March 9, 1899. The inferior turbinate was dependent and lay close to the antral wall. I removed the anterior portion of it to facilitate the passage of the trocar into the antrum. I did not introduce a drainage tube into the nose. After a counter opening had been made beneath the inferior turbinate the gingivo-labial incision was allowed to fall into place without stitches and union followed nicely in a few days. However, a small abscess occurred later on the margin of the wound requiring curettage. It did not communicate with the antrum. This case improved rapidly for several weeks. The antrum was readily flushed through the nasal opening, and I found injections of alcohol serviceable in reducing the discharge and lessening its purulent character. In about three weeks the nasal opening began to grow small and the discharge to be somewhat confined within the antrum. On April 19th I enlarged
the nasal opening under cocaine with a curette, and have used since at intervals injections of alcohol and of a solution of iodoform in ether. Since May 26th there has been no unusual nasal discharge nor any symptoms of antral disease. 'Antral translumination is equally good, though there is no left pupil glow. This case, therefore, may be considered cured.

Valid conclusions as to the value of this operation can not be drawn from so limited a number of cases, but I offer their details for your consideration and discussion. The limitations of the operation and the proper choice of cases for its performance will be facilitated by reports of its results, whether successful or otherwise. I see several directions in which my own technique can be improved in subsequent operations. The introduction of the drainage tube I have found the most difficult step in the operation. To facilitate this, I have had made for me a modification on a small scale of Bellocq's cannula. Introduced through the nose and with the probe point thrust forward and upward into the antrum, it brings readily into reach the ligature to which the drainage tube or strip of gauze can be attached and then drawn through the opening in the nasal wall and out at the nostril.

The suturing of the gingivo-labial incision seems from my limited experience to be unnecessary. It is difficult to keep the stitches already inserted from being somewhat torn out during the later stitches on account of the manner in which the parts must be drawn upon to secure access to the lips of the wound.

The parts coapt readily without stitches and there is but little necessary motion of the gingivo-labial fold. The wound need not be disturbed if the patient is fed upon soft food, taking care in eating to use the side of the mouth opposite to the operation and to avoid blowing the nose violently. As shown by my second and third cases, healing occurs readily without stitches if a little care is used.
REPORT OF A FEW CASES OF CHRONIC EMPYEMA OF THE ANTRUM OF HIGHMORE: OPERATION BY THE CALDWELL-LUC METHOD.

BY A. W. DE ROALDES, M. D.

At two successive annual meetings—in 1897 and 1898—of the Société française d’otologie, de laryngologie et de rhinologie, my friend, Dr. H. Luc, of Paris, one of our corresponding fellows, with much merit, established the great value of what he considered a new operation for the rapid and radical cure of chronic empyema of the maxillary antrum. His excellent results embodied in a statistical report of twenty cases, all of which were successful but one, have been the subject of much commendation at the hands of his fellow-members of the society, who, following his steps, have obtained equally good results.

Under these circumstances it seems to me somewhat surprising that this procedure has not obtained more general recognition among our American specialists. This is the more astonishing that, after all, the honor of having first described and advocated this operation belongs to one of our countrymen, Dr. George W. Caldwell, of New York. Without discussing this question of priority, which has been settled by the frank and honest declaration of our French confrère, our thanks, on the contrary, are due him for having brought to light and repeatedly performed an operation which, pregnant with brilliant achievements, had fallen into comparative oblivion. When his paper first appeared, imbued with the desiderata of older procedures in many cases, I immediately suggested to my partner, Dr. Gordon King, who was then abroad, the propriety of studying this new operation in view of testing its merits in our clinic of the Eye, Ear, Nose, and Throat Hospital upon his return. Through the courtesy of my friends—Dr. Luc, Dr. Lermoyez, and Dr. Moure—he
was invited to witness a number of operations with all facilities to familiarize himself with its technique. Five cases have been so far operated on by him under my direction with most encouraging results, as can be judged from the following observations:

Case I.—Josephine L., twenty years of age, a native of France, presented herself at the clinic of the Eye, Ear, Nose, and Throat Hospital in the month of August, 1898, suffering with a copious purulent discharge from the right nostril, which, according to her story, began about three years before. She had been a sufferer from toothache when a few years younger, and had had a carious bicuspid and the first molar of the upper jaw of the right side extracted, which gave her subsequent relief. Examination at the time of her first visit to the clinic revealed the presence of a small polypus in the right nasal fossa bathed in a quantity of creamy pus which came from the region of the middle meatus. The discharge had set up an eczematous condition of the vestibule of the nose. Transillumination of the bones of the face by means of Heryng's lamp showed quite a marked opacity on the right side, with a diminished perception of light and an absence of the retinal reflection in the eye of the corresponding side. Exploration of the antrum with a cannula introduced through the ostium maxillare gave positive proof of an empyema of the cavity. The case was then subjected to Cooper's method of treatment, the site of the first molar tooth being selected as the point for making the drill opening through the alveolus. A rigorous treatment was then instituted of irrigating the cavity daily with solutions of peroxide of hydrogen and boric acid, and this treatment was kept up with care and conscientious regularity during an entire year that followed, during which time the drill opening had to be reenlarged three times. At the end of this time the antrum was still suppurating vigorously, and it was deemed necessary to undertake a more radical measure to effect a cure; accordingly, on the 13th of August last year the patient entered the hospital and the Caldwell-Luc operation was performed, the alveolar opening having been first allowed to close, so that all communication with the oral cavity was cut off.

The technique of the operation was carried out as follows: The patient having been chloroformed, the inferior turbinate body of the affected side was attacked with a
cutting forceps and its anterior third removed, after which the nasal fossa was firmly packed with gauze and attention turned to the opening of the antral cavity through the canine fossa. The upper lip being everted and well retracted by an assistant, the incision was made through the soft parts, beginning just below the gingivoblabial fold near the frenum anteriorly and extending posteriorly in a horizontal direction back to the root of the first molar tooth. The periosteum was included in the incision and both flaps were detached from the bone and retracted so that the bony anterior wall was laid bare. A chisel was then used to make an opening into the cavity at the deepest point in the canine fossa, and by means of bone forceps this opening was enlarged so that the finger could be readily introduced and extended anteriorly almost to the nasal process of the maxilla. This gave free access to the cavity for the introduction of instruments and inspection with the eye and finger. The antrum was found to be lined within by a thick growth of polypoid tissue that almost obliterated its cavity. Quite a free hemorrhage occurred at the stage where the antrum was opened and this tissue attacked with a curette; but firm pressure by means of a gauze pack quickly checked the flow, and the scraping was systematically continued until the cavity had been deprived of all its interior lining and nothing remained except the bare bony walls. This done, a temporary gauze pack was introduced into the cavity and the drainage way into the nose established as follows: The pack removed from the nose, a finger was introduced and placed upon that part of the antral wall corresponding to the resected part of the turbinate. With this as a guide, a chisel was placed upon the corresponding point on the side of the cavity and used to break away a part of the bony wall, the opening being made sufficiently large to permit of the free passage of the finger. Any remaining shreds of mucous membrane left on the nasal side were cut away with a biting forceps, so that the artificial hiatus thus made would be in nowise obstructed.

It only remained now to suture over the wound made in the canine fossa and cut off all communication from the mouth. With the lips well retracted and a properly curved strong needle employed no very great difficulty was experienced in carrying out this step of the procedure. Rather fine catgut was employed in interrupted suture, the mucous membrane and the periosteum being caught up together and brought into firm appos-
tion over the breach in the bony wall. Before the cavity was finally closed, however, the gauze packing was removed, iodoform powder insufflated, and a fresh strip introduced through the nose, so as to avoid any difficulty in its removal at the first dressing a few days later.

On the following day there was considerable swelling of that side of the face, the patient complaining of some pain and of severe tenderness on pressure over the cheek; the temperature, however, did not rise above 100° F. Low diet was ordered and an ice-bag applied to the face, and she was given a boric-acid mouth wash to be used every three or four hours. The dressing was renewed on the fifth day and the cavity irrigated with warm boric solution. The buccal wound had healed by first intention. The patient remained in the hospital twelve days, at the end of which time she was allowed to go out and resume her usual vocations, being instructed to return to the morning clinics for further treatment. At the end of a few days the gauze dressings were discontinued and the patient was taught to introduce a cannula through the nasal opening and wash out the cavity twice daily. This she did conscientiously, and at the end of six weeks all discharge had ceased, the injected solutions coming out clear, and the empyema was pronounced cured.

As an incident, however, of much importance in this case, I must add the following notes relating to a subsequent affection for which this patient had to be treated, and which in all probability was a sequel of the surgical interference: About two months after the radical operation on the antrum, when that had been pronounced well and was no longer treated, the patient came to the clinic complaining of a neuralgic pain over the region of the infra-orbital canal. Some slight swelling could be noticed at that point, and there was considerable tenderness on pressure over the part. Medicinal treatment afforded no permanent relief and the pains grew more severe and constant. These pains were not associated with any muscular twitchings of the face, nor was there any return of the antral discharge. After a careful study of the case it was decided that the pain was due to a neuritis of the infra-orbital branch of the trigeminal nerve, and that probably in the course of the operation the nerve had been exposed within the antral cavity or had been injured at its point of exit from the canal by the elevation of the periosteum, and that the formation of cicatricial tissue at one of these
points had given rise to some pressure upon the nerve. Surgical interference was decided upon, and on February 21st infra-orbital neurectomy was performed by Dr. F. W. Parham, of the consulting staff. The infra-orbital canal was exposed along the orbital floor and an inch or more of the nerve excised. There was apparently no cicatricial tissue present or any evidence of inflammation of the surrounding tissues. Primary union took place and the patient was relieved of the pains. During the course of the operation, however, the antral cavity was broken into, and this set up a sero-purulent discharge which lasted a few days. Seen lately, the patient showed some evidence of a return of the neuralgic pains and of some neuralgic involvement of the supra-orbital nerve.

Case II.—J. H. W., a mechanical engineer by occupation, twenty-nine years of age, married. The antrum trouble dated back to the year 1881, a year after a serious attack of nasal diphtheria, evidence of which could still be seen in the nose in the form of membranous synechia between the inferior turbinate and the septum. At that time the patient suffered with an abscess at the root of the canine tooth on the right side, which gave rise to a fistula through which a small probe could be introduced into the antrum and which gave exit to a discharge of sero-pus. The first molar of the same side was also carious, and this was removed to admit of a larger drill opening being made into the antrum in this situation, which, when done, was followed by a very free flow of pus from the cavity. From that time until a year and a half ago, when patient came to be examined at the Eye, Ear, Nose, and Throat Hospital, he had made use continually of a cannula and syringe for washing out the antrum, and still the discharge was as free as ever. He had become a sufferer from dyspepsia, and had what were apparently occasional attacks of gastric vertigo.

The radical operation was performed October 19, 1898. The drill opening through the alveolus, which was then very small, was allowed to close, and when the antrum was opened there was found an unusually large quantity of offensive-smelling pus and thickened polypoid membrane. The patient remained eight days in the ward and suffered no great amount of inconvenience from the operation, and on the third day was up and about the ward.

The buccal incision failed to unite completely, owing to the use of defective catgut sutures, and for ten days
following the operation it was noticed that when the cavity was irrigated through the nasal opening there was an escape of water through the anterior part of the wound. This, however, soon closed without any deleterious effects following, and the patient was allowed to go and resume the injections as before, this time through the nose. The discharge gradually diminished and at the end of about six weeks had ceased.

On March 8th he was examined again, and found to be much improved in general health and with no recurrence of the antral discharge.

Case III.—Sylvia F., a white girl, aged eighteen years, resident of Plaquemines Parish, Louisiana, came into the clinic of the Eye, Ear, Nose, and Throat Hospital on November 5th of last year complaining of the return of symptoms of nasal polypi, for which she had been treated at the hospital about four years previously. In addition to this she called attention to a constant purulent discharge from the left nostril associated with headaches of a neuralgic character referred to the frontal region. Rhinoscopic examination revealed the presence of a mass of small polypi in the left fossa occupying the middle and superior meati, from which oozed a characteristic yellowish creamy pus. The use of Heryng’s lamp showed marked opacity on the left side over the region of the maxillary antrum and beneath the orbital floor. The retinal illumination was absent on that side and the perception of light bad. Transillumination of the frontal sinuses was negative. A second examination by means of a probe revealed the presence of necrosis of some of the ethmoidal cells and of the lateral wall of the nasal fossa in the middle meatus, so that a cannula could be easily introduced into the antrum through what appeared to be an enlarged ostium maxillare. When it was washed out by this means a quantity of thick, ill-smelling pus was evacuated. At her next visit to the clinic, two days later, the polypi, together with the diseased turbinate, were removed and the ethmoidal cells curetted out as thoroughly as was permitted. Irrigation of the antrum with antiseptic solutions was continued untiringly with no marked effect upon the discharge until December 1st, when the radical operation was performed. The mucous lining of the cavity was found to be in an advanced stage of myxomatous degeneration. The nasal wall in the region of the middle meatus was thin and necrosed so that with little force the finger could be carried through into the nasal fossa. Considerable haemorrhage attended the
curetting of the cavity and the removal of the turbinate, but this was easily controlled by packing with gauze. The operation was completed and the dressing applied as in the previous cases. On the next day after the operation the face was quite swollen and painful to the touch, and on the third day the patient was so uncomfortable that the packing was removed and the antrum irrigated, after which there was a rapid subsidence of the inflammatory symptoms. At the end of a week the patient was permitted to leave the ward, to be subsequently treated at the morning clinics. Firm union of the buccal wound had taken place, and a week later further dressing with gauze was suspended and the patient given a cannula and syringe and taught to wash the antrum herself. She went then to spend the Christmas holidays at home, and was given instructions to irrigate the cavity twice daily with Seiler's solution.

At the end of three weeks' time she reported at the clinic. The discharge from the antrum was very slight, but some pus could still be seen in the ethmoidal region, leaving the impression that some of it found its way into the sinus through the natural opening, considerably enlarged, as has been mentioned, by a necrotic process. This part was again curetted, and the patient departed. Before she left, however, the frontal sinus was again examined by transillumination which gave a relative opacity on the affected side, leaving a suspicion of some implication of this cavity. The solution of this obscure point of diagnosis was left for the next visit, but, unfortunately, the patient failed to return.

Case IV.—William H., a negro laborer, twenty-eight years of age, came to consult at the Eye, Ear, Nose, and Throat Hospital in April, 1898, for a purulent discharge from his left nostril of a year's duration. In November of the preceding year he had suffered with a carious tooth, the second upper bicuspid of the left side, which he had had extracted by a dentist. With the discharge he complained of some obstruction and odor in that side of the nose and a sensation of liquid in the cheek bone when he stooped or turned his head far to one side. Pus in the middle meatus of that side and a well-marked opacity of the bone upon the application of Heryng's lamp confirmed the diagnosis of maxillary empyema. The frontal sinuses and ethmoidal cells were apparently healthy. A test treatment was instituted of irrigating the cavity through the natural hiatus, but this proved inefficient, and it
was found necessary to remove the first molar tooth and make a drill opening through the alveolus in this situation. The sinus was curetted as well as could be done through this small aperture and packed with gauze. Notwithstanding the most careful and systematic post-operative treatment with antiseptic solutions the discharge of pus continued. In February of this year it was decided to attempt the radical cure by the Caldwell-Luc method. At that time there still remained a small fistula in the alveolus through which the patient had faithfully washed the cavity every day with no favorable result. He entered the hospital and the operation was performed by Dr. King. Hæmorrhage was freer than usual and retarded the operation somewhat, while on the other hand the large mouth of the patient facilitated the suturing of the wound. The antral cavity was found to contain the same polypoid masses as were observed in the other cases, which revealed the cause of the persistent suppuration. Secondary reaction was very slight, the temperature not exceeding 99°, and swelling of the face was scarcely perceptible. At the first dressing, on the fourth day, the buccal wound was found united. The patient was allowed to leave the hospital, being seen on alternate days for a week longer and the dressings renewed at each visit. Daily irrigations were then begun by the patient himself, and in four weeks from the date of operation all discharge had practically ceased. He was seen again in April, and no discharge could be detected, the nose being free of secretion and the large opening into the antrum plainly in view.

Case V.—Mrs. B., aged forty years, a widow with two children, came to consult me on the 6th of last March, after having been treated elsewhere for nearly two years for supposed nasal catarrh. She was very anæmic and in a very poor state of general health. The local trouble began with severe attacks of toothache in the first upper molar of the left side, which, though apparently sound, continued to ache until extracted by a dentist. Four or five days after there began a bloody, serous discharge from the left nostril, soon becoming purulent in character. It had continued without cessation, and at times was excessive in quantity and of offensive odor. The discharge usually fell back into the nasopharynx and was expelled, but if the head was held low at times the pus would drip from the nostril.

Nothing abnormal could be found on inspection of
the nasal fossa, nor was any pus ever to be seen in the region of the middle meatus. Heryng's lamp gave positive evidence of maxillary empyema, and when a catheter attached to a syringe was introduced through the ostium maxillare a large quantity of foetid pus was washed out. The subjective symptoms of the case were insignificant. The diagnosis once established, a tentative treatment was decided upon of irrigation of the cavity through the natural opening, and this was done three times a week with scrupulous care for a month, after which time it was found that the discharge still continued with no apparent diminution in quantity or change in character; consequently, on April 5th, the radical operation was performed at the New Orleans Sanitarium. Very little haemorrhage attended the operation. The only divergence from the usual technique employed was that the turbinotomy was not performed until the last, when the sinus had been curetted out and was ready to be closed; then the anterior portion of the turbinate was removed and the artificial drainage opening established. This was done to avoid the annoyance of haemorrhage in the early stage of the operation.

The diseased lining membrane of the cavity gave way very readily under the curette and was easily removed. The after-treatment of the case consisted in light stimulating diet and the use of a borated mouth wash every three hours. Reaction was slight, the temperature not exceeding 99.6° until the fifth day, when there was a temporary rise to 101.4°. The dressing was removed on the fourth day. The buccal incision was well united. She left the sanitarium on the ninth day after the operation and was thereafter seen every three days and the dressings changed. Soon, however, she learned how to introduce the cannula herself, and was permitted to carry on the lavage treatment at home, reporting twice a week for examination. On May 4th, a month after the operation, no more discharge was present and the patient considered herself as well. There existed, however, some tenderness of the lateral incisor and canine teeth on the side operated on, which rendered mastication a little painful. A more recent examination shows this symptom to be rapidly disappearing. Heryng's lamp still shows opacity of that side.

The technique of this operation has been sufficiently brought out in my first observation not to need any general description. I will limit myself, therefore, to
the consideration of a few practical points which have mostly engrossed my attention in the study of these cases as compared with others.

First. In making the buccal incision the aim has always been to obtain an inferior muco-periosteal flap of sufficient width to permit later on of easy suturing, in view of obtaining union by first intention. It is evident that in the minds of Dr. Caldwell and Dr. Luc one of the main ideas in advocating this new operation was to cut off in the final procedure all communication between mouth and antrum, and thus avoid all possible secondary infection of the sinus through the introduction into that cavity of germs from the mouth. This preoccupation should certainly be foremost in the mind of the surgeon.

I was so imbued myself at first with this thought that in Cases I and II the radical operation was not undertaken until all fistulous alveolar communication with the antrum had been allowed to heal. In Case II I experienced some disappointment when an incomplete union of the buccal incision was found to exist, leaving a communication between the two cavities which gave passage to antiseptic solutions injected through the nose into the antrum. This little accident had apparently so little influence on the cicatrizing process of the antrum that, emboldened by the fact and pressed by time, I did not hesitate in Case IV to allow the radical intervention to be undertaken regardless of a communication existing through an alveolar opening. There was again no bad result therefrom. Similar communications existed in Cases II, IV, and XX of Luc's report, which seemed to be of no consequence in the healing of the antrum. I therefore think that the danger of secondary infection from the mouth is little to be feared. There can be no comparison between these small apertures and the large gaps in Desault's operation, in which the cicatization of the antrum is more interfered with by the penetration of food into this cavity than by ordinary buccal secretion, the former acting as an irritant like a foreign body.
It has been found advisable to bring the incision nearer the frenum than advocated at first, this with a view of modifying the usually round bony opening made in the canine fossa. This resection should be in preference slightly ovoid to bring one of its extremities closer to the nasal wall of the antrum and the other nearer the tuberosity. This shape facilitates a more thorough curetting of parts of the cavity in directions which might otherwise escape the instrument. It will also be of considerable help in establishing the artificial hiatus through the nasal wall.

The operative treatment of the cavity consists, it is needless to say, in a thorough curetting of the mucosa and removal of all diseased tissue. There lies our sheet anchor for the radical cure of the obstinate forms; lesions of the bony walls, unsuspected abnormal prolongations of the antrum, inflamed diverticula, pouches, or even almost separate compartments, must be remembered in connection with the retention of inflammatory products and thick exudations, and treated accordingly. In cases uncomplicated with frontal or ethmoidal suppuration, the failure of the operation is oftener the result, I dare say, of an oversight and of an incomplete destruction of the degenerated mucosa than of a secondary infection. Our attention must be turned next to the nasal fossa, where a partial turbinectomy of the anterior extremity of the inferior turbinate is rapidly performed with biting forceps. This procedure has been opposed by Dr. Luc on account of the fear of abundant hæmorrhages, not to mention its uselessness. The execution of this partial resection has struck me, on the contrary, as being advisable, and even necessary if we believe in a large opening for post-operative treatment; the hæmorrhage, it is true, may be at times a little annoying; for this reason, I think it preferable to postpone that partial resection to the latter part of the operation.

As to the creation of an artificial opening into the nose, which should come next, I will unhesitatingly pronounce in favor of a very large one, which will
render continuous the floor of the antrum and of the corresponding nasal fossa. It should be made as near as possible to the angle formed by the junction of the anterior wall with the floor of the antrum, and the bone attacked in preference from within the cavity. A finger introduced into the nose will generally be found useful at this step, not only as a landmark and guide for the hand gouge which is breaking down from the other side the bony partition, but also as a possible means of compressing in case of oozing from the resected extremity of the turbinate; later, it can assist in trimming closely the edges of the new opening by shoving through it and bringing into sight shreds or flaps of mucous membrane which can be easily removed with biting forceps. The artificial opening made by Dr. Luc and others in their first operations was simply calculated to give passage to a drainage tube, after removal of which there was such a marked tendency to closure that in several instances the surgeon himself had some difficulty in finding the opening, which had to be reestablished. This undesirable occurrence is plainly shown in Case VI of Dr. Luc's statistics, in which, on the sixteenth day after the operation, he had to reenlarge the opening with the galvanocautery, this intervention giving rise to a submucous abscess which opened a few days later into the antrum. Such drawbacks, with the substitution of gauze dressing for the tube, explain sufficiently the reason why in his twentieth case Luc does not hesitate to emphasize the value of a very large artificial hiatus, which we have uniformly adopted in our cases. Another practical advantage consists in the fact that, the surgeon having once discarded the gauze dressing, the handling of the case can, under certain circumstances, be safely intrusted to the patient himself, who can without further pain or difficulty syringe the cavity.

With this operation all my patients have been radically cured in from four to six weeks, as evidenced by a complete cessation of all suppuration. I must, however, point out that in none could the diseased
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antrum be transilluminated, owing probably to the comparatively short time since the cure, which does not exceed seven months in any one. I must admit, however, that, even if all my cases were of the chronic type, with extensive and advanced degenerative changes of the mucosa, three of them having been vainly subjected to Cooper's method of treatment, they were not, with one exception, complicated with suppuration of the other cavities, such as the frontal sinus or the ethmoidal cells; a more obstinate form, in fact, almost a morbid entity, which is designated by some as fronto-maxillary empyema. Of course, such cases must demand more time and offer greater difficulties for a radical cure, owing to the multiplicity of the foci of suppuration and to the possible reinfection of one focus by another if they are not all eradicated. Many operators have made use of an application of a twenty-per-cent. solution of chloride of zinc to the antral cavity after curetting. I have dispensed with that procedure as an unnecessary precaution.

In the report of my first case, I have purposely made mention of the development of an unfortunate and obstinate form of neuralgia which leads to an interesting question, Was this neuralgia a mere coincidence, or was it caused by traumatism incidental to the operation? This last interpretation should imply a timely warning to the operator. In connection with this case I can not but also call your attention to the fact that at the time of the exploratory operation, ending in neurectomy, the cavity of the antrum was opened, and through that accidental opening blood and a subsequent sero-purulent discharge drained for several days into the cavity without any indication of reinfection.

In conclusion, let me repeat an opinion expressed in a joint paper written more than a year ago by Dr. King and myself: "We are convinced that a more general application of the Caldwell-Luc method will prove it to be a most valuable operation in the treatment and cure of cases, which too frequently have been the opprobrium of rhinology."
Since my last operation, on April 5th of this year, I have received a letter from our esteemed fellow-member, Dr. H. Luc, bearing partly on this subject. To my inquiry as to whether he had anything new to communicate to me in view of this report, he writes the following: "The number of maxillary empyemas operated on by me by my new method amounts now to thirty-three. All free from ethmoidal complications made a complete and quick recovery, with the exception of one, in which the relapse may be accounted for by the existence of an ozæna and reinfection of the sinus by the nose. The chief improvements I have brought to the method lately consist in the considerable dimensions given to the artificial hiatus, including nearly the third inferior anterior part of the internal wall of the antrum and connected with the resection of the corresponding part of the inferior turbinated bone, and also of the substitution of a single strip of iodoform gauze for the drain. I applied quite lately this same operation to cases of empyema of the antrum complicated with subperiosteal premaxillary abscess, and obtained a splendid result, draining both abscesses by the nose and thus avoiding the production of a fistula of the cheek which was imminent. This is the subject of my intended communication to our congress next May."

Discussion.

Dr. Henry L. Swain, of New Haven: I should like to ask Dr. de Roaldes three questions: First, how much hæmorrhage there was from the turbinectomy, and if it was a serious complication of the operation. Second, whether the upper lip was divided in the middle and turned back or simply everted. Third, how long it was before he took out permanently the gauze dressing of the antral cavity through the nose.

Dr. M. R. Ward, of Pittsburgh: I wish to ask Dr. de Roaldes if he resorts to this method in all cases of antral empyema, or whether he performs the operation only in obstinate cases that do not get well by drainage and irrigation.

I do not think we should let the interesting paper of Dr. de Roaldes's go by without further discussion. I
suppose that Dr. Luc's claim to a portion of the credit for this operation is due to the simple fact that he had called special attention to the operation as performed by Dr. Caldwell more than two years before, which Dr. Caldwell clearly described exactly as now performed by Dr. Luc. I suppose his share in the credit of the operation is on the principle that, as Sidney Smith has said, "It is not he who first says a thing is the real discoverer, but he who says it so long and so loud as to compel mankind to hear him."

When performing this operation, in making the opening through the nasal wall of the antrum we should carefully consider the position of the antrum. In many cases the floor of the antrum will be found above the floor of the nasal passage, whereas in many other cases the floor of the antrum will be much below the floor of the nasal passage. In the former case an opening made into this cavity from the nasal wall will afford free drainage from the cavity into the nose, whereas in those cases where the floor of the antrum is much below the floor of the nasal passage we will have drainage from the nasal passage into the antrum.

The position of the antrum should therefore be carefully ascertained by making a small exploratory opening before the operation is attempted.

In opening the antrum from the outside through its anterior wall I much prefer making the opening through the canine eminence rather than the canine fossa.

The opening through the external wall should be a very large one in order to enable the operator to thoroughly inspect the interior of the cavity, to remove any polypoid growths or degenerate tissue, and to break down any partitions or walls dividing the cavity into compartments, which interfere very seriously with drainage, of which I shall speak in my paper on that subject.

When partitions, or septa, occur in the cavity, which are found in about half the cases, they must be thoroughly broken down and removed, so as to convert the antrum into one smooth cavity, and allow free drainage from its most dependent point, which is absolutely necessary in order to effect a cure.

Dr. E. L. Shurly, of Detroit: According to my experience, severe operations on the maxillary sinuses have not been found very often necessary. In the first place, the laryngologist sees fewer cases than the dentist or the general surgeon does. I have been somewhat
astonished to know how frequently dentists with a large practice have opened up the maxillary sinus with a small drill through the alveolar space somewhere. Sometimes they drill through the canine fossa and inject the antrum a few times, and the patient recovers. I have also had a similar experience in a great many cases of disease of the maxillary sinus that followed ordinary influenza. When, on the other hand, we have disease of the maxillary sinus which depends upon some adventitious formation inside, then, of course, a thorough opening of that cavity and curetting are absolutely necessary. And it may be necessary sometimes where we suspect that a tumor is growing, but it has always seemed to me that in cases which are not complicated by marked disease of the nasal passages, we had better open the maxillary sinus through the alveolar process. The idea of injecting a cavity through the mouth is purely theoretical, and I believe we have no ground for assuming that the renewal of the disease is frequently caused by infection through the mouth. Opening through the nose by Krause's method not only is open to the objection mentioned, but there is in some of these cases, according to my experience, constant disease of the cavity kept up by drainage of the nose into the maxillary cavity. I should be inclined to believe with Dr. de Roaldes that after opening through the nasal walls into the maxillary cavity there should be a counter opening. I would not think of leaving a patient with one opening in the nose. We can not be sure of keeping the maxillary sinus patent so as to empty all of the secretions of the nose. Therefore, it seems to me, for general purposes it is quite sufficient, first, to make an opening in the old-fashioned way through the alveolar process, enlarging it, if necessary, from time to time, and second, to make an opening through the nose, while leaving also the opening in the alveolar process.

The only point I wish to make is that the average laryngologist rarely finds it necessary to make such extensive incisions into the maxillary sinuses.

Dr. G. Hudson Makuen, of Philadelphia: I should like to ask Dr. de Roaldes if he has observed what to me is a very curious fact—namely, that the law of gravity does not seem to hold good in draining the cavity of the maxillary antrum. You may make a good-sized opening through the anterior wall of this cavity at the most dependent part, or even through the alveolar process, and, if the normal opening into the nose is patent, the
cavity will continue to drain uphill through this opening. There seems to be a capillary action going on in the drainage of this cavity which is increased by the respiratory processes through the nasal cavity.

Dr. G. A. Leland, of Boston: In the discussion of this subject we seem to have forgotten that man is not always an upright animal. He lies down sometimes, so that the outlet of the cavity looks downward, although he can not walk with his head wrong side up like a fly. This cavity was made by the great Architect to drain at the top, which is not true of any other cavity with bony walls in the body. We therefore must consider that there is in the normal state some agency which is capable of furnishing efficient drainage through this apparently unfavorably situated opening. This agency has been variously described as siphonage aided by the intranasal air currents, the action of the ciliated epithelia within this cavity, and the recumbent posture, but is probably a combination of all three factors. This leads us to think, in cases where there is no foreign body in the antrum, that drainage might often best be established through its normal opening—the hiatus semilunaris. I have operated in a few cases of empyema of the antrum through the inferior meatus, but have been able in most cases to establish free drainage normally through the second meatus, when the cases would run along for a year or two afterward and eventually end in recovery.

As to the operation, I believe Mikulicz first made a small opening through the inferior meatus in treating these cases, a method which has been much extended and elaborated with great success by Dr. H. A. Lothrop, of Boston; and while I was in Berlin, in 1893, I saw the operation through the canine fossa done several times by Jansen and Rosenberg—which operation seemed to be followed by much suffering and a tedious convalescence. The operation now known as the union operation, the Caldwell-Luc operation, seems to be an improvement over other methods of treating empyema of the antrum, and I am very glad to hear the added testimony of Dr. de Roaldes, as to its efficiency, supported by his brilliant results; and yet I can not but believe that there are many patients who will get well without such radical procedure.

Dr. de Roaldes: I will answer the first question put by Dr. Swain in regard to whether the lip was everted by means of an incision or simply retracted.
In none of these operations were the tissues divided externally, while that was done in the first case of Dr. Luc's. He made an opening through the commissure of the lip in order to gain easier access and to put his suture in better position. After that he discarded this feature on account of the cicatrix. Ever since he has operated without any external incision, which he finds is not necessary. After a few operations one becomes familiar with this method of operating, and with good assistants the external incision is not necessary.

In regard to the other question, which was how long the gauze dressing was kept up, we generally dispensed with it from the eighth or tenth to the twelfth or fifteenth day. We found that the patient himself in the after-treatment was able to inject the antrum through the large opening in the nose. This change in the mode of dressing, which was a substitute for the original tube, is an important matter in the operation, and it is not very painful if the opening is large in the nose. The surgeon has to follow the patient for say ten days or more, and after that he can let him go. This is of great advantage in the after-treatment; it is successful even if you miss the patient for a week or two.

In answer to Dr. Swain's question with reference to haemorrhage accompanying the turbinectomy, there is no question but that a turbinectomy is followed by a certain amount of haemorrhage, which may be annoying, particularly if the practice advocated by Dundas Grant and Luc is followed of doing it in the early part of the operation. At that time, with a flow of blood into the postnasal space and the patient under chloroform, it is objectionable and interferes with the subsequent steps of the operation. In the last operation I advised postponing the turbinectomy until after the real operation had been done, which consisted in chiseling out the anterior wall and thoroughly scraping the cavity. The operation is practically finished after that, and the turbinectomy is performed, and by vigorously packing the cavity one will quickly arrest the haemorrhage without much trouble. Then finish the operation by knocking down the internal wall, which does not then cause any bleeding.

With reference to the question of Dr. Ward as to whether this method is to be used generally, I distinctly stated that the operation was for chronic cases of empyema of the antrum. The operation is reserved for those chronic cases that are of long duration, that have
resisted other treatment, such as the operation of drilling into the alveolar process, the Mikulicz operation, that of drilling into the canine fossa, etc., and cases which even resist the operation of Desault, which is an old operation. But the drawback to that operation, which is not to be compared with this, is the length of time it takes for the cavity to heal after thorough curettage. Then, too, we have a very large cavity which is liable to become reininfected by germs in the mouth, but more especially by the food that is introduced into the mouth and comes in contact with the antrum undergoing decomposition and acting as a foreign body. We all know it is necessary to protect the cavity in order to facilitate healing and the formation of a cicatrix. Many of the cases treated by the Desault method have taken months and months, and sometimes years, before a cure was effected, and even then it was necessary to resort to other measures of treatment. I have very often found it necessary to perform secondary operations to scrape out the cavity, because, on account of the constant excitement and the stimulation of the parts by food and irritants, granulation tissue is stimulated and "proud flesh" forms. How many times, after the secondary operation of Desault, have surgeons had to scrape the antrum a second or third time, or use a strong solution of chloride of zinc or the galvano-cautery! We are all familiar with the objections to the method of Desault, or the operation of opening through the canine fossa. Those who have performed that operation will see the advantages of the Caldwell-Luc method and cut off communication between the mouth and antrum. They will find in the course of ten or fifteen days that there is very little or no suppuration. But certainly in the course of two weeks or a month the cavity is dried up and there is formed a tough cicatricial membrane, which is really a scar. It cicatrizes rapidly, very differently from the length of time it takes to cover itself with epithelium when it is constantly irritated by food or secretions from the mouth.

I did not hear enough of the remarks of Dr. Shurly to reply intelligently to them. Dr. Roe, I think, made an objection that certainly has some foundation. There is no question of the fact that the floor of the antral cavity and that of the nasal cavity, as has been demonstrated by Zuckerkandl, are not always to be found on the same level. That is why I have advocated in the paper knocking down the partition from within the
antrum and against the finger, one finger being in the nose. This is a very important point. One or two operators, through a little carelessness, have found themselves almost opening the buccal cavity, instead of the nose, because they forgot the difference pointed out by the doctor. I must say that in all cases reported by Luc, thirty-two up to date, five of my own and several others, bringing the number up to about fifty in all, the difference between the two floors mentioned, which we are told exists, and which is pointed out by the best authorities to exist, has not been noted.

The advantages of the operation I have described are so obvious that I should like to have an expression of opinion from the gentlemen who have been attached to large clinics for a long time, and who see case after case of antral empyema that they have drilled into, cases in which they have injected through the ostium maxillare, and also cases in which the Mikulicz and other operations have been performed. I think there are objections to the continuation of those methods in the treatment of obstinate cases—cases which were the opprobrium of medicine until the Caldwell-Luc operation was devised and adopted. I would ask them whether the subacute cases yield many times to the ordinary drilling method and to other less serious operations than this one, and whether they have not found many of them extremely difficult at times to deal with so as to effect a cure. If that is the case, I hope they will try this method, assuring them that it is an excellent one, and one that will answer the purpose.

I have presented these observations and cases for the purpose of making a plea in favor of this operation, and I certainly think the verdict will be the same as I gave in this paper, and the one which has been given in Europe in the last fifteen months.

Dr. John O. Roe, of Rochester: I should like to ask Dr. de Roaldes if it would not be a good idea, to avoid the hæmorrhage from the turbinectomy, to perform it in a few days in advance and allow the parts to heal before attempting the other operation.

Dr. de Roaldes: The same question was raised at a meeting of the French society last year. It was practised in one or two operations, I think, but has since been discarded, because it is a double traumatism, and, while the whole thing can be accomplished in one operation and under one chloroformization, it does not pro-
long the operation very much, and with skilled assistants, I certainly think it is better to perform it at one sitting.

Paper.

TAKING COLD.

By GREEN V. WOOLLEN, M.D.

Probably no other exciting cause of disease is so important, if we consider the various channels through which it travels, the many results, and the gravity of those results, as that known under the phrase "taking cold." The wonder is that it has received so little attention toward its ultimate solution, since it "has ever been a phenomenon of such frequent occurrence that it could not escape the observation of the least curious."

Without going fully into the literature of the subject, I shall refer only to a few of the more recent explanations of "taking cold" and of special susceptibility to "colds." The essential disagreements between these explanations is the reason for the somewhat liberal quotations in this paper.

What is a "cold"? It is a derangement of the vasomotor nervous system and the nutritive process, producing a disturbance of the temperature of the body, with general malaise. The attending phenomena are coryza, ocular irritation, a sense of heat and pain in the head, facial and other neuralgias, earache, sore throat—pharyngeal and laryngeal—bronchitis, often with pneumonia, cystitis, rheumatism, suppressed menstruation, etc.

The cause, according to Rosenthal, is the action of cold on the surface of the body, exciting contraction in the peripheral vessels, by which the blood is driven from the surface in upon the internal organs and acts there as an irritant, producing inflammation.*

* Bosworth. Diseases of the Nose and Throat, 1889.
According to Seitz, the cause is "the removal of heat to an unusual extent from the external or internal surface of the body; that this causes some functional disturbance, which in its turn gives rise to certain morbid processes in some portion of the body far removed from the part immediately affected by the cold. That the morbid changes are not due to the immediate or direct effect of this exposure is evident from the fact that, as a rule, a certain length of time elapses before these changes set in." *

According to Seiler,† "It is a well-known fact that the human organism must be maintained under all circumstances at a temperature equal to 98° F., otherwise disease will result. . . . The maintenance of the normal temperature of the body, therefore, depends upon the production of heat by the oxidation of food within the system, by muscular exercise, and upon the prevention, or at least reduction, of radiation; and a lowering of this temperature, especially if it be sudden, causes contraction of the capillaries in the outer integuments, a disturbance of the heart's action, and a congestion of some of the internal organs, and particularly of the mucous membrane of the respiratory tract. . . . In connection with, and perhaps caused by, this contraction of the capillaries of the skin by cold there is always an irritation of the distal nerve ends, which, by reflex action, produces a change of the heart's action, which, in turn, becomes a factor in the production of the congestion in other portions of the body. . . . Catching cold may then be defined as a momentary lowering of the temperature of the body by external influences, which causes both directly and indirectly an uneven distribution of the blood, and thereby a congestion or inflammation of internal organs."

According to Bosworth,‡ "the true action of cold upon the body, in producing morbid conditions, is probably on these nutritive changes which are constantly

* Bosworth. *Diseases of the Nose and Throat,* 1889.
‡ *Diseases of the Throat,* 1889, p. 154 et seq.
‡ *Diseases of the Nose and Throat,* 1889.
going on, and by which the animal heat is developed. This heat production is going on in all of the tissues of the body. In order that this function shall not be impaired, it is necessary that the normal temperature shall be maintained. This we know is 98.6° F. Any marked deviation from this normal standard, as the result of extraneous influences, results in morbid changes. Molecular death follows intense cold (freezing). If the action of the cold is insufficient to arrest nutritive processes of the parts, it may cause only inflammatory action. In these cases we have only the direct action of a low temperature on the organism. In the ordinary phenomena of 'taking cold' we have still the results of a low temperature acting on the heat-producing processes, but in an indirect manner. The direct action of a cold is, as a rule, upon the surface of the body, but the resultant morbid condition is upon some organ remote from the exposed part. In both cases, however, the cause and the effect are the same, and the connection between the exposure and the resultant inflammatory condition is the disturbance of those nutritive changes in the tissues which result in the production of animal heat. . . . The nutritive processes going on in the whole economy are governed by the central nervous system, and, furthermore, a certain amount of nervous force is expended in the regulation of these nutritive processes. If, as the result of the exposure to cold, these nutritive changes are arrested in a certain portion of the body, the same nervous force being sent out from the central nervous system, it will be understood how this local arrest of the nutritive process in one portion would be attended with a certain amount of increased nutritive activity in another portion, the activity of the nerve centres going on as before. Now, increased nutritive activity constitutes inflammation, and this inflammation locates itself at the point of least resistance—viz., as a rule, at the point in the economy where a mild chronic inflammatory process is going on, which is lighted up into an acute process as the result of a cold." Bosworth further states that "there are three factors generally necessary for the
production of a cold: low temperature, air in motion, and moisture,” and that, “as a rule, one or more of these factors should act for a somewhat prolonged time.” * According to Woakes, † “the mechanism of taking cold” is that “some portion of the body is exposed to a current of air colder and moister than that of the average surrounding atmosphere, and that this exposure be prolonged for a considerable period. In this way the surface temperature is lowered generally, or some part of it is thus reduced below the normal standpoint. . . . In either case this prolonged lowering of the temperature, or abstraction of heat, is appreciated as a shock by the peripheral sympathetic nerves of the skin which receive it. These being, as already shown, afferent in their conductive function, convey the impression to their respective ganglia.

“The next step in this investigation concerns the consequence of the transference of the shock from the ganglia in an efferent direction—i.e., along the vasomotor nerves to the muscular coats of the arteries. The totality of evidence goes to show that the immediate effect of such reflex impression is to cause contraction of the vessels. This is of very short duration; it is rapidly followed by one of prolonged dilatation, the effect being most manifest in peripheral portions of the circulation—i.e., the arterioles and capillaries of the particular vessels implicated. This fact reduces the area where symptoms are exhibited to considerably smaller dimensions than would otherwise be the case, leading us to look for these in a limited number of tissues. It is a matter of observation, furthermore, that some efferent nerves of a given ganglion are more prone to carry off the impression than others, perhaps from already having been the scene of a similar irruption or from an inherent weakness of the ganglionic cells which regulate the action of these particular nerves. Again, some structures, as muscle and areolar tissues, etc., are so

* Bosworth. Diseases of the Nose and Throat, p. 59.
† Postnasal Catarrh, etc., London, 1884, p. 28 et seq.
undemonstrative of the presence of hyperæmia, either by
sensation appreciable to the patient or to the physician
by the display of the objective states, that they will
usually escape notice in the summary of symptoms at-
tending the stage of vessel dilatation. It comes to pass,
therefore, that when we have to observe these phenomena
in the sphere of the superior cervical ganglia they will
be discernible chiefly in those vessels which ramify in
tissues having a free surface, as mucous membrane."

Thus we see that these various authors find that
external influences, chief among which is cold, impress
the external surface more or less; that the impression
is conveyed to the internal organism, and that there-
from results nutritional disturbance, expressed in con-
gestion, inflammation, etc.

How do disturbances of the nutritive forces thus pro-
duced cause the so-called catarrhal diathesis or disease?
Why are some so much more susceptible to taking cold
than others? I have long observed that deficient calori-
fication is seemingly the ultimate disastrous result of
colds, if, indeed, it is not their initial cause. As we have
seen, Seiler and Bosworth take note of the disturbance
and the depression of temperature, regarding them as
the results of the impress of the external cold. They
do not draw attention to what I believe to be a fact—
namely, that a subnormal temperature, or a condition of
system tending to a subnormal temperature, predisposes
to the susceptibility to be impressed by external cold.
In other words, the reason one takes cold is that one is
already suffering often, if not continually, from sub-
normal temperature. This predisposition I have found
very generally among catarrhal patients, and often to a
degree alarming and unsuspected, the temperature be-
ing as low as 95° F. even in subjects apparently well
nourished. As those with a normal or an excessive
amount of fat are often deficient in blood, so we often
find those, of whom we would not suspect it, unable to
generate the necessary amount of animal heat. Even
in the cases of those ordinarily of normal temperature I
have found occasionally a depression explaining an oth-
erwise unaccountable malaise. Notably are these facts true in the colder seasons.

Now, normal calorification depends, as we know, upon hematosis and resulting nutritive action, which in turn depend upon the circulation apparatus, and this, as Woakes rightly insists, is under the control of the sympathetic ganglia and their connecting nerves, the vasomotor system.

But Nature has provided these organs and functions for this specific purpose, and why the failure? This question opens a most interesting field of study. No one that I know of, except Woakes, has attempted its answer. In the section on "the precatarrhal state," in his treatise on postnasal catarrh, he says, in accounting for "the condition of susceptibility to take cold," that "it implies, therefore, the operation in the system, over a longer or shorter period, of certain morbid processes, the combined effect of which produces the precatarrhal state."

He suggests that these "morbid processes" are syphilis extending to the third and fourth generation, inebriety of progenitors, or heredity, transmitting system or organs at fault ab initio, and that "in those subjects who from birth onward show a repeatedly recurring catarrhal tendency . . . there is to be found a disturbance of the equipoise between the functions of nutrition and excretion, due to a defective working power inherent in the organs primarily concerned in these processes," as evidenced in "dry, harsh skin, glandular deficiency as respects capacity for work, whether exhibited in the excretory follicular structures of the mucous membrane, in the glands of the lymphatic system, or in the more complicated gland organs of which the liver and kidneys may be taken as representative," and "depreciation of the special nerve centres, the ganglia of the sympathetic, which by the regulatory influence they exert upon the blood-vessels control the functioning capacity of any given organ." The subject thus handicapped for life has to contend with "errors of diet," "clothing," "atmospheric and cli-
matic environment,” etc., greatly taxing the robust and vigorous.

That these “morbid processes” or ætiological factors operate more largely than is generally recognized in the production of catarrhal troubles, especially as perpetuating influences, I am not prepared to deny, but the great prevalence of catarrhal disease forbids the idea that heredity is the sole predisposing factor. I am persuaded that many children, born under favorable circumstances, who would otherwise develop free from this ever-prevailing catarrhal process, are doomed at their primary toilet, or during the first week of postnatal life, to all the evils enumerated as constituting the catarrhal state or diathesis. When we consider its delicate organism and the habitat of the child in utero, with thermal regulations perfect, and its sudden extrusion into those most imperfect; when we consider that the danger from this change of conditions is greatly accentuated by its immediate management, or rather mismanagement, by the subsequent utter disregard of its thermal demands, and by the supply of clothing usually fit only for tropical climes, the wonder is not that it has “sniffles,” persistent crying to exhaustion, hoarseness, and aphonia, within the first week of postnatal life.

Children are not born with catarrhal disease, but catarrhal disease is of childhood genesis, a fact not recognized by any author, to my knowledge. Adults never contract idiopathic catarrhal disease. The child that passes into adolescence without the disease, and this is exceedingly rare, I regard as safe for life.

There must be a beginning of “taking cold,” and any explanation of the process that does not explain the beginning is, of course, defective. Systemic depression of temperature is the beginning. One who can preserve the normal standard of temperature is safe and does not take cold. The newborn child, be it ever so healthful, can not do this unaided. Much less can the child described by Woakes do it unaided. And the adult once fettered by a more or less continuous subnormal temperature, however caused, is more or less contin-
uously susceptible to "taking cold." We find, then, that a subnormal temperature, or an inability to preserve the normal temperature, is primarily the beginning of "taking cold," and, indeed, of Woakes's "precatarrhal state."

This condition of subnormal temperature, which, as I believe, thus lies at the foundation of the catarrhal state in subsequent life, is largely due to poorly digested, excessively developed, partially assimilated, and non-eliminated nutritional elements in the system.

Without recognizing the clinical fact of subnormal temperature, Woakes has explained this perpetuating process, and in its elaboration has suggested the rational basis for its successful therapeutics. To follow his analysis and the most modern investigation along this line, in an examination of the products of digestion, assimilation, and excretion, would lead me too far from my present purpose. I need only call your attention to what is known about self-infection to give the key to my suggestions.

I can not dismiss this feature of the subject without calling attention to the relation of nasal stenosis to faulty haematosis and body temperature. That there is a causative relationship between them I am assured from long and careful observation. The fact that the nose is primarily and chiefly a breathing organ indicates the possibility by obstruction of great interference with the respiratory function, which is primarily to supply oxygen to the system and secondarily to eliminate carbon dioxide, both so essential to haematosis and the normal temperature of the body. The mouth will not perform these functions satisfactorily, as is well known to those who have given special attention to this subject. The mouth is an eating organ, and any work it may do in the respiratory process is substitutionary. Mouth-breathers have, very generally, subnormal temperatures. I do not mean that the one condition is the exclusive cause of the other, but I do believe that the one materially contributes to the causation of the other.

The practical deductions from the foregoing are the advisability of the control of the production of the unfit
for life's vicissitudes; the more rational care of the newborn, the tender, and the immature; the proper care of the adult body, by the use of clothing that will conserve the body temperature against the ever-changing phases of climate and temperature; watchfulness against overheated houses; attention to the elimination of effete material from the body, by combating constipation, one of the curses of our civilization, and by other depurating processes; and the restoration of the nutritive processes of the system that hematosis and calorification may be sustained at the normal standard.

Discussion.

Dr. J. L. Goodale, of Boston: By the term "taking cold" the essayist means, I suppose, to designate the process known pathologically as acute rhinitis. It seems to me that any explanation relative to the aetiology of this affection must take into account the possible rôle which micro-organisms may play. A good deal of experimental work has been done recently in regard to the bacteriology of the nose and mouth, both in England and other countries. The recent experiments in Flügge's institute are interesting as bearing on the diminution in virulence of bacteria which the saliva seems to exert. Pathogenic micro-organisms are harbored in the mouth that are not virulent for the host under normal conditions. If, however, they are recovered from the mouth and cultivated on artificial media, they may show a degree of virulence. In view of these facts, it seems reasonable to suppose that any diminution in the natural resisting powers of the human system might allow these organisms to become virulent again. The nutritive functions, so called, may become disturbed; the composition of the saliva or the nasal mucus may become altered; phagocytosis may become inhibited, and micro-organisms naturally disposed of may become pathogenic for the individual. We know that a great many colds are simply inflammations of the lymphoid tissue in the nasopharynx. Bosworth has called attention to this. The typical cold in children is an inflammation of the lymphoid tissue in the nasopharynx. The peculiar susceptibility of lymphoid tissue to bacterial infection makes it extremely probable that if the infectious agent is of bacterial origin in acute
rhinitis, its entrance point may be the lymphoid tissue in the nasopharynx. The symptoms of acute rhinitis are those of a bacterial infection; that is to say, it begins in severe instances by a chill, subsequently fever supervenes, and the process finally terminates by what we may call lysis. In view of these facts I wish to suggest that the theory of bacterial infection should not be overlooked in any explanation regarding the cause of taking cold.

Dr. Samuel Johnston, of Baltimore: I should like to ask Dr. Goodale what micro-organisms are especially found in that peculiar secretion which we get in the nose.

Dr. Goodale: The Staphyloccoccus pyogenes aureus and albus are the micro-organisms most commonly found. The Streptococcus pyogenes also occurs and is, I believe, more characteristic of the severe forms of colds in the head.

Dr. G. A. Leland, of Boston: There are probably few things in our province of medicine concerning which there are so many theories as taking cold, which is after all a very simple matter, the keynote of which was struck by Dr. Bosworth when he referred to the activity of the skin. We may describe a cold as simply a disturbance of the vasomotor equilibrium between the external and internal surfaces of the body—that is, between the circulation of the skin and that of the lining of the internal tubes or cavities of the body. The external surface receives a chill. Its capillaries are thereby contracted and the blood driven away from the surface. The skin is doubtless the largest organ of the body and contains more blood than any other organ, with the possible exception of the liver. Its surface is probably larger than that of any other system of intracorporal tubes. When these tubes, therefore, are obliged to take up the blood driven from the skin, they become congested, or at least hyperæmic. If, now, the skin is in a sluggish state, the return of warm surroundings may not be sufficient to induce it to take up again its supply of blood and the internal hyperæmia remains. The skin, being deprived of its blood in these warm surroundings, is anæmic and chilly, which is almost the first symptom of taking cold. If any of the internal surfaces are affected by a chronic or subacute inflammation, the congestion referred to immediately manifests itself as a dryness and stiffness if, for instance, only the nose and throat are affected by a cough, if the air-
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passages below the pharynx are affected, as an intestinal flux, if it is the bowels, and so on. If the skin, on the other hand, is in an active state when warm surroundings are resumed, it takes up again its supply of blood and the internal hyperæmia is relieved—i. e., the patient does not "take cold," which is another way of saying that the internal congestion does not persist. The persistence of the hyperæmia, however, causes the usual train of symptoms which we call a cold. In the one case it is rhinitis, in another bronchitis, and another diarrhoea, or perhaps a metritis. Ordinary treatment, both domestic and professional, for a cold bears out this theory, the remedies being directed to the simple renewal of the blood supply of the skin—that is, the relief of the internal congestion. The old-fashioned "rum sweat" or the "herb tea" of our grandmammas had as an object the heating up of the body, producing hyperæmia of the skin, without which sweating does not occur. The Dover's powder, by dilatation of the external vessels, relaxing the vasomotor tension, does the same thing. The Turkish bath, or, in fact, the hot bath, however taken, has the same result; and I have found in my experience that the prescription of the hot soak of twenty minutes in a bath with the temperature of 105° F. or more, followed by the usual cleansing process, and another immersion of ten minutes, this succeeded by a reduction of the temperature of the water to 80° or 85° F., or even less, to produce a reaction, with a good rub down afterward to again warm and dry the skin, is one of the most efficacious, pleasant, and least injurious methods of getting rid of a cold, if taken within the first forty-eight hours.

Another fact sets forth this same theory as follows: Living in the far East for a number of years, it was my privilege to learn, among other things, of the fondness of the Japanese for bathing. It is their custom to take exceedingly hot baths, the temperature of the water ranging even as high as 130° F., and for a certain class of the community 120° F. is the common temperature. I have frequently seen a native go walking through the streets with the snow falling (the temperature being from 30° to 34° F.), dressed in wooden clogs and a loin cloth and a kimono (a loose garment hanging from the shoulders and blowing out far behind, leaving, of course, the body almost entirely naked), as red as a lobster, having just emerged from one of these hot baths. He walks through the streets to his dwelling, covers him-
self with a thick body garment, and sits about in his room without a thought of taking cold. Here the internal congestion does not take place, because the cutaneous capillaries are paralyzed, and the blood can not at once be driven inward by their contraction before relief to the paralysis of the vasomotor constrictors takes place. Enveloped in his big garment, this relief takes place slowly. The body temperature would be much reduced, of course, during his walk homeward, but as he has absorbed an excess of heat from his bath he does not lose enough to produce evil effects.

The bacteriological theory of taking cold doubtless obtains in some cases when an invasion of micro-organisms produces the symptoms of internal cold, but in general it is probably true that the internal hyperæmia, with its perversion of surface secretion, reduces the vasomotor resistance so that this invasion may produce its evil results.

There is one theory which has not been mentioned to-day, and that is one which Dr. L. Duncan Bulkley illustrated a few years ago; and I would like to add my testimony that in my own case, as well as in that of many patients, I have found that what might be called a uric-acid explosion often produces the symptoms of "cold"; and that, as he recommended, the sudden production of alkalinity by taking large and frequent doses of bicarbonate of sodium (best given in the five-grain soda mint tablet) is capable of banishing certain forms of cold in a most satisfactory manner.

Dr. Woollen's paper is a very interesting one and was not produced without a great deal of study and thought, and I am very glad that it has enabled us to bring up this subject for discussion, for evidently the common subjects which concern us in our everyday work can not be too well understood.

Dr. F. H. Bosworth, of New York: It has always seemed to me that the expression "taking cold" is susceptible of criticism. A cold in the head, or an acute rhinitis, bears somewhat the same relation to "taking cold" that the roseola of syphilis does to the disease in the blood, or that the eruption of scarlet fever does to scarlet fever. It is a great mistake to say that taking cold is a cold in the head. Acute rhinitis is simply the local manifestation of the general disturbance. I am very glad the subject has been brought up, and I wish there were time for more discussion. We are protected from the dangers and menaces of the world by the
outer coating of the body—viz., the skin—and when it ceases to protect us, we become liable to colds. It is through the skin that we feel and contract colds. If we are not protected by the skin from low temperature we take cold. Why, then, are we not protected? The Lord sent us into this world with ample protection. We live in hot rooms, and pile on clothing until the function of the skin is put to sleep, as it were.

I have been treating catarrhal diseases for now nearly thirty years, and I long ago made up my mind that it was absolutely impossible to treat successfully these affections unless we taught our patients how properly to protect themselves from suffering from exposure in our great changes of temperature. This is only accomplished by teaching them those simple sanitary measures which protect them from taking cold and thus restoring to them what they have practically abolished. Those functions with which Nature has endowed us tend to quit if we do not give them something to do. Of course, that is a slang expression, but is a good one. The best and practically the only protection against taking cold is a good, vigorous circulation—that is, a good capillary circulation in the skin. We must give it exercise if we want it to do us any good, and if we do not give the skin exercise it quits. How do we put the skin to sleep? By simply piling on heavy clothing. We keep the skin in order by wearing thin clothes, suitable for the different changes in temperature. By putting on clothing we protect ourselves from suffering and the discomforts of low temperature, but thereby render ourselves exceedingly sensitive to exposure.

There are two measures that are absolutely essential as aids to treatment in the management of so-called catarrhal cases, and what I mean by catarrhal cases are adenoids, rhinitis, etc. In the first place, forbid all patients from wearing more clothing than is absolutely necessary. I recall a book published by one of the founders of this association, in which he recommended patients to wear six suits of underwear during the year, changing them according to the rise and fall in temperature. No teaching, it seems to me, could be more pernicious. One rarely changes his underwear in the course of the year without taking cold. We should get along with as little clothing and as few changes as possible. There are some rules I insist upon. One of them is to instruct my patients to wear but one suit of woolen underwear. Too much clothing not only
renders the skin circulation sluggish, but hampers the
great function of the skin—perspiration. By the way,
most of our woolen manufacturers in making up woolen
underwear put the prickly side on the inside, and the
dressed or smooth side on the outside, a feature ex-
ceedingly irritating to a sensitive skin. And so it is a
good plan to tell such a patient to have his underwear
made wrong side out. I would recommend one suit of
underwear, or a combination suit, if it is the right ma-
terial, with short sleeves and low neck. The neck and
arms are parts of the body that can be exposed with
impunity. Furthermore, the fabric should be as thin
as is compatible with comfort.

The next measure is the daily use of the cold bath.
This beyond any other single measure promotes and
stimulates a good circulation. The benefit of the cold
bath is not only in its stimulation of the circulation,
but also in its toning up of the nervous system. One
word here as to the much-vaunted Turkish bath. It
would seem rather curious that we have to learn from
the Turks how to bathe. Did any of you ever stop
to think of the modus operandi of the Turkish bath?
You go into a room heated to a temperature, say, of 185°
F., and sweat and sweat. Now, profuse perspiration is
an abnormal condition. I know of no earthly reason
why you should sweat in this way. People say the ob-
ject is to open the pores. The sweat pores, I suppose.
These pores are always open; they are never closed.
If you stop up the pores, you are going to have a boil
or an abscess. The Turkish bath is a luxury in which
many indulge, but from a sanitary or hygienic point of
view I have always been skeptical as to its virtues.

We can not successfully manage our catarrhal pa-
tients unless we so regulate their habits as to clothing
and bathing that they are not constantly taking cold,
and so baffling our efforts at relief by repeated exacer-
bation of their disorders.

I am very sure that in my own practice my success
in treatment has been very notably increased since I
began to enjoin the rules to which I have briefly re-
ferred.
CHRONIC ABSCESS OF THE FRONTAL, ETHMOIDAL, AND SPHENOIDAL SINUSES, FOLLOWED BY MENINGITIS AND DEATH.

By J. H. Bryan, M. D.

Believing that as much can frequently be learned from our failures as from our successes, I desire to call your attention to the following unfortunate but instructive case of suppurative disease of the frontal, ethmoidal, and sphenoidal cavities, hoping it will be an object lesson for us all not to allow these cases to go too far before resorting to operative interference.

While a great deal has been done in the way of unraveling the mysteries of this dangerous region, there still remains a great deal to be worked out before our diagnosis and therapeutics can be said to be precise.

Mrs. ——, aged forty years, consulted me February 28th, complaining of intense frontal neuralgia, limited to the left frontal and temporal regions, occlusion of the left nostril, and a profuse purulent discharge from the left side of the nose. This condition had been going on for a number of years, but increasing in intensity of late, especially since an attack of influenza from which she suffered in the early part of January of the present year.

The patient was a well-nourished woman, with rather an unhealthy appearance of the skin, and with an anxious facial expression, so characteristic of these cases when at all well advanced.

Examination of the nose showed the left side completely blocked with polypi of considerable size, and also containing a large quantity of thick green pus, which was discharged principally from the anterior naris. The right side was in a comparatively fair state of health, the mucous membrane over the middle and inferior turbinates being somewhat hypertrophied; but there was no noticeable secretion coming from that side. A post-rhinoscopic examination showed a small quantity of pus in the middle meatus coming down over the posterior extremity of the middle turbinate; but the quantity was so small that it was considered to be a
part of the secretion from the ethmoid cells—otherwise nothing abnormal in the postnasal space was observed.

The polypi, several quite large, were removed with the snare, and when the nose was freed of these tumors the whole middle meatus was observed to be completely obliterated by the swollen ethmoid cells. The middle turbinate was very large, and on the use of the probe it, together with the greater portion of the ethmoid bone as far back as its middle, was found to be in an advanced state of caries. The probe could readily be passed into the left frontal sinus. Irrigation of the nose brought away large quantities of thick, foetid pus, and gave the patient temporary relief.

An examination of the eye by Dr. W. H. Wilmer before the removal of the polypi showed the fundus normal, and there was no contraction in the visual field, a fact which surprised me somewhat in view of the extensive disease of the ethmoidal cells.

The electric light showed the left frontal sinus opaque, while the right as well as both maxillary sinuses were translucent.

The patient was informed of her serious condition and advised to submit to an operation, already too long delayed, as the only hope of saving her life.

She left for her home to make her final preparations for coming into the hospital, and it was while at home that she contracted a severe cold, which developed into a slight bronchitis, and increased to a considerable degree the quantity of secretion from the nose.

On March 26th she returned to Washington and was admitted to the Episcopal Eye, Ear, and Throat Hospital, where she was kept under observation until her cold was better. While her bronchial inflammation rapidly subsided, her head trouble seemed to increase in severity, and it was decided unsafe to postpone the operation; so, on April 1st, she was etherized. The left brow having been shaved, an incision, commencing at a point just within the left supraorbital notch, was made through the brow down to the bone, and continued over on the nasal bone; the flap, composed of skin and periosteum, elevated, and a button of bone a centimetre in diameter was removed by means of a crown trephine from the anterior wall of the frontal sinus. The cavity was found filled with thick pus and granulation tissue. The probe revealed extensive caries of its anterior wall, and the whole ethmoid bone, as far as the probe could reach, seemed to be in a carious state. The sinus was freely curetted and all diseased tissue
removed; then, with the little finger in the nose as a guide, I removed all the anterior ethmoid cells by means of the curette passed through the frontal-sinus opening. Operating from before backward, I removed as much as half the ethmoid cells. When this had been done, the probe not revealing any further diseased bone, the cavity was thoroughly irrigated with a solution of bichloride of mercury (1 to 3,000). Pus continued to come after each irrigation for some little time, and this puzzled me considerably at the time; but in the light of the autopsy, I now believe that some of this pus was coming from the posterior ethmoid cells and the sphenoidal sinus, which during the examination gave no evidence of being diseased.

After thoroughly cleansing the parts the cavity was packed with iodoform gauze, one end being passed into the nose, the periosteum and external wound closed with catgut sutures, and the whole sealed with iodoform and collodion.

The patient passed a fairly good night, vomiting blood several times during the night. Evening temperature, 98.4° F. Complained of some pain in the region of the operation, but this passed off during the night.

April 2d, S A. M.—Temperature, 99° F.; pulse, 76. A sero-sanguinolent secretion discharging through the gauze drain. At noon she complained of pain in the head, principally in the suboccipital region. Temperature, 99.2° F.; pulse, 80. Toward evening the pains in the head increased in severity.

8 P. M.—Temperature, 101° F.; pulse, 88; suffering from nausea. No chill.

3d, S A. M.—Temperature, 101° F.; pulse, 84. During the night she complained of feeling cold, but there was no decided chill. Removed the gauze drain, which came away perfectly clean, and irrigated the frontal sinus through the nose; but no pus was brought away, and no pus was found in the nasal cavity after irrigation.

12 M.—Temperature, 102° F.; pulse, 92. The general condition of the patient seems much worse; the sensorium considerably duller; pupils normal, and react to light.

4 P. M.—Temperature, 102° F.; pulse, 80. The frontal wound was opened and the cavity thoroughly irrigated with a boric-acid solution, but no secretion was brought away. After a consultation with Dr. Wilmer and Dr. Bowen, ten cubic centimetres of antistrep-
tococcus serum were given by injection. In two hours the temperature fell one degree.

8 P. M.—Temperature, 102° F.; pulse, 120; very restless, and does not respond readily to questions. Examination of the eyes by Dr. Wilmer showed the fundus normal. Frontal sinus and nose irrigated, but no pus was brought away. At 9 p.m. she had a second injection of ten cubic centimetres of serum, but without any appreciable effect on the temperature.

4th.—Patient in a semicomatose state; temperature, 103.2° F.; pulse, 148. Urine voided involuntarily. At 10 A.M. she received a third injection of antistreptococcus serum. At 1.30 p.m. the patient died.

The following is a report of the autopsy by Dr. D. S. Lamb, of the Army Medical Museum:

Head alone examined. Scalp normal but pale. Bones normal except left side of cribriform plate of ethmoid bone, which had been destroyed apparently by ulceration, and the opening was occupied by a blood clot; left olfactory ganglion softened.

Dura mater firmly adherent to calvaria in places. Sinuses of dura mater contained recent soft dark clots except in anterior part of superior longitudinal sinus, where was a firmer, paler clot; no purulent fluid in sinuses. Vessels of pia mater engorged.

Both Gasserian ganglia were softened, and there was a little pale, thin, puslike fluid in the subganglionic depression. Purulent fluid in left nasal fossa up to the roof, and in the left posterior ethmoidal and in both sphenoidal sinuses.

Brain showed fibrino-purulent deposit along the vessels, especially of the convexity; also at base and on cerebellar hemispheres; very scanty, however, in the cisternae magnum and pontis; apparently none on the medulla.

The arteries at the base of the brain appeared to be normal.

Cause of death, acue leptomeningitis, apparently secondary to caries of the ethmoid bone. The secondary infection was most probably through the lymphatics, since that route seems to explain better the involvement of the subgasserian fossae, and there was no purulent fluid in the dural sinuses. It is just possible that infection may have also come by way of the ethmoidal veins to the cavernous sinus, but there was no purulent liquid in these sinuses.
As will be seen by the clinical record and the report of the autopsy, this case presents many interesting features.

The meningitis following so soon after the operation, one naturally looks to this region for the source of the infection; but the frontal sinus can be excluded, for there was no pus found in this cavity upon frequent irrigations, and I do not believe it took place from the region of the anterior ethmoid cells, for they were completely removed, and no pus was found in the nasal chamber on frequent examinations made after the operation. The purulent secretion found in the nose at the time of the autopsy was probably the result of an emptying of the posterior ethmoidal cells and sphenoidal sinuses a short time before death, and we are forced to the view that these cavities were the source of the infection through either the ethmoidal veins or the lymph channels, as suggested by Dr. Lamb as being the most probable course. It is possible that there was a slight caries of the walls of the sphenoidal roof, which was not discovered at the autopsy, for this region along both sphenoidal fissures seemed to be the seat of the intensest inflammation.

An odd feature of this case is that there should have been such decided destruction in the sphenoidal sinuses and in the left posterior ethmoidal cells without any evidence, either local or general, being given to direct my attention to these cavities, for, as I have previously mentioned, there was only a small quantity of pus observed flowing into the postnasal space over the posterior end of the middle turbinate. The headaches were entirely referred to the frontal and temporal regions.

Abscess of the sphenoidal sinus and the adjoining posterior ethmoid cells, for they are generally one cavity in well-advanced cases, is a most difficult affection to diagnosticate when its symptoms are well defined, and next to impossible when the symptoms are obscure. The only positive evidence is a choking of the optic disc, when associated with a postnasal secretion and occipital
headache. Had the sphenoidal disease been discovered in time, I feel this patient's life might have been spared.

Paper.

REMARKS ON INTRANASAL OPERATIONS.

BY WALTER F. CHAPPELL, M. D., M. R. C. S. Eng.

Possibly no subject connected with our specialty has received more attention than the one embraced in the title of this paper. It may not be my privilege to impart any new procedures to this society of skilled rhinologists; but I wish to draw your attention to my experience and observations, that I may benefit from your discussions and criticism.

There was a period in the development of our specialty when, beyond nasal douching, little was done for affections of the nasal passages. The brilliant results effected by the removal of adenoid growths from the nasopharynx drew attention and thought to the effects of all nasal obstruction on general conditions. From this date many enthusiastic workers have labored to devise means to meet all forms of nasal stenosis. It was not realized at first in this new departure of nasal treatment that much harm might result from operations in the nasal passages. We all at this time realize that no nasal treatment should be undertaken without carefully considering the best measures to be adopted and their results. It is not necessary for me to enumerate the many operations which have been recommended for the relief of different nasal conditions which seek our aid. I wish, however, to state that, in my belief, a most conservative spirit should be cultivated in the treatment of all nasal conditions, and that extreme measures, accompanied by any great loss of tissue, are rarely justifiable. The subject of nasal surgery covers such a wide field that I shall confine my remarks to some operations and treatment of the septum. The most frequent septal conditions requiring surgical interference are spurs,
deviations, and thickenings. All spurs, in my belief, do not require removing, and unless they give some undoubted evidence of their pressure I advise against it. The small anterior spurs and localized thickenings of the septum may readily be treated by the annular knives described by me some years ago. Their advantage consists in the possibility of removing the exuberant cartilaginous tissue and leaving the mucous membrane attached anteriorly, so that it can be imme-

Fig. 1—Annular knives.

diately replaced. The large septal spurs, whether anterior or posterior, can, in my opinion, be removed more satisfactorily with the saw than by any other means. If you will bear with me for a moment I will make some remarks on what I consider the essential qualities of a saw. In choosing this instrument one should be selected that is firm, with rather a short cutting blade, the teeth of which readily catch the mucous membrane and cut both ways. Dr. Mial, of the Manhattan Eye and Ear Hospital, New York, has presented us with such a saw. Its teeth are arranged similarly to the crosscut saw of commerce and cut rapidly through the tissues both ways, with little pressure. In my experience it has given more satisfaction than any other of the numerous saws I have used. Variously shaped handles are made for this saw, but that recommended by Mial is the best. I have taken some of your time on this seemingly trivial matter, but the selection of the instrument we are to use is most important in obtaining good results.

The after-treatment of septal wounds has caused considerable discussion in our societies, and we have gone through the periods of dressing with cotton, gauze, spunk, and also the period of leaving the wound completely unprotected, relying on cleansing and free drain-
age for good results. The latter method, I think, is now generally accepted as being the most desirable. It has, however, some drawbacks in the prolonged process of granulation, which not infrequently produces an exuberance of tissue, in many instances equaling, if not surpassing, the original amount of tissue removed. Furthermore, if a large spur has been removed and no dressings have been applied, a secondary haemorrhage may occur. These, with other minor considerations, make it desirable in some, if not in all, cases to adopt means which will prevent the formation of granulation tissue and hasten cicatrization. During the past year I have renewed my attention to the after-dressings of septal wounds, and have met with a fair measure of success in accomplishing this, and will briefly relate my procedures. My first step is to thoroughly douche the nares and the nasopharynx. I believe douching to be better than the spray, as it not only is more effectual in cleansing the parts but, owing to the smaller amount of pressure employed, less hyperæmia of the mucous membrane is produced. I have used all kinds of antiseptic solutions, but do not find that any one more than another has special virtues to recommend it. The solution should be warm, alkaline, antiseptic, and non-irritating, and plenty of it should be used so as to insure thorough cleansing.

The field of operation is then dried and an eight-per-cent. solution of sterile cocaine applied; after five minutes a filtered solution of suprarenal extract is applied and allowed to remain about two minutes, when cocaine is again applied for ten minutes. This routine, I believe, gives the greatest amount of cocaine anesthesia and the fullest haemostatic effect of the suprarenal extract. The saw, with all the instruments employed, should be thoroughly clean. In using the saw a complete removal of the spur tissue should be done, as I think some of it is too often left and results in an incomplete operation, and leaves a base for new tissue to proliferate. I believe it is also important not to wound the mucous membrane with the end of the saw,
Remarks on Intranasal Operations.

which is often done by using too much backward force. If any shreds or ragged edges of mucous membrane remain they should be trimmed off. Powdered nosophene, boroform, or some similar antiseptic powder is then dusted over the surface. Before beginning the operation a splint of gutta-percha, such as is used by dentists, is prepared, of suitable shape and size, and is then dipped in a fifty-per-cent. albolene and nosophene solution and introduced so as to cover the septal wound.

The splint should be held firmly over the cut surface until the outside packing is introduced. For this purpose I have employed two retainers, such as are shown in Fig. 2. The intranasal blades are corrugated on one side, which prevents their slipping, and they are made in two lengths. The short blade is for anterior work and the long blade for posterior work. After the splint has been placed in position by the operator, the retainer is introduced and given to an assistant, who stands behind the patient, to hold. He applies firm pressure, but

![Fig. 2.—Splint retainer.](image)

should keep the retainer perfectly steady. The warmth and moisture of the tissues, together with the pressure, mold the splint into the wound. The dressings are then easily introduced external to the splint, as the pressure by the assistant on the retainer gives plenty of space between the splint and turbinated bodies. The kind of dressings employed will probably be determined by the individual preference of the operator. I have tried absorbent cotton, iodoform, and nosophene gauze, spunk, oakum, and Bernays sponge, and give the preference to the splints recommended by Dr. W. L. Simpson, made from the Bernays sponge. The small-sized
ones are the most useful, and should be dipped quickly into water and liquid vaseline just before introducing them. This treatment of the splint will make it swell a little at once and gives just the required amount of posterior and lateral pressure. On removal, some days later, it will be found that the centre of this splint is perfectly dry. This shows that the primary pressure has been sufficient to greatly lessen the secretion—in fact, the wound, splint, and other dressings, excepting the outside, will be perfectly dry if the work has been successfully done. If the anterior part of the nasal cavity is large, it may be necessary to put in some extra small pieces of Bernays sponge, or to moisten the anterior end of the Simpson splint. The patient is then allowed to depart, returning for examination on the second day. If there is no discomfort from pressure and the dressing looks dry, the splints are retained for another twenty-four hours, and removed on the third day.

Of course, some discretion must be used in the length of time the splints and dressing are allowed to remain. I have, in many cases, kept them in for a week with benefit, while in other cases they had to be taken out on the second day. As an average, I think my best results have followed the removal on the third day. Care should be exercised in taking out the dressing, so as not to disturb the gutta-percha splint. The Simpson splint comes out in layers and is easily removed. The question whether the gutta-percha shall be removed or left in situ must then be determined. If the splint looks dry, and there is no odor or evidence of suppuration, I dust in one of the antiseptic powders already mentioned, and reintroduce the Simpson splint. If the splint is removed the wound is doused as at the first operation, and the splints and dressings are again applied, with the precautions before mentioned. Two dressings after the one at the operation carry the patient along for about ten days, when the septal wound is either entirely healed or so far advanced that the dressing and splint can be removed. In fact, in some patients one redress-
ing is all that is required. The cicatricial tissue covering the septal wound is smooth and even and the whole aspect of the surrounding tissue is much better than I have seen when other methods have been adopted. During the past nine months I have treated all my cases of septal spurs by this method, both in hospital and private practice, with an average healing of the operative surface in from seven to fourteen days, and without the formation of any excessive granulation tissue. At first a few cases complained of pain from the pressure, but a little experience showed about the amount of packing necessary for each case. It is specially important not to use a large Simpson splint. The removal of the rubber splint, if done with ordinary care, produces no hæmorrhage, as other dressings often do, for it does not adhere to the cut surface. No cases have shown any symptoms of sepsis nor any evidence of nasal irritation since the details of the operation and dressing have been worked out. The introduction of the suprarenal gland into nasal surgery makes a bloodless operation possible, and the after-dressings, continuing the pressure on the vessels, prevent subsequent oozing. I believe these have contributed largely to the success I have obtained in preventing the formation of post-operative granulation tissue. This statement has been confirmed in several instances when the suprarenal extract failed, and considerable hæmorrhage occurred, followed by more granulation tissue and suppuration than when the operation was bloodless.

The rubber splint, I have shown, may also be employed after operation for straightening the septum, and in my opinion greatly simplifies this operation. Any of the numerous methods for breaking up the septal deformity may be done, and the rubber splint, shaped to the size of the nasal cavity and cut a suitable length to reach sound tissue posteriorly, may then be introduced and treated in the way already described. A similar splint may also be used on the other side of the septum, but unless it is a case of great deformity it is unnecessary. When employed, I always remove the sec-
ond splint permanently on the first or second day after operation.

We have all felt, I think, the need of a splint for sæptal deviations which embrace the full width of the sæptum. Most of the splints in use are smaller at the posterior than at the anterior end, and in wide sæptal deviations employ pressure for not more than half the sæptal width, leaving the upper part unsupported. The splint shown to this society is intended to meet these cases, and also for deviations confined to the upper segment of the sæptum. It consists of two hollow plates, one for either side, connected by a spring. The hollow plates carry a plate so arranged that after introduction the posterior end is elevated after the shape of a fan, and exactly double the width of the posterior end of the splint. The fan extension can be used on both sides of
the septum if the operator so desires. After introduction the small Simpson splint is used for pressure, but other measures may be used. In the conditions for which the splint was designed it has proved most satisfactory in keeping the parts in the position desired.

I also wish to draw your attention to another fan-shaped rubber splint of tubular form.

This splint allows of an increased posterior width and of free nasal respiration after its introduction. Its many advantages are readily apparent.

ADDENDUM TO DR. NEWCOMB’S PAPER (page 18).

The later history of the case is as follows: During the summer of 1899 the mass in the nostril continued to reproduce itself after frequent removals, each of which was attended with considerable haemorrhage. It gradually invaded the outer aspect of the superior maxilla, and finally appeared on the under surface of the hard palate. Examination (Dr. Wright) of a piece of the tumor removed in October showed that it had changed its characteristics somewhat, having lost the adenomatous arrangement of the epithelium. It now presented very rapidly growing epithelium and epithelioid cells, occasionally arranged in tubular fashion, but, as a rule, crowded into the enormously dilated lymph spaces without any appearance of blood-vessels or of anything else, the whole mass being made up of a growth of very low vitality and degenerated epithelia. It had manifestly assumed a greater malignity.

The patient was finally induced to undergo an operation simply as a means of rendering life more comfortable. She was operated upon in the Roosevelt Hospital by Dr. Charles McBurney, November 25, 1899. The patient did well for one week, but died suddenly on the seventh day. Autopsy revealed thrombosis of the coronary arteries, which were extensively diseased. The report on the tumor was “alveolar carcinoma.”

The following papers, which have appeared since my own was read before the association, are worthy of consultation by those interested in the literature of malignant tumors of the nasal fossae:

THE DIRECT EXAMINATION OF THE LARYNX IN CHILDREN.

By Max Thorner, A. M., M. D.

The examination of the larynx of children, and especially of young children, is, as a rule, not easy. However important it may be for the practitioner, for diagnostic or therapeutic purposes, to get a view of the interior of the larynx, and however expert he may be in the technique of laryngoscopy, there are doubtless many cases where he will fail with the ordinary methods of examining the larynx. It is not alone the difficulties which are occasionally encountered in the laryngoscopic examination of adults that are the cause of this failure of all attempts at ocular inspection of the interior of the larynx, but new ones are added which are by far more difficult to overcome. These difficulties may be conveniently divided into two classes:

First, those which are due to subjective causes, as it were, on account of the age of the patient.

Secondly, those that are due to anatomical conditions in the young child different from those of the adult.

In the first place, we have to deal with young children, who are afraid of any manipulation about the mouth and throat, and who can not be expected to aid us in the procedure. It is rarely possible to persuade them to put out their tongues; but often they will not even open their mouths, will fight against the introduction of the mirror, will not intonate, etc. During all these manœuvres the pharynx and entrance of the larynx are more or less violently contracted and the lower pharynx is filled with mucus and saliva—all ob-
stactes which in themselves would be sufficient to prevent any satisfactory examination.

But, in the second place, the anatomic conditions in children, at least in young children, are very unfavorable to making an inspection of the interior of the larynx in the usual manner. The frenulum of the tongue is at an early age often so short that even if the children are willing to push the tongue out, it is almost impossible to get a hold of it. Furthermore, the height of the mouth is comparatively small, and the uvula depending deeply into the lower pharynx. The larynx itself differs in very young children from that of a later age in many respects. Luschka* showed many years ago that the epiglottis in very young children was curved on the flat and formed a narrow longitudinal groove—in fact, he thinks this shape of the epiglottis is characteristic of early childhood. There are, however, a few more differences between the larynx of the child and that of the adult, of which the following are of importance for the subject under consideration: The hyoid bone lies during the first few years overlapping the upper margin of the thyreoid cartilage and entirely covers its highest point anteriorly.† By this arrangement the base of the tongue depresses directly the epiglottis, which, having its lateral margins curved, decreases the entrance to the larynx considerably. Thus is explained the peculiar appearance of the image of the vestibulum laryngis (see Fig. 1) in very young children.

"This narrowing down of the upper portion of the larynx in the young child is enhanced through the undue projection of the cornicula and cuneiform cartilages and through the narrow and short aryepiglottic folds." ‡ These facts would readily account for the difficulties encountered in examining the entrance and upper half of the interior of the larynx. But even in such cases, in

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‡ Ibid.
which we might perchance overcome them, we find a new obstacle, inasmuch as in young children (under four years of age) the axis of the larynx is tilted slightly backward toward the vertebral column on a level with the cricoid cartilage. This fact, which was established by L. Bauer \(^*\) in 1897 on a hundred and thirty-six larynges of young children, explains through the peculiar tilting of the plate of the cricoid cartilage the diminished distance between the cricoid and thyreoid cartilages, whereby the perspective view of the lower half of the larynx is oftentimes rendered impossible.

If we consider that the obstacles enumerated above were almost sufficient for many years to frequently deter the most enthusiastic observer from insisting upon making laryngoscopic examinations in young children, even in cases in which it appeared to be almost absolutely necessary for the purpose of making a differential diagnosis in threatening conditions, is it to be wondered at that the method of direct examination of the larynx, discovered by Kirstein, and called by him autoseopy of the larynx, or examination without a mirror, was looked upon by the inventor and by many others as possibly furnishing the means of rendering the examination of the larynx in children easy, or at least feasible? In fact, Kirstein expressed himself in one of his first publications regard-

ing this matter in the following manner: "In all probability autoscopy will assume an important rôle in the examination of children on an equal footing with laryngoscopy; but in preference to laryngoscopy in very young children." *

For purposes of recapitulation, it may suffice to briefly state the principles of autoscopy or direct inspection of the larynx and the trachea. As long as twenty years ago Reichert † had called attention to the fact that pressure upon the base of the tongue and the median glosso-epiglottic ligament produces an elevation of the epiglottis on account of its close attachment to the tongue. For this purpose Reichert used an instrument which he called "elevator of the epiglottis" (*Kehl-deckelheber*), and which serves this purpose well enough. Making use of this new principle, Kirstein constructed an especially shaped spatula or tongue depressor, which is built upon the following lines: ‡ It consists (Fig. 2) of a strong metallic handle to which is joined at a right angle the tongue portion of the instrument. This portion is eleven centimetres long, about two centimetres wide, and about three millimetres thick, and is in its distal part, for a distance of about five centimetres, slightly bent downward to adapt itself to the curvature of the base of the tongue.

The tip of the spatula, which must be thickened and well rounded, in order to avoid injury to the mucous membranes, has also a shallow notch, so as to admit of its more ready approximation against the median glosso-epiglottic ligament. The underlying principle of autoscopy rests upon the possibility of bringing the imaginary axis of the laryngotraacheal tube and of the buccal cavity, which are joined at an obtuse angle, into


‡ Berl. klin. Wochenschrift, 1898, No. 12.
a straight line. This is effected by placing the tongue spatula described above well back upon the tongue so that its distal end rests upon the base of the tongue and the notched tip receives the median glosso-epiglottic ligament, and then by pushing the tongue through firm forward and downward pressure out of the way. In doing this the epiglottis is elevated, through the pressure upon the median glosso-epiglottic ligament, and thus it is possible to get a direct view of the larynx, well illuminated by a reflector or any of the electric forehead lamps, during which manipulation the head of the patient should preferably be slightly stretched forward, while the examiner stands in front of the patient so that he looks from above downward into the buccolaryngeal cavity.

It stands to reason that a procedure that did away with making traction upon the tip of the tongue, in order to elevate the larynx; that did not require intonation of A or other sounds to raise the epiglottis; that abandoned the laryngeal mirror, so easily covered with mucus coughed against it by struggling children, and that in its very nature is forcible enough not to need the assistance, and perhaps even to overcome the resistance, of unwilling or even refractory children—that such a procedure, I say, should lead to trials with the new method of laying the upper air-passages open to inspection. Kirstein himself recognized this very early and stated that he had frequently made autoscopic examinations in children with or without a general anæsthetic, the result being often very satisfactory.* And E. Fletcher Ingals † has modified the tongue spatula for autoscopic purposes in children by adding two flanges to prevent the patient's mouth from closing and obscuring the line of vision, a very practical point in the examination of children.

In this connection it is necessary to mention the method described in 1896 by Escat, of Toulouse, for the

* Loc. cit., and private communications.
† New York Medical Journal, September 17, 1898.
laryngoscopic examination of children.* He replaces the traction upon the tip of the tongue by dilatation of the laryngopharyngeal space with the aid of an especially constructed tongue depressor, employing at the same time the ordinary laryngeal mirror, which is used, however, not only as a reflector, but also to push back the soft palate and the pharyngeal wall during the forcible contractions that are liable to occur. For this purpose the handle of the mirror should be very strong.

The tongue depressor of Escat (Fig. 3) is built upon the following lines: To the strong handle is fixed, at an obtuse angle, the tongue portion, the pharyngeal end of which curves downward so as to adapt itself to the base of the tongue. On the end of this curved portion is forged a broad, two-pronged fork, consisting of two well-rounded and curved metal bars, which, descending beyond the base of the tongue, surround the lingual surface of the epiglottis and find with their knob-shaped extremities a lodging place in the sinus pyriformis on each side of the laryngeal orifice. This done, the examiner presses the instrument downward and pulls it at the same time forward, introducing simultaneously the laryngeal mirror. This whole procedure is, as will be

* La Laryngoscopie chez l'enfant. *Archives internationales de laryngologic, d'otologie et de rhinologic, 1896, p. 479.*
readily understood, a forcible one, and the little patient must be firmly held upon the knees of an assistant, his arms fixed against his body and his legs secured between those of the assistant. It is best to roll the child in a sheet. In order to go without disturbance through these and the following manipulations, which may appear to outsiders somewhat formidable, Eschat says: "The principal condition of success consists in the courage to remove from the room without pity the parents of the child or all persons who are too emotional." During this procedure it may be but usually is not necessary to keep the mouth open with a mouth gag. If now, light is thrown upon the mirror, which must be firmly pressed against the uvula and pharyngeal wall in order to act, together with the spatula, in the fashion of a retractor, and if this whole manoeuvre is carried out with great celerity and dexterity, it is in most cases possible to see the laryngeal surface of the epiglottis, the vestibule of the larynx, the arytaenoid cartilages, and the ventricular bands. It is, however, not so easy, in very young children, to see anything below them, although one may occasionally get a view of the vocal cords and, still more rarely, of the sub-glottic space.

This method of forced laryngoscopic examination is not only feasible, but also practical, as a somewhat extended experience with it has proved. However, it is a method that after all is probably best reserved for such cases as for any reason can not be examined by other methods, be it the usual laryngoscopic examination or the direct examination with the modified autoscopic method of Kirstein. For Kirstein himself has of late also used the spatula of Eschat for the direct examination—that is, without the aid of the laryngeal mirror—and he finds that the results have been very encouraging.

For some time past I have been making experiments

* La Laryngoscopie chez l'enfant. Archives internationales de laryngologie, d'otologie et de rhinologie, 1896, p. 487.
† Fortschritte in der laryngologischen Untersuchung kleiner Kinder. Berl. klin. Wochenschrift, 1898, No. 6
with the different methods. Above all I was early impressed with the fact that with any of these methods, if carried out by experienced hands, we can often gain information about the condition of the larynx in young children which we could not obtain by the ordinary method of laryngoscopy. The direct examination with Kirstein's method affords in all cases an excellent view of the lower pharynx (the so-called hypopharynx), of the epiglottis, and part of the vestibule. In many cases we can also see the arytenoid cartilages. To see more—that is, the ventricular bands—I found very often difficult, and sometimes impossible. And only in extremely rare cases could I succeed in seeing the glottis. In doing this the children were usually examined in the upright position held on the lap of an assistant, although in some younger children an anaesthetic (chloroform) appears to be unavoidable, as has been pointed out by Fletcher Ingals.* In such cases the examination was done with the head hanging over the end of the table.

Another series of children, ranging in age from eighteen months to nine years, were examined with Escat's spatula, used, however, for direct examination without the laryngeal mirror. The children were held in a similar position as in autoscopic examination, with their heads stretched forward. The only difference was that instead of placing the end of Kirstein's spatula in front of the epiglottis, the fork of Escat's spatula finds its fulcrum laterally of the epiglottis and places no obstacle to the raising of this cartilage between it and the base of the tongue, which region, as we have seen above, leaves so very little opportunity for this movement in children on account of the close proximity to and overlapping of the hyoid bone over the upper margin of the thyroid cartilage. The next step is then to make a quick and forcible downward movement with the instrument, and simultaneously a forward traction; if, now, light is thrown into the dilated lower pharynx one will, in the majority of cases, get a more or less perfect view of the

* Loc. cit.
vestibulum of the larynx in the moment in which the little patient takes a deep breath. Sometimes one sees even more, although, so far, I have but rarely succeeded in seeing the glottis.

Although my experience is as yet limited with this method, I feel that I can state that with increased experience it may possibly afford us great opportunities in the examination of children. Which of the various methods is the best, and whether all of them are not open to improvements, or may be superseded by still better methods, only the future can show. None of these methods will be required when, even with the aid of great patience and tact, laryngoscopic examination is at all feasible; and all these remarks refer, therefore, mainly to very young children. But it is confidently believed that these methods of direct, though more or less forcible, examination of the larynx in young children are a step forward and a distinct advantage over our former helpless inactivity, when in most cases we were only too often compelled to base our diagnostic and therapeutic actions entirely upon the urgency of the symptoms.
Presentation of Specimens and Instruments.

AN ADENOID REMOVED WITH THE SCHUETZ PHARYNXAMYGDALOTOME.

By JOHN W. FARLOW, M. D.

Dr. J. W. Farlow, of Boston: I have here a specimen of adenoid disease, which is interesting for two reasons: First, it is from a patient fifty years of age, in my experience a very unusual amount to be found at that time of life; and second, I removed it all with one cut of the Schuetz pharynxamygdalotome. The accompanying life-size figure gives an accurate idea of its circumference, but it is much thicker than the photograph would indicate.

An Adjustable Nasal Splint.—Dr. John W. Farlow presented a nasal splint devised by Dr. R. A. Coffin, of Boston.

A Laryngeal Applicator.—Dr. Coolidge showed a laryngeal applicator devised by Dr. Clark. It consists of a rod of somewhat smaller diameter, but having the curve of a Schrötter laryngeal tube forceps. This rod is split for about three inches from the end, which has mouse-toothed tips for holding cotton securely. The rod is set in a hollow metal handle, and there is a small ring which slides over the split portion of the rod to hold the cotton after it has been adjusted. The instrument is made by Leach & Greene, of Boston.

AN ADJUSTABLE NASAL SPLINT.

By JOHN W. FARLOW, M. D.

Dr. Farlow: I would like to present an adjustable nasal splint devised by Dr. R. A. Coffin, of Boston, and made by Codman & Shurtleff. As the illustration shows, it consists of two nearly flat pieces of perforated silver, between which is an oval spring of composite metal, which has running through it a small rod, headed at one end, and having a thread and nut at the other. By turning the nut with the key the blades of the splint may be separated to any desired width.
As advantages over the ordinary hard-rubber splint may be mentioned: First, the blades may be very closely approximated, thus allowing it to be introduced with ease; second, it may then be adjusted to any width; third, the patient can breathe easily through it and also irrigate the nostril; fourth, the even pressure of the flat blade against the septum makes perforation less likely, and the septum unites smoothly and in a vertical position; fifth, in case it is necessary to fracture the maxillary ridge, the splint holds it well in place, as the blades come well down on the floor of the nose.

The patients on whom Dr. Coffin has used it all agree that the air passes freely through the splint while in place. The fact that the blades are expanded by an oval spring allows it to adapt itself more to the lateral wall, thus making it more comfortable to the patient. For cleaning after removal, it can be placed in boiling water and afterward in peroxide of hydrogen.

THREE IMPROVED INSTRUMENTS FOR USE IN THE OPERATION FOR THE REMOVAL OF LYMPHOID GROWTHS FROM THE VAULT OF THE PHARYNX.

By Thomas R. French, M.D.

These three instruments, which I take pleasure in presenting to the association, have recently been evolved from the cutting forceps and mouth gag which I designed a number of years ago for use in the operation for removal of lymphoid growths from the pharyngeal vault. The bite of the cutting end of the forceps has been gradually extended until, as used at present, the blades embrace, practically, the entire length of growths in the pharynges of children (Fig. 1).

The forceps is made heavier than the original in-
The fenestrae are larger, and therefore the curve of the distal end is greater. The plates forming the back of the oval rings are widely separated, so that a large part of the growth can be grasped and held while the cutting edges are dividing the growth at its base. The bulk of the lymphoid mass is removed with the first cut, and that which remains attached to the posterior wall can be readily and rapidly removed with a few bites of the forceps. While the cutting blades are made broad to give them strength, I have but rarely been obliged to use smaller forceps to eradicate the tissue lying behind the Eustachian eminences. The curve of the cutting edges seems to be well adapted to the curve of the posterior wall and vault in most children's heads, and the cut surface is left clean and smooth. The vault is usually completely cleared while the growth attached to the posterior wall is being removed, but occasionally a few taglike bits of tissue are left, which can be quickly and certainly removed by means of the second forceps (Fig. 2).

This forceps is exactly the same as that which has just been described, except that the cutting edges are confined to the curve at the distal extremity of the instrument. With the child in the upright position so little bleeding occurs that even very large growths can be most thoroughly eradicated with this forceps, in practised hands, in from ten to fifteen minutes.

The mouth gag (Fig. 3) is made heavier than the original instrument to accommodate a strong ratchet.
catch, which holds the blades much more securely. The spread of the arms is great enough to permit of its use in adults. As all the parts in the new model are detachable the instrument can be made aseptic.

A Modification of Bosworth's Nasal Speculum.—The modification consists, first, of a backward angular projection of the nasal blades, and second of the use of rings instead of discs for the grasp of the thumb and forefinger (Fig. 4). The object of the prolongation of the nasal blades is to secure a better expansion of the nostril and to prevent the heels of the blades from slipping into the nasal opening.

All the instruments described above are made by Fred. Haslam & Co., of Brooklyn.
A MODIFIED ALLEN'S SNARE.

By W. E. CASSELBERRY, M. D.

Some years ago the late Slover Allen had shown before the American Laryngological Association a nasal snare which, while embodying a valuable mechanical principle, is deficient in two essential details of construction. The main principle of the snare is a double cog-and-ratchet movement by which it can be manipulated and the wire caused to penetrate thick tissue by means of one hand. This mechanism is unaltered in the new modification. The original instrument is adapted only for nasal work—that is, the socket for insertion of a cannula is fixed to the body of the instrument at an angle. This I have changed, affixing the socket so as to hold a cannula in a straight line with the handle, thus adapting the snare for abscession of the tonsils. The socket is also provided with a screw. For intranasal manipulation the angle is given in a separate cannula itself. In the original instrument the wire was fastened by a clamp, which would soon wear loose so as to become ineffective and annoying. I have substituted three strong pins, which serve the purpose well. Thus modified, I have found the snare most convenient in nasal operating, and for abscession of the tonsils in children under general anaesthesia it is effective. It is made by G. Tiemann & Co., of New York.
BUSINESS MEETING.

The Twenty-first Annual Congress of the American Laryngological Association convened at the hall of the Medical Association, Chicago, Ill., on the 22d of May, 1899. The Association was called to order at 10 A.M. by the President, Dr. William E. Casselberry. There were present during the sessions the following Fellows:

William E. Casselberry, Chicago, President.
John W. Farlow, Boston, First Vice-President.
Henry L. Swain, New Haven, Secretary.
John O. Roe, Rochester, Member of Council.
C. E. Bean, St. Paul, Minn.
Francke H. Bosworth, New York.
M. R. Brown, Chicago, Ill.
A. Coolidge, Jr., Boston, Mass.
T. Amory De Blois, Boston, Mass.
J. L. Goodale, Boston, Mass.
T. Melville Hardie, Chicago, Ill.
Thomas Hubbard, Toledo, Ohio.
E. Fletcher Ingals, Chicago, Ill.
Samuel Johnston, Baltimore, Md.
George A. Leland, Boston, Mass.
John N. Mackenzie, Baltimore, Md.
James E. Newcomb, New York.
J. Edwin Rhodes, Chicago, Ill.
A. W. de Roaldes, New Orleans, La.
E. L. Shurly, Detroit, Mich.
A. B. Thrasher, Cincinnati, Ohio.
M. R. Ward, Pittsburgh, Pa.
Max Thorner, Cincinnati, Ohio.
F. C. Cobb, Boston, Mass.

Formal proceedings were begun by the roll call, which was followed by the address of the President. At the close of the first morning session the Association elected the following candidates as active Fellows: F. C. Cobb, M. D., Boston, Mass., proposed by Dr. Farlow and Dr. Swain. Thesis—Peritonsillar Abscess. J. F. McKernon, M. D., New York, proposed by Dr. Knight and Dr. Swain. Thesis—A Contribution to the Technique of
Modern Staphylorrhaphy. Max Thorner, M. D., Cincinnati, Ohio, proposed by Dr. Casselberry and Dr. Thrasher. Thesis—The Direct Examination of the Larynx in Children.

The President appointed as a committee to audit the Treasurer's report Dr. John O. Roe and Dr. C. E. Bean.

The following gentlemen were elected as a Nominating Committee: E. F. Ingals, J. N. Mackenzie, C. E. Bean, Samuel Johnston, and E. L. Shurly.

At the business meeting of the second day the following reports were read and approved:

Secretary's Report.

This year, as I present you with the tardily printed volume, I take pleasure in calling your attention to the index, which was compiled at the suggestion of the Council. It is as complete an index as that of any other set of Transactions with which I am familiar. It has added considerably to the cost of the volume, but is worth every cent spent upon it. The Secretary was in need of help in its preparation, and takes great delight in hereby publicly expressing his thanks to Dr. Newcomb, who looked up all the references of the first five volumes.

The active Fellows elected at the last meeting have all duly qualified. Since our last meeting we have lost by death one active Fellow, Dr. Nichols. Our active Fellowship, with the newly elected members, will now number seventy-three.*

Two meetings of the Council were held during the year, and the minutes of these will now be read.

Treasurer's Report, 1898-'99.

Receipts.

Balance from 1898 account . . . $149 71
Dinners, Brooklyn . . . . . . 190 00
Dues, 1898 . . . . . . . . 60 00
Dues, 1899 . . . . . . . . 265 00
Transactions, 1879-'96 . . . 44 50
Transactions, 1897 . . . . . . 15 50
Transactions, 1898 . . . . . . 2 00

$726 71

*Since these words were read in Chicago, there has occurred the death of the newly elected Fellow, Dr. Max Thorner, and that of Dr. J. C. Mulhall.
Disbursements.

Dinners, Brooklyn . . . . . $200.00
Stenographer, 1898 . . . . . 83.50
Printing stamped envelopes, postals, circulars, programmes . . . . 66.27
Postage on programmes . . . . . 8.00
Expressage on Transactions . . . . . 2.40
Compiling and typewriting index to first twenty volumes of Transactions . . . . . . 30.00

Balance to credit . . . . . $336.54
JOHN O. ROE, \{ Auditing Committee.
C. E. BEAN, \}

Librarian's Report.

The Librarian has to report that during the past year seventy-three unbound pamphlets have been added to the library, and have been deposited in the library of the surgeon-general. Respectfully submitted,

J. H. BRYAN, M. D., Librarian.

Dr. Farlow asked what became of the rule with reference to depositing inventions and modifications of instruments in Washington.

The President stated that the rule was finally construed as not being obligatory, but was dependent upon the choice or wish of the exhibitor. If he chooses to send an instrument that he exhibits, or a duplicate of it, to Washington, the Association is glad to have him do so: but, as the rule is now construed, he is not obliged to do it.

Dr. Ingals read the report of the Committee on Nominations as follows:

Report of Committee on Nominations.

Your committee have to report as nominations for the ensuing year the following:

President.—SAMUEL JOHNSON, Baltimore.
First Vice-President.—T. AMORY DE BLOIS, Boston.
Second Vice-President.—MOREAU R. BROWN, Chicago.
Secretary and Treasurer.—HENRY L. SWAIN, New Haven.
Librarian.—J. H. BRYAN, Washington.
Member of the Committee of Arrangements.—T. MORRIS MURRAY, Washington.
Under the head of Miscellaneous Business, the first thing considered was the proposed by-law, which was read by the Secretary.

The following amendment to the Constitution is proposed by the Council:

To strike out of Section 3 of Article III that portion which refers to Honorary Fellows, and to add the following words: "Active Fellows of twenty-five years' standing shall be eligible for honorary membership."

The Secretary stated that the matter had come up in connection with the resignation of Dr. Robinson, which if accepted to-day entirely severs his connection with the Association. This emergency and the fact which, however unpleasant it may be, we have necessarily got to face, that others of the older members of the Association who have nurtured it in its youth and faithfully served it in its later, stronger years would also one by one feel that they would like to be relieved of the duties which devolve, according to our by-laws, upon active Fellows, made it seem wise to provide some way whereby such honored members could be excused from arduous work, and yet remain with us, connected for the rest of their lives with the Association. Without greatly altering our Constitution, the only feasible scheme seemed to be to create them Honorary Fellows.

A general discussion of the subject followed, during which several amendments of the amendment were proposed, and it was finally moved and carried to lay the amendment upon the table.

The matter of Dr. Robinson's resignation then came up, and in view of the fact that the amendment had not been passed whereby he could be created an Honorary Fellow, it was voted that the resignation should not be accepted, and that Dr. Robinson be informed that it was the sense of this Association that it wished to retain him as a member as long as possible.

Dr. Ingals then moved, if it seemed wise to the Council, that it is the sense of this Association that a class of life members be established whose names shall appear upon the list the same as other members, with the exception of an asterisk indicating that they are life members. This was carried.

The second suggestion of the Council which was proposed in view of some difficulties in getting the publishers to continue the work of preparing our Transactions, was read as follows: "That hereafter all papers must be in the hands of the Secretary by the 15th
of July. Such papers as are withheld beyond that date must be published at the expense of their author." The Secretary explained that, according to the arrangement that had been made with the publishers, if a paper was handed to him too late to appear in the *New York Medical Journal*, in order for it to appear in the volume, the whole expense of printing it had to be borne by the Association. When articles appear in the *Journal*, no charge is made for printing them. It seemed unfair that by the delay of handing the paper to the Secretary this extra expense should be saddled upon the Association. This latter statement explains the last sentence of the resolution. On motion of Dr. Mackenzie, the suggestion of the Council was accepted.

In executive session on the third day the election of officers resulted in the unanimous choice of the gentlemen whose names had been presented by the Nominating Committee.

The retiring president, Dr. Casselberry, then appointed Dr. Ingals and Dr. Mackenzie a committee to escort the newly elected president, Dr. Samuel Johnston, of Baltimore, to the chair, and he responded with a few words thanking the Association for the distinguished honor conferred upon him.

The Secretary moved that a vote of thanks be extended to the Chicago Medical Society for the use of its pleasant and commodious quarters, and to the Chicago Fellows who had contributed so much to the welfare of the meeting and to the personal comfort of the members. It was seconded and unanimously carried.

There being no further business, the President declared the Association adjourned, to meet in Washington, D. C., in May, 1900, in conjunction with the Congress of Physicians and Surgeons.
OBIITUARY.

MAX THORNER, M. D.

Scarcely had the Association been able to extend the right hand of fellowship to Dr. Thorner, whose honored position in the ranks of the profession made him more than ordinarily welcome in our midst, when suddenly the new-formed friendship was forever ruptured, and we mourned his death by apoplexy. This occurred on the 21st of August, 1899, at his home in Cincinnati.

Dr. Thorner was born in Hanover, Germany, April 2, 1860. His education, both general and medical, was thoroughly completed and rounded out in Europe. Directly on its completion, he came to this country, located in Cincinnati, and began at once to practise his specialty, for which he had thoroughly prepared himself and in which he achieved such a notable success. He held for a number of years the chair of clinical laryngology in the Cincinnati College of Medicine and Surgery. He was also on the staff of the Cincinnati, Jewish, and Ophthalmic Hospitals as well as a member of the local and national medical associations. Few men of his years are better known in their respective lines of work than he, and he has left behind, to attest his ability and labors, numerous papers and essays on the greatest variety of topics connected with his and our chosen field of study and practice. They are all indicative of the man, painstaking, conscientious, full of the results of much careful research, and particularly sound in the conclusions. Such a mind, coupled with good health and a cheerful disposition, makes an admirable combination for any work, and especially for the trying life-work of a physician. The result was that Dr. Thorner was respected and beloved by all who knew him, and he will be greatly missed by us, who awaited much from him as a fellow-worker in this Association, as well as by those to whom he had endeared himself by the stronger ties of a longer and closer friendship.

H. L. S.
It is with great sadness that we chronicle here the sudden and violent death of our much-esteemed friend and colleague, Dr. J. C. Mulhall, which occurred on January 11, 1900.

Dr. Mulhall was born in St. Louis in 1851, and received his earlier and university education in his native town. Later he attended the St. Louis Medical College, and, after graduation, went to Europe to complete his medical education. His first work was done in Dublin and London, where he spent some considerable time. Then he went to Berlin and Vienna, and finally rounded out his course by a term of service in the London hospitals, where he was under the special attention of Dr. Morell Mackenzie. Having thus most thoroughly and completely prepared himself, he returned to St. Louis in 1878 and began the practice of medicine and his particular specialty.

In 1882 he was married to Miss Margarette Crawford, who with their three children survives him.

Early in his professional career Dr. Mulhall became connected with the Beaumont Medical College as lecturer on diseases of the chest. He retained this chair until last year, when he retired with the title of "Emeritus."

As a result of his preliminary training, his great skill, and his forceful character, he attained the greatest reputation and honor, both in a professional way before the community and among his colleagues. He was a member of and honored by all the local medical societies, and was also included in the membership of most of the national societies, being prominently identified with the Climatological Association and with our own. He was noted in all of them for his frank and fearless way of stating his beliefs and convictions, and in the same way he wrote many bright and yet solid and thoughtful papers on the greatest variety of subjects connected with our line of work. He was always a willing contributor to all the meetings of these various associations to which he belonged, and, while they all will miss his help most sadly, by none will he be more sincerely regretted than by our own Association.

Dr. Mulhall's personality was conspicuous. Gifted by Nature with a keen mind and tongue ready with wit, repartee, and, if need be, sarcasm, with abundant
common sense and a cheerful disposition, he combined all the essentials to qualify as a man among men. Add to this his high ambition, complete education, and mastery of his subject, and it was no wonder that we all liked him, all respected him, and all thought him most successful. And this latter he was, till, by its very consequences and the work which his splendid renown gave him, he gradually began to suffer from that insidious sapper of mental, moral, and physical strength known as nerve-tire and exhaustion. This he fought through the last three or four years, but he gradually lost grip on himself from time to time until life became so much a burden, so undesirable, that he chose to lay it down.

As we who have been intimately associated with him for a number of years feel with tremendous force the keen shock with which his death breaks in upon us, we can not but reflect how stern and unrelenting must have been the strain which broke off the life thread with such a snap, and this is all the more impressive as we contemplate what a splendid fellow he was, how well equipped by Nature in disposition, physical power, and training to do his share of the work of life. And we can not come out from under the shadow of so great a calamity without the inquiry, even though we scarce dare stop to think it. "Who else among us is overstrung?"
1900.

ACTIVE FELLOWS.

ELECTED.

1879. Asch, Morris J., 5 West Thirtieth Street, New York.
1880. Bean, C. E., Germania Life Building, St. Paul, Minn.
1893. Birkett, Herbert S., 123 Stanley Street, Montreal.
1895. Boylan, J. E., 319 Broadway, Cincinnati, O.
1891. Bryan, J. II., 818 Seventeenth Street, Washington, D. C.
1882. Chapman, S. H., 193 Church Street, New Haven, Conn.
1897. Clark, J. Payson, 76 Marlborough Street, Boston, Mass.
1893. Coolidge, A., Jr., 613 Beacon Street, Boston, Mass.
1880. Daly, William H., 516 Market Street, Pittsburgh, Pa.
1881. Delavan, D. Bryson, 1 East Thirty-third Street, New York.
1892. Farlow, J. W., 234 Clarendon Street, Boston, Mass.
1879. French, Thomas R., 150 Joralemon Street, Brooklyn, N. Y.
1897. Frothingham, Richard, 60 West Fifty-fifth Street, New York.
List of Fellows.

1878. Glasgow, William C., 2847 Washington Avenue, St. Louis, Mo.
1898. Goodale, J. L., 3 Fairfield Street, Boston, Mass.
1878. Hartman, J. H., 5 West Franklin Street, Baltimore, Md.
1888. Hinkel, F. Whitehill, 412 Franklin Street, Buffalo, N. Y.
1893. Hope, George B., 133 West Seventy second Street, New York.
1895. Hubbard, Thomas, 205 Ontario Street, Toledo, O.
1878. Ingals, E. Fletcher, 36 Washington Street, Chicago, Ill.
1878. Johnston, Samuel, 204 West Monument Street, Baltimore, Md.
1885. Knight, Charles H., 147 West Fifty-seventh Street, New York.
1878. Knight, Frederick I., 195 Beacon Street, Boston, Mass.
1880. Langmaid, Samuel W., 373 Boylston Street, Boston, Mass.
1878. Lefferts, George Morewood, 212 Madison Avenue, New York.
1894. Leland, George A., 669 Boylston Street, Boston, Mass.
1878. Lincoln, Rufus P., 22 West Thirty-first Street, New York.
1897. Logan, James E., 1208 Wyandotte Street, Kansas City, Mo.
1888. Lowman, John H., 441 Prospect Street, Cleveland, O.
1886. MacCoy, Alexander W., 1338 Walnut Street, Philadelphia, Pa.
1883. Mackenzie, John N., 605 North Charles Street, Baltimore, Md.
ELECTED.
1892. Murray, T. Morris, Seventeenth and H Streets, Washington, D. C.
1892. Porcher, W. Peyre, 99 Meeting Street, Charleston, S. C.
1878. Porter, William, 3886 Washington Avenue, St. Louis, Mo.
1882. Rankin, D. N., 273 Western Avenue, Allegheny, Pa.
1884. Rice, Clarence C., 123 East Nineteenth Street, New York.
1878. Robinson, Beverley, 42 West Thirty-seventh Street, New York.
1879. Roe, John O., 28 North Clinton Street, Rochester, N. Y.
1879. Seiler, Carl, Scranton, Pa.
1878. Shurly, E. L., 32 Adams Avenue, W., Detroit, Mich.
1889. Swain, H. L., 232 York Street, New Haven, Conn.
1892. Thrasher, A. B., 296 Walnut Street, Cincinnati, O.
1888. Van der Poel, S. Oakley, 47 East Twenty-fifth Street, New York.
1892. Wagner, Henry L., 522 Sutter Street, San Francisco, Cal.
1892. Watson, A. W., 126 South Eighteenth Street, Philadelphia, Pa.
1896. Woollen, G. V., 20 West Ohio Street, Indianapolis, Ind.
1890. Wright, Jonathan, 73 Remsen Street, Brooklyn, N. Y.

HONORARY FELLOW.

CORRESPONDING FELLOWS.
1880. Bruns, Paul, Tubingen, Württemberg, Germany.
1896. Chiari, Ottorar, Ballariastrasse 12, Vienna, Austria.
Elected.
1890. De La Sota y Lastra, R., 7 Calle de Torqueros, Seville, Spain.
1893. Desvernine, C. M., Cuba 52, Havana, Cuba.
1894. Holden, E., 13 Central Avenue, Newark, N. J.
1881. Labus, Carlo, Via St. Andrea 8, Milan, Italy.
1897. Luc, H., 54 Rue de Varenne, Paris, France.
1894. Macintyre, John, 179 Bath Street, Glasgow, Scotland.
1892. Massei, F., 4 Piazza Municipio, Naples, Italy.
1896. Mygind, Holger, 60 Kjobmagergade, Copenhagen, Denmark.
1896. Schmiegelow, Ernst, 18 Nørregade, Copenhagen, Denmark.
1881. Schroetter, Leopold v., Schwartzzenberg-Strasse 8, Vienna, Austria.
PAST MEMBERS.

Honorary Fellow.

Elected.


Corresponding Fellows.

*1880. Wilhelm Meyer, Copenhagen, Denmark.
*1881. Carl Stoerk, Vienna, Austria.
*1881. R. Voltolini, Breslau, Germany.

Active Fellows.

*1883. C. W. Chamberlain, Hartford, Conn.
*1878. F. H. Davis, Chicago, Ill.
*1878. Frank Donaldson, Baltimore, Md.
1886. Frank Donaldson, Jr., Baltimore, Md.
*1879. Louis Elsberg, New York.
†1879. Edgar Holden, Newark, N. J.
*1882. Franklin H. Hooper, Boston, Mass.
*1878. Hosmer A. Johnson, Chicago, Ill.
*1880. William C. Jarvis, New York, N. Y.
1879. R. H. Kealhofer, St. Louis, Mo.
1881. G. W. Major, Montreal, Canada.
1879. Charles McBurney, New York, N. Y.
1885. H. Clinton McSherry, Baltimore, Md.
*1881. E. C. Morgan, Washington, D. C.
*1886. J. C. Mulhall, St. Louis, Mo.
1881. H. Mynter, Buffalo, N. Y.
1881. J. M. Robertson, Detroit, Mich.
1878. T. F. Rumbold, St. Louis, Mo.
†1880. Charles E. Sajous, Paris, France.
1879. Bernhardt Tauber, Cincinnati, Ohio.
*1899. Max Thorner, Cincinnati, Ohio.
1878. Clinton Wagner, New York, N. Y.
1879. G. Whitefield Ward, New York, N. Y.
*1886. Benjamin F. Westbrook, Brooklyn, N. Y.

* Deceased. † Corresponding Fellow.
### Past Officers.

**LIST OF OFFICERS.**

#### Presidents.

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#### Vice-Presidents.

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#### Secretaries and Treasurers.

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#### Librarians.

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American Laryngological Association
Transactions of the annual meeting