TRANSACTIONS

OF THE

THIRTEENTH ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION

HELD IN THE CITY OF WASHINGTON, D. C.

SEPTEMBER 22, 23, AND 24

1891

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1881. FREDERICK I. KNIGHT, M. D.

1882. GEORGE M. LEFFERTS, M. D.

1883. F. H. BOSWORTH, M. D.

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ADDRESS OF THE PRESIDENT.

By W. C. GLASGOW, M.D.

Gentlemen:

It is my first and a pleasant duty, on occupying this chair, to make an acknowledgment of the honor you have conferred upon me in selecting me as your presiding officer during the current year. Owing to my absence from the session in which you elected me to this high office, I have hitherto been unable to thank you for this testimony of good-will, and I can only now assure you of my thorough appreciation of the distinction thus conferred upon me.

My next and most agreeable duty is to welcome you all to this our thirteenth annual session of the American Laryngological Association, meeting, as we do to-day, as an integral part of the second Congress of Physicians and Surgeons. I would also extend, in your name, the hand of welcome to those of the congress outside of our body who may be pleased to be present at our sessions, and also to our colleagues in Washington, who have in the past extended to us so many courtesies, and who by their generous hospitality have bound us to them by the warmest ties of friendship and fraternal feeling. We can not too cordially welcome our friends and colleagues from abroad who have made the long and laborious journey to be with us at this congress, and in your name I must express our great appreciation of the honor of their presence, and hope that their visit may be one of unalloyed pleasure.

Our connection with the first Congress of Physicians and Surgeons was an unqualified success, and there is every reason to believe that the present one will be equally agreeable. The value of the fraternal feeling, the possibility of intimate acquaintanceship between men of different sections and engaged in different lines of work engendered by such a gathering, can hardly be estimated. It dissipates prejudices, obliterates sectionalism, and encourages a liberalism fully in harmony with this great cosmopolition nation.

The wisdom of the step inaugurated by the management in confining the society work to the morning hours can only be judged after a fair trial. It certainly subordinates the individual societies and curtails their time of session. This seems to be a step in the direction urged by some toward an amalgamation of the different special societies into a permanent annual congress, of which the individual societies will be merely sections. It is claimed that greater interest would be promoted, better papers would be presented, and that there would be a higher incentive to original and scientific work. The special societies embrace in their membership many of the leading minds of the profession, and were it possible to unite them in a permanent body, without sacrificing the individuality of the societies, it would constitute a congress of which the American medical profession might well be proud.

I am not one of those who believe that the days of usefulness of the special societies has passed. So far as the Laryngological Association is concerned, I believe that the necessity for its existence as a special independent society is greater now than at any time within its existence.

When a few of us met together in Buffalo fourteen years ago, this organization was an experiment.

The position of American laryngology to-day, mainly the work of this society through its individual members, has proved the foresight of its founders, and verified the predictions so eloquently expressed by your presiding officers in our earlier days.

It must now be apparent to all that during the past few years a radical change has taken place in the individuality of the men seeking to be known as laryngologists. In numbers they have vastly increased. In 1878 they could be numbered by the tens; now the hundreds will hardly embrace them all. Then they could only be found in the larger cities; now in every town of a few thousand inhabitants will be found an acknowledged laryngologist.

The establishment of the post-graduate schools in different parts

of the country, where a knowledge of the necessary instrumentation is easily and cheaply acquired, has induced and enabled a vast number to join the ranks of the specialty. Many of these recruits are recent graduates without experience in the practice of medicine; others are older practitioners who have taken up laryngology as an easy and lucrative means of livelihood. The idea seems to prevail that laryngology is simply a mechanical specialty, and that any one entirely ignorant of the principles and practice of medicine can pursue it successfully, if he has the means to obtain the necessary armamentarium. The ability to possess a spray apparatus, the nerve to handle the cautery, saw, or snare, are considered by many to be the sole requisites of a successful practice.

Under such conditions is it not self-evident that the existence of an association of the best men of the country practicing laryngology becomes a necessity, in order that the true standard of our specialty be kept before our fellow-practitioners, and that the example of its members and the hope of future membership shall induce better preparation and more earnest, conscientious work in those seeking to join our ranks?

It is still within the memory of some of us when the special practice of diseases of the air-passages was largely in the hands of the charlatan, and it was only by faithful, persistent work of our pioneers that a place has been found for it as a branch of scientific medicine. As our veterans battled against charlatanism and quackery, it rests with us now to fight against ignorance and empiricism. This association, through its members, who are largely interested in teaching, has a powerful influence at its disposal, and it should be our special care to see that our present standard is not lowered.

The influence of this society will largely depend upon its existence as a live society. After fourteen years of existence, it now presents a condition of vigorous health. The continuance of this condition will depend upon the members themselves. History repeats itself in societies as well as nations—and from the past history of other societies we can forecast that of our own.

The men who by their work have placed this society in its present condition are now passing from a robust youth toward middle age. The eager effort and zeal of earlier manhood is now tempered in advancing years. The cares and labors of a successful practice are absorbing in themselves, and many interests, both social and professional, make such a demand upon our time that we are apt to feel that the time demanded by attendance on our annual session

becomes somewhat burdensome; hence a lessened interest and a lessened zeal must naturally be expected.

The whole life of our society depends upon the attendance of its prominent members at the annual sessions. Many of our fellows attend the meetings at a great personal sacrifice, and it is discouraging to find on arrival a small attendance and a manifest lack of interest. Indifference begets indifference, and when it becomes general, the usefulness of the society is near its end. In the face of such natural causes of weakness it becomes us to take such measures as will neutralize the evil as far as possible.

This can only be done by the yearly infusion of new blood, and, as a step in this direction, you will have before you at this session an amendment to the constitution increasing our membership. I do not believe that this society should necessarily be a large one. As one of the founders, I can say that such was not the intention in the beginning, and I do not believe that time has changed this spirit. It should, however, be sufficiently large to allow those men to become members who have, by their work in the specialty, given an evidence of zeal and ability.

An additional amendment to the constitution will be presented to you at this session seeking to change the manner of the nomination and election of your presiding officer. There will be a natural difference of opinion on this amendment, but we are fully assured that every fellow will conscientiously act in this matter for the best interest of the society. Experience has shown that we need a change in our By-laws whereby a member can be quietly dropped by the Council whenever he, from any cause, may become unworthy of membership, or has shown a marked lack of interest. The present By-law whereby any kind of a paper may be a substitute for attendance at the annual meetings has proved unsatisfactory.

It becomes my sad duty to call attention to two vacancies in our ranks through the death of two of our valued members.

Dr. Hosmer A. Johnson was, in years, the oldest of our fellows, and, recalling a conversation held with him some years ago, the oldest laryngologist in America. He stated to me that Horace Green had only preceded him a few years in the practical use of the laryngoscope in America. Already of advanced years when he entered our society, he showed a remarkable interest in our specialty for one already overburdened with private and public cares, and his attendance at many of our sessions testified to his continued interest.

When this society met in Washington two years ago Ethelbert

Carroll Morgan was our presiding officer. When we elected him at the previous meeting he was already a victim of the dread disease, and few of us could hope that he would be able to perform the duties of the office. We can all recall how, in a condition of extreme weakness, he manfully stood at his post, and used every effort to make the meeting a success. Genial, courteous, manly, he endeared himself to us all, and he will be sadly missed at our annual gatherings.

Paper.

A TOY BALLOON IN THE TRACHEA; REMOVAL.

By W. C. GLASGOW, M. D.

ON April 22d, N. H., a colored child, aged eight years, was brought to the Polyclinic with the following history: It was stated that two hours previous to this time the child had swallowed a toy balloon, that she had had several severe choking spells, but that in the intervals her breathing was normal. When brought to the clinic there seemed to be nothing the matter with her. Her breathing was perfectly quiet and normal, there was no cough, her voice was clear, and there seemed to be no interference with respiration. In the face of these conditions her story seemed almost incredible. Suddenly, however, without any apparent cause, she began to struggle for air. She quickly became cyanotic, her cry was toneless, and there was frothing at the mouth.

This spell subsided in a few minutes with the return of the normal condition. She was seen by Dr. Charles H. Dixon, of the surgical clinic, and the diagnosis of a foreign body in the trachea was made.

I saw the child soon after this, and could hardly credit the statement made by her friends, her breathing was so easy and natural, and it seemed impossible for this condition to exist with a body of the size of the balloon in the windpipe.

I explored the throat and naso-pharynx only to bring on a terrific attack of strangulation, an examination of the chest showing a whistling râle over the left bronchus, with weakening of respiratory murmur.

She was then chloroformed, and a low tracheotomy made by Dr. Dixon. He passed a sound into the trachea, but could detect nothing.

After the anæsthetic her breathing remained quiet for twenty-four hours. It was somewhat hurried, but free and easy; there was diminished resonance over the left lung, with feeble respiratory murmur and numerous mucous râles. There was no cough or spells of suffocation. On the fifth day she had several coughing spells, with symptoms of strangulation, which lasted a few minutes. During one of the violent efforts of coughing a red substance was seen presenting at the tracheal wound. Dr.

Dixon caught this with a forceps, and, although but gentle traction was used, the red rubber came away from its attachments, leaving the wooden tube in the trachea. Chloroform was now given, and the wooden tube, which in the effort at extraction had been driven above the tracheal wound, was forced upward through the glottis and removed through the mouth. It was too large to pass through the tracheal opening.

The next day surgical emphysema was seen over the whole anterior part of the chest. The left lung gave numerous mucous râles with a distinct, full, respiratory murmur.

The specimen I present to you is the balloon extracted from the trachea. The wooden part measures an inch and three sixteenths in length and five sixteenths of an inch in diameter.

This case presents several points of interest. It is puzzling, in the first place, to know how such a small child succeeded in getting such a shaped body as a toy balloon through the glottis into the trachea, and, when there, how little it affected the breathing. The strangling spells, with loss of voice, appear to have been caused by the rubber having been driven upward between the cords. My friend Dr. Dixon was of the impression that these attacks were produced by the displacement of the body covering both bronchi through an inflation of the balloon.

Paper.

A CASE OF THYROTOMY IN A CHILD EIGHTEEN MONTHS OLD.

By CLINTON WAGNER, M.D.

AT the eighth annual meeting of this association I presented a paper on Thyrotomy, in which I reported the cases of three very young children upon whom I had successfully operated. Thyrotomy should only be resorted to for the relief of urgent dyspnœa arising from laryngeal obstruction caused by the presence of benign neoplasms or a foreign body, and in which the operation *per vias naturales* is inadmissible or impracticable.

In cases of malignant growths it should be performed only when there is a reasonable possibility of eradicating the disease thereby.

In tuberculosis, in my opinion, the operation is unjustifiable, and death, which is inevitable in these cases, is likely to be hastened by it. The danger to life from the operation itself is, I think, very slight. I have performed the operation ten times, six times for ma-

lignant growths, in all of which the disease recurred and resulted fatally, although in no single instance was death caused by the operation, as the patients survived from six months to two years. The four remaining patients—children—recovered.

With the exception of two, all of the operations were performed at the Metropolitan Throat Hospital.

The following case is of interest on account of the age of the patient—eighteen months—the youngest of which we have record:

In January, 1889, the patient, who was supposed to be suffering from asthma, and in size no larger than children usually are at about ten months, was brought from Florissant, a small village in the Rocky Mountains, to Colorado Springs, for treatment. Dr. Garnett referred the case to me for opinion and treatment.

The following history was given: The child almost from birth had been neglected by its parents, and when it was about ten months old they deserted it; neighbors found it in the yard in the rear of the house, where for many hours it had been exposed to cold and wet weather. From this exposure a severe cold was contracted, which resulted in permanent hoarseness. About three months before I saw it dyspnœa began, which gradually increased in severity. When the child was brought to me the dyspnœa was very marked, the slightest excitement increased it, and spasms of the glottis were frequent, especially during the night, and were alarming in their intensity. There was complete aphonia.

An examination with the mirror was impossible. Merely approaching the child caused it to struggle, and in its struggles spasm of the glottis was invariably brought about.

Carefully observing the child when quiet and undisturbed by excitement, I became satisfied that the obstruction to respiration was laryngeal and not thoracic. I decided therefore to perform tracheotomy, and, if relief to respiration was obtained, to follow it with thyrotomy, for the purpose of removing the obstruction, which, of course, was either a growth or web of false membrane. Immediately upon the introduction of the cannula the relief in respiration was quite apparent, but, as the child was in an extremely weak condition from long deprivation of a proper air supply and but illy nourished, I decided to postpone the thyrotomy until it had improved in strength and general health.

Two weeks later I performed the thyrotomy in my usual manner, commencing the incision at the thyroid notch and extending it downward through the crico-thyroid membrane and cricoid cartilage to the cannula.

I found upon the left vocal cord posteriorly a papilloma of about the size of a small pea, which I removed entirely. The wound healed kindly, and in about ten days after the operation the good people who had humanely adopted the child as their own were compelled to return to their

home, and declined to leave the child in the hospital, promising, however, to return at an early day.

I was in no haste to remove the cannula, preferring to be first assured in this, as I had been in my other cases, that the laryngeal obstruction had been thoroughly removed and that respiration was unimpeded. Accordingly, I instructed the father to insert, a month after the operation, a tightly-fitting cork into the cannula in order that respiration might be carried on through the larynx. This was done. The cannula used had no fenestra; consequently, the cork closing the entrance to the tube completely, respiration was maintained altogether through the larynx, the air passing upward and outside of the tube, proving that the larynx was quite free from obstruction of any kind. The cork was removed occasionally in order to cleanse the inner tube of the secretion which had collected in it.

I was compelled to be absent from Colorado Springs during the spring, a greater part of the summer, and also the autumn. Upon returning to Colorado I went to Denver.

In consequence of being seriously ill for many weeks, I was unable to have the child brought me for the purpose of removing permanently the cannula; finally, when I had recovered sufficiently to give my attention to the child, I wrote the father to bring it to me.

In his reply to my letter he stated that the child was in excellent health, that he breathed without difficulty through the mouth and nose, and that voice was returning to him. He named an early day on which he would bring him to me.

A few days later he again wrote, stating that the little fellow had just died, after a very brief illness, from the grippe, which at the time was very prevalent throughout Colorado.

The child lived eleven months after the operation; it gained greatly in strength and weight; its respiration for months previous to its death was through the larynx, and not through the tube, and its voice was beginning to return.

Although an unfortunate combination of unforeseen circumstances prevented the permanent withdrawal of the tube in this case, I think it may justly be regarded as a successful thyrotomy in its results and in the youngest patient of which we have record.

Discussion.

Dr. Clarence C. Rice: It would be exceedingly satisfactory, in the cases referred to in this very interesting paper, if the diagnosis could always be made before the operation is performed. I recall a case somewhat similar to the one reported, although the child was older (between three and four years of age), where I was able to make a diagnosis by the combined use of chloroform and cocaine. It is very difficult

under ordinary circumstances to make a laryngoscopic examination in young children, and impossible to make the diagnosis of laryngeal obstruction without such examination. Before doing an external laryngeal section it is important to know the character of the occlusion, its location, size, etc. In making the laryngeal examination, the plan followed was to paint the posterior wall of the pharynx and fauces with a two-per-cent. cocaine solution, and to spray the larynx with the same; then I gave the child a few inhalations of chloroform while it was held upright in the arms of its father, and in this way I was able to make a satisfactory examination with the laryngeal mirror and to discover the multiple papilloma attached to the sides of the larynx, which were removed by endolaryngeal methods. In another case of apparent laryngeal obstruction in a child, seen within a few days, I was not able to make a satisfactory examination, and I intend using cocaine and chloroform in the manner described on my return. I think that by this method, which requires care and patience, we can make the exact diagnosis and can remove a growth or foreign body from the larynx in a case where a general surgeon would perform laryngotomy. In a case of a girl, five years old, in which I had the assistance of Dr. Joseph O'Dwyer, of New York, we removed several papillomatous growths from the larynx by the following method: The larynx was so thoroughly closed by these growths it was found necessary to introduce a tube and allow the patient to recover respiration before giving the anæsthetic. After slight anæsthesia was produced the tube was removed, the forceps was quickly introduced into the larynx, and as much of the growth as possible was removed before it again became necessary to introduce the O'Dwyer tube. The bleeding caused by the introduction of the forceps increased the dyspnœa. Both the forceps and the tube were carried into the larynx three times before enough of these numerous growths could be removed to allow the child to breathe without the tube. The growths returned, and a thyrotomy was eventually done. Two points I wish to make: (1) It is possible to make an examination in young children by the combined use of cocaine and chloroform, and (2) by the aid of intubation we can introduce forceps into the occluded larynx of a child, and perhaps remove obstructions without opening the larynx.

Dr. J. N. Mackenzie asked Dr. Rice if he gave chloroform to complete anæsthesia, and, if so, what was the advantage of using cocaine in addition.

Dr. Rice: The use of chloroform in small quantity does not entirely abolish the irritability and the spasmodic movements of the pharynx and larynx; but by the preliminary application of a weak solution of cocaine this is entirely overcome.

Dr. J. C. Mulhall: There is one instrument much used by general surgeons which laryngologists should more frequently use; I refer to the index finger. The finger with its nail attached forms an instrument which may be very successful in removing papillomatous growths from the lar-

ynx. There is no difficulty whatever in reaching the larynx in young children, and with the aid of chloroform there should be no trouble in making the diagnosis. In one case that I recall I was enabled to effect a removal and a cure by the use of the finger-nail alone.

Dr. E. Fletcher Ingals: In examining young children, if the tongue is drawn well forward by a tongue depressor like that devised by Mount Bleyer, we are often enabled to make a diagnosis by inspection. When the papilloma projects above the vocal cords it can often be detected by the finger. As the larynx is relatively high in children it can be reached without difficulty. I have several times detected papillomata in this way.

Dr. Wagner: With regard to the use of ether or chloroform in these cases, I would say that for my own part I am afraid to give ether merely for diagnostic purposes, because of the danger of death by asphyxia. In three of the cases of children upon whom I operated I was compelled to perform rapid tracheotomy in order to avoid death on the table from asphyxia produced by the ether.

With regard to the use of cocaine in these cases, I might mention that my three cases previously reported occurred before the discovery of the drug. In one of them, that of a boy five years of age, I was enabled to make a thorough examination with the laryngoscope, and discovered a large papilloma, but in addition to the growth there was a membranous web stretching from cord to cord and probably more directly concerned in causing the dyspnœa than the growth; it was not possible to remove this membrane by the mouth.

In the case that forms the subject of my paper I think death from spasm of the glottis would have taken place had an attempt been made to make an examination with the mirror, either with or without cocaine.

Paper.

OBSERVATIONS ON PARALYSIS OF THE EXTERNAL TENSORS OF THE VOCAL BANDS.

By GEORGE W. MAJOR, M. D.

ON the 3d day of January, 1891, G. G., aged twenty-five years, a bartender by calling, applied at the clinic for diseases of the throat and nose, Montreal General Hospital, for treatment for loss of voice. He stated that on the 2d of January he had driven a fast horse for ten miles in the face of a very cold wind with his throat unprotected. At the time he experienced some discomfort; this was succeeded by slight pain referred to the front of the larynx. On rising on the morning following the drive he was unable to utter a sound. On palpation of the throat, a tender spot was discovered over the region occupied by the crico-thyroid muscles. It was also noticed that, on attempted phonation, these muscles

failed to contract. There were no other sensitive areas, nor was there evidence of swelling anywhere in the neck. The patient was in the enjoyment of his usual health, and no indication of constitutional disturbance existed. The voice was muffled, coarse, and in monotone. The breathing was noisy and, if judged by the peculiar sound produced on inspiration and expiration alike, might be considered difficult, but there was a total absence of dyspnœa. The man himself claimed that his respiration was quite satisfactory. A laryngoscopic examination revealed the fact that the free edges of the vocal bands presented the wavy outline that is considered to be characteristic of paralysis of the crico-thyroid muscles—the external tensors of the vocal bands. On expiration, the vocal bands appeared to be convex on their upper surface, and on inspiration somewhat concave. On phonation, the vocal bands seemed flaccid and relaxed, and the points of contact between the free edges were not constant. The larynx was otherwise in a normal state. On the 20th of January the patient, whose habits of life were most irregular, contracted a severe cold, and he was admitted into the wards of the hospital. There was now some tenderness over the whole thyroid gland, but no apparent swelling; the tonsils and pharynx were red, swollen, and painful. By the third day the thyroid gland was very much increased in size and tender. Breathing was also difficult when recumbent; the laryngeal image, however, underwent no alteration in configuration. The swelling had almost entirely disappeared in four or five days under the use of linseed poultices and other suitable treatment, and the difficult breathing had ceased. The patient was discharged on the 1st of February, eleven days after admission, cured. The vocal condition was still unchanged. As he left for England, the subsequent history is unknown.

Paralysis of the external tensors is a rare affection, and therefore worthy of being recorded when met with in practice. It is very exceptional indeed to encounter a case where the recognized symptoms were so very well marked as in this instance.

The wavy outline of the glottis, the convexity of the upper surface of the vocal bands on expiration and on phonation, the concavity on inspiration, the unstableness of the points of contact of the free margins of the vocal bands at different intervals, and the flaccid and relaxed appearance of the vocal bands—were all well-developed features. The contraction of the crico-thyroid muscles on phonation when the cricoid cartilage was elevated in front, and which can be readily felt in the average throat, was entirely absent.

The occurrence of the acute inflammation of the entire thyroid gland during the period of paresis (without altering the configuration of the image) was also an unusual and interesting complication. The

freedom from dyspnœa and the presence of noisy breathing during the paralysis are points worthy of note. The difficulty of respiration, which supervened when the inflammation of the thyroid gland was at its height without modification of the laryngeal image, is presumptive of tracheal rather than nerve pressure.

Paper.

THE TONSILS IN HEALTH AND DISEASE.

By HARRISON ALLEN, M. D.

THE object of this paper is to harmonize the descriptions of the normal tonsil with the accounts of its morbid conditions. It is an axiom in medicine that the best basis on which the clinical study of any organ can rest is an exact knowledge of its structure. I will endeavor to show that our conceptions of the tonsil are not in conformity with this axiom. Some of the descriptions of the tonsil have been drawn up from hypertrophied glands, some from atrophied glands, while the terms used by anatomical and clinica writers are often at variance with one another, or may even conflict. I can not recall any other structure in the economy of which this can be said. This confusion does not arise from lack of knowledge, for numbers of admirable papers have been written on the tonsil, and its plan is understood. But the description of the mass has become conventional, and clinicians have not seen fit to depart from antiquated, and often quite inaccurate, methods of expression.

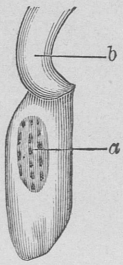

FIG. 1.—Simple form of tonsil. *a*, tonsil showing the mouths of diverticula; *b*, the uvula. (After F. Th. Schmidt.)

The tonsil is an association of *diverticula* developed from the epithelial layer of the mucous membrane (Retterer, *Comptes rendus*, 1885, vol. i, p. 1284), in the walls of which are grouped *muciparous glands* and *lymph follicles*. Resulting from this association the tonsil is marked by the mouths of the diverticula, which open in a uniform manner upon the surface of the mass. The various tonsil-groups differ from one another only in the arrangement of the diverticula. Thus in the lingual tonsils they are single, in the masses occupying the tonsillar space and the roof of the pharynx they are compound.

Such a tonsil as the one last named is exhibited in Fig. 1, from F. Th. Schmidt (*Zeit. für wissensch. Zool.*, 1863, xiii, p. 221, tf. xv). It will be observed that the small, linearly arranged openings are the mouths of the simple diverticula. Moreover, a disposition exists in every compound tonsil for a number of diverticula—from eight to eleven in number—to recede from the general surface of the group of which they are a part, and for the chamber in this way formed to be slightly narrowed at the mouth. Such a recess is called a *crypt* or *pocket.**

H. Asverus (*Nov. Act. Leop. Carol.*, 1861, Bd. xxxix) exhibits in a diagrammatic manner this disposition.

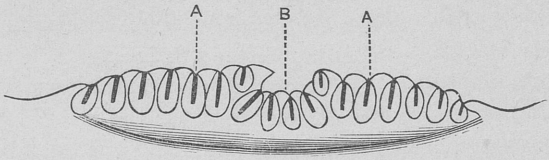

FIG. 2.—Schema of tonsil. A, A, groups of diverticula on either side of, B, a crypt. (After Asverus.)

Huschke (*Sömmering's Baue des menschl. Körp.*, ed. 1844, 32) describes a pocket, in the bottom of which smaller openings (Fig. 2) are found, and adds that this is a repetition of the type seen in apes and other mammals.

This being the accepted plan of the tonsil, let us glance at some of the descriptions given by accepted authorities.

Luschka (*Der Schlundkopf des Menschen*, 1868, p. 64) states that the body, as a rule, is coarsely foliated, and is so figured. (Table IX, Figs. 2 and 3.) Exceptionally only is a single, large opening present leading to a proportionally wide pocket. The general form of the body is oval and provided with numerous openings of irregularly disposed canals.

Henle (*Handbuch der Eingeweidelehre des Menschen*, 1866, p. 144) lays special stress upon the presence of longitudinal folia, although stating that at times a pocket-like form may prevail.

* The terms diverticulum (gland), follicle (vesicle), and crypt (pouch or pocket) have definite meanings. It is unfortunate that the term follicle in clinical studies is generally applied to the diverticulum, while anatomists speak of the follicles as "closed nests of lymph-cells" (Asverus). In the minds of some writers the muciparous glands are also the tonsil follicles, while the term vesicle is used for the true follicle. The lacuna is the same as the crypt, but this term is used in so many ways in anatomy that it were better here discarded.

L. Heisler (*Tonsillarum nova et accuratior descriptio*, in *Ephemer. C. L. Car.*, Cent. III, IV, 1715, p. 456, Table XI) complains that anatomists have given no exact description of the tonsil. He enters upon what he understands to be such description, and begins by stating that the tonsil is covered with a membrane which is in common with the lining membrane of the mouth. When this is pushed aside the tonsil is disclosed, the upper part reaching as high as the velum and the lower part extending in varying degrees from the root of the tongue to the pharynx. In the excellent figure accompanying this description one finds on the left side of the throat the parts remaining undisturbed, while on the other the anterior part dissected and disclosing the tonsil in its receded position. Heisler further states that, as a rule, the tonsil contains a large cavity, upon the walls of which many smaller orifices open. It is evident that in this account one of the varieties, which I will speak of further on, is correctly outlined. The single mistake made by the writer is in insisting that this form is a constant one instead of being one of the numerous variations which the tonsil may exhibit.

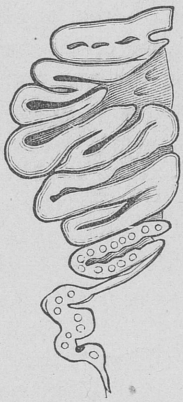

FIG. 3.—A tonsil section showing diverticula and a single crypt. Only the lower part of the figure exhibits the lymph-follicles. (After F. Th. Schmidt.)

The account of Haller (*Element. Physiol.*, 1736, vi, 65) is not explicit. He indicates, however, an involucrum, and implies that this is a layer of mucous membrane which holds the gland in position. The gland in the lower animals is said to be of the same type as in man.

Harrison (*Dublin Dissector*, Am. ed., 1855, p. 61) describes the figure of the tonsil as irregular and somewhat oval. He states that "small holes are marked upon its surface, which lead to interlobular cells."

Cruveilhier (*Anatomy of the Human Body*, 1844, American reprint, p. 334) states that the form pretty nearly resembles that of an almond. No allusion is made to the existence of cavities, but a "compound tonsil" is said "to result from the component follicles being collected into several distinct masses."

John and Charles Bell (*Anatomy and Physiology of the Human*

Body, 1834, American reprint, p. 350) make no reference to the interior of the tonsil other than to state that on the surface of the organ "a number of cells open like the mouths of veins; behind the lobes a gland is felt as if it were one solid body."

A. Macalister (*Text-book of Human Anatomy*, 1889, 596) describes the surface as "depressed into one or more longitudinal slits, or else pitted into a series of rounded holes."

It is noticeable in the above citations* that the presence of ridges, depressions, and canals is implied, but without these parts being conformed to a plan, while Heisler, Huschke, Luschka, Henle, and Macalister describe pocket-shaped and foliate forms. That the first of these shapes is of morphological significance is evident from the fact that in the lower animals it is always present. The account of Bell is apparently that of an atrophic mass. The foliations are coarse rows of lymphoid masses which define the walls of closely disposed diverticula. They are best seen when the gland is divided vertically. Are these varieties of tonsils met with in clinical studies? I find that they are. But the morphology of the gland is disguised to a remarkable extent by the products of diseased action, and it is not always easy to see in the tonsil the details of the general plan. I am sure unprejudiced observers will agree with Luschka that any comparison of the tonsil with an almond-shaped body is misleading, and that the cryptose or pocket-form, with or without associated ridges of lymphoid tissue, is common, while the foliate form is rare.

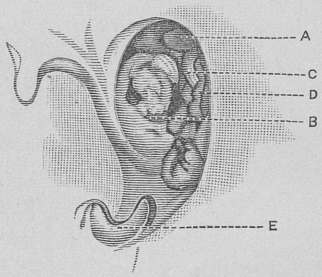

FIG. 4.—View of the foliated type of tonsil. A, the small velar tonsil; B, the opening of the crypt, the parts below this remaining smooth; C, D, two coarsely nodulated ridges, constituting the folia; E, epiglottis. (After Nature.)

The variation which I have most frequently seen is a rounded or elliptical mass—of which the largest is also its vertical diameter—placed in the tonsillar space a little above the level of the tongue. The organ is slightly compressed from before backward and consists

* The account of Kölliker (*Mikroscop. Anat.*, 1852, ii, 42) is not included in the above citations. His schema, which has been so often copied, exhibits the closed follicle, but defines no distinction between diverticulum and crypt. The dilated space in the single depression is called simply a "cavity" (*Höhlung des Balges*).

for the most part of a pocket or crypt—whose walls are greatly thickened—directed downward. The palato-glossal muscle is to be accused of maintaining the compression here named, in some individuals to a degree sufficient to serve as a complication in tonsillitis.* In some individuals the tonsil appears to be lodged almost entirely toward the palato-pharyngeal fold and displayed when the mouth is open. It may be composed of two lobate, cryptose masses arranged like two peas in a pod, but without any one of the crypts being larger than its neighbors or having special direction.

The anterior wall of the pocket is covered with mucous membrane (involucrum), which in every way is similar to that lining the pharynx, along the side of which it sometimes extends as far as the tip of the epiglottis. If close inspection be not made, this covering might be confounded with the palato-glossal fold. In such a disposition two surfaces of tonsil tissue must lie exposed toward each other. Above the mouth of the pocket lies a mass which constitutes the "tonsil" of common language. This alone is cryptose.

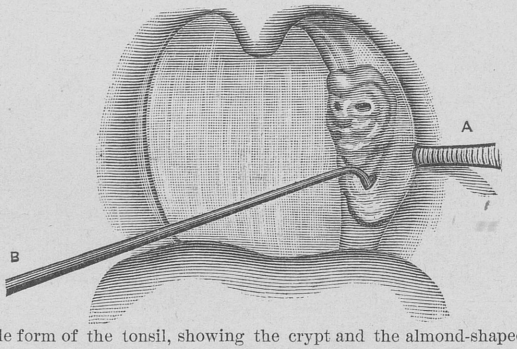

FIG. 5.—Simple form of the tonsil, showing the crypt and the almond-shaped mass above the opening. A, retractor pressing out the palato-glossal fold; B, probe in opening of the crypt. (After Nature.)

Very commonly the tonsil above the pocket also exhibits numerous communicating passages. I desire to call special attention to these. They can be demonstrated in the tonsil of children, where they are often long and lie deep in the gland; as well as in the adult, where they are more superficial. They may be small yet well defined, as in a sponge, or imperfectly limited by bridge-like bands, which cross the mouths of wide, shallow crypts. Allusion to these intercommunicating tracts are made by writers; *vide* Haller, Luschka,

* See in this connection Houze de la Aulnoit, *Mem. sur l'estranglement des amygdales par les piliers du voile du palais*, 1864.

Bell, and Asverus, the last-named alone recognizing them as morbid. It is evident that they do not exist in the morphological plan of the gland, and, so far as I know, occur in the tonsil of none of the lower animals.

It will be seen in Fig. 6 that in hypertrophy of the tonsil the lower smooth part is enormously enlarged, and can be readily distinguished by a sulcus from the cryptose mass.

The almond-shaped structure, therefore, which is so commonly described, is but a portion of the tonsil, and even this portion is continuous with the lining of the main pocket or crypt.

At a point still higher up, and tending to be placed slightly back toward the palato-pharyngeal fold, lies a second, smaller, somewhat nodular body, which is quite distinct from the foregoing, since an interval exists between. This may receive the name of *velar tonsil.*

The velar tonsil is not to be confounded with the parts described by James Yearsley (*A Treatise on the Enlarged Tonsil and Elongated Uvula, and other Morbid Conditions of the Throat*, London, 1843, p. 58). "In the most frequent kind of enlarged tonsils, where the glands maintain their original position, or at least extend in every direction, the Eustachian tubes are generally compressed. There is another variety of enlargement which I am not aware has ever before been noticed; it is where the diseased growth is confined to the upper margin of the tonsil, and which, from being hidden behind the veil of the palate and the anterior palatine arch, is quite out of sight when the throat is merely examined by the eye. In numerous cases I have verified this interesting observation, and effected cures by the indications of treatment which the knowledge of it afforded. We never can be certain that the tonsils have no share in producing deafness until these bodies have been examined carefully with the finger. In some instances, where nothing morbid was visible in the throat, the upper part of the tonsil has been of such magnitude as to produce, in addition to deafness, nasal speech, from encroaching on the posterior nares. These novel views have afforded me the most gratifying results, and I feel assured they will exert considerable influence

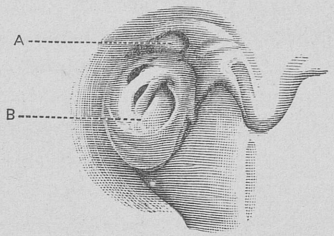

FIG. 6.—A, a small velar tonsil; B, the main tonsil, showing the mouths of two diverticula and a crypt, the last-named being the largest opening on the tonsil. The parts below the mouth of the crypt are smooth and without diverticula. (From Nature.)

on the future treatment of deafness." It is evident from the above extract that the growth named by Yearsley as being "confined to the upper margin of the tonsil" was really within the naso-pharynx, and in all probability was the mass now spoken of as "adenoid growth," or the "pharyngeal vegetations." It is interesting to know that Yearsley as early as 1843 described this growth; he was unfortunate, however, in the terms of his description, since it would appear at first sight that he alluded to the lower tonsil. The statement that the treatment of such a mass will exert considerable influence on the treatment of deafness has been abundantly substantiated.

The tonsil is in whole or in part ordinarily exposed when the mouth is open. But in some individuals it lies concealed between the palato-pharyngeal and the palato-glossal folds; in such a situation it can not be inspected unless the palato-glossal fold is drawn outward by a retractor (Heisler, *loc. cit.*). A tonsil thus concealed is almost never seen in children or young adults. I attribute this lack of harmony between such a form and that of full maturity to the fact that the tonsil is best developed when the formative forces of the economy are unexpended. Until about the twenty-fifth year these exhibit their greatest activities. In adult life the tonsil is apt to atrophy and become exceedingly aberrant in shape. When atrophic, while all semblance of the plan is lost, clinical study is best conducted by recalling it. In many instances it must be acknowledged that the gland forms irregular, hard nodular masses, which are apparently without diverticula. The causes producing this change are obscure. They can be assigned in part to certain inherent dispositions to degeneration, and in part to the results of inflammation. Few individuals escape frequent attacks of tonsillitis, ranging in severity from the mild form of the miscalled follicular inflammation to the severe parenchymatous invasions. Again, the tonsil which projects from the tonsillar spaces will be disposed to rind-like thickenings from impact with food, etc. As a result most adults exhibit the gland more or less indurated, the free surface being especially firm in consistence, and occupied by minute white, cicatricial bands which tend to occlude the crypts. Beneath this cortex-like layer the parenchyma may have a softer texture. According to Gustav Harff (*Ueber die anat. u. path. Struktur des Tonsillengewebe*, Bonn, 1875), the closed lymph-follicles have a disposition in the adult to be less well defined than in the young, and the connective tissue of the entire organ to be increased in volume. These conditions certainly tend to indurations, and indirectly to atrophy. In some states of

health in such a tonsil, probably owing to long-continued pharyngeal irritation, the folds, especially the palato-pharnygeal, become greatly exaggerated in volume, and in an individual having a large tongue the motion of this organ backward and downward aids the fold in exerting a certain amount of tension on the gland. However the situation may be explained, the result in the shape of the gland being molded by resisting forces is evident; thus it may appear to be greatly compressed from before backward, and so project into the pharynx as to exert pressure against the posterior wall and excite irritation. In most instances the mass has a disposition to retroversion. A tonsil of apparently medium size may, in the act of gagging, assume larger proportions—a circumstance due to the fact that an actual turning of the gland from before backward and from without inward takes place.

The small velar mass is probably the same as the supernumerary tonsil upon which the late Dr. E. Carroll Morgan (*Trans. Amer. Laryng. Association*, 1889, 4) has written. It varies greatly in size, and, as a rule, is smaller than the main tonsil. In some instances it becomes pedunculated, and may even suddenly slip away from its usual position and hang into the throat so as to interfere with speech and deglutition. Such a mass was removed by me in a patient who reported in a speechless condition, and showed the pharynx in part occupied by a pedunculated mass the size of a walnut. A somewhat similar case is reported by Jurasz (*Monatsch. f. Ohrenheilk.*, 1885, 361). Heisler (*Inst. Chir.*, 1747) describes methods of removal of what he terms an indurated tonsil, when the mass hangs by a slender stalk, and it is probably true that this writer clearly recognized the above clinical condition.

I believe many morbid processes may be restricted to the upper tonsil, the main mass not of necessity participating.

Figs. 4 and 6 exhibit the proportions usually noted as existing between the velar and the main tonsil.

But what of the foliate type of tonsil which has been noted in the early part of this paper? I may briefly say that, while it is occasionally met with in practice, it is so rare that it scarcely enters into clinical study. I subjoin a sketch of this form of tonsil taken from a subject eleven years of age (Fig. 7). It will be seen that the upper and main masses are present as in the simplest forms, but that the foliate formations appear at the side lying between the main tonsil and the palato-glossal fold. The folia are not true laminæ, but are rather of the nature of bridge-like (annectant) masses of tonsil

tissue, imperfectly limiting large crypt-like openings into the main tonsil, and extending from the level of this mass to some of the lymphoid tissue at the side, and most likely are measurably the results of diseased action (see p. 15).

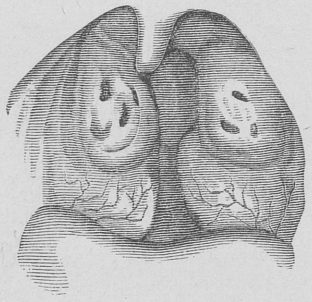

FIG. 7.—Hypertrophied tonsils showing constriction between the cryptose and the smooth non-cryptose portion. The last named is alone covered with veins. The velar tonsil is not seen. (After Nature.)

I will now glance at some additional clinical conditions of the tonsil. In the first place, it must be remembered that the influence which the tonsil exerts in the economy is not known. The knowledge, therefore, of a disturbance of functions being sought for as a clew to the nature of diseased action is in this instance futile. The mucoid secretion of the tonsillar surface aids in lubricating the food and prepares it for swallowing, but no reason other than the fact that adenoid tissue is everywhere developed in childhood can be given to explain why the tonsil should be larger at one time of life than another. As already mentioned, the organ is larger in childhood and early maturity than in adult life. It appears to be compensatory with the thymus body. In proportion as the thymus body disappears the tonsil increases in size. At the time when the narrow chambers of the long bones are assuming actively the function of manufacturing blood-corpuscles, the tonsil is also large, and it is probable that both structures are allied in function. R. Hingston Fox (*Jour. Anat. and Phys.*, 1886, xx, 559) attributes the large size of the faucial tonsil to the law of marginal overgrowths. "New growths," says he, "are apt to arise at such junctions (viz., of the hypoblast and the epiblast). Now, it is curious that the fauces (if it be such junction) should be the spot selected by so many diseases for the production of inflammatory lesions."

The structure of the tonsils does not prevent analogies being drawn between them and the true lymphatic glands. From the typical lymphatic glands some writers distinguish the lymph bodies appended to the alimentary canal under the name of peripheral lymph glands. They are apparently independent of those clinical indications which exist between lymphatic glands and the region in their immediate neighborhood. I have noticed that the tonsils are very generally small in pulmonary phthisis. It is probable that a connec-

tion exists between the size of the tonsil, the rate of dental development, and the small size of the jaws. The tonsils are largest at the time when the greater number of permanent teeth are in the jaws ready to be erupted. It is an interesting fact that they are larger in the human subject than in the lower animals. Ph. Stöhr (Virchow's *Archiv*, 1884, xcvii, Heft 2, 211) demonstrates that the follicles while closed permit their contained leucocytes to wander freely through the epithelium into the diverticula. He finds this migration to be constant at all ages and in all quadrupeds. Its significance as a factor in the peculiarities of the tonsil is therefore not apparent. Unlike Peyer's patches and the solitary glands in the small intestine (bodies which recall measurably the nature of the tonsil), no inclination to specific diseased action is here exhibited. It is true that the diphtheritic membrane frequently appears upon the tonsil, but this is apparently due to the ease with which the microbe of this disease is mechanically held within the recesses of the organ. Nevertheless, a property is possessed by the tonsil which I believe is constant in adult life (I have never noted it in young children or in the aged), namely, the formation and ejection of solid pellets. They appear to be of the nature of epithelial desquamations, and as such are of importance in the clinical study of the gland. When the pellets escape into the mouth, as is normally the case, the tonsil may be said to be normal, but when they escape into the interspaces of the gland and are caught between the tonsil and the adjacent folds, or are imbedded in the gland itself, they are fertile sources of mischief. How is the removal of these masses best secured ? I have answered this question in my own practice by assuming that all operative procedures upon an organ should be in harmony with the plan on which it is framed. Hence, in the exploration of the tonsil for retained pellets, I first attempt to define the main pocket or crypt. If I fail to detect this, I assume that its orifice has been obliterated by inflammation and that it should be opened. Even if it is found open and a number of the pellets be detected and removed, it is well to divide the pocket its entire length and sear the divided surfaces. Should the pellets, however, lie in the spaces between the tonsil and its adjacent folds, or in the spaces between the lobules, if these be present, they can be best removed by carefully exposing the entire tonsillar space. When this is thoroughly done the pellets will often fall out of themselves or can be washed away. In order to carry out the detail in the process last mentioned, the following method of examination is recommended: A tongue depressor is placed upon the tongue and given to the patient to hold.

The mouth is opened to its widest extent, and an aneurysm-needle (the adjustable end of which has been firmly soldered on to the shank or handle) inserted behind the palato-glossal fold, and gentle traction made forward and slightly outward. To a patient who is untrained, it is quite likely that gagging will ensue upon this manipulation. With the exercise of a little care, however, the irritability may be so far overcome as to enable the tonsil to be freely seen. Very often no trace of a tonsil is discerned until such a manipulation is resorted to. It is an interesting fact that the act of gagging itself rather assists than otherwise in the examination, since a disposition exists for the tonsil to be turned slightly upon itself. If the patient remains composed and does not move the shoulders backward, both he and the physician can remain indifferent to the gagging as long as it does not excite vomiting.

Hypertrophy of the Tonsil.—As has been stated, the tonsil is largest in childhood, yet a point arises as to whether this is simply a physiological state of the organ or an overgrowth. In this connection I may be permitted to make the following statement: No matter how large the tonsil may become, it need not constitute a clinical state unless respiration is impeded. If the child has nasal respiration, a natural form of chest and roof of mouth, and if the teeth are regular, the tonsils are in a physiological condition; but if there is snoring respiration, irregular teeth, the habit of mouth-breathing established, a high, narrow palatal arch being present, and the child be pigeon-breasted, then the enlarged tonsil may be said to constitute a clinical condition. A. Macalister (*loc. cit.*, p. 596) asserts that the normal tonsil should not project beyond the glosso-palatine fold. According to this statement, the tonsil is almost always abnormal in childhood.

An error is often made in maintaining that difficulties in respiration are due to enlarged tonsils, when the cause lies in disease of the naso-pharynx. I have seen cases where the tonsils have been needlessly removed to correct the habit of mouth-breathing, when in each instance the naso-pharynx was stuffed with a neglected adenoid growth. Hypertrophy of the tonsil being diagnosticated and attempts at reduction being demanded, the question arises as to what method is the best to accomplish this. In my judgment, tonsils should never be removed as a whole; this operation leaves a large, open, and often irritable surface. As is well known, after amputation of the tonsil, the patient in going out into the open air, or traveling in heated steam-cars, may have attacks of bronchitis, or even of pneumonia. It may

be said that these are very infrequent cases, and that many physicians having extended experience have not encountered such accidents; but that such are likely to occur can not be denied.

From what has been seen in the above sketch, a transverse incision of the gland is not in the line of any of its directions of growth. Why should these several parts be treated as though they were masses of fungoid tissue?

I believe that abscission should be restricted to the removal of hardened cortex; and in preference to the treatment by amputation of the whole mass, that after the removal of such cortex, should the crypt be closed, remembering that the tonsil is often perforated by canals which are not represented in the plan of the organ, I would carefully search for them, and, when found, pass a probe or director through them after the manner of exploring a region which is traversed by fistules or sinuses, and the overlying tissues freely divided. Following this rule, I would incise the tonsil in any direction and to any required depth. After this is done the separate coarse lobules can be severally taken up by a tenaculum or fŏrceps and removed, care being taken to avoid touching the opercular or involucral folds. Occasionally a patient presents an enormously enlarged involucral mass inclosing a degenerate tonsil. The latter should be ablated or otherwise destroyed, but the former left absolutely untouched. As a rule, the lower portion of the gland should not be thus cut, since it does not contain the canals, and incisions into the membranous covering (involucrum) are not well borne. The submucous connective tissue is here loose, and diffuse traumatic inflammation is readily excited. Outlying tags of tissue may be removed with the knife or scissors when necessary. I have in many instances found the gland recede to normal proportions and reflex phenomena due to the hypertrophy disappear.

One of the most notable features in the clinical study of the tonsil is the ease with which exposed surfaces lose their epithelial covering, and the raw, or rather denuded, patches which arise therefrom cause the tonsil to be glued to one or both the adjacent folds. The velar tonsil moves easily with the palato-pharyngeal fold. If the gland masses are united, the normal play of the folds is interfered with, and irritation is the result. Under these conditions the bodies must be separated. If this be done only by the knife, the surfaces at once reunite and the irritation persists. It is necessary to effect a permanent separation by searing the edges of the incision by the electro-cautery. The slow process of throwing off of the eschar pre-

vents the recurrence of the false union. The same method of procedure is to be recommended in either of the anterior or posterior unions. If the pocket-like recess in the tonsil be the subject of chronic inflammation, it should, in all instances, be opened its entire length and allowed to heal after the application of the galvano-cautery, precisely as in the removal of secretion pellets. The employment of the galvano-cautery without the knife is often made compulsory when the irritability of the parts or the intractableness of the patient is very great. When this agent is employed the electrodes should be of small size and inserted in the pockets or canals, small portions only being destroyed at a time.

The palato-glossal fold is really well defined only from the tonsil to the velum. Along the sides of the tonsil it is apt to be united to the main gland, except at the upper part, when a large irregular interspace can be demonstrated. This interspace serves to lodge tonsil pellets and foreign bodies. The fold will be seen in many examples spreading over the front of the main tonsil and partially concealing it. I have ventured to name this the *opercular fold*. A number of veins are often seen lying upon it. I am inclined to the opinion that in operating on the tonsil most of the troubles due to hæmorrhage are caused by interference with this fold; for within it often lies a branch of the facial artery. Under all circumstances the fold is sensitive, and the slightest wound is followed by pain and irritation.

Cyst of the Tonsil.—Rokitanski, in his *Pathological Anatomy*, and Virchow, in his work on *Tumors*, describe tonsillar cyst as being detected in the dead subject. A number of years ago I observed one of these cysts in dissection. The specimen was exhibited before the Pathological Society of Philadelphia (*Trans. Path. Soc. Phila.*, 1871, iv, 68). The committee to whom was referred the specimen made the following report: "The tonsil showed the marks of chronic inflammation, the interfollicular connective tissue being slightly increased and indurated. The follicles of both tonsils, instead of presenting the usual round or oval shape, were distended into large, irregular, star-shaped crypts. In these crypts, where the contents had not been previously evacuated, were found retained masses of disintegrated epithelium, fat granules, and crystals of cholesterin. The occlusion of the orifice of the glands and the retention of their secretion had given rise to the formation of cysts."

A short time ago I had an opportunity of recognizing a tonsillar cyst in the living subject. The case did not present any unusual

appearances, but excessive pharyngeal irritation of long standing was complained of, and, the left tonsil being larger than the other, I determined to excise the cortex and explore the interior, since I was of the opinion that a number of the diverticula had been closed by inflammation. Greatly to my surprise, following the excision a large quantity of glairy fluid escaped, as though the tonsil had been converted into cyst. Exploration revealed the presence of a rounded chamber the size of a small chestnut. The irritation immediately disappeared.

Acute Abscess.—Opening an acute abscess of the tonsil, whether it be directly in the substance of the gland or in the tissue about it, is occasionally a procedure requiring judgment and patience. As a rule, no difficulty is experienced, but in exceptional cases the attempts are annoying to the physician, painful and depressing to the patient, and not free from danger. Fortunately, the usual incision with a straight knife thrust into the center of the mass and drawn toward the median line of the throat is successful. But pus is never to be sought for in a single locality. The incisions are frequently made too high and the palatal structures needlessly wounded. If the abscess occurs in the velar portion of the tonsil it can not be reached at all by any prudently devised incision. The pus, when in the main gland, may not point toward the surface which is visible, but backward. I have seen cases where three deep incisions had been made without success, when the fourth showed that the pus lay in the posterior part of the gland as above indicated. In another instance the pus lay well down on the side of the pharynx below the curve of the tongue, and was reached only by an incision with a laryngeal knife. All these peculiarities are easily explained when the anatomical variations in the form of the tonsil are borne in mind. The abscess is sometimes lodged well to the outer and upper side of the main tonsil, above the position in which the pocket is usually found. If an opening to a crypt is demonstrated, a curved probe or director should be passed along it. Not infrequently the collection of pus can be thus emptied into the throat and the patient saved the pain of an incision. I have seen several cases months after an ordinary attack of quinsy in which these pus tracts could be easily traced. The fact that they may lie in free communication with normal openings is noteworthy from several points of view. They demonstrate that in suppurative tonsillitis the pus is not always peritonsillar (since it may be retained in the crypts and diverticula of the mass), and that spontaneous

openings of the collection may not end in recovery if the shape of the parts do not favor drainage.

Respecting the danger of opening a tonsil abscess, it must not be forgotten that fatal hæmorrhage has followed the use of the knife in skillful hands. The risks of not opening the abscess are greater than those attending the operation, and nothing remains for the physician but to operate. The bleeding may arise from a normal artery which has assumed extraordinary proportions under the inflammatory excitement, or from a large ascending pharyngeal artery. Never, I believe, does the blood spring from the internal carotid if the incision be prudently devised. Before making an incision I have been in the habit of placing the index finger of the disengaged hand in the throat and endeavor to introduce the tip between the tonsil and posterior wall of the pharynx. The knife should be thrust toward the finger-tip. This manipulation protects the ascending pharyngeal artery and gives freedom to the operator, who, in any event, may dread wounding the pharyngeal wall. That this is no timid precaution is evident. I have notes of peculiarities in three persons, and have knowledge of a fourth, in whom a vessel as large as the radial artery was seen pulsating on the posterior wall of the pharynx. I have advised these persons that in the event of tonsillar incision being proposed they should inform the physician in attendance that an abnormally large artery lies just beneath the surface of the throat passage directly back of the tonsil.

Chronic Abscess.—Retention of pus for an indefinite period is unusual, and I invite attention to a few remarks on the subject.

A gentleman, aged fifty-six years, had had for ten years an excessively irritable pharynx. In this period two acute attacks of inflammation were reported, the first of which was severe. The patient was rheumatic, although there was no history of acute rheumatic fever. Distress was referred to the left side of the throat; the membranes here were more injected than on the right side. A mild form of pharyngeal catarrh was present, with laryngitis. The tonsils were small. After the patient had been under treatment for a month without relief, I determined to remove a portion of the left upper tonsil. With this object in view, I cut away a portion about the size of a split pea. Pus to the amount of four or five drops escaped. At the next visit, two or three days after, the parts were greatly improved, and in a short time all signs of the trouble ceased.

A second case, illustrating chronic pus retention, was that of a medical student nineteen years of age. He was suffering from laryngitis, and had always had irritable tonsils. He had suffered from repeated attacks of diphtheria when a child. The present distress ensued upon a rather

severe form of tonsillitis. Believing that much of the condition of the larynx was due to irritation excited by the tonsils, I removed a portion of the main mass on the right side with the knife, when there escaped fully a half-drachm of pus. The tonsils were of great thickness, and the pus lay fully three lines from the surface. The patient made a satisfactory recovery. The laryngitis spontaneously disappeared, showing that it had been caused by the irritative effects of pus in the tonsil.

J. Garel (*Annales des maladies de l'oreille et du larynx*, 1889, p. 1) narrates three cases of chronic abscess of the tonsils. The first of these was a man forty-six years of age, who reported in January, 1885; he developed an acute tonsillitis on December 7, 1884, which was opened on the 10th, and again on January 31st, so it will be observed that the duration of the case, including the date at which pus was supposed to have formed, was but seven weeks.

The second case was that of a woman, aged twenty-eight years, who had had her tonsils removed by tonsillotomy in infancy; she had subsequently repeated attacks of quinsy with attendant suppuration on the left side; in January, 1885, quinsy, resulting in suppuration on the right side; after the escape of pus, however, the pain did not subside, and the patient could not report. The neck was found to be tumefied; dysphagia intense. The case passed from observation, but it was ascertained the month afterward—namely, at the end of February—that an abscess opened spontaneously, and the inflammatory condition rapidly subsided. The entire duration of this case appears to have been about one month.

In the third observation—that of the young man, aged thirty-six years, who reported September 21, 1888—the patient was subject to repeated attacks of tonsillitis, and at the twelfth year had an attack in which both tonsils suppurated. In 1883 acute abscess developed in the right tonsil, which demanded surgical interference. In August, 1888, tonsillitis developed on the left side; the physician opened the collection of pus on the seventh day, but the cure was not completed; three weeks afterward pus could be still detected oozing from the tonsil. The opening in it was enlarged by Dr. Garel by the galvano-cautery. As a result of treatment by this agent, the case was cured by the 20th of October; this case, therefore, had a duration of two months.

M. Noquet (*Revue de laryngologie, d'otologie et de rhinologie*, 1888, No. 7, p. 393) reports a case of a person, twenty years old, who suffered for six months with acute pain in swallowing on level of the left tonsil. Many times a day the patient would raise pus which could be traced to the tonsil. This patient had had the right tonsil removed at the sixth year, and the left six months subsequently to the time at which the case came under notice. Dr. Noquet detected in the left tonsil a fistulous tract which led to a pocket which contained pus, which, being opened, led to complete recovery. In the discussion which followed, M. Moure cited an analogous case—namely, one with abscess of the tonsil, lasting several years, finally cured with the galvano-cautery. Heryng names

two cases in which abscess was detected during operation by tonsillotomy.

Grynfellt (*Gaz. hebd. des. sc. méd. de Montpellier*, No. 34, 23 août, 1884) reports a case of chronic abscess of the tonsil which occurred in a youth seventeen years of age, the result of acute tonsillitis.

Foreign Bodies.—The practitioner is frequently called upon to remove foreign bodies from the pharynx. When these are large the most casual inspection reveals their presence. Frequently, however, examinations carefully conducted fail to detect them. The conclusion is arrived at that the objects had been either swallowed or ejected, and the symptoms complained of are to be referred to the effects of congestion or to the anxiety of the patient. It must not be forgotten that small fish-bones may be lodged within the tonsil and be out of sight when the throat is inspected, but may protrude during the acts of swallowing and speech.

A gentleman once reported to me with the complaint that a fish-bone was fixed in his throat. The history was consistent, and a careful but futile examination had been made by the family physician. I was equally unfortunate in not finding the offending bone. I ventured to say that it had disappeared, and that the distress could be controlled by the use of a soothing gargle. But in this I was mistaken. The patient reported after an absence of several hours and persisted in his belief that the bone remained in the throat. Finding the right tonsil rather large, I grasped it with a pair of forceps and drew it forward, thinking that the bone might be found between the gland and the palato-pharyngeal fold. Directly I saw (as a result of compression) projecting from the gland the end of an exceedingly slender needle-like fish bone, which was readily lifted from its bed by a pair of forceps held in the disengaged hand. The bone was fully an inch in length, and would have remained undiscovered had I not fortunately by the seizure of the gland forced it slightly out of its bed. On another occasion I removed a thin scale of an oyster-shell, which had been in the throat forty-eight hours, from the interval between the upper and the main tonsil. The object was readily seen by drawing the palato-glossal fold forward.

Remarks.—In conclusion, it may be said that the existence of a large pocket or crypt at the lower part of the tonsil is common; that a mass lies above the thickened cryptose tissue above the opening of the main pocket, and forms the velar tonsil; that the varieties of tonsil-form, as above expressed, constitute the best guide to clinical study of the region; that the treatment of the affections of the tonsil should be based upon structure; that this structure, being of the character of recessions of mucous membrane from the general

pharyngeal surface, attempts to restore such parts to their normal condition should be always borne in mind, and that all canals or fistulous passages in the tonsil that are abnormal should be slit up; that closed tonsils should be opened; that incisions for the reduction of enlarged tonsils should be in directions which harmonize with the plan of the region, and that when such hints for the treatment of the tonsil are acted upon, the majority of the diseases of these glands disappear.

Discussion.

Dr. SAMUEL JOHNSTON: One clinical point is brought out in Dr. Allen's paper which, I think, we all should consider, and that is the apparent dependence of enlarged tonsils upon hypertrophied adenoid tissue. I believe the usual rule of practice is in favor of operating upon the enlarged tonsils first and subsequently upon the adenoid hypertrophy. Dr. Allen's observations, however, teach us that the reverse is the better rule, for by so doing we may relieve our patient without a double operation.

Dr. MACKENZIE: I believe that the majority of cases of enlarged tonsils sent to me for operation also have adenoid growths in the nasopharynx. It is my practice to remove the latter before treating the hypertrophied tonsils.

Dr. C. C. RICE: The paper is a disappointment to me, not because of what the author has said, but because of what he has omitted to say. If there is any member of this association who is competent to state all that is known concerning the physiological functions of the tonsil it is Dr. Allen, and I am sorry that he has not enlightened us as to the true functions of these glands. That they assist in keeping the throat moist and in lubricating the food as it passes into the throat seems probable, for the removal of the tonsils often causes temporary dryness of the throat. The presence of the *Leptothrix buccalis* in the crypts of the tonsils is an interesting clinical condition. The retention of this parasitic mass in a closed crypt occasionally causes a chronic tonsillar abscess. In this chronic form of abscess there is usually very little pain and swelling, differing in this respect very much from so-called suppurative inflammation of the tonsils, or quinsy. Chronic inflammation of the tonsil, which is a rare disease, is, in my opinion, most often caused by the retention of leptothrix masses. More rarely still a suppurative process ensues, and we find the chronic, I might almost say non-inflammatory, abscess of the tonsil. I think the term peritonsillar abscess more correct than that of suppurative tonsillitis or quinsy, because the pus is more often found behind and around the tonsils, in the surrounding cellular tissue, than in the tonsil itself. How often we are disappointed when we make incisions into the tonsil with the hope of evacuating the abscess, and how much more frequently pus is found in the tissues behind and around the tonsils!

Dr. J. WRIGHT: It has been my experience that, if I take out a pair of enlarged tonsils, the adenoid tissue in the roof of the pharynx will disappear of itself. The plugging up of the air passages by the enlarged tonsils causes irritation and leads to an increase in size of the pharyngeal tonsil. The other way looks like putting the cart before the horse; but, of course, actual experience will counteract any theoretical consideration.

Dr. ROE: There is one clinical point that I would like to refer to with regard to opening abscesses of the tonsil. It is a method that Dr. Allen has not alluded to, but one which I consider quite valuable, as it secures the utmost safety in performing the operation. This method consists in the use of sharp-pointed scissors, either straight or curved, as the occasion requires. The sharp points of the scissors, when closed, can be forced into the tonsil until the abscess is reached; then, by spreading the blades, an opening is made as large as desired, and at the same time all danger of wounding large vessels is avoided.

This method is especially valuable where the pus lies deep; but, if the abscess is quite superficial, the ordinary methods will answer equally well. This method was first suggested by Hilton for the purpose of opening deep abscesses in other parts of the body, but it is especially adapted for the opening of deep abscesses in or about the tonsils

Dr. ALLEN: I fully appreciate the force of what Dr. Rice said about the want of knowledge of the physiology of the tonsil; he has thrown open a very interesting and difficult subject for discussion. I am sorry that I am not able to contribute more to its elucidation. It is strange that bodies so easily seen, and which can almost be taken in the hand, have so little known about them, while with parts that are deeper seated and remote we are much better acquainted.

With regard to Dr. Wright's statement that hypertrophied tonsils should be removed before operating upon the adenoid tissue above, I would say that, if this be true, it is strange that children are so often brought to the physician for removal of tonsils, and in whom, by removing the adenoid tissue, satisfactory results are obtained. I remember the case of a child, who was brought to me last spring, where I hesitated about operating, and thought that perhaps I was pushing my theory too far; but I finally decided to operate, and removed the adenoid tissue, but left the tonsils untouched. I have since learned that he became perfectly well, the tonsils becoming much reduced in size and gave no trouble.

It must be remembered that, when examined, the tonsils appear at their worst; the separation of the jaws and pulling forward of the tongue makes them project into the throat more than they do when the mouth is closed. When the jaws are closed, the tonsils fall back and do not obstruct the air passages as much as they appear to do when we look at them from in front, and with the tongue depressed and the mouth wide open. This, moreover, is a physiological condition; a child has naturally large tonsils.

With regard to the suggestion of Dr. Roe to adopt the method of Hilton and use scissors in opening a tonsil abscess, I thank him for mentioning it. I remember being very much impressed by Hilton's remarks about using the scissors, some years ago, while reading his book on *Rest and Pain*, and would only add that, if one does not get sufficient opening with the scissors, the dressing forceps may be substituted.

I am sorry that more has not been said in the discussion on the anatomy of the tonsil; although I could hardly expect that the novel points which I brought forward would be accepted by the Fellows without having more time for their consideration. I would, however, respectfully suggest the point that, in the study of diseased tonsils, the plan of construction should be constantly borne in mind.

Paper.

THE USE OF PYOCTANIN, AN ANTISEPTIC, IN DISEASES OF THE UPPER AIR PASSAGES.

By R. P. LINCOLN, M.D.

THE question has often been proposed, Why do we find so much more work to do in the nasal passages than formerly? This thought is especially emphasized by inspecting the list of papers offered at this meeting of our association.

It is true we not only attempt, but we accomplish, much more than we thought possible ten or even five years ago. The explanation is not that naso-pharyngeal affections are more common now, not that we did not recognize abnormities that we now attack with confidence, but it is that we have learned, from our own and the experience of co-laborers in the same field, that we can with impunity almost undertake operations the possible unpleasant consequences of which were greatly magnified and acted to effectively deter us.

We are further encouraged not only by the primary and immediate relief that follows many operations, but also by secondary advantages, sometimes even general, that are often of greater importance than the removal of the local trouble.

The advantage from the use of cocaine has greatly facilitated our operations. But the element that has contributed not the least to our success and to extending our achievements is the discoveries and improvements in antiseptics.

In determining the utility of a drug and defining its uses, we aim not only to restore the ailing, but to fortify our patient against the liability to disease; and it must be remembered that every applica-

tion of such knowledge becomes an important experiment, either yielding confirmation of or casting doubt upon some hypothesis not yet crystallized into acknowledged doctrine. Evolution in our art is being rapidly developed. The almost countless new remedies or substances that the diligent chemist or the indefatigable herbalist is constantly presenting to us for testing make it impossible that any one person or school should definitely pass judgment on them all. To prove the cause of an effect in even one instance is a contribution to this end. A contribution toward the solution of any such equation is work in the direction of ameliorating or curing disease. Cherished fallacies that often sway the laity must be guarded against by the investigator; such is the idea, prominent in the public thought, calculated to mislead because not consistently discountenanced by the profession, that remedies heal—that certain atmospheres, for example, heal the diseased mucous membranes.

The healing process is from a higher power and pertains to the germ of our growth, intrinsic. At war with this are extrinsic elements. The air, I repeat, does not heal, but some atmospheres contain fewer disease-promoting germs than others. To destroy those present, to fortify our patient against their deleterious effects, is, then, one of our objects.

Further, we must not lose sight of the fact that man never manufactured living tissue. Our aim must be to assist Nature. This, in surgery, we do in three ways—by co-apting solutions of continuity, by removing obstacles, and by shielding a fresh or granulating surface from bacteria prejudicial to its healthful progress. In nasal surgery unexpected constitutional symptoms occasionally present themselves that we recognize as due to septic poisoning. I think the practice is not yet definitely settled on the point whether the nostrils should be sealed, so to speak, with a pledget of lint after an operation, or whether an effort should be made to keep the passages freely open. Whichever plan is adopted, we must recognize the necessity of an effective antiseptic. We thus see there are so many contingencies that interfere with the theoretical use of remedies, that a true estimate of their value can only be determined by experience, and I apprehend that the efforts of the rhinologist and laryngologist will hereafter find their greatest advantage in studying the action of remedies whose province is chiefly aseptic. There are many that have been used, each with enthusiastic advocates, such as boric acid, antipyrine, bichloride of mercury, iodoform, iodol, aristol, peroxide of hydrogen, and others; but there is one that has been but little

tried, but which, from my present experience, seems destined to become a valuable addition to the list.

With the foregoing plea for investigation in the direction of antiseptic methods, I invite your attention to a remedy that E. Merck, the chemist, has brought forward within a short time. I refer to pyoctanin, the methyl-violet. The efficacy of the remedy seemed so pronounced in the limited number of instances where I have used it that I hope to elicit observations by others and hasten the determination of its place in our pharmacopœia. Whatever be the final verdict, I am convinced it has merit, and I now recognize but one disadvantage.

For the convenience of any that may not be familiar with its attributes, I compile here the essentials of whatever I have been able to find on the subject, and also present some samples. Pyoctanin is a chemical preparation of the class of aniline colors, there being two kinds, the blue and the yellow, the former, according to Pohl,* having the greater germicidal power. It is offered in the market in the form of powders, tablets, and sticks. It is odorless, almost tasteless, non-poisonous, slightly anodyne, and non-irritating. It does not coagulate albumin, has great penetrating and disseminating power, and hence does not form a protecting shield about diseased germs. It destroys bacteria quickly; even a weak solution prevents the development of all micro-organisms. It is freely soluble in water and petroleum products. Its disadvantage is its staining quality, which is an offense to the sight, but which can be avoided on exposed parts by exercising reasonable care.

It may be used without unpleasant consequences in any degree of strength, from the pure substance to a weak solution. It can be applied to the part to be treated in the form of a spray, by means of a pledget of lint saturated with a solution, in the form of an ointment, as a powder or by crayon.

Its Method of Action.—W. Pohl,† of Berlin, reports in his inaugural thesis the results of the study of the effect of pyoctanin on different bacteria. Putrefactive ‡ ones showed the greatest resistance. A solution of the strength of 1 in 2,000, however, stopped their evolution, while a solution of 1 in 1,000 killed them in half an hour. It is found by increasing the proportion of the chemical that this action is hastened. The rapidity of this action on all

* W. Pohl, Darmstadt, 1891.

† *Op. cit.*

‡ Stilling. *Anilin. Farbstoffe als Antiseptica.* Strassburg, 1890.

other micro-organisms is much greater. Janicke* showed that a total stoppage of development took place in streptococcus with a solution of 1 to 333,000, whereas a solution of 1 to 5,000 killed it in half a minute.

Professor Stilling,† who appears to have been the first to have introduced and systematically experimented with pyoctanin, applied a strong solution to the eyes of his patients without much discomfort.

Bresgen,‡ who was the first to systematically use pyoctanin in the nose, noticed a distinctly anodyne faculty on its being applied to the mucous membrane.

Thus we learn that while its effect varies much in degree with the strength of the remedy, we need not be deterred, by fear of pain or too much irritation, from a free use of the substance, undiluted if it seems indicated, when we wish to destroy suppuration or prevent it if impending.

When used in solution it is said that it is best to keep it in colored glass and have it freshly prepared every three or four days. My own observations date from July, 1890. One of my first cases, which was as follows, seemed to me at that time most remarkable:

The patient was a well-nourished single woman, thirty-five years of age. About a year before I had operated upon her for an abscess of the left frontal sinus, the early effect of which trouble had been most serious. At the operation the necrosed outer wall was in large part removed—as much, in fact, as seemed justifiable, yet not completely, so that small pieces were removed with forceps, curette, etc., for a period of several months following. A style was worn for a long time, and injections of various remedies were frequently made through the external opening into the nostril. In fact, the patient herself operated this method successfully. Notwithstanding the many different remedies thus applied for months, after all evidence of necrosis or caries had disappeared some suppuration continued, with slight swelling and redness of the upper eyelid. It was not till after I had made a few injections of a ten-per-cent. solution of pyoctanin in water that a new impetus to the healing process began which was speedily completed. In less than three weeks, the strength of the solution being gradually reduced, all discharge, either external or through the nostril, ceased, and the patient was relieved of a trouble that had caused physical and mental distress for nearly two years.

While this patient was under treatment I had an opportunity to use the remedy in a case of suppuration of the antrum with equally

* *Fortschritte der Medicin*, 1890, No. 12, p. 460.

† *Loc. cit.*

‡ *Deutsche med. Woch.*, 1890, No. 24.

gratifying results. Four cases of this disease where the suppuration has been pronounced have been relieved more promptly than ordinarily by other methods.* In cases of suppurative ethmoiditis, where I have been able to reach the parts in consequence of some fortuitous malformation especially, comparatively prompt relief has been secured, unless necrosis existed, in which case, after removal of detritus, the disease was readily corrected. Whenever ulceration of the mucous membrane and suppuration are present, I think the remedy most useful. I have seen several instances where there was erosion and unhealthy granulation on the septum nasi smoothed and healed in a short time. The granulations on the border of a perforated septum cicatrize more readily when kept coated with an ointment of twenty grains of pyoctanin with an ounce of vaseline. Like Bresgen,† I have found it useful after cauterizations, but I am not prepared to say, with my present experience, that it has a great advantage over iodol, iodoform, and some other remedies we are familiar with, except for the fact that septic poisoning has been escaped by patients operated on when I have used it. It quickly heals all aphthous ulcerations in the mouth.

It is useful as a local remedy in all acute follicular inflammations, and especially in those chronic follicular diseases of the tonsils and soft palate where we find inspissated mucus often crowded with micro-organisms, as *Leptothrix buccalis*. The effect of a fifty-per-cent. solution applied in instances of this last-named affection is immediately evident to the observer.

I have applied the remedy in but two cases of unquestionable diphtheria. Both recovered without sequelæ. One case was very severe and one only moderately so. In the former, a little girl five years old, the disease began in the right nostril, extended to the left, the membrane gradually involving a part of the pharynx, the whole of the right tonsil and part of the left. Before I used pyoctanin, besides administering internally tonics and chlorate of potassium, I had used locally in the nostrils, one after another, sprays every two or three hours of bichloride of mercury, benzoate of sodium and wine of pepsin, chlorate of potassium, and iodoform. The same had

* In the *Journal of Laryngology and Rhinology* for September, 1891, I find, in the report of the May and June meetings of the Berlin Laryngological Society, that Cholewa recommends pyoctanin for diseases of the frontal sinus, and Meyer reports two cases of antrum disease improved. In the same report Scheinmann says it can only help when combined with other remedies, and Katzenstein and Herzfeld never saw any effect from it.

† *Loc. cit.*

been used in the throat, and here, in addition, a mixture of compound tincture of iodine and carbolic acid. There was great physical depression, but no albumin in the urine. The disease, which must have been present three or four days before I saw the child, continued to increase and extend for three days, when I determined to leave in the nostrils through the night rolls of absorbent cotton saturated with a ten-per-cent. solution of pyoctanin. So much improvement was found the following morning that the remedy was used more freely, and its use extended to all parts involved, with the result that in forty-eight hours all trace of the membrane had disappeared. The other case was an adult, when a strong application started an improvement at once.

Three cases of diphtheria were treated in the early summer and encourage me to give the remedy further trial.* Its effect on a single instance of membranous rhinitis was, as should be expected, prompt and salutary, the plastic deposit being quickly destroyed and not reproduced after three or four applications. My experience with the remedy in laryngeal phthisis does not cover a period sufficient to justify me in expressing a conclusive opinion, but I note † that Dr. Capart, of Brussels, presented at the Annual Assembly of Belgian Laryngologists, May, 1891, a case of ulceration and perforation of the soft palate, occurring after an ulceration of the tonsil, in which Koch's bacilli were found, healed rapidly under pyoctanin. He also exhibited two patients with laryngeal tuberculosis in whom the ulcerations had improved under pyoctanin. I have used pyoctanin with most satisfactory effect in both syphilitic and non-syphilitic ozæna. At the present time a child, three years old, with a very offensive, non-specific ozæna, having much tumescence of the nose and frequent epistaxis, is markedly improved after only a week's treatment. Peterson ‡ reports cases of syphilitic ozæna deodorized and cured in a short time by a one-per-cent. solution.

* Pohl reports nine cases of diphtheria, not selected, treated successfully.

† *Journal of Laryngology and Rhinology*, August, 1891, p. 343.

‡ *St. Petersburge medizin. Woch.*, 1890, No. 24.

Paper.

THE RESULT OF TREATMENT OF THE UPPER AIR PASSAGES IN PRODUCING PERMANENT RELIEF IN ASTHMA.

By FRANCKE H. BOSWORTH, M. D.

I THINK all of us will confess to a certain degree of enthusiasm in adopting new and original methods of treatment for the relief of hitherto obscure and intractable diseases, and, furthermore, that in recording our results we are under the influence of a certain mental bias, which leads us perhaps to overrate our successes. Whether this be true in regard to the intranasal treatment of asthma seems now the fitting time to decide, in view of the fact that a number of years have elapsed since the remarkable observations of Schäffer, Fränkel, Bresgen, Hack, Daly, Spencer, Todd, and others were first put on record.

In a paper read before the American Climatological Association on May 28, 1885, I advanced the theory that an asthmatic paroxysm is dependent on three conditions: First, a general neurotic habit; second, a diseased condition of the intranasal mucous membrane, and not the bronchial; and third, some obscure atmospheric condition; the former two being the active predisposing causes, while the latter is the exciting cause of the paroxysm. The truth of these propositions I think is generally accepted; certainly no one will question at the present day the fact that a diseased condition of the nasal mucous membrane exercises a very marked influence in the production of a paroxysm of asthma. This being true, the further proposition must be accepted, that in the restoration of the nasal mucous membrane to a condition of healthy function we remove one of the very active causes of the asthmatic paroxysm, and thereby are notably aided in the complete cure of the disease. I should like, parenthetically, to emphasize this point, and repeat that our efforts in intranasal treatment should be directed broadly toward the complete restoration of healthy functional activity in the membrane, for I consider it as a somewhat narrow view to regard the removal of a simple nasal stenosis as the prominent indication.

In my former paper I furthermore argued that a paroxysm of asthma not only depended on the three stated conditions, but that the removal of any one of them, and not all, was ordinarily sufficient to arrest the disease. We all of us recognize the fact that a resort

to certain elevated regions is almost invariably attended by immediate relief. In this way the obscure atmospheric condition which is the cause of the paroxysm is removed. We are furthermore familiar with the fact that in many instances where, by our general and specific therapeutic measures, the peculiar neurotic condition is overcome, the asthmatic paroxysms terminate. In the remaining cases of relief afforded by treating the intranasal condition, clinical observations have multiplied themselves to such an extent that the success of this method in a certain number of cases can not be questioned. The permanence of the results, however, opens up an exceedingly interesting and pertinent inquiry. In a paper on asthma, published in the *American Journal of the Medical Sciences*, in September, 1888, I analyzed the results of treatment in eighty cases, thirty-four of which were instances of hay-asthma or periodical asthma, and forty-six of perennial asthma or true nervous asthma, as it has been called. For our present purpose these may be grouped together. Of the eighty cases, I reported forty-six as having been cured, twenty-six improved, three unimproved, and in five cases the results were unrecorded. Three years have now elapsed since this record was made, and I regret exceedingly my inability to report as to the ultimate results of treatment in these cases. This report was based on a somewhat extensive correspondence, and the limited time at my disposal has prevented my hunting up the cases, the very large proportion of which have passed from my observation. A few of those patients who were reported as cured, however, have suffered relapses, but I am confident that I do not understate the number when I say that in but six of them have the asthmatic paroxysms returned, but of these the violence and frequence of the paroxysm in no instance equaled that which existed before the treatment.

Since this report I have recorded and subjected to treatment eighty-eight additional cases of asthma in which there was a coexistent intranasal lesion of a turgescent character. In running over these cases I find that forty-two patients were cured, thirty-three were improved, two were unimproved, and in eleven the results were unknown, the patients being seen usually but once. The local lesion was in the very large majority of instances either nasal polypi, deflected septum, or hypertrophic rhinitis.

Leaving out of consideration the eleven cases in which the results were unknown, we have seventy-seven patients suffering from some form of asthma, in only two of which did the intranasal treatment

fail to afford a certain amount of relief. If this report is correct, and I believe it to be absolutely so, I think no stronger evidence could be adduced of the intimate and close causative relation which exists between a diseased condition of the nasal mucous membrane and asthma. Since Voltolini's first observation, I think no one denies that nasal polypi may be the cause of asthma, but hypertrophic rhinitis and deviations of the septum as a cause of the disease are still seriously questioned by many.

I have reported forty-two cases as cured. Curiously enough, there would seem to be some question as to what constitutes a cure in asthma. I think, however, that we are fully justified in considering a patient cured who has passed through twelve months of immunity, subjected as he is during that time to the various atmospheric changes which are so prone to give rise to an attack, especially during the cold and damp weather of the spring and fall months. In the foregoing report I have endeavored to confine myself to this rule, though in some of the cases the reports cover two and three years of immunity.

The thirty-three patients reported as improved include not only those in whom the paroxysms were notably mitigated, but others in whom months elapsed without an attack, and in many the disease had ceased to be a source of any very serious distress, and yet, the immunity not persisting for the full twelve months, I have recorded them simply as improved.

Coming now to the immediate topic of discussion—viz., the permanence of relief afforded by intranasal treatment—I think this is fully answered by this report. This method is clear in its indications, easy of accomplishment, and promises, I believe, not only more immediate relief, but more permanent relief from this distressing disease than any method of treatment yet suggested.

While, therefore, this method affords so much promise, for both the temporary and permanent relief of the disease, it is to be borne in mind that we are dealing here with but a single factor in its causation. The neurotic habit is an equally prominent factor, and I do not think we have done our full duty in any case without giving our patient the full benefit of those general hygienic measures, together with internal medication, which are attended with such excellent results in their action upon the nervous system.

Discussion.

Dr. Beverley Robinson: Mr. President, I merely desire to take up this subject again in order to affirm the opinions which I have endeavored

to place before this association at previous meetings and before other societies, and which I have expressed in some of the medical periodicals of the day. I am glad, if I interpreted Dr. Bosworth's paper correctly, to learn that he has somewhat modified the views which he maintained several years ago. It is certainly remarkable for him to say that other conditions than those present in the nose take a prominent part in causing an outbreak of asthma. Certainly none of us take exception to his statement that he had by his treatment given relief to a certain number of cases. We merely do not accept the assertion that all cases of asthma arise in the nose; that in effect Providence has appointed that all cases of this kind should fall into the hands of the rhinologist and laryngologist, and that all cases of pure asthma should go to the specialist and to him alone. In a paper which I read before the Climatological Association in 1889 I endeavored to prove, and believe I did prove, that Dr. Bosworth's views were wrong from a broad general standpoint; that they were those of a specialist. I think that if Dr. Bosworth had followed up his cases he would have found a certain amount of the old trouble recurring at intervals. I am firmly of the belief that where there are frequently changes in the peripheral nerve fibers or central nervous system, a permanent cure is rare. Local conditions of the nose may at times justify an operation for removal of a source of irritation, but I wish to put myself upon record against the view that obstruction of the nasal chamber, or the effect of inflammation, is the usual cause of asthmatic attacks. I am opposed to such a limited view of the disease. While we may occasionally remove the source of a certain amount of irritation by the treatment of the nose, we do not remove the disease; relief may follow just as it sometimes follows the application of a blister between the shoulders. The relief may persist for a certain length of time, but after a while the condition producing the attack will return and the old disease reappear.

Dr. Roe: In all cases of asthma caused by disease of the nasal passages we should distinguish between those in which the asthma is dependent directly upon diseased conditions in the nasal passages and those in which there is associated disease of other portions of the upper respiratory tract which have resulted from disease in the nasal passages and which often become independent centers of irritation in the production of asthma. As regards the ætiology of asthma, I believe that asthma proper is always dependent upon a diseased condition of the bronchial mucous membrane, and it is by reason of this abnormal condition of the bronchial mucous membrane that diseases in the upper air-passages so readily produce turgescence and swelling of the bronchial mucous membrane, as was first pointed out by Weber. I think that in those cases reported by Dr. Bosworth, where the attacks recurred, it was because he overlooked the diseased conditions in other portions of the respiratory tract after he had removed the disease in the nose. In this manner it is readily explained why in some cases asthma dependent upon nasal polyps will be readily

cured by the removal of the polyps, while in other and quite similar cases the removal of the polyps will have but little or no effect in arresting the asthma.

Dr. WAGNER: In a brochure, published about ten years ago, on Habitual Mouth-breathing, I reported a case of nasal polypi which greatly obstructed the nasal respiratory passages. After removal by operation the patient had relief from asthma, from which he had long suffered. But I have seen since then so many cases of asthma with, so far as I could judge, perfectly healthy nares, and, on the other hand, so many cases of nasal polypi, deviation of the septum, hypertrophied mucous membrane, exostoses, etc., with no symptoms of asthma, that I have long since ceased to look upon the nose as a factor in this affection, or to recognize any connection between asthma and nasal disorders.

In regard to patients being benefited by removal to great altitudes, I have seen many that experienced no relief by the change. I might refer to one, a New York physician, a sufferer from asthma, who went through the usual course of painful local treatment of his nose; not experiencing relief, he tried change of climate—to the South, thence to the West Indies, thence to Colorado Springs, thence to New Mexico, and finally to the sea level in southern California, where he not only found relief, but has quite recovered.

Dr. SHURLY: I think that the ground has been pretty well covered in the discussion. I remember very well the paper that Dr. Bosworth read before the Climatological Association, some years ago, in which he gave his opinions on the causes of asthma and its treatment. I remember that the same points were brought out in the discussion then that have just been considered. Since many cases of disease of the nose occur without asthma, and *vice versa*, we are still held to the old conclusions or doctrine that two causes must coexist to produce asthma: Firstly, a point of irritation, which may be in any part of the body; and, secondly, a peculiar predisposition of the nervous system of the individual. Such treatment as Dr. Bosworth proposes is necessary in a certain number of cases; but the physician who neglects to treat the nervous element would not do his whole duty to the patient. In any case, if it is associated with a hypertrophic enlargement which gives rise to irritation, this should be removed. In a paper which I wrote some years ago I recorded the results of some experiments upon dogs in relation to this subject, one of which was that, by irritating the peripheral nerves of the respiratory tract with an electric current, symptoms were produced resembling asthma. This does not invalidate the view that asthma may be due in some cases to vascular excitement, or congestion, in certain parts of the body, because the physical conditions may be about the same. I regret to say that in many cases the pathology and ætiology can not be made out, and such I recommend to go to a more suitable climate; it may be St. Paul, or southern California, or Mackinac, if it is possible for them to go.

Dr. GLASGOW: We must remember that in the surgical treatment of

asthma there is a psychical factor; as an attack can often be broken by a powerful emotion, the application of the electrical cautery has a similar effect. The method of Duclos at the beginning of the century was based upon this, the effect being brought about by the application of aqua ammoniæ to the pharynx. I read a paper before this society upon the effect of applications to the larynx in breaking up a paroxysm. I called attention to the use of carbolic acid and the insufflation of certain powders into the larynx, and showed that this was immediately followed by a cessation of the attack of asthma. I have also seen an attack relieved by simply cleaning the nostrils, by the removal of a polypus, and even by spraying the cavities with a simple alkaline wash. One case made a profound impression upon me. I applied a strong solution of carbolic acid to the larynx during the height of the attack, and the man has never had an attack of asthma since, and that was three years ago. The statement of Duclos, together with my own experience, has made me believe that the results in some of our patients are largely due to the powerful psychical impression. Like all nervous affections, asthma is erratic in its course and appearance. The asthmatic habit is stronger in some than in others, and the same methods of repression will not be equally successful in all cases. The habit is unquestionably sometimes kept up by points of irritation in various parts of the body, and relief of this irritation is necessary before permanent relief can be obtained.

Dr. MULHALL: I think that we are arguing away from our original standpoint. What Dr. Bosworth was referring to was simple nervous asthma. My objection to the statistics presented is that they are not properly studied. When Mr. Hutchinson, of London, recorded a case, he took the address and visited the patient afterward to learn the results of treatment. In Dr. Bosworth's list there are a number in which the result is not given, because the patient failed to come back to him. This invalidates his percentage of cures. I remember when Dr. Daly read his paper on galvano-cautery in the treatment of hay-fever, I was impressed by it, and during the next season I treated twelve cases in this way. I took the address as well as the name of each patient, and subsequently I called upon them and found that, while they were surprisingly relieved, they were not cured. That nasal disease is one of the causes of nervous asthma I can not deny, but that it is the sole cause of the disease is simply absurd. Patients with nasal polypi are many of them free from asthma or the two diseases may coexist. The pathological irritation may start from the nasal mucous membrane, and cause reflex contraction and symptoms in parts of the body other than the bronchi. In one case that I recall there was a difficulty in passing urine, a spasmodic stricture, which was immediately relieved by the removal of nasal polypi. This patient had what might be called "vesical asthma."

I agree with Dr. Bosworth in his statement that some cases of bronchial asthma are cured by the removal of disorder from the nose, such, for example, as hypertrophic rhinitis. In two cases that I recall where

there was associated enlargement of the anterior end of the middle turbinated bones I have the record; one was done five years ago and the other three years ago. I took the patients' addresses and have verified the result in each case as being complete and lasting successes. The position I take with patients is this: I tell them that I have been able to find nothing wrong in the body except this disease in the nose, and by its removal the asthma may be cured. I by no means promise that it will cure the asthma; it may do so and in many cases will do so, but I can not promise that it will in any particular case.

Dr. INGALS: From my own experience and what I have learned from others, I am satisfied that in a large percentage of cases operations on the nose, however complete, fail to relieve asthma. I have seen three cases in which there was a peculiar and interesting connection between nasal polypi and asthma. In all of the three where polypi were confined to one naris, the patient alleged that the asthma was also confined to the same side.

Dr. ROBINSON: I wish to call attention to cases of asthma of malarial origin, and would state in the first place that I am to read before the Climatological Association a paper on The General *versus* Local Treatment of Catarrhal Inflammations of the Upper Air Tract, in which these cases are reported. They came under my observation with symptoms of asthma some years since. I have now reason to believe that in these instances examination of the blood would show the presence of the *hæmatozoon malariæ*. There is not invariably in such cases enlargement of the spleen or other physical signs of malarial poisoning. I have proceeded upon the conviction established by symptoms to show the connection between the respiratory disorder and blood-poisoning. By acting in this manner, I have been able also to note that treatment directed to the condition of the blood was followed by relief from the asthma. In cases of different order where some nasal source of irritation was present the *hæmatozoon malariæ* was not found.

One other point I would like to mention. A very valuable essay was read by M. Noel Guéneau de Mussy some years ago upon the effects of enlargement of the bronchial glands in causing asthmatic attacks in children, and physical examination has proved to me the correctness of this statement. Why may not such a condition be sometimes present in cases of asthma in adults? One reason why the iodide of potassium has such remarkable value in some of these cases may be explained by the presence of hypertrophied lymphatic ganglia. I think that in those cases where there are hypertrophies of the nose, operation does good by giving freer respiration and relieving congestion.

Dr. BOSWORTH: I seem to have been exceedingly unfortunate in my choice of words, else I should not have been so misunderstood. The real subject of my paper has been largely passed by in the discussion. Dr. Mackenzie has come to the conclusion that I affirm that I can cure emphysema. I made no reference to this affection. I did not say that all

cases of asthma were caused by nose diseases. That would be a gross misstatement; nobody believes it. To state that because hypertrophic rhinitis does not always cause asthma it never causes asthma, that because nasal polypi do not always cause asthma they never cause it, scarcely rises to the dignity of discussion. The old view is that asthma is caused by spasm of the bronchial muscles. I do not believe that the bronchial muscles have anything to do with it. I believe that the vaso-motor theory of Weber is the correct one; and if any gentleman here would do me the favor to read the paper which I prepared three years ago I think that he would agree with me. I hold that there are three causes of asthma, as I stated in my paper. This does not conflict with the views of Hyde Salter and others. With regard to the cases where there is enlargement of the heart or disease of the liver or kidneys, I say that these are conditions which aggravate and keep up the disease. I did not say that the nose was the only cause, and that its treatment was the only treatment; but I will say that in nineteen out of twenty cases, if we pay attention to the nose and remove any disorder existing here, we shall do better by our patient than if we simply rely upon iodide of potassium and routine treatment with the usual remedies for asthma.

Paper.

NASAL PAPILLOMATA.

By JONATHAN WRIGHT, M. D.

AT the last meeting of this association, in the discussion which followed the reading of Dr. Ingal's paper on Warty Growths in the Nose, I was encouraged to hear the majority of the members protest against Hopmann's declaration of the relative frequency of papillomata within the nasal fossæ. Out of several hundred nasal tumors and hypertrophies removed it had been my fortune to see but one case of what I regarded as a nasal papilloma. This was a small tumor with velvet-like papillæ, about half the size of a split pea, growing at a point above the center of the cartilaginous septum in the left nasal fossa. It was cauterized thoroughly, and I did not see the case again. Of course, a diagnosis from gross appearances, as subsequent experience has taught me in such cases, is little better than conjecture.

Shortly after this Hopmann's (1) statement came under my observation, and I supposed with others that these tumors must have been overlooked and regarded as polypi and hypertrophies. Supported by Morell Mackenzie's (2) half admission and by the acquiescence of Schech (3), Schäffer (4), Krause (5), Moldenhauer (6),

Chiari (7), Jurasz (8), and Bayer (9), it seemed as though many of us had been very lax and careless observers. A careful perusal of Hopmann's original paper, however, convinced me that he differed really more radically from histologists and pathologists than he did from clinical observers. The discrepancy was one of terminology, not of rhinology.

One of the first patients I saw after I returned from Baltimore last year was a case of subglottic tumor, in which there were similar appearing growths on both sides of the septum, on both inferior turbinated bones and the floor of the nose anteriorly, on the naso-pharyngeal surface of the soft palate, and a double one just where the vomer articulates with the body of the sphenoid bone on the roof of the naso-pharynx. This case, which was interesting in other respects, I reported last May at the meeting of the American Medical Association. It was thought that this was a case of typical papilloma. It really was an almost unique case of papillary lymphoid hypertrophy (lymphoma). The small fragments removed from the nose were too much broken and torn to make a safe microscopical diagnosis, but they apparently differed in no way from the subglottic growth.*

Lacoarret (10) speaks of two cases which had every aspect of papillomata to the naked eye, but which nevertheless, on microscopic examination, proved to be hypertrophies of the mucous membrane and granulation tissue. He reiterates the assertion, as does Moure (11), that "nasal papillomata are very rare." The latter observer, in whose service the two cases cited by Lacoarret occurred, said, before the microscopic examination: "Now or never."

Noquet (12), of Lille, who had previously reported a true case of nasal papilloma, published the account of a tumor removed from the nasal fossa which he regarded as a papilloma. On inquiry as to the result of the subsequent microscopic examination by Dr. Laurent de Hal, Dr. Noquet was kind enough to inform me by letter that "the tumor in question is composed of a *mucous tissue* covered by cylindrical epithelium and developed in the form of papillary projections." He adds: "The examination of Dr. Laurent has consequently had the same result as those practiced by you, and, as you say, the tumor proved deceptive. It is very certain, however, that

* I have recently seen this patient. There has been no recurrence either in the nose or larynx since the last endolaryngeal and intranasal operations—about eight months. My fears of sarcoma are thus far unrealized, for, though aphonic, she is recently married and happy.

this tumor had not the macroscopic appearance ordinarily seen in mucous polypi, and that it was not attached at the place where the latter are usually formed." . . .

When Virchow (13) announced his "terminological wrath" at the confusion which had arisen from the loose way in which laryngologists had used the word papilloma, he might also have reviewed with regret some of his own words. The father of modern pathology, in his great work (*Die krankhaften Geschwülste*, 1863, Bd. 1, p. 334), said:

"Papilla formation is not merely a hypertrophy, as is ordinarily said, or an excess of normal papilla formation, as though in each case the pathological papilla had grown from a pre-existing physiological one, but every surface can independently for itself produce papillæ even in places where previously no papillæ existed. . . . Little cellular buds may begin on the surface free from papillæ or on the papillæ themselves and grow into full-sized papillæ. After the cellular growth has reached a certain point there is developed, springing from beneath it, a vascular loop. This may be supported by a very small amount of connective tissue, so that it seems simply a loop of a vessel covered by epithelium, or the connective tissue may be well marked."

Certainly no clearer or more exact description could be given of any growth, and in regard to the name he says (p. 341): "The generic name must be fibroma, and papillary can only be used as an adjective addition."

This is eminently satisfactory, but in his *Cellular Pathology* (translated by Chance) he says, after referring to modifying adjective terms as applied to tumors, as colloid cancer, etc.: "In just the same manner we see that a great number of tumors, when they are seated on the surface, give rise to excrescences which, according to the nature of the surface, appear in the form of villi, papillæ, or warts. All these tumors may be comprised under one head and be called papillomata (!), but the tumors which have this form often differ, *toto cœlo*, from one another."

Further on in the same work he says: "The pathological importance of papillary tumors is, at least so far as I know, determined by the condition of their basement substance, or by that of the parenchyma of the villi themselves."

It would be irreverent to even suspect a confusion of ideas evinced by such contradictory words, but it may thus be easily seen that his "terminological wrath" at the laryngologists in general is

not entirely consistent, although Hopmann's stretch of the term papilloma to include everything with a papillary surface, without regard to its parenchyma, or basement substance, or pathogenesis, is certainly well deserving of some kind of wrath from somebody. The gist of the matter is, when carefully considered, that papilloma as a generic term should be abolished. It is a surface phenomenon and not a good criterion of the much more important condition of the basement substance or of the parenchyma of the tumor. It is probably impossible to exclude the term, but it certainly is possible to confine it to its most striking exemplification—papillary fibroma.

Virchow's terms of "pachydermia verrucosa" and "hard warts," while very welcome additions to our pathological nomenclature, do not cover all the ground desirable, since the majority of laryngeal papillary tumors can not be put under these terms, as defined by him.

Birch-Hirschfeld (14), Rindfleisch (15), and Klebs (16) give practically the same idea of a papilloma, but no one approaches the luminous exactness of Virchow's early description quoted above.

Cornil and Ranvier (17), under the head of Papillary Polypi, say: "Among polypi of the nasal fossæ there are some which are truly papillomata. They are formed of numerous composite papillæ, pressed one against the other, or contained within a common epithelial investment. The stroma is fibrous and vascular, slight in quantity, while the epithelial investment is thick and composed of pavement cells."

Wolfenden and Martin (18) say that the epithelium does not dip down into the fibrous core in finger-like projections, making this one of their diagnostic points between papilloma and epithelioma. This, of course, can not be accepted as it is written, and apparently the authors mean that such digitations must not be *actually* isolated from the surface epithelium and infiltrate the stroma. As a matter of fact, these finger-like projections from proliferation of the epithelium are very common. It is hardly probable that they mean to assert the contrary. Otherwise their description tallies with that of other observers. Nearly, though not quite, all pathologists agree that the epithelium, however much proliferation there may be, must be sharply defined from the connective tissue, and a structureless limiting membrane is often described. Virchow especially dwells on this as the distinguishing point between papilloma and epithelioma.

Elsberg (19), however, following Heitzman, says that in most cases it is very difficult to tell where the connective tissue begins

and the epithelium leaves off. While not pretending to any great expertness in histological examination, the writer has examined many sections with a high-power oil-immersion lens where it was impossible to make out any structureless limiting membrane, and in some perfectly benign cases no distinct line could be drawn where the epithelial and connective-tissue cells met. Still, practically, with an ordinary objective, there is no difficulty in differentiating the two, excepting within extremely narrow limits. It is unnecessary to go into the very minute histology of papillomata further. Elsberg's description of many years ago is still very instructive, while the more recent description of Klebs is exhaustive and admirable.

It certainly would seem as though all these authorities were sufficiently concise and clear, with Virchow at the head, in limiting the designation of papilloma at least to papillary fibromata. Even this concession, as we have seen, has its very grave disadvantages and inconsistencies, but to extend it to practically all tumors with a papillary surface is unnecessary, and sure to result, as it has, in dire confusion.

It may be unnecessary and a tiresome repetition before members of this association, but I can not refrain, for the sake of illustration, from quoting Hopmann's description of the appearances of the tumor in his first case. After giving dimensions, etc., he says:

"The upper and lateral (convex) surface is divided by fifteen deeply marked transverse furrows and several longitudinal furrows into separate papillæ, the most anterior of which are again divided into smaller papillæ. Sections stained with malachite green and examined in glycerin with +60 magnifying power show the cylindrical and glandular epithelium stained deep green, so that it is easy to distinguish the individual parts of the tumor from one another. First, the richness of the invariably dilated glandular acini and their canals is apparent. Glandular clusters, such as are observed in the normal mucous membrane of the turbinated bones crowded thick together and many branched, are found in sparing numbers here and there, and then only with hypertrophied acini looking swollen and dilated. Most often one observes round or oval rings lined with a simple layer of stretched epithelium. In the deeper layers of the tumor these rings are often lengthened out and irregularly dilated, here and there widened out to cavities of very irregular conformation, whose walls are no longer covered with cylindrical epithelium, but frequently, when the epithelium is not entirely lacking, lined with smaller cells. Some of these lacunæ are filled full of blood-corpuscles; others are empty. Near these glandular ectasiæ the rich network of blood-vessels is strikingly observed, from which dilated branches ascend toward the papillæ and nearly to the epithelial covering, with many anastomoses, and branches sometimes

curved into loops. The stroma is formed into a fine network, whose radiating branches stretch out to the surface of the papillæ. Between these bundles of fibers, often arranged parallel, are imbedded round cells, thickly crowded together, which can hardly be distinguished in form and size from round, young epithelial cells, such as one finds in the deeper layers of the cylindrical epithelium covering the papillæ with their sac-like contours. The epithelium agrees in form and size with that of the dilated glands.

"*Diagnosis.*—Adenoma papillare."

If Hopmann had afterward called these growths adenomata instead of speaking of them under the generic name of papilloma, there would have been less cause for complaint, although the writer believes that these growths are nothing more than simple hypertrophies with the glands and blood-vessels dilated and distorted in the process of chronic inflammation, with the epithelial covering proliferated, stretched, distorted, and folded on itself, crumpled, as it were, by the pressure of its confined quarters, by the irregular distention of the glands and blood-vessels, and by the uneven hyperplasia of the connective tissue beneath.

The glandular ectasia in these tumors is striking. The tumors themselves without the papillary surface are very common, while with the papillary or crumpled surface seen in a lesser degree in the so-called mulberry hypertrophies they are not at all rare. Such growths may possibly be on the border line between simple hypertrophy and adenoma, for it is impossible to say that there is not a new production of glandular growth, but to give it the name of papilloma, without a description of the epithelial cells lining the papillæ, of the thickness of their layers, of their proliferation, of the basement membrane, etc., but apparently on account of the surface being covered with elevations separated from one another by parallel and crossed lines, a purely macroscopic phenomenon, is certainly a most extraordinary proceeding for a zealous worker and a good observer, and especially for a fellow-countryman of Virchow and his *confrères*. He himself says: "If one takes as a criterion the pathological reproduction of the physiological papilla (Förster, Rindfleisch, Birch-Hirschfeld), of course such papillary growths can not be regarded as papillomata."

Thost (20), in his very excellent paper, while being disposed to agree with Hopmann, also says: "If, however, one only recognizes as papillomata the epithelial proliferations with connective-tissue digitations growing in them, Hopmann's papillary tumors are not true papillomata, but adenomata—as, in fact, he describes them. It appears to me that in these cases we have to do with a glandular

hyperplasia, and that the subjacent epithelium has greatly proliferated from the irritation beneath, and has itself grown out into digitations. . . . I repeat, the glandular and vascular development in these tumors seems to be the principal thing, and I think the dictum may be allowed to remain : 'True papillomata are rare in the nose.' "

If we are to allow adenomata to be called papillomata, why not certain cases of cancer, syphilis, tubercular growths ? These and other pathological processes on the mucous membrane often have true *papillæ* on their surfaces, while the papillary hypertrophies in the nose have only the macroscopic *resemblance* of papillæ on their surfaces. Moreover, there are all grades of this furrowing and folding of the surface epithelium. Where are we to begin to call them papillomata ?

Rarely, but undoubtedly, there are instances of true papillary fibromata growing in the nose. They differ in about every possible histological way from papillary adenomata. They are the tumors almost universally called papillomata. Why give the same name to two totally different pathological formations ?

It may seem that I dwell a little strongly on this point, but one appreciates the importance of it when such good observers and distinguished authors as Sir Morell Mackenzie and Dr. Bosworth seem inclined to accept Hopmann's statements apparently from a misapprehension of what he calls papilloma, while the confusion which has arisen elsewhere is a natural but unfortunate sequel to the acceptance of the term in Hopmann's sense of the word.

I present here a drawing made by Dr. Hodenpyl, from a section in my possession of a growth removed from the nasal fossa by Dr. Knight, in a case of hypertrophy of the middle and inferior turbinated bones in which there were also a number of ordinary mucous polypi. Unfortunately, Hopmann has given us no illustration of the microscopic appearances of the growths so graphically and accurately described by him. A glance at this drawing will show, it seems to me, that it is the analogue of the first case described by Hopmann and quoted above. It will be seen that the investing epithelium, convoluted and folded on itself, forms a fair imitation of true papillæ when not examined too closely or too critically. The pathogenesis is, however, I believe, entirely different, and the histological distinction perfectly recognizable from a true papilloma. I regret I have no good example of a nasal papillary fibroma to compare with it.

Hopmann said he had seen fourteen of the growths out of one

hundred cases of nasal tumors, and again six out of twenty-five (21), while Schäffer (22) has seen twenty out of one hundred and eighty-two. These proportions are not at all surprising and will probably correspond fairly well with every one's observation.

It is impossible to say how many cases of true nasal papilloma have been observed. Doubtless some of those so reported were not papillary fibromata. It is certain that only those which have been examined microscopically can be accurately classified, though some had every macroscopic appearance of a true papilloma. They evi-

dently have a preference for the cartilaginous septum and the floor of the nose, while Hopmann's growths are more frequently reported on the turbinated bones, especially the inferior, the most frequent site of hypertrophies.

Mackenzie (23), after his great experience, says he has only met with five cases of what he regards as papillomata; Bosworth (24), only one out of two hundred. Warts just within the vestibule are comparatively common, and are probably analogous to the pachydermia laryngis of Virchow and the hard warts of the skin. They owe their ætiology doubtless to the irritation of the finger nail and the flow of secretions. The neighborhood of all muco-cutaneous junctions is the favorite seat of epithelial proliferations—benign, specific, and malignant. I have in my possession microscopic sections of one removed from the convex surface of a deviated septum just within the columna.

Michel (25) is commonly credited with reporting the first case of nasal papilloma.

Zuckerkandl's (26) case is also well known. As neither of these were examined microscopically, they can only be regarded as *probable* instances.

The two cases of Aysaguer (27), although more satisfactory, may also be placed in the same category.

Butlin (28) reports a case of nasal papilloma and rejects Hopmann's classification.

Verneuil's (29) remarkable and unique case is only paralleled by the exuberance with which papilloma occasionally recurs in the larynx and in the bladder after operation. Noquet's first case was questioned by Moure, Ruault, and Chatellier, but he stated in his letter to me that a microscopic examination proved its genuineness. His second case, as stated above, was a polypus.

Solis-Cohen (30) reported a case combined with a similar growth in the larynx.

Cozzolino's (31) two cases appear genuine, but were not examined microscopically.

The case reported by Dr. Mulhall, of St. Louis, before this association last year, he informs me, was proved by microscopic examination to be a genuine papilloma. It will be understood, of course, that I have not attempted to give any complete list of nasal papillomata. This would be impossible from the confusion in nomenclature and diagnosis. The cases mentioned are principally those most frequently referred to in treatises on the subject.

Several other members of this association mentioned a few cases that had come under their observation (32). There is no special interest attached to their symptomatology or treatment that is not too well known to bear repetition.

In conclusion, in order to know more of these growths, it would give me great pleasure to make a microscopical examination and return stained sections of any nasal papillary growth removed by any one interested in the subject. If the operator will put the specimen for twenty-four hours into eighty-per-cent. and then into absolute alcohol, and send it to me with a short history, I will return the sections by mail.

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Discussion.

Dr. MULHALL: I did not hear all of Dr. Wright's paper, but I agree with his conclusion. In my specimen and report presented last year I took occasion to state that I doubted very much the propriety of Hopmann's statement that he had found so many cases of true papilloma. I removed such a growth, just before I left home, attached to the columna. It resembled a bunch of grapes, was pedunculated, and completely blocked the nostril. I found upon examination that it was a true papillary fibroma—the only case I have ever seen. I wondered why I had never seen any before when Hopmann had seen so many, but Dr. Wright has probably furnished the true explanation.

Dr. SHURLY: I was very much interested in this truly valuable paper we have just heard read; it is valuable for its investigations in the fields of histology and pathological anatomy. In these papillary growths we have another illustration of the law of evolution and the analogy between the animal and vegetable world. This process of *budding*, so prominently belonging to vegetable growth, is nevertheless destined in a few years to be accepted in explanation of the growth of tumors, a vegetable process manifested, as it were, by animal tissues.

Dr. J. SOLIS-COHEN: I believe that macroscopically a distinction may be made in many cases between papillary and other tumors in the contrast between the size of the growth at its base and at its attachment, the former being pedunculated. I think something of this kind was what led Hopmann astray. I remember that Dr. Jarvis some years ago pointed out this contraction at the point of attachment of papillomata, and I think that this led to the invention of the snare.

Dr. JARVIS: I had something to say upon this point last year. The only case of true papilloma that ever came to my notice I reported at that time. I have seen a number of cases, in both public and private practice, such as Hopmann describes, but I recall one case of true papilloma, and this was at the margin of the vestibule at its junction with the skin. I have also seen that condition of the turbinated bone alluded to by Dr. Solis-Cohen which Hopmann evidently mistook for a true papilloma. In the nostril proper I have never seen an instance of independent papilloma, but I have seen it in connection with other growths, such as mucous polypi, and think that it may easily be overlooked. I regard it as secondary to the polypi, and as not requiring special treatment. As remarked by Dr. Solis-Cohen, it is of more interest to us and to those in general practice to establish points of diagnosis upon macroscopic distinctions rather than microscopic. I pointed out in a former communication that chromic acid afforded a special means for distin-

guishing papillary from other growths. In papilloma the application of chromic acid to the base of the growth creates a peculiar eschar.

Dr. MACKENZIE: At our meeting a year ago I said that true papilloma of the naris was rare, having myself seen only two cases. It is more common anteriorly than in the posterior nares. It is probable that Hopmann has mistaken for papilloma those papillary vegetations characteristic of the transition stage from hypertrophic to atrophic rhinitis. It is not unusual for patients to expel these masses spontaneously, thereby gaining relief from previous nasal obstruction. As a matter of fact, however, this process of detachment and expulsion is degenerative, and the final condition of atrophy is worse than that which preceded.

Dr. WRIGHT: There is very little to be said in closing the discussion. I think that Hopmann was not so much led astray in his diagnosis as he was wrong in his nomenclature; he knew what they were, but called them by an objectionable name. If this is permitted, it introduces confusion into laryngological literature. I was not aware that he had recanted in a more recent publication, as I have not followed up the subject very closely. I must take exception to the statement of Dr. Jarvis that it is not very important to make a microscopical diagnosis between these tumors and others which resemble them. I think it very important.

Dr. JARVIS: I meant from a therapeutical point of view.

Dr. J. SOLIS-COHEN: If the word papilloma is to be rejected, perhaps some title such as "dendritic vegetations" would be a good substitute.

Dr. WRIGHT: I think it would be better to abandon the term papilloma altogether.

Paper.

A CASE OF SUPPOSED NASAL TUBERCULOSIS IN A MONKEY.

BY E. L. SHURLY, M. D.

I PRESENT the following history of an interesting case of what might be called nasal tuberculosis in a monkey:

Last October I obtained from a "museum" a "spider monkey" which was very ill and emaciated, suffering with a profuse discharge from the nostrils, and consequent difficulty of breathing. There was no cough, no paroxysmal dyspnœa. The animal had little appetite for solids, but was always eager to drink, which of course he could only do with difficulty. There was occasionally an elevation of temperature. A large quantity of a glairy discharge was ejected daily. The diagnosis of the menagerie men was tuberculosis, which was confirmed by a microscopical examination, revealing tubercle bacilli in large numbers. We determined to treat him exclusively by inhalations of chlorine gas and chloride-of-sodium water, which was done by placing him in the gas-cage from

three to five minutes twice daily. He was given also a good nutritious diet, generally fed with a spoon by our faithful William (the care-taker of the animals), who soon became very much attached to him. This treatment was kept up with good results throughout last winter up to July of this year, when the animal was killed with chloroform. At that time he ate well, was stronger, while the discharge from the nostrils was greatly diminished. From time to time the inhalations were reduced in number, and even stopped, sometimes for a week or two (during the spring and summer). Whenever he was actively treated in this way the tubercle bacilli would disappear, but when the treatment was stopped for a week they would reappear.

Of course we entertained no doubt of the tubercular nature of the malady. Judge of our surprise when the post-mortem examination revealed no microscopic evidence of tuberculosis anywhere, not even in the turbinated bones, although all the bony parts of the nasal passages were softened. However, Dr. Gibbes, at my request, went over the subject again, and his report from Ann Arbor was as follows:

I have examined monkey G., and am fairly puzzled by the appearances presented.

1. The nasal region: I have made sections from ten different parts, and can not find a trace of tubercle; the whole of the epithelium is gone, and there is chronic hypertrophy of the submucous tissue with what appears to be hypertrophy of the spongy bones, or rather a formation of cartilage rising from the bone; the intertrabecular spaces of the cancellous tissue are filled with a fibrous-looking tissue, and near the inner surface of the nasal passages show signs of an acute or subacute inflammation. I could find no epithelium there.

2. The lungs nowhere showed a tubercular formation, but some inflammatory changes, and in a few places some small masses of a dense homogeneous material looking like a clot. This is, I think, thrombosis.

3. The spleen presents no appearance of tubercle, but all through the cortex has the look of inflammation and contains several homogeneous patches similar to those found in the lungs

4. Liver: All through the interlobular tissue and around the intralobular veins of the liver there is a formation of new tissue consisting of cells and a small amount of stroma. What this tissue is I can not quite make out; it looks very like syphilitic tissue as found in the human subject.

5. The kidney shows the same sort of new tissue around the blood-vessels as that found in the liver; and at the hilum it is very strongly developed.

6. The intestines show no pathological change.

The inevitable conclusion, it seems to me, from this report, is, that the monkey contracted a severe suppurative inflammation of the nasal passages, including the neighboring sinuses, from the in-

troduction of some parasite or other foreign body. It could not have arisen from the teeth, because they were examined and found normal.

Whether the tubercle bacilli subsequently dwelt there, maintaining a saprophytic existence, so to speak, and whether, if the animal had received no treatment, the microbes would have become fixed in their habitation, are interesting questions. But why the bacilli did not seize upon such good soil and "camp on the monkey's respiratory tract," thereby inducing pulmonary tuberculosis, constitutes the puzzle. From the evidence presented in this case, how can we avoid the conclusion that the presence of tubercle bacilli is not alone an infallible sign of tuberculosis?

Paper.

CYST OF THE MIDDLE TURBINATED BONE.

By CHARLES H. KNIGHT, M. D.

THE middle turbinated body may become of pathological importance in various ways. Aside from malignant disease and syphilis, which are prone to attack this structure in common with other intranasal tissues, the lesions of this body with which we usually meet may be divided into two classes—those involving its mucous membrane, and those affecting its bony framework. The former are more frequent and are more remediable, since osseous changes are always associated with an advanced degree of disease of the mucous membrane.

The object of the present paper is to add to the literature of a very interesting pathological change in the bony framework of the middle turbinated body, which, notwithstanding its frequency, has had but little notice. Many years ago one of my associates at the Manhattan Eye and Ear Hospital called my attention to a singular condition of a middle turbinated body which he had just removed with a cold-wire snare. We found that the loop had cut through a mass of polypoid tissue attached to a bony shell, presenting a depression in which the tip of the little finger could readily be placed. The bone was for the most part extremely thin, so that in the process of cutting through the mass the existence of osseous tissue was not recognized. The mucous membrane externally, which had not undergone polypoid degeneration, was in a state of decided

atrophy. The interior of the cyst was lined by a pale, thin membrane. No attempt was then made to examine the tissues microscopically. Since that time numerous similar instances have come under my observation, and my friend Dr. W. H. Park has been kind enough to make sections and give me the results shown by the microscope. For the photographic reproductions I am indebted to my assistant, Dr. W. P. Brandegee. The illustrations show a side-

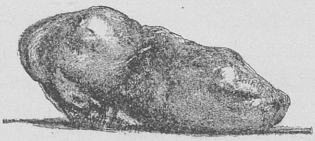


FIG. 1.—Cyst of right middle turbinated bone. External surface.

FIG. 2.—Cyst of right middle turbinated bone. Interior.

view and a view of the interior of one of the largest of these cysts with which I have met.* The patient from whom it was obtained was a middle-aged woman, whose right nostril was completely occluded by a mass which could easily be seen without a speculum when the tip of the nose was raised, and which at first glance appeared to be a large myxoma. But on palpation it was found to be hard and resistant, and there was no sign of a polypoid condition of the mucous membrane. On the contrary, the soft parts were atrophied. The septum was somewhat deviated to the left, and there was some hyperplasia of the mucous membrane in the left naris without apparent bony change.

The subjective symptoms complained of were impeded nasal breathing, impaired sense of smell, and persistent headache. The voice had a slightly nasal quality and there was considerable annoyance from post-nasal discharge. The obstructed nostril was freed by means of the cold-wire snare and cutting forceps. The portion removed with the snare and shown in the photographs measures an inch and a quarter in its antero-posterior diameter, half an inch vertically, and half an inch laterally. The greatest depth of the cyst through which the wire passed was five eighths of an inch. The part removed with the snare represents only about two thirds of the entire cyst. The remnant was removed with cutting forceps so as to relieve all pressure and obstruction and permit free drainage. The

* (Zuckerkandl, whom nothing in nasal pathology seems to have escaped, shows a typical example of this deformity in his classical work, *Normale und patholog. Anatomie der Nasenhöhle*, Tafel 2, Fig. 6.)

patient experienced great relief from the operation, which was done under cocaine, and was followed by no unfavorable developments.

The clinical history in cases of this kind must of course vary with the degree of enlargement. In nearly every case the symptoms most prominent are those referable to pressure from the distending cyst, such as hemicrania and neuralgias of the fifth pair. These reflex neuroses were especially marked in cases described by Glassmacher,* McBride,† and others. The most serious complication likely to arise, and one more apt to occur if myxomata coexist, is empyema of one or more of the adjacent sinuses, obstruction of the *ostium maxillare* being a frequent cause of antral disease. It is a remarkable fact that this cystic transformation but seldom involves the inferior turbinated. I have myself never seen it except in the middle. A single case has been reported by Schaeffer‡ in which the inferior turbinated was affected, and Bayer has reported a case in which the superior turbinated was involved. It is also noticeable that in a certain proportion of cases the condition is associated with well-defined myxomata or polypoid degeneration. In my experience more than half the cases presented this feature, and in every case there was more or less atrophy of the mucous membrane. Children seem to be exempt. None of my own patients was under twenty years of age, most of them were past middle life, and the majority were females. This condition requires to be distinguished from osteoma, myxoma, and mucocele of the ethmoidal cells. But little difficulty should be found in reaching a correct conclusion if we carefully observe the origin and situation of the tumor, its immobility, its hardness and at the same time its fragility, and possibly its translucency (Zwillinger). Osteomata are harder and do not permit of penetration by means of the exploring needle, and, moreover, are said to be movable at their inception. Myxomata are freely movable, are soft and yielding, and are generally multiple. Mucocele of the ethmoidal cells is a rare condition, presenting many of the features of ordinary myxoma, and could hardly be mistaken for a bony tumor.

The method of preparing the specimen for microscopic examination was as follows: The cyst was kept for eighteen days in a saturated solution of picric acid, and was then washed out in alcohol. It was then placed in absolute alcohol for twenty-four hours, then transferred to equal parts of absolute alcohol and ether, in which it

* *Berl. klin. Woch.*, No. 36, 1884, p. 571.

† *Brit. Med. Jour.*, 1888, p. 1116.

‡ *Chir. Erfahrungen in der Rhinol. und Laryngol.*, Wiesbaden, 1885.

was retained another day, and finally was immersed for twenty-four hours in a solution of celloidin in absolute alcohol and ether. It was then imbedded in celloidin, cut, and stained with hematoxylin and eosin, and mounted in Canada balsam.

The section, of which an excellent drawing has been made by Dr. Van Gieson, consists of one half of a small and probably recent cyst, which has been cut vertically at a right angle to its long axis. Examined from without inward, we find externally a layer of stratified epithelium, then a layer of connective tissue of considerable thickness, rich in cells, and quite vascular. This structure is rather more dense in the immediate neighborhood of the bone. The thickness of the bone varies greatly in different regions, and distributed along its inner surface may be seen a row of osteoblasts. Lining the bone is a layer of loose œdematous connective tissue resembling myxomatous tissue. Finally, a complete row of columnar ciliated epithelium lines the inner wall of the cyst.

Two theories have been advanced in explanation of this condition. The first is that it is a result of a rarefying osteitis, similar to that occurring in the long bones. The second theory, recently sustained by Greville Macdonald, supposes the lesion to have its origin in an osteophytic periostitis, doubtless secondary to a hypertrophic rhinitis involving the soft parts. The margin of the bone begins to curl outward and upward until it meets the body of the bone at some point where at length adhesion takes place. Thus, eventually, a closed cavity is formed, lined within and without by mucous membrane. The external membrane atrophies or becomes polypoid, or its hypertrophied condition may persist. The internal membrane continues to secrete until the cavity becomes distended, when, as a result of pressure, the glandular elements undergo absorption and the membrane becomes very much attenuated. In some cases the lining membrane will be found to have become polypoid and granulating, giving rise to the formation of pus, perhaps in sufficient quantity to simulate abscess. Macdonald, in an article on Cyst and Abscess of the Middle Turbinated Bone (*Lancet*, London, June 20, 1891), remarks that abscess "may possibly originate in a cyst produced by retained secretion." The contents of these cysts vary in character. The name given them by French and German writers implies that they contain air, which is doubtless generally the case. But it is equally true that they sometimes contain fluid, mucous or purulent, as the case may be. Unless one could remove a cyst unbroken, which I never have succeeded in doing, it would

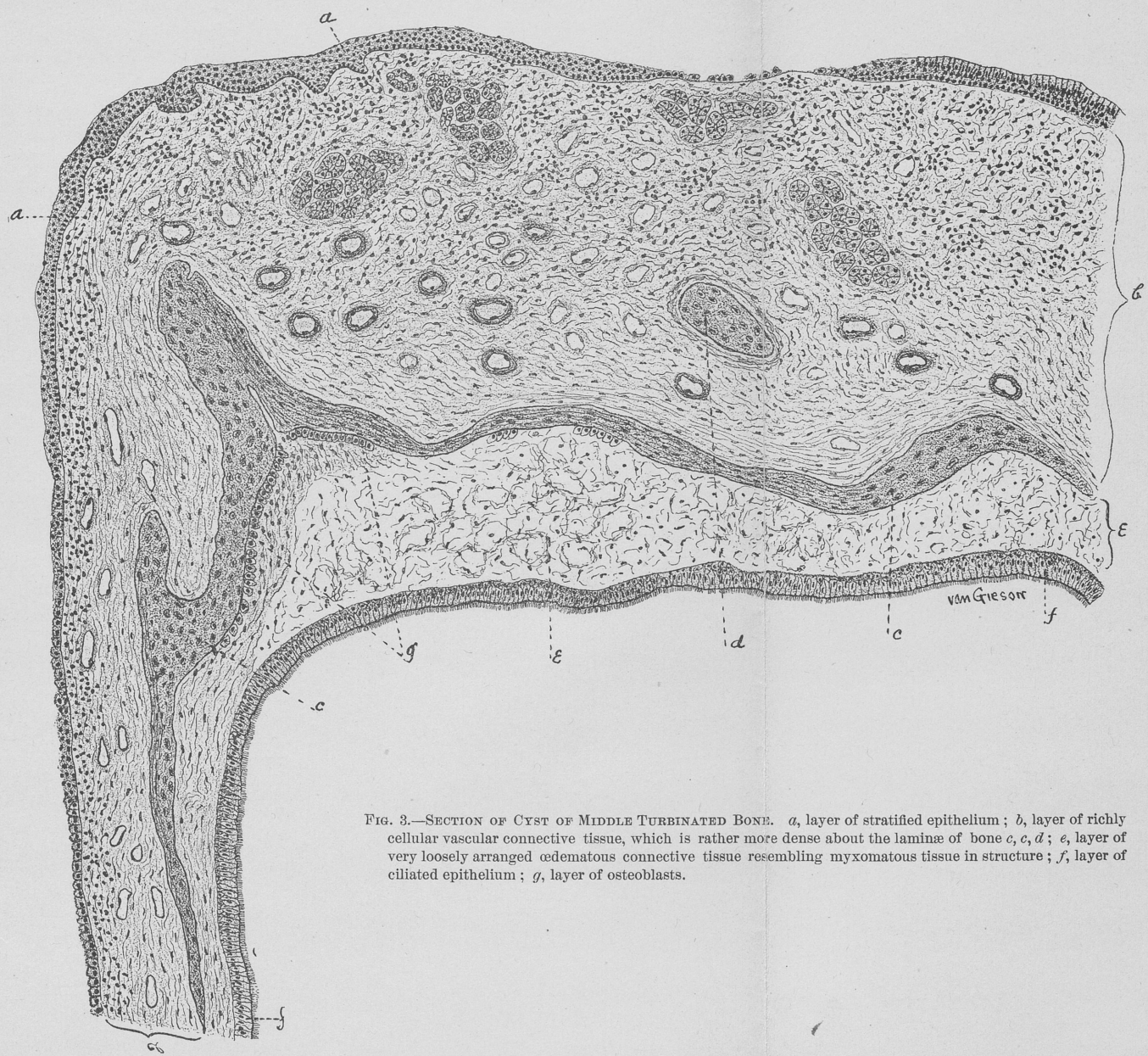


FIG. 3.—SECTION OF CYST OF MIDDLE TURBINATED BONE. *a*, layer of stratified epithelium; *b*, layer of richly cellular vascular connective tissue, which is rather more dense about the laminæ of bone *c*, *c*, *d*; *e*, layer of very loosely arranged œdematous connective tissue resembling myxomatous tissue in structure; *f*, layer of ciliated epithelium; *g*, layer of osteoblasts.

be somewhat difficult to determine the quality and quantity of its contents. The manipulations attending its removal must of necessity provoke secretion and obscure its source. In some cases the cyst is multilocular, or its cavity is traversed by numerous bands of bony or membranous tissue. Bayer (*Rev. mens. de laryngologie*, etc., June 1, 1885) minutely describes a multilocular cyst of the right middle turbinated bone which he punctured with the galvano-cautery. The tumor occluded the naris and displaced the sæptum. It finally disappeared, and the parts regained their normal contour in the course of two months, after repeated applications of the galvano-cautery and the use of injections of chloride of zinc and phenic acid. A remarkable feature of this case was a recurrence of cystic degeneration involving not only the middle but the superior turbinated as well. In the largest of the specimens exhibited and shown in the photographs, the wall of the cyst is quite thick on one side and honeycombed. Elsewhere it is thin as tissue paper. It is difficult to conceive that the appearance depicted in this particular specimen could have been developed in the manner suggested by the second theory. On the other hand, I have met with several cases in which the cyst was as yet incomplete and apparently in course of formation by this process of curvation. The existence of columnar epithelium provided with cilia still further supports, and indeed may be said to prove, the second theory. At the same time other conditions can be satisfactorily explained only by assuming an inflammatory process in the bone itself.

The indications for treatment are clear enough, and may be enumerated as follows:

1. Interference with nasal respiration.
2. Prevention of nasal drainage.
3. Reflex neuroses.
4. Anosmia.
5. Impaired quality of voice.

Unless the cyst is so large as to cause pressure or impede nasal breathing, it is seldom necessary to interfere. The bone is usually so thin that it may easily be crushed with forceps if desirable, and redundant tissue may be removed with cutting forceps. In large cysts, especially if associated with polypoid growths, the cold-wire snare will be found to be most serviceable. Schmiegelow,* who has carefully described this condition under the name "*transformation kystopneumatique*," prefers to puncture the cyst with the galvano-

* *Rev. de laryngologie*, etc., May 15, 1890.

cautery and remove its walls to the necessary extent with cutting forceps and scissors. A similar method is advocated by Zwillinger,* who reports two cases, and who claims to detect the presence of the cyst by translumination and puncture. In my experience a diagnosis is usually possible without resorting to either of these methods, and the advantage of the galvano-cautery over other procedures as a mode of treatment is not apparent. The pain of the operation, in spite of the free use of cocaine, is sometimes considerable, and subsequent reflex neuralgias are not infrequent. Hæmorrhage is seldom excessive, and in several of my cases it was surprisingly scanty.

Discussion.

Dr. WRIGHT: I am very much interested in the paper and specimens. Some years ago, after I had removed a bony growth from the middle turbinated bone, as a matter of routine, I decalcified it and made a number of sections of it. I was very much surprised to find that it had really contained a cyst; the contents were unfortunately not noted. The walls were entirely bony, and were covered with remains of a grumous material from the altered fluids. I could not distinguish an epithelial lining to the cavity; nothing but bone-cells. Shortly after, I read Schmiegelow's paper upon this subject; his explanation was that they are congenital. I wrote to Schmiegelow and inquired if he had found epithelium in these cysts, and he replied that he always had found epithelium in them. I had thought that possibly it was due to ordinary osteitis, causing hypertrophy, and then rarefying osteitis occurred with the formation of cysts; but, of course, if epithelium exists, the question is settled.

Dr. CASSELBERRY: Some years ago I made reference to a case of nasal myxoma which had apparently undergone calcareous degeneration. It was hollow, and formed of egg-shell-like substance, lined within by myxomatous tissue and without by the same, and also mucous membrane. It was so large as to totally occlude the nostril and push the septum far to the other side. It could not be removed entire, as it was brittle; it occupied the position of the middle turbinated body. After hearing this paper, I think that the explanation given of the mode of formation of cysts is probable, and that my case was originally an outgrowth of the middle turbinated body, followed by hypertrophy, and finally formation of a cyst.

Dr. KNIGHT: One of the most interesting points in cases of this kind is the character of the membrane lining the cyst. As represented in the drawing and as seen in the section under the microscope, it consists of columnar ciliated epithelium. As time passes and the lining membrane undergoes degenerative changes the cilia disappear, and in cysts of long duration we should not expect to find the epithelium preserved. The

* *Wiener klin. Wochenschrift*, No. 19, 1891.

congenital theory sustained by Schmiegelow—which is substantially identical with the idea of Zuckerkandl—that the ethmoid cells may extend into the body of the bone, seems to me untenable for the reason that the lesion is not met with clinically in early life.

Paper.

VARIOUS FORMS OF DISEASE OF THE ETHMOID CELLS.

By F. H. BOSWORTH, M. D.

FOR a number of years past, and since the diseased conditions of the ethmoid cells have been recognized, it has been the custom to group all forms of morbid action in this region under the general designation of "ethmoidal disease." With our increased knowledge and familiarity with morbid manifestations in the nasal cavity at the present day, it seems to me incumbent upon us that we should abandon this vague term of ethmoid disease, and, certainly in the majority of our cases, make a more definite diagnosis, especially since, from a clinical point of view, diseased conditions in these cells manifest themselves by appearances and symptoms entirely distinct in different instances. It is only within the past five or six years that our attention has been particularly called to disease of this region, and during that period I have had under my own personal observation and fully recorded in my note-book twenty-seven cases under the designation of "ethmoidal disease." I have made a somewhat careful analysis of these cases, and I find that they group themselves into five varieties.

First, myxomatous degeneration without purulent discharge. Four of my cases were of this variety, of which a single one is fairly illustrative:

Case I.—C. E. A., aged sixty-one, presented with a history of nasal stenosis and repeated colds in the head, dating back for ten years, and for six years had been a sufferer from perennial asthma. Examination showed the middle turbinated bodies in both nares swollen to such an extent as to nearly approximate the septum, while at the same time the mucous membrane was in a state of myxomatous degeneration, presenting the bluish-white, gray aspect of ordinary nasal polypi and yet showing no pedunculated tumors. This patient was seen at varying intervals, and the sessile masses of myxomatous tissue removed by means of the snare were constantly reproducing themselves, but never assuming the form of pedunculated tumors. The intranasal condition was finally overcome by snar-

ing out the anterior portion of the middle turbinated bodies, thus opening into the ethmoidal cells of either side, and, as opportunity offered, these cells were to an extent excavated, and the local difficulty overcome in this way by means of the snare and curette.

In former years I have been accustomed to regard this condition of myxomatous degeneration as simply the precursor of ordinary nasal polypi. My experience with this case and that of three others very similar has led me to the belief that the diseased condition of the mucous membrane covering the middle turbinated body in these cases is to be regarded as a symptom of ethmoid disease, rather than as constituting an independent morbid lesion. The intracellular condition in these cases is probably of an inflammatory character, rather than neoplastic.

The second group of cases is that characterized by extracellular myxomatous degeneration, with purulent discharge from the ethmoid cells. As an illustrative case, the following is given:

Case II.—G. I. S., aged thirty-seven, presented with a history of intranasal trouble extending back twenty years, and which for three years had given rise to an ill-smelling, purulent discharge from the right side of the nose. An examination revealed the right middle turbinated bone notably swollen and covered with mucous membrane in a condition of myxomatous degeneration, which anteriorly assumed the form of small, sessile polyps. A considerable amount of bright-yellow pus was found both on the middle and lower turbinated body, the source of which, upon careful inspection, was found to be in the superior meatus, thus clearly indicating its source in the posterior ethmoid cells. The myxomatous tissue was removed by the snare, as also a considerable portion of the middle turbinated bone, thus uncovering the ethmoid cells, which were subsequently excavated by means of the electric drill and burr. The result has been a very marked improvement in the symptoms. The patient, however, is still under care.

Seven cases of this kind have been under observation, three of which were practically identical with the case already given, while in four the disease was complicated with disease of the antrum This latter affection was eliminated by opening the antrum and subjecting it to thorough irrigation; and, although in these cases the ethmoid affection was suspected, the diagnosis was only rendered certain by the fact that the pus discharge persisted after the antral disorder was brought under control. Of these seven cases, two were cured, two were seen but once, and the other three are notably improved and still under treatment.

This form of ethmoid disease is practically a later stage of the first form, as an investigation of the histories shows that whereas in the first variety the disease had persisted from but five to ten years, in the variety under consideration the disease had existed from fifteen to twenty-five years, the purulent discharge setting in after the milder form had persisted from eight to fifteen years.

A third variety we designate as "purulent ethmoiditis with nasal polypi." Thirteen of these cases have been under observation, in seven of which the ethmoid disorder was complicated with disease of the antrum, this latter affection being eliminated, as in the former variety, by opening this cavity through the alveolar process and subjecting it to proper irrigation. The following is a fairly illustrative case :

Case III.—Mrs. S., aged sixty, for twenty years had suffered from nasal stenosis, with more or less profuse discharge from each nostril, which, on examination, was found to be due apparently to the existence of nasal polypi. At intervals of from ten days to a fortnight perhaps from twenty-five to thirty growths were removed from each nasal passage until the passages above were clear. Notwithstanding the treatment, a more or less profuse purulent discharge persisted from the right side, which finally I determined was due to the existence of antrum disease. This cavity was perforated through the alveolar process, and found to contain a large amount of offensive pus. Under the ordinary treatment this source of the purulent discharge was controlled, notably mitigating the symptoms. The pus discharge continued, and I subsequently determined that its source was in the ethmoid cells, the middle turbinated body being notably swollen. These cells were now opened by means of the Jarvis snare and curetted. This treatment was repeated on several occasions, and the patient is practically cured, although there is a moderate amount of muco-purulent discharge still persisting from the neighborhood of the superior meatus, evidently from the broken-down ethmoid cells.

Of the seven cases of this form of ethmoid disease which were complicated with antrum disorder, both the antrum and ethmoid cavities were opened in six, while in the remaining six cases in which there was no antrum disease, the ethmoid cells were opened. In those cases which were complicated with antrum trouble the disease had existed for periods varying from ten to twenty-five years ; and while the antrum disease was practically cured, the ethmoid trouble was so far relieved as to prove of but little annoyance, although in no instance, probably, would it be safe to say that a radical cure was accomplished. Of the cases uncomplicated with antrum disease,

three were cured, while in the remaining three there was very marked improvement.

A fourth variety of ethmoidal disease we may designate as "intracellular polyp without pus-discharge," of which one case has come under my observation:

Case IV.—G. H., a female, aged twenty-one, presented with a history of nasal stenosis, dating back three years, giving rise to no prominent symptoms other than a disposition to repeated colds in the head, with moderate mucous discharge. An examination showed the right middle turbinated bone swollen to perhaps twice its normal contour, and in contact with the septum. The mucous membrane covering it presented something the aspect of myxomatous tissue. A snare was placed about it and the shell-like cap, as it were, removed, upon which there came into view a large, soft, gelatinous polyp, completely filling the cavity. This was evulsed by means of the snare, the result being an entire cure.

A fifth class of cases may be designated as "intracellular polyp with purulent discharge," two of which have come under my observation. The first case is as follows:

Case V.—Mrs. C. D., aged thirty-two, presented with a history of catarrhal trouble, dating back ten years, giving rise to a more or less profuse dropping of muco-pus into the throat, with frequent colds in the head and nasal stenosis. An examination of the nasal cavity showed the middle and lower turbinated bodies of both sides coated with thin, greenish-yellow, dry, purulent incrustations, upon the removal of which by a pledget of cotton the membrane beneath was found to be in a fairly healthy condition, although both middle turbinated bones were slightly swollen and presented somewhat the appearance of myxomatous degeneration, while from above each of these bodies there seemed to issue a small amount of bright-yellow pus. After a certain amount of local treatment directed to the nasal cavities, which failed to relieve symptoms, I determined to open the ethmoid cells, which was done on both sides by means of the Jarvis snare. The convex face of each middle turbinated body, being removed in this way, revealed on each side a number of large, soft, semi-translucent, gelatinous polypi, which were extracted by means of the snare and curette in a number of sittings. The result in this case was an entire cure.

The second case of this variety which came under my observation was subjected to similar treatment, with probably equally favorable results, although this patient did not return for inspection.

I have thus divided my cases into five varieties. As before stated, the second variety is undoubtedly a later stage of the first, while the fifth variety is probably a later stage of the fourth, thus giving

us practically three classes of cases which present distinctive features, which ordinarily should be recognized by careful examination, these three distinct varieties being extracellular myxomatous degeneration, purulent ethmoiditis, and intracellular myxomatous degeneration.

As to the cause of myxomatous degeneration, whether intracellular or extracellular, I have no suggestion to offer. In cases which have come under my observation the disease seems to have developed without any traceable cause. As regards the purulent ethmoiditis, as we have seen, in all of the thirteen cases which I have recorded, it occurred in connection with nasal polypi, and in seven there was antrum disease. This would suggest, perhaps, a certain substantiation of Woakes's theory, that all nasal polyps are due to a necrosing ethmoiditis. I have elsewhere taken decided issue with this view of Woakes's, and it seems to me that a more careful consideration of these cases would lead to the suggestion that, instead of the polyps being the result of necrosing ethmoiditis, the ethmoiditis was rather the result of the polyps. This view is certainly emphasized when we consider that more than half our cases of ethmoid disease with polyps have been complicated with antrum disease. As we know, the starting point of nasal polyps, in the very large majority of cases, is in the hiatus semilunaris, in which the orifices of both the antrum and anterior ethmoid cells meet. The first effect, therefore, of the development of nasal polyp would be the setting up of mechanical obstruction to the exit of the normal mucous secretion from both these cavities. The natural result of a damming back of a mucous secretion is the development of a purulent inflammation. I take it, then, that the origin of both the antrum and ethmoid disease lies in the mechanical obstruction which is caused by the presence of the nasal polypi, and that these growths are the cause, therefore, and not the result, of the ethmoid disease.

It might seem that that variety which I have designated as extracellular myxomatous degeneration, either with or without purulent ethmoiditis, is the early stage of nasal polypus, therefore reducing our varieties to but two, and yet a number of the cases of the extracellular myxomatous degeneration which have come under my observation have persisted for ten, fifteen, or twenty years without developing genuine nasal polypi. Hence I am disposed to think that the broad and diffuse myxomatous degeneration, while developing occasionally small, sessile polyps, constitutes an entirely distinct variety.

I have thus presented an analysis of my cases, with an attempt at classification, which, while perhaps not perfect or entirely clear, may serve in some small way to eliminate from our nomenclature that very general and unscientific term "ethmoid disease," and help us perhaps to a more definite designation and classification of the various affections which we encounter in the ethmoid cells, and certainly enable us, with this diagnosis, to give more intelligent opinions and to arrive at a more definite prognosis, and undertake the treatment with a clearer apprehension as to what results can be counted upon.

Perhaps the most interesting point in this connection, certainly the most important, has to do with the question of diagnosis and treatment. In the first variety which I have described—viz., extracellular myxomatous degeneration without pus—the diagnosis must be based entirely on the swollen condition of the middle turbinated bone, together with the gross appearances of the mucous membrane covering it, which presents the pale, bluish-gray color so characteristic of myxomatous degeneration, the appearance being practically that of an ordinary nasal polyp. Its immobility, however, as determined by the probe, easily demonstrates the condition to be one which is confined to the mucous membrane alone. I have never seen this appearance in any case in which I was not convinced that it indicated a diseased condition of the ethmoid cells.

In those varieties of the affection which are attended by purulent discharge, whether in connection with simple myxomatous degeneration or with nasal polypi, the diagnosis is made by carefully tracing the source of the purulent discharge and eliminating the possibility of its arising from the maxillary sinus. If the anterior ethmoid cells are involved, the exit of the pus into the nasal chambers, of course, is from beneath the middle turbinated bone, the same point from which pus from the antrum escapes. In such a case the diagnosis can only be made after eliminating the question of antrum disease by opening this latter cavity and subjecting it to proper irrigation. If the posterior ethmoid cells are the source of purulent discharge, this can be determined by the fact that the exit from these cells is upon the upper surface of the middle turbinated body.

In sphenoidal disease the source of the pus discharge is also above the middle turbinated, but in this affection it makes its exit so far back as to practically drain into the naso-pharynx, whereas in disease of the posterior ethmoidal cells the pus drains into the nasal cavity at a point easily observed by direct ocular inspection through

the nostril—viz., at a point about the junction of the middle and posterior third of the middle turbinated body.

As regards the question of diagnosis in the intracellular variety of myxomatous degeneration, whether with or without pus, this can only be determined after opening the cells by removing the cap of the middle turbinated body.

Of course, in all that has been said above we have taken the ground that the ethmoid cells practically extend so far into the middle turbinated body that, by removing the convex bony shell which forms this body, free access is obtained to the ethmoid cavities. When this is not the case it is a very simple matter to enter the cells with the electric burr after the bony shell has been removed; a small, strong curette also answers admirably for this purpose.

As regards the treatment of the disease, as is easily inferred from what has been said before, this consists in freely opening the cavity by means of the snare or other suitable instrument, and subsequently removing the diseased tissue, as far as possible, by means of the drill, burr, or curette. Where the disease is purulent in character we have to do with an affection which consists essentially of a purulent inflammation of the mucous membrane lining a number of small cavities, and the indication for treatment consists in opening every individual cell which is involved in the purulent process. Whereas in my own hands the burr and drill have been of notable service, I should probably give the preference in usefulness to the small spoon-shaped curette, which can be used with considerable freedom, and, although necessarily painful, has never in my hands been attended with any bad results.

I have made no special reference in the foregoing to the question of carious bone. In none of the cases which I have met with has there been any extensive caries or necrosis; and yet necessarily many of the small partitions which constitute the trabeculæ of the ethmoid are in a more or less completely necrosed condition, as shown by the use of the probe. This, however, does not in any way complicate the prognosis or treatment.

Discussion.

Dr. Mackenzie: I take great pleasure in saying that Dr. Bosworth has read a paper with the contents of which I can entirely concur. I wish to say this in opening the discussion on the paper that we have just heard, and to thank him for that paper. I agree with him in his

remark about the confusion of cause and effect that has been made by Woakes, whose theory is only explainable on this ground.

Dr. JARVIS: I can confirm the remark made by the reader of the paper concerning the danger of removing the cap from the turbinated bone and opening the cells, and also of removing the bone, on account of the existence of a myxomatous growth. In such cases the unfortunate patient may perish with meningitis, from extension of the inflammation through the ethmoid cells. After the removal of the posterior end of the middle turbinated bone the nostril may be found to be occluded by a soft myxomatous growth. It is my rule not to stop until all this obstruction is removed. I believe we may have pure ethmoiditis. I recall a case of blood poisoning in which I was called in consultation after pyæmic symptoms had set in. I drilled away the side of the septum into the body of the turbinated bone, and in this way obtained free drainage. It required a number of operations, but the patient made a good recovery. It is of interest to note that in these cases of non-myxomatous ethmoiditis we often have to deal with a condition of malformation in which the septum is deflected to one side so as to completely occlude the upper part of the naris. I recall one case, that of a lady, who had traveled extensively without obtaining relief, in whom the trouble was removed by chiseling away the septum until the channel was clear. I agree entirely with Dr. Bosworth in his views upon the treatment of ethmoiditis.

Dr. WRIGHT: I did not understand whether or not Dr. Bosworth referred to cases of acute ethmoiditis; but since Dr. Jarvis has mentioned such a case I may also refer to one which I saw last spring. My observation is that these patients generally get well after thorough cleansing of the nose; washing it out frequently with a syringe or spray is often sufficient. Such an operation as Dr. Jarvis resorted to would rarely be necessary.

Dr. MULHALL: I subscribe to the views expressed by the reader of the paper and to his remarks upon a class of diseases which we all recognize and which he has grouped in a way that will be of great value. I wish simply to state that I coincide with his statement that in the class of cases referred to we are tempted to radical measures for the relief of the condition when milder ones would answer and are safer. I recall a case coming under my observation in which the middle turbinated bone was removed and the patient died; however, the operation was not done aseptically; it was before the day of the introduction of present measures into surgery. I now use the curette, but always take the precaution to do the operation in a perfectly aseptic manner. The danger of opening the ethmoid cells and of lighting up inflammation is such as to make such measures indispensable.

Dr. JARVIS: I should like to say in reply to the remark of the last speaker, with reference to securing asepsis, that there is no method that will equal the use of the cold wire. I have never seen septic symptoms produced by the application of the cold wire in operating. I have seen

such symptoms after the use of drills, but I think as long as the cold wire is used we can proceed with impunity. I do not think that any gentleman present can report a single case in which septicæmia followed an operation with the cold wire snare.

Dr. Bosworth: I have nothing to say in closing the debate, but I should not let the occasion pass without acknowledging the remarks of Dr. Mackenzie and my gratification at having him agree with my conclusions. With regard to the theory of necrosing ethmoiditis of Woakes as the cause of all cases of nasal polypus, I think he still stands almost alone in his views.

Paper.

THE RADICAL TREATMENT OF NASAL POLYPI (MYXOMATA). A SUPPLEMENTARY PAPER.

By W. E. CASSELBERRY, M. D.

A FEW years ago, in a somewhat exhaustive paper on Nasal Myxomata, read before the Chicago Medical Society, I advocated a vigorous surgical treatment having for its object, first, access to and then eradication of the actual seat of attachment. Zuckerkandl's researches on cadavers were summarized (*Anatomie der Nasenhöhle*, S. 64 *et seq.*), by which he demonstrated that *two thirds* of all nasal myxomata originated from the middle meatus, beneath the middle turbinated body, and that approximately *two thirds* of this number took origin from the edges of the hiatus semilunaris, which is a crescentic opening into the infundibular space, whose upward and downward continuations enter respectively the frontal and maxillary sinuses and which is located high up beneath the middle turbinated body. This numerical deduction harmonizes with our own operative experience.

In Fig. 1, which is accurately drawn from a divided skull, the middle turbinated body has been broken and turned upward in order to disclose the *hiatus semilunaris* and *bulla ethmoidalis*.

Ætiology.—Well-developed myxomata rarely spring from flat surfaces, but from free edges, and the edges of the hiatus semilunaris lie at a narrow point in the nostrils, partly inclosed by the curtain-like turbinated body in such a manner that drainage becomes easily defective by reason, further, of abnormally narrow nostrils, hypertrophic rhinitis, septal deflection, and excrescences. Mucopurulent secretion, imprisoned and decomposing in the middle meatus

and around the middle turbinated body, excites irritation and furnishes a sodden soil most favorable to polyp growth.

While multiple myxomata not infrequently occasion intranasal expansion, in other cases I have observed an undue narrowness, especially in the superior nasal region, conjoined, perhaps, with abnormally large or incorrectly shaped middle turbinated bodies by which pressure was exerted on contiguous parts. This observation should be received in conjunction with the thought suggested by Hopmann,* that the primary lesion which leads to the development of mucous polypi is in some impairment of venous escape,

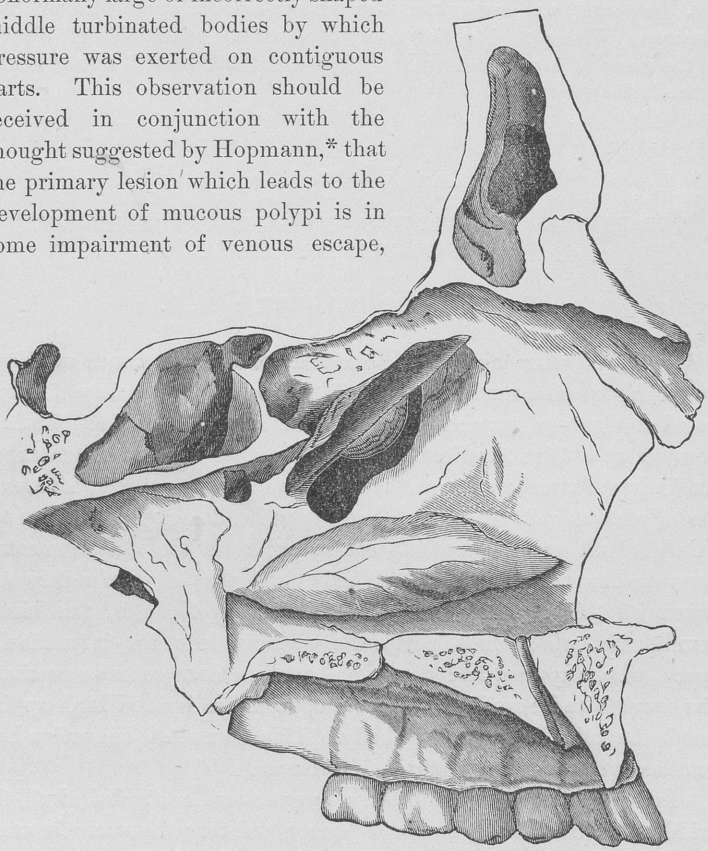


FIG. 1.

resulting in an œdematous condition of the membrane. True vasomotor paresis also, by favoring œdematous transudation, exerts a like effect.

I am of the opinion, therefore, that the explanation of the so-called myxomatous diathesis will be found in whatever local ab-

* Bosworth, *Diseases of the Nose and Throat*, i, 392.

normity or neurological defect may be discovered in individual cases to be the fundamental cause of simple œdema or vaso-motor impairment.

Myxomata are connective-tissue neoplasmata with a maximum of mucin-containing serum and a minimum of embryonic or stellate cell proliferation; therefore, also, whatever favors rhinitis leading to hyperplasia will *predispose* to myxomata, especially when acting in the presence of the conditions enumerated which produce œdema of the upper nasal region. Gravity determines the shape of the tumors when pedunculated, and possibly in their incipiency it favors development on free edges; but the edges of the hiatus semilunaris are not the only points of attachment. Polypi may spring from the bulla ethmoidalis just above or from the middle turbinated body itself, it being remembered that this particular nasal zone—where occur hyperplasia, narrowness, pressure, œdema, and bad drainage—is composed chiefly of edges or projecting irregularities, to some of which the tumors *must* be attached. Then, too, we do observe *sessile* myxomata, or, what is almost identical therewith, myxomatous degeneration of the turbinated bodies. Moreover, gravity can scarcely conduce to the further growth of polypi that are already tightly impacted within the nasal cavities. Altogether, I believe the ætiological effect of gravity to have been somewhat exaggerated.

In view of these ætiological factors, the importance of radical surgical measures was emphasized in the paper referred to, first, for

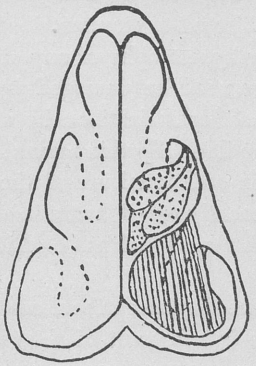


Fig. 2.

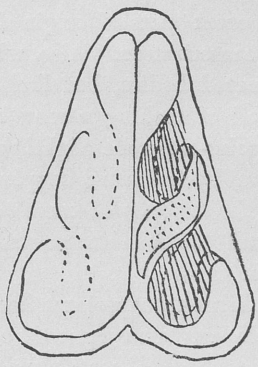


Fig. 3.

the establishment of a free nasal passage for respiration, drainage, vision, and instrumental manipulation, and to this end the reduction

of hypertrophied turbinated structures by the electro-cautery, the removal of septal excrescences by the saw, chisel, or motor drills, correction of septal deflection, and excision of hypertrophied tonsils or adenoids.

Figs. 2, 3, and 4, representing myxomata springing from the left middle meatus complicated by hypertrophy of the turbinated bodies and by septal excrescence (Fig. 4), will render more lucid the principles of treatment thus briefly expressed. But, as pointed out, the real success of the treatment, after having gained access to the polypi, consists in tracing them to their points of attachment and thoroughly cauterizing these so-called roots, if not at the same sitting, then at the next, remembering meanwhile the exact spot. Knowing the hiatus semilunaris to be a favorite point of origin, those polypi which proceed from beneath the middle turbinated body could be followed up by insinuating a fine electrode, slightly curved on the flat, to this point; and those which spring from the superior meatus posteriorly must be reached by a properly curved point-electrode introduced through the mouth and naso-pharynx, always under the best illumination.

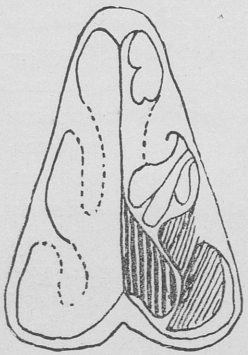


Fig. 4.

It is not meant that any considerable surface area of mucous membrane should be seared over, but that, as nearly as possible, exact spots of origin should be subjected to circumscribed but deep cauterization. Also, when reducing hypertrophy of any of the turbinated bodies, but little surface area need be damaged by our method of making narrow but deep linear cauterizations by means of a point-electrode slightly curved on the flat. By this means, after removal by the snare, supplemented by an occasional use of the forceps, the *majority* of cases can be permanently cured, but a *minority* will still continue unrecovered; and with *these* I did not deal in my former paper.

Additional experience has convinced me that exceptional cases are curable only after *removal* of the *antero-inferior part* of the *middle turbinated body*—certainly a radical procedure and one very proper for discussion by this society.

When the superior nasal zone is very narrow, and the turbinated body in contactwith the septum and close also to the outer wall,

cauterization will only be followed by adhesions, with further obstruction to drainage. Moreover, the space is insufficient through which to insert an electrode to the region of the hiatus semilunaris; also when the bone of the turbinated body is itself enlarged or malformed it presents like impediment to access and treatment.

The removal of the antero-inferior end of the body then suffices to provide space for the passage of instruments to the seat of attachment for eradication of the polypi, to afford a proper drainage channel preventing accumulation of muco-purulent material, and to relieve pressure upon the venous escape and œdema, thus guarding against recurrence.

The turgid, swollen, water-soaked aspect of the membrane rapidly assumes a healthier appearance, and the inferior turbinates, when previously congested, will retract as a result of subsidence of irritation above.

I mean that in certain rarer cases such action seems essential to permanent recovery within reasonable time, and the qualification concerning *duration* of treatment I consider important, for if treatment is permitted to drag along through years, the patience and confidence of the invalid will be exhausted, he will drift from one to another, and remain practically unrelieved, much to his own disadvantage and to our professional discredit.

The size of piece to be abscised one determines by individual circumstances.

The question next arises: Is the operation described justifiable to the end attained? Opinions differ. The middle turbinated body as a process of the ethmoid bone should, of course, be carefully dealt with, as the possibility of septic or other inflammation extending thence to the meninges can not be denied, although personally I am unfamiliar with testimony adequate to establish such an occurrence solely as a result of reasonably skillful operating. A case of meningitis following cauterization of the middle turbinated body was recently reported to the Chicago Medical Society, but it appears that the cauterization was undertaken as a means of relief to symptoms previously pointing toward meningitis.

Morell Mackenzie* cites some cases collected by Lemére in which abscess of the frontal sinus or meningitis followed evulsion of polypi by the old forceps method, by which means it is assumed that bones were fractured; but it is clear that they have no bearing upon the general merits of the operation now under discussion.

* *Diseases of the Nose and Throat*, ii, 367.

Bosworth* writes: "The removal of bone or healthy mucous membrane, I think, is never justifiable." He believes it "perfectly possible to carry the steel-wire loop completely to the base of a growth, no matter how far it extends beneath the middle turbinated bone"; and in reference to cauterization he remarks: "I have never been able to recognize the base from which a polyp has been severed, and therefore think it unwise to subject healthy tissue to injury in the blind attempt to cauterize a region that can not be seen. . . . Furthermore, I do not believe it is necessary, for if we thoroughly extirpate the growths (by the snare) they do not recur."

Much as I regret it, my experience is, of course, at variance with these views, although I am in accord with Bosworth in the belief that unnecessarily frequent, violent, and prolonged operating tends to influence a more fibrous development when recurrence does occur.

Morell Mackenzie† asserts that there are some polyps which from their anatomical situation can not be extirpated unless a portion of a turbinated bone is also taken away, and in his experience no bad effect has ensued from the partial removal of one of these bones.

Lennox Browne‡ writes: "The main point for the cure of polypus consists not so much in the removal of the growth—nor, indeed, in the all-important complete eradication of the minutest visible polypus—as in the destruction of the soil and bases of their origin." At the same time he indorses Bosworth's dissent from Mackenzie's position regarding removal of bone. One must inquire how in the rarer cases characterized by narrowness, etc., he can gain access to the soil and bases of origin "to sear limited and indicated portions of the mucous membrane with the cautery point."

Cohen# expresses the opinion that the shape of the nasal cavity often renders it impossible to remove all the polyp attachments, and the remaining portions develop anew. Cohen also cites Gross as recommending removal of half the turbinated body.

It is unnecessary for me to relate cases at length; they are not numerous, a few only among the many of this disease which we have had occasion to treat having demanded resort to abscission of the turbinates:

* *Diseases of the Nose and Throat*, i, 407.
† *Diseases of the Throat and Nose*, ii, 369.
‡ *The Throat and Nose, and their Diseases.* Third edition, p. 605.
# *Diseases of the Throat and Nasal Passage.* Second edition, p. 398.

Miss M. had multiple polypi occluding both nares. Very narrow nostrils throughout; hypertrophic rhinitis and vaso-motor paresis; extreme discomfort and interference with business usefulness; hay fever every year. The nostrils were cleared by the usual methods, but with constant recurrence during two years. The middle turbinated bodies were crowded and of sodden appearance; drainage defective; the regions of the hiatus semilunaris and middle turbinates were repeatedly sending forth polyp buds. Some of the points of origin could not be reached, or, if reached by insinuating a cautery-point electrode, adhesion followed in spite of care, and the drainage became still more defective.

I ultimately removed the antero-inferior part of each middle turbinated body, with the greatest possible benefit to the patient. A polyp bud still occasionally springs up at long intervals, but, with access to the part, I am confident of a complete cure, while formerly it was discouraging.

Mr. R., a clergyman. Multiple polypi on each side; great disability as regards speaking. Numerous operations during previous years, but always prompt recurrence. Conditions similar to the first case, but a trifle more space in which to work. The same operation, accompanied by other suitable treatment, has seemingly resulted in complete restoration to health. No recurrence for eight months.

I could report still other cases, but the details would be similar —cases in which it was apparently impossible to effect a radical extirpation otherwise, and wherein the disability was so pronounced as, in our opinion, to justify this procedure.

Entirely another class of cases in which I have performed the same operation, sometimes accidentally, more often purposely, includes those in which a polypus of considerable size springs from the antero-inferior part of the middle turbinated body itself.

These are apparently of the kind indicated by authors who say that the removal of the underlying spicule of bone is the most certain method of eradication. The polypus often has *not* a *narrow* pedicle, but quite a broad base, which envelops the sides as well as the lower edge of the turbinated body, the bony base of which seems likewise to have grown a distance into the tumor, whose pedicle it is then difficult to envelop without including in the snare a part of the bone.

Examinations of specimens of this sort, three of which I have preserved and exhibited, show that the bone itself is not intimately associated with the myxomatous structure, but the periosteum does seem to be therewith incorporated, so that, while myxomata can not be said truly to spring from the bone itself, for operative purposes, when they involve its periosteum, it amounts to the same thing. I

have not known this species of polypus thus removed to reappear in the same situation.

Method of operating.—Before this association it is unnecessary to relate in detail the technique of an operation on the middle turbinated body. I consider properly constructed turbinate-bone scissors the easiest and best means of abscission, *provided* space on each side of the body will permit the passage of the blades sufficiently high up—the best means, because a clean cut of the bone is made at the point selected without risk of fracture at other points, as would seem possible by the crunching movement of a snare or the breaking action of forceps.

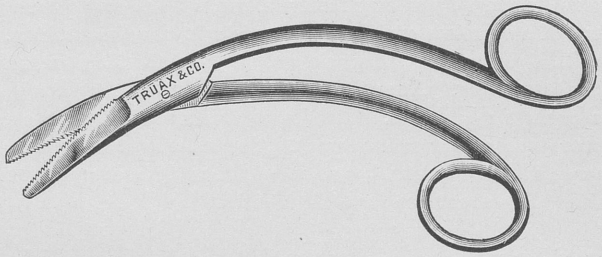


Fig. 5.

I have devised for the purpose a pair of turbinate scissors, curved in a manner similar to others of the kind, but smaller, shorter, and with thinner blades, the latter being serrated to prevent slipping (Fig. 5). When one can not manipulate the scissors, the snare will usually effect the purpose. The instrument should also possess the écraseur action, and require but one hand to simultaneously hold and work it, characteristics which are possessed by the Allen snare. When the parts are so crowded as to offer resistance to the passage of a loop, the steel wire should be sufficiently heavy to be not easily turned aside; otherwise the ordinary so-called No. 5 piano-wire is best, being thinner and therefore cutting cleaner.

It would seem that the snare, instead of cutting through, might crowd the bone together and fracture it at a point higher than intended, but I have never been able to ascertain that this has actually happened. A more real disadvantage is the liability of the loop to slip and remove *less* than desired. There are times, however, when, by reason of extreme narrowness or crowding of the parts, neither turbinate scissors nor snare can be satisfactorily manipulated, and then I use a small but strong cutting forceps, with sharp, rounded extremities which fit accurately together. By this means the part

must be abscised in several pieces, which renders it a more painful and tedious process, but one which is effective and not unbearable.

Discussion.

Dr. SAJOUS: I have listened with great interest to this communication; it is on a subject to which I have given much attention. I agree with the authors whom he quotes as to the difficulty of reaching the points from which polypi arise after removal of the growths. It is surprising to see how easy the operation seems to be as described in the books, but it is not so easy in practice. Some years ago I attempted to pass a galvano-cautery wire as far as possible behind the middle turbinated bone; I subsequently found that by using a rongeur forceps and removing a small portion of the middle turbinated bone at its anterior angle I made a convenient passage for the introduction of the instrument. I have not found it necessary, except in very few cases, to remove the whole body, in order to introduce the forceps or galvano-cautery. In applying the galvano-cautery, I have been much helped by using an electrode with a tip bent in the shape of a curette. By not heating the wire too much, say to a red heat, it retains its hardness, and can be used as a curette, combining the heat with the scraping of the surface, if so desired. The electrode I now show you is, as you can see, glass-covered. It can be easily cleansed and does away with the silk-covered electrodes, which can never be made absolutely aseptic. The glass electrodes are not affected by the heat of the incandescent tip.

Dr. J. SOLIS-COHEN: I rise simply to say that some months ago I read in one of the journals an article by a gentleman whose name I can not recall, in which he recommended, after removal of polypi, simply washing out the nose with a solution of alcohol or of witch-hazel. I would here bear testimony to its value; I use it in preference to the cautery. I use it in the strength of one to four, one to three, or even one to two —simply the distilled extract of hamamelis with alcohol.

Dr. BOSWORTH: I should like to ask if Dr. Cohen thinks that it will have the slightest effect in preventing the return of the polypi.

Dr. COHEN: Yes, I have found it so.

Dr. BOSWORTH: I have used both the witch-hazel and the cautery, and found neither of value.

Dr. COHEN: I use it in place of the application of the cautery, using injections twice a day; the patient can do this for himself.

Dr. BOSWORTH: I quite agree with the remarks which have been made with regard to the galvano-cautery. I think that it is the removal of the polyp which cures the patient; I do not think that there is any use in applying the galvano-cautery afterward unless some better reason can be given than has been offered. The principal value of the hamamelis in such cases is that it may prevent the use of something worse.

Dr. ROE: I agree with the last speaker, that the success of the treat-

ment of nasal polyps lies in the completeness of their removal; but in some cases, owing to their situation, complete removal is well-nigh impossible. In the majority of these cases it is because the polyps lie behind an enlarged middle turbinated body. In all such cases in which the turbinated body is very much enlarged, and particularly where the bone is sufficiently projecting to press against the septum, I have made it a rule to remove a part of this projecting turbinated body. I do not remove the whole of it, but only sufficient to get at the base of the polyps. The method I adopt for its removal is by means of a saw, such as I presented to this association two years ago, and termed the nasal bow saw. It is modeled on the plan of the jeweler's saw, and by using one with the blade set at a right angle with the back and with a bow at the proper height, the amount taken off can be so accurately regulated that we can remove just the amount desired. I formerly used scissors, but scissors crush the bone before cutting it, and the same objection applies to the snare. I find the method that I have described by far the best, and it leaves the parts in a better condition for healing. In those cases where the base of the polyp is accessible I have for some time adopted a plan of encircling the polyp with the wire, and then dissecting away the base with a small knife, taking the periosteum with it and where it is located upon a turbinated bone, taking off a small spiculum of bone with it. When this is done I never have a recurrence of the polyp.

Dr. Rice: The treatment of those cases of multiple nasal polypi which form the text of Dr. Casselberry's paper is very difficult. After all tangible growths have been removed by the snare the entire mucous surface in the affected nostril is so thickened, and the middle turbinated bone is frequently so much hypertrophied, that great obstruction still exists. Even after all hypertrophy has been removed the muco-purulent secretions are very abundant and exceedingly troublesome to the patient. It is not possible with the snare to reach the tissue satisfactorily which is above and behind the middle turbinated bone without first removing a portion of the middle turbinated bone. I do not approve of the application of the galvano-cautery to the surface of the middle turbinated bone, where it is very closely related to the septum. Both surfaces are apt to be scorched, very little tissue is removed, and adhesive inflammation may be the result of such burning. The only rational method of treatment is to remove enough of the middle turbinated bone, so that the thickened tissues above and behind it can be reached and removed by proper manipulations.

A word of caution should be suggested as to the removal of the middle turbinated bone. Only so much of it should be taken away as will secure good drainage and allow treatment of the cavity above. I have seen severe forms of atrophic rhinitis following the wholesale removal of the middle turbinated bone and the use of the galvano-cautery above the neighboring structures.

In these cases of nasal polypi the middle turbinated bone seems to have

become so much weakened in its attachments that the entire bone may be removed by the snare if too much of it is included within the loop. The treatment of these cases is troublesome at the very best, and requires careful and painstaking work.

Dr. JARVIS: I am myself a great believer in the surgical treatment of these cases; but I also believe, in contradistinction to what Dr. Bosworth states, that it is possible to find chemical agents that will remove these growths. I formerly employed an application, which I was led to try some years ago, through the suggestion of a physician who had found it very effective. While the treatment in most cases is purely surgical, it is not necessary to make the nose a surgical armamentarium. For instance, why should we use first a snare, then scissors, then a saw, and finally the cautery? It seems to me that all might be done with two instruments—the snare and the searching forceps. Where small polypoid growths appear, I encircle the base and remove part of the bone with it; the searching forceps I use is of about the thickness of a lead-pencil. With this little instrument these bead-like growths are seized and stripped off one after another; there is no hæmorrhage of any account after tearing them away. There is one point which I wish to accentuate: where we remove polypi by means of the wire snare, we use a method which is easy and simple as compared with evulsion and the cautery, and one which is free from the danger of producing septic symptoms. Even if the patient has to come back again for another operation in a year or two, it is not much trouble to repeat the procedure.

Dr. J. SOLIS-COHEN: I would ask the last speaker if he knows of any medicament which, applied to a polyp, will cause it to disappear without surgical procedure? If so, he should state what it is.

Dr. JARVIS: There is no secret about it, it was simply the injection of the tincture of the chloride of iron into the nostril. It is not an elegant application and I am not entirely satisfied with it; but in some cases I have found it effective.

Dr. MULHALL: There is nothing new about that, as it is mentioned in the text-books on surgery years ago. With regard to operating upon these cases, I have a rule concerning the removal of a portion, but not the entire, middle turbinated bone. It came to me by experience. The rule is that where the Jarvis snare can catch the end of the middle turbinated bone, it can be and should be removed. I rise principally, however, to speak in opposition to the views expressed with regard to the use of the galvano-cautery. Some years ago I read a paper by Lennox Browne condemning the use of the galvano-cautery, on the ground that it caused erysipelas and other bad results. I concluded that they were not due to the method, but to the rules of operating laid down by that writer. I have used it in many cases—I should say at least four thousand cases—and have never met with such an accident. My rule is that the platinum wire should be white hot before cauterizing the spot, and it should be withdrawn in the same condition. Lennox Browne's rule was to heat

the wire only to a cherry-red heat and allow it to cool inside the nose before withdrawal. This is sure to be followed by inflammation, for which the operation has been blamed, whereas it is the fault of the operator. It is necessary in some cases to remove part of the middle turbinated bone in order to reach a polyp in the hiatus semilunaris. In one case I recommended the removal of the entire middle turbinated bone for a man who had had polypi removed for thirty years; the operation was done with entire success.

Dr. MACKENZIE: I have been very much interested in the discussion, especially in the remarks of Dr. Jarvis, and in the simplicity of the means to be used in the class of cases under discussion. I can not, however, concur in his statement that everything can be done with the snare. In these bone cases I have found considerable difficulty in getting the snare through the bone; when the bone was thoroughly engaged in the loop, it was with the greatest difficulty that I got it home. Therefore, in many cases, I have been obliged to relinquish the snare in favor of other means. I am also completely in accord with Dr. Mulhall in his estimate of the value of the galvano-cautery; I keep it by my side all the time. I use it every day, and among several thousand cases I have never seen an accident. I use it at a heat just bordering upon a white heat, and just whiter than a cherry-red. I have seen a purulent discharge following the application and lasting several weeks, and some sloughing after removing large pieces of the turbinated bones, but no serious accident. At the same time it must be admitted that unskillful use of the cautery might cause sloughing and do great damage.

Dr. ROE: The main reason for the failure to get good results after the employment of the galvanic cautery, and the cause of the occurrence of inflammatory and septic troubles, is that the burned surface, after the operation, is not rendered thoroughly aseptic. This should be done as thoroughly after a cautery operation as after a cutting operation, and kept so until the parts are healed. When this is done we never have any inflammatory or septic troubles and seldom a purulent discharge. This fact was pointed out by me in an article read last year in Berlin before the International Medical Congress.

Dr. ASCH: My experience is thoroughly in accord with that of Dr. Jarvis. I find that the snare fills every indication; the operation is a slight one and, if necessary, can be repeated at a future time. But few growths require more than one or two operations. With regard to the objection of Dr. Mackenzie, I think that the trouble is due to defective instruments. Where the snare and holder are made of steel, there is no difficulty in cutting through bone—certainly not with an instrument made as mine are. Like Dr. Jarvis, I have never seen the use of the snare followed by septic trouble. I take the precaution always to immerse the wire and snare in a carbolized solution before operating.

Dr. JARVIS: If the galvano-cautery is harmless, why is it that we read of the case of Ziem, where total blindness in one eye followed its use; or

that of Quinlan, where meningitis occurred? I also recall a case where erysipelas resulted, where the operator was sued for malpractice.

Dr. MULHALL: I attribute such accidents to an imperfect method of operating.

Dr. ROE: I should say imperfect antisepsis.

Dr. SAJOUS: I would confirm the statements just made as regards improper use of the galvano-cautery.

Dr. CASSELBERRY: I feel a little guilty for calling out a discussion upon all the methods of treating polypi. My contribution was meant to limit the discussion to a newer field—the removal of the anterior portion of the middle turbinated bone in certain cases. I hardly think that the removal of a small portion of the middle turbinated bone could give rise to atrophic rhinitis. With regard to the transition of hypertrophic into atrophic rhinitis, I would offer the suggestion that it may occur more frequently in the climate of New York, as I have never seen a case in Chicago where hypertrophic change has passed into an atrophic. With regard to the use of chemical agents, especially the tincture of iron, alcohol, etc., I think that where there is general relaxation of the parts such astringents are useful as adjuncts to surgical treatment. Alone they can not often reach the actual seat of disease. With regard to the snare, I may say the same, concerning, however, a much smaller proportion of cases—that one can not always reach the growth with the snare; and the cautery also fails at times. Then I resort to the operation described. In conclusion, I will merely refer to the remark that has been made about removal of the normal turbinated body: the turbinated body in these cases is never normal; it is hypertrophied, sometimes covered with polyp-buds, and often curved over toward and crowding upon the septum. Moreover, I never removed the whole body, but merely the antero-inferior end. In the case where meningitis set in, following the use of the galvano-cautery, it was probably a case of inflammatory ethmoiditis, and the meningitis set in before the cauterization; the use of the cautery was merely a coincidence, occurring in an effort to relieve symptoms due to the ethmoiditis.

Paper.

THE SYMPTOMS AND PATHOLOGICAL CHANGES IN THE UPPER AIR PASSAGES IN INFLUENZA.

BY J. SOLIS-COHEN, M. D.

IN presenting a summary of the symptoms and pathological changes in the upper air passages in influenza, let me at once refer to the remarkable paper presented to us in 1889 by our present president, in which he seemed to have recognized a precursor of the recent pandemic in a series of cases which had come under his ob-

servation for the previous three or four years. If we carefully peruse this paper and compare it with half a hundred or more of the reports of ordinary and exceptional lesions which have been noted during the pandemic of 1889–'90 in the most diverse portions of the globe, we can not fail to be impressed with the accuracy displayed in Dr. Glasgow's observations. A few such confirmative records will be referred to in foot notes when these remarks are printed.

To confine the subject to the limits assigned for the present discussion, we find from various sources records of a mucoid or, as I would call it, a lymphoid œdema of the palate and pharynx, of the intranasal structures, of the epiglottis, and of the larynx, top and interior. We find records of patches of exudation on the tonsils and on other portions of the throat, much resembling the patches of diphtheria; we find records of œdema of the glottis and death therefrom, analogous to Dr. Glasgow's cases of œdema of the vocal bands, and of sudden death from spasm of the glottis or from sudden laryngeal stenosis.*

We find records of purpura spots on the mucous membrane of the structures already named, and even in the trachea, with recurrent hæmorrhage therefrom; † and we find records of mycosis of the tonsils.

There are a few additional manifestations in our immediate domain which have doubtless been observed by Dr. Glasgow during the late prevalence of influenza. These are, as extensions from the nasal passages, inflammation and suppuration in the frontal and maxillary sinuses, in the ethmoidal cells, cerebral abscess, inflammation of the Eustachian tube leading to otitis media, and other lesions of the auditory apparatus; as extensions of the laryngitis, hæmorrhage ‡ and abscess; # and as sequelæ, paralysis of the palate ‖ and paralysis of the larynx.△

I should likewise call attention to a paper by another fellow of our association, Dr. Seiler, read in the same year before the Laryngological Section of the American Medical Association, in which he presents a summary of some five hundred personal observations of

* De Lostalot. *France méd.*, March 28, 1890. Bavachi. *Gaz. méd. d'Orient.*, April 15, 1891.

† Caverhill, Semon. *Edinb. Med. Jour.*, August, 1890.

‡ Marano. *Arch. ital. di lar.*, May, 1890.

Schäffer. *Deut. med. Woch.*, No. 10, 1890.

‖ Heymann. *Deut. med. Ztg.*, March 1, 1890.

△ Krakauer. *Deut. med. Ztg.*, March 17, 1890.

cases similar in character to those described by Dr. Glasgow and with which he had been familiar for about the same period.

Although the ætiology of influenza is not included in the subject of the present discussion, it may be permitted here to remark that the various local but extensively separated telluric disturbances of several kinds that have taken place in the United States within the period comprised in the clinical observations of Dr. Glasgow and Dr. Seiler, and of a few others of like character, link their cases to those which have recently occurred pandemically throughout the globe, and which have not altogether ceased to appear endemically, and that they thus justify the surmise of Dr. Glasgow that the epidemic described by him was to be regarded as *influenza*—a surmise, under the circumstances, of most discriminative acumen.

The symptoms of influenza as manifested in the upper respiratory tract are not at all characteristic, and are recognizable as due to that disease only from their endemic character and the peculiar prostration of the nervous system which attends them, and which in its turn is characterized by suddenness of onset and by great debility of the circulatory system.

These symptoms comprise sternutation, coryza, parosmia, nasal dyspnœa, epistaxis, sore throat, dysphagia, impaired articulation, cough, expectoration sometimes hæmorrhagic, dysphonia, aphonia, laryngeal dyspnœa, spasm of the larynx.

The lesions, mainly catarrhal, giving rise to more or less of these symptoms are not universal. They exist probably in about one fourth of the cases, the remainder presenting the nervous, pulmonary, and gastro-intestinal disorders without catarrhal complication.

The pathological lesions observed in the upper respiratory apparatus comprise catarrhal, hæmorrhagic, and purulent rhinitis; inflammation and suppuration of the ethmoidal, frontal, and maxillary sinuses; acute phlegmonous and œdematoid sore throat; simple acute pharyngitis and œdematoid pharyngitis, general amygdalitis, and lacunal amygdalitis; inflammation and tumefaction of the lymphoid nodules at the vault of the pharynx and in the base of the tongue; pseudo-membranous exudation of the tonsils, palate, pharynx, tongue, and larynx; superficial, œdematous, hæmorrhagic, fibrinous, subglottic, purulent, and ulcerative laryngitis; abscess of the larynx; simple and hæmorrhagic tracheitis—all this but an exemplification of the general Protean characters of influenza in general.

To these must be added submaxillary and cervical infiltration of

the connective tissue with lymph, simulating the more serious lesion known as Louis's or Ludwig's angina, and sometimes compressing the larynx. On incision into this tumid mass there is no evacuation of pus either immediately or a day or two after, but only blood and serum or a serolymph exude, as occurred in a few cases I have seen in consultation during the pandemic.

These lesions occur but in a small proportion of the catarrhal cases.

It is to be hoped that some member of the profession with sufficient leisure will study the records of these manifestations with a view of learning their proportionate frequency.

The congestion of the mucous membrane is passive rather than active, due to venous stasis rather than arterial congestion. The color is a violet-red rather than a carmine. The membrane looks sodden, tumid, and pasty from lymph stasis, and from exudations of lymph on the surface. Ecchymoses take place in irregular numbers and distribution, and hæmorrhages, for the most part slight, in a certain proportion. In the œdematoid cases muco-lymph, rather than sero-mucus, is discharged from incised wounds, and the release of serum, as in ordinary œdema from venous stasis, is seen but exceptionally.

At a later date fibrinous accumulations are noted at various points upon the mucous membrane. In some cases there is profuse glandular secretion, and in some laryngeal cases the secretion may be seen exuding from the ducts of the glands.*

The morbid process may proceed to suppuration and ulceration, while in some cases abscesses are formed. These manifestations do not subside with the actual attack of influenza, but often continue for a number of weeks after cessation of all characteristic constitutional symptoms.

In some cases of laryngeal complication, paresis of the laryngeal muscles takes place, chiefly in the domain of the constrictors, and occasionally in the form of paralysis of the recurrent.†

Paralysis of the palate and other paralyses sometimes occur in the domain of the upper respiratory organs which bear considerable resemblance to the paralysis occurring in diphtheria.

I have seen a number of examples of the tumid, puffy, pasty condition of the mucous membrane of more or less of the mouth, palate, and pharynx, so well described by Glasgow, much resembling

* B. Fränkel. *Deut. med. Woch.*, No. 28, 1890.

† Krakauer. *Loc. cit.*

ordinary œdema on first inspection, but not fluctuating or pitting under pressure. The tumefaction is often so great as to impair articulation, respiration, and glutition. The rhinopharynx, the interior of the nose, the epiglottis, the borders and the interior of the larynx, may be similarly affected. At the same time, in some instances, there is an analogous tumefaction of the subcutaneous tissues under the lower jaw and in front of the neck, similar in appearance to that of diffuse cellular infiltration, widely known as Louis's or as Ludwig's angina, and giving rise to dyspnœa by compression.

Incision into the tumid portions of mucous membrane show that the infiltration is not serous but seems lymphous, and the viscid liquid will exude in long strands. During paroxysms of gagging after incision I have seen thick strands reach from the mouth of the seated patient to the spittoon on the floor in unbroken streams. In other cases there is nothing but venous hæmorrhage from the incision, but considerable mucoid or lymphoid material will be expectorated later.

Before the œdematoid condition is reached, the lymph will have made its appearance on the surface of the mucous membranes, whence it is expectorated in thinner viscid strands. The known connection of the lymphoid spaces of the nasal mucous membrane with the subarachnoid and subdural spaces affords a clew for accounting for some of the terrible meningeal and cerebral complications, if we admit that the disease is one affecting the lymphatic circulation as well as the sanguineous circulation. It is probable that both are impaired by paretic conditions of the vaso-motor system as a direct consequence of the poison of influenza, just as its poisonous influence upon the pneumogastric nerve has long been held to account for the frequent pneumonic congestion and the cardiac debility. The tumefaction of various lymphatic glands and of the spleen noted in many cases still further indicates the lymphatic apparatus as a chief seat of lesion.

I must therefore regard the immediate anatomico-pathological lesion of influenza, as manifested in the upper respiratory passages, as one involving the lymphatic organs and structures, in consequence of which the lymph accumulates in the connective tissue.

There appears to be a paresis of the nervous system, in partial result of which there is a stasis in the venous and lymphatic circulations. Hence passive sanguineous congestions, ecchymoses, and hæmorrhages from the one, and passive lymphous congestions and lymphous or mucoid exudations from the other. Fibrinous exuda-

tion occurs in some instances, and a typhoid grade of inflammation in others, sometimes terminating in suppuration and in discrete or in diffuse abscess.

I have had two most remarkable instances of a happy effect of severe attacks of influenza upon malignant diseases. One was a severe case of epithelioma of the palate in a gentleman more than eighty years of age. The diagnosis had been confirmed by histological investigation. I had destroyed the entire disease upon one side by partial excision and by electrolysis, and it had cicatrized in the most satisfactory manner. The opposite side, which was not near as extensively diseased at first as the other side, resisted the same treatment and also the electric cautery. It had in places succumbed to lactic acid, but, despite all that could be done, the disease had extended to the pharyngopalatine folds and to the region of the alveoli, when, in January, 1891, the patient was suddenly attacked with the influenza. The brunt of the disease was borne in the epitheliomatous portion of his throat; the entire diseased portion sloughed out, and he convalesced from his influenza and his epithelioma together. A year later he called to pay me a Christmas visit, and he was so stout I did not recognize him until he laughingly recalled himself to me.

The other case was one of tuberculosis of the lungs and the larynx in a lady about fifty years of age. The cough was incessant. Rest at night could be secured but by spells, and that with difficulty. Expectoration was extreme. It was reported to me by her family physician as more than a pint in the twenty-four hours. This lady was attacked with influenza, and that disease cured her tuberculosis. She has not coughed or expectorated for eighteen months, and is, to all intents and purposes, a healthy, though not a robust, woman.

These cases present some compensation for the much larger class in which the influenza hurries the patient to his doom. They remind me very much of a number of cases which I have observed for many years in hospital practice, in which patients with tuberculosis, with syphilis, and with carcinoma have become cured by the effects of an intercurrent attack of erysipelas. I have been afraid to inoculate similar patients with erysipelas, lest it should get beyond control, for erysipelas of the nose and throat is a very serious disease; but I have again and again called the attention of some of my bacteriological friends to the importance of the subject, and have for years unavailably coaxed some of my surgical friends to have some of their cases of carcinoma of the mamma inoculated with erysipelas, as that

disease would be more manageable on the exterior of the body than in its cavities.

I can thus confirm the observations recently recorded from various sources, that infection with erysipelas will sometimes cure tuberculosis and carcinoma.

Discussion.

Dr. SHURLY: I am very much interested in the paper, especially because of having met so many cases of tuberculosis the origin of which was apparently in an attack of influenza. Another point to which I would like to call attention is one noticed by some French writer, in an article published some eight or ten months ago, in which the idea was advanced that the late pandemic of influenza was a modification of, or allied to, cerebro-spinal meningitis. There is certainly a resemblance clinically, because in our district there were neurotic symptoms manifested in a majority of the cases strongly resembling the latter disease. A third point that I would mention is that the paper formulates the belief that it is a chemical metamorphosis, which takes place in the various cells and tissues, which constitutes the original features of the disease. In our chemical work, incident to the examination of tubercular matter, etc., we have been unable yet to separate a distinct ptomaine or toxine from them. However, fluids treated with phosphotungstic and phosphomolybdic acids yield deposits which, when injected into the tissues of guinea-pigs, gave rise to intense glandular irritation and inflammation, which, in some cases, reach their height in three days, afterward gradually subsiding. In one of the animals, where suppuration took place, examination of the pus showed no bacteria whatever, but pus cells and broken-down lymph material only. If we had allowed the animal to live, it is possible that the characteristic lymph elements might have been developed. The observations of the author of the paper may be borne out by the results of such experiments. The why and wherefore, of course, I do not know, but we shall pursue these experiments further upon the larger animals, such as calves or goats. I think that the chemical poisons of tuberculosis may be considered as related to that or those of pandemic influenza, whatever it is.

Dr. WRIGHT: I was much struck during the second epidemic of influenza by the disproportion between the amount of actual disorder which could be found upon examination and the amount of suffering and constitutional disturbance. I saw a large number of throat and nose patients in the hospital, and could find only a slight pharyngitis or rhinitis; and the way we usually made the diagnosis of influenza was by observing the slight lesions of the nose or throat and the large amount of constitutional disturbance.

Dr. ASCH: I think that it would be well for the representatives from the different sections of the country to give their experience as to the

manifestations of influenza, so that we could ascertain whether the upper air passages were equally affected in the different localities where it prevailed. In my own experience in New York there was not a marked increase in the number of such cases applying for treatment nor in their gravity, nor did I remark in the cases of influenza which came under my notice a uniformity of lesion. There was, however, one lesion which was frequently, though not always, present—viz.: an inflammation of the tonsils, attended by an extreme depression, which I have noticed under no other circumstances. Though follicular amygdalitis is usually marked by depression, I have never seen it so severe as in these cases. It was so great that in some cases it gave me reason to fear for the safety of my patients.

Dr. CASSELBERRY: The point raised by Dr. Asch is a very valuable one, and in fact I brought it out yesterday in connection with disease of the mucous membrane of the nose. As regards the climates of New York and Chicago, there seems to be a decided difference in the number of cases of transition from the hypertrophic to the atrophic stage of chronic rhinitis, which transition is rarely seen in Chicago. With regard to the point raised by Dr. Wright concerning the severity of local manifestations of influenza in the upper respiratory tract in Chicago, we observed them often of a violent type, commencing with severe rhinitis and naso-pharyngitis, and extending into intense degrees of laryngitis, bronchitis, and even pleuritis. In the nose I have not always at first been able to distinguish between the local manifestations of influenza and those of ordinary severe inflammatory attacks; perhaps in the former the mucous membrane had a more bluish aspect, and this appearance I had not attributed to a specific venous congestion, but to the violence of the attack.

Dr. WRIGHT: I might supplement my remarks by the statement that with us in New York we observed a much larger proportion of cases of suppuration of the middle ear than among ordinary cases of throat inflammation.

Dr. S. SOLIS-COHEN: The comparative frequency of special lesions of influenza in the personal experience of any physician will depend largely upon the character of his practice. For instance, in my general wards in the Philadelphia Hospital characteristic manifestations of the disease in the upper air passages were comparatively few; and, in fact, I can recall but two cases, both presenting the "solid œdema" referred to by the reader of the paper. On the other hand, I saw a much larger percentage in my private and consultation practice. I would express my admiration of the graphic expression "solid œdema," used by Dr. Glasgow in his original paper. The character of the manifestation has been fully described and I need not repeat it. The first case of influenza I saw in 1889 was one in which this solid œdema affected the tonsils and soft palate. Through the knowledge gained from the paper of Dr. Glasgow, I was enabled to make the diagnosis, which otherwise I might not have been able to do, as it was some months before general recognition of the existence

of the pandemic. I have now under care a convalescing case which at first I was inclined to diagnosticate as one of typhoid fever; but its further progress has led me to think it rather a case of the peculiar pneumonia described by Dr. Glasgow, and I mention it now only to suggest the wisdom of greater attention to this peculiar condition. The favorable effect of influenza upon tubercular processes is, of course, exceptional. Hundreds of cases of tuberculosis have been hurried to the grave by the epidemic. I would supplement my remarks with the statement that with us, in Philadelphia, otitis media was also very common. In some cases other symptoms were lacking, and only from the prevalence of influenza and the occurrence of several cases among the children in a family was I enabled to recognize its infectious character. In many instances it was bilateral, one ear becoming affected as the other healed.

Dr. JARVIS: The paper read by Dr. Cohen presents clinical features of great interest which we may very well study. I refer especially to the curability of malignant disease and tuberculosis. Only a few days ago a most distinguished dermatologist expressed a belief that he had seldom seen cases of lupus in which erysipelas had occurred where a favorable influence was not exerted upon the course of the disease.

Dr. ROBINSON: I wish to simply say one thing, perhaps not bearing directly upon what Dr. Cohen has said. In connection with influenza, I have been witness to disturbances of the middle ear which seemed to me to be very interesting for several reasons. I could not say precisely in what the inflammatory condition consisted. There did not really seem to be any notable disturbance of the Eustachian tube, or inflammation of the canal; but these patients suffered a very great deal. There was dullness of hearing, noises, worse in one ear than in the other, and a sensation of a foreign body in the ear; but I could not determine anything of a pathological nature simply by sight. The obstinacy of these cases was something extremely remarkable. I saw a lady only a few days ago who has been troubled in this way for at least twelve months, in spite of general and local treatment. I wish merely to add this to the discussion—that there is something peculiar hitherto unclassified in the auditory disturbances following influenza.

Dr. JARVIS: According to my observation, the victims of this class of affections of the upper air passages were those having more or less pathological deviation of the septum; in other words, those who were suffering with chronic rhinitis. I would ask if this is borne out by the experience of any other gentleman present?

Dr. ROE: I observed, when the epidemic first appeared, that those who had chronic ear, nose, or throat disorders were those who suffered most from the influenza. I also noticed in this connection that the apparent cause of this œdema, which was first described by Dr. Glasgow and now mentioned by Dr. Cohen in his paper, was due to a vaso-motor paresis associated with cardiac weakness. In nearly all cases I have been led to look upon this passive œdema as not associated with any in-

flammatory trouble, but as one due to lack of sufficient circulation, resulting from weakness of the heart. In the treatment of these affections I have obtained the best results from the administration of cardiac stimulants in addition to other medication that may be indicated.

Dr. SHURLY: We have three distinct grades of severity among the cases of the late pandemic of influenza, and I wish to exclude entirely instances of ordinary influenza that we usually have in our northern climate every winter. In some cases the general affection is light and, perhaps, only lasts twenty-four hours, but the upper air passages seem particularly affected. Just as in epidemics of scarlet fever and measles, there are certain persons who have nasal catarrh or rhinitis, but who do not manifest the symptoms of scarlet fever or measles. Now I take issue with those gentlemen who hold that a deflection of the septum, or any purely local condition of the air passages, induces the attack; or that the nervous, pandemic, general disease is influenced by any local condition.

Dr. JARVIS: I wish to explain that I do not maintain that the pathological process is confined to the nostril, but that it constitutes the starting-point from which the disease may extend to the throat and lower air passages, producing more serious symptoms. I did not mean that the disease was due to a deflected septum, but that this condition might be a predisposing cause.

Dr. S. SOLIS-COHEN: The majority of the cases of influenza which I have seen had no chronic nasal trouble.

Dr. SAJOUS: I think that the matter is easily explainable. The gentlemen are looking at the matter from different standpoints, basing their conclusions upon their individual observations. Where there is already local disease, the patient will find that there is more local disturbance during the progress of the disease.

Dr. ROE: I did not mean to say that the local diseases that I referred to were the cause of the general symptoms, but that when these local disorders exist in the upper air passages the person is predisposed to attacks of influenza. I do not, however, regard the influenza as merely a local trouble, limited to the upper air passages, but believe it to be more severe when the air passages are diseased.

Dr. GLASGOW: The complications, or rather the pathological changes, occurring in the upper air passages as the result of influenza have been fully described, and I can add very little to what has been said. There are a few points, however, which have not been mentioned which have attracted my attention. During the epidemic I have met with a greater number of cases of acute suppuration of the antrum than I have seen at any other time. I think it was also true that during the prevalence of the disease the tendency of all inflammations of the closed cavities was to become purulent. If pleurisy occurred, it was empyema; pericardial effusion was purulent. In fact, according to my experience, purulent inflammation was a characteristic feature of the disease. My experience is fully in accord with the writer of the paper in stating that during the

prevalence of the epidemic there was an almost complete disappearance of catarrhal inflammations of the upper air passages. The reappearance of this condition was an evidence that the epidemic was disappearing. I have not observed that local disease in the nasal passages had any causative effect in provoking the disease. Where pathological changes have produced obstruction, the addition of the cellular infiltration of the mucous membrane has certainly added to the distress. There is one point in Dr. Cohen's paper which has gratified me, for it was upon this point that I was criticised when I read my paper before this society on Œdematous Disease of the Upper Air Passages. I refer to the presence of an exudation in the throat bearing a certain resemblance to the diphtheritic membrane. I can heartily agree with Dr. Cohen in believing that influenza is essentially a disease of the blood. I have always considered it analogous to typhus or erysipelas—a general infectious disease. In regard to the connection of influenza with tuberculosis I have positive views, which are based upon extended clinical experience. According to my observations, I should say that influenza rather encourages the production of tuberculosis, instead of being a protection against it. The interstitial cellular infiltration of the alveolar walls—the pathological condition in influenza—seems to be a most fertile soil for the development and growth of the tubercular bacillus. Microscopic examination of the sputa of cases which have become tubercular shows enormous numbers of bacilli, and resembles rather a culture of the laboratory than human sputa.

The weakness of the heart has been referred to by the speaker, and I can fully indorse all that he has said. Cardiac weakness is a constant accompaniment of the disease; it is due to a change and weakening of the heart fibers, similar to that existing in infectious diseases.

Dr. J. Solis-Cohen: The supposed connection between cerebro-spinal meningitis and influenza, which has been referred to in the discussion, was first brought to the attention of the profession by Dr. Levick, who was then physician to the Pennsylvania Hospital, I believe about 1864. I do not wish to be understood as saying that influenza will cure tuberculosis. I have seen too many fatal cases of tuberculosis hurried off by influenza. I thought it peculiarly interesting that I had seen one case of tuberculosis of the larynx and one of malignant disease of the pharynx cured by the attack of influenza.

Paper.

USEFUL DEDUCTIONS DERIVED FROM THE STUDY OF A CASE OF CICATRICIAL CONTRACTION OF THE LARYNX POSSESSING UNUSUAL CLINICAL FEATURES, WITH EXHIBITION OF SPECIMEN.

By W. C. JARVIS, M. D.

IN presenting the subject just announced I am not unmindful of the fact that cases of cicatricial contraction of the larynx as commonly observed are to be viewed as neither novel nor unique, nor indeed would a pathological specimen of this kind ordinarily possess a sufficient degree of interest to warrant the appropriation of the time and attention of this important division of our great triennial congress. Nevertheless, I am convinced that it will be conceded that the history, and perhaps also the specimen I am about to present, possess clinical features, both novel and instructive in character, which, taken into consideration with the deductions and thoughts suggested thereby, have encouraged me to confidentially lay this matter before you.

The subject of this sketch was a gentleman, sixty years of age, who first came under my observation March 31, 1888, and was last seen by me in about March, 1891. He was kindly referred to me by Dr. Laurence Johnson, of New York. When first seen by me he detailed his history in a strained, raucous, but easily intelligible voice. Its salient points were substantially as follows: Almost ten years had elapsed since the first signs of a nasal and throat disease had become manifest. The nasal malady advanced with great rapidity, involving the hard as well as soft parts, as was clearly shown by the escape of fragments of dead bone from the nasal cavities. As a natural result, the two nasal cavities were rendered continuous. Energetic means had been employed to combat these ravages—such as the cautery and similar local measures, combined with a mercurial and iodide-of-potassium course of treatment—but without apparent result until the space of a year had been allowed to elapse. Severe headaches, alternating with attacks of vertigo, increased the misery occasioned by the local disease. Of the greatest concern, however, was the suffering caused by the recurrence of certain suffocative attacks. During one of these he was almost reduced to a state of utter helplessness and insensibility, and actually despaired of life. He is still subject to these suffocation symptoms, and at times is aroused from a deep slumber by a dreadful sense of impending strangulation. Asthmatic attacks have also contributed to make his life miserable. Inquiry elicited the information that when only twenty years of age he had acquired a lesion

which his physician had pronounced to be syphilitic in character; he is confident, however, that he has been reinfected since this period. Another reminiscence of his earlier manhood possessing a certain amount of clinical value was the history of the receipt of a crushing blow upon the nose, sufficiently severe to reduce him to a state of unconsciousness.

An examination of the external nose demonstrated the nasal vestibule to be preternaturally narrowed, its graceful symmetry being largely lost by reason of cicatricial contraction, as proved by the presence of scar tissue in and about the vestibule. Scar tissue likewise afforded evidence of pre-existing ulcerative processes in the pharynx and nares proper. The extraordinary extent of the nasal disease was evidenced by the discovery of a perforation of the nasal septum. A laryngeal examination, of more interest to us in this connection, likewise afforded indubitable evidence of the fearful ravages wrought by the pre-existing ulcerative disease. The epiglottis appeared as a small, irregular mass of cicatricial tissue. It might perhaps have been more properly termed a cartilaginous remnant, having a form not unlike that of a Phrygian cap, its surface, as was proved by subsequent examinations, being sometimes lighter and at other times ruddier in color than the normal epiglottic mucous membrane. This structure was markedly depressed and partly overhung and concealed a very much reduced laryngeal orifice. The free edges of the false and true cords and the shadowy entrances to the ventricles, as usually observed in the laryngeal image, were entirely absent. The familiar irregular outlines of the arytænoids were replaced by two irregularly rounded prominences which I properly inferred were the sites of the arytænoid cartilages. Instead of the triangular outlines of the rima glottidis, there was a delicate circular aperture, which, but for its location, would have failed to suggest in any way the normal entrance to the larynx.

The diagnostic significance of the clinical manifestations and pathological peculiarities I have just described coincide with those commonly observed in advanced syphilitic disease of the upper air-passages. The cicatricial lesions, like the fantastic irregularities of an extinct volcano, served here to vividly impress the observer with the apparently tremendous extent of the original syphilitic eruption. Taking into consideration the history of the patient and the pathological findings I have just noted, we would naturally be led to conclude that the ulcerative processes commenced in the nasal cavities, and upon the septum in particular, and, extending from this point, they ultimately implicated the pharyngeal and laryngeal structures. Dismissing the consideration of the nose and pharynx with this brief diagnostic mention, I shall address my attention to the larynx, which need only be of especial interest to us in this connection. That the syphilitic ravages were especially severe in the larynx was

apparent, as evidenced by the extensive implication of the epiglottis, which, as I have already explained, was reduced to an insignificant-looking cicatricial stump. It seems highly probable, in view of the extent and character of the cicatricial changes, that, in accordance with the views of Virchow and Mandl, gummatous masses must have originally occupied the site of the diseased structures, the unusual degree of the cicatricial contraction being due to the extraordinary depth of the tertiary ulcers resulting from the breaking down of the gummata. The ulceration and healing processes were largely expended upon the epiglottis and ventricular bands, and to a much lighter degree upon the true cords. Although the vocal cords were invisible by reason of the extreme narrowness of the laryngeal orifice and distortion of the epiglottis, their existence in a fair state of preservation was proved by the patient's ability to intelligibly phonate, an observation subsequently verified by an examination of the exsected larynx.

The history of the receipt of a crushing blow upon the nose, already noticed, may possess a certain amount of clinical significance, as bearing upon the ætiology of the intranasal disease and disorganization of the septum. It is safe to infer that a septum deflected to a point of impact with the lateral nasal wall constitutes a starting-point for the extension of a morbid process. That the resultant disease was originally catarrhal is demonstrable, and that the irritating contact of the deviated septum against the pituitary membrane by provoking extraordinary disturbance may provide a favorable point for the local manifestation of a constitutional dyscrasia, as evidenced in the perforation of the septum, it is fair to assume in the light of common clinical experience in this class of cases.

The recurrent suffocative attacks evidently emanated from one or more of several ætiological factors—such as the occasional entrance of liquids and food particles into the larynx during the act of deglutition, through the insufficient protection afforded this cavity by the deformed epiglottis; irritative inspiratory laryngeal spasm, induced by preternatural dryness of the mucous membrane lining the contracted rima; the presence of extralaryngeal mucus within the excessively narrowed glottic opening; and periodical attacks of subacute catarrhal congestion of the endolaryngeal mucous surfaces. The association of this last-named condition with these recurrent attacks of dyspnœa was observed on several occasions.

With regard to the treatment, I must first explain that the con-

dition of the patient when first seen by me was sufficiently encouraging to give rise to the hope, which was subsequently verified, that relief might be obtained by resorting to purely palliative means, in contradistinction to the employment of extreme operative measures. The formation of this belief was materially influenced by the remarkable self-control exhibited by the patient when suffering from temporary respiratory embarrassment, and his well-nourished appearance, despite the extent, or rather effects, of the disease.

Having observed that urgent dyspnœic symptoms were frequently ushered in by the patient evincing a sense of dryness in the larynx, I naturally inferred that a good lubricant was especially indicated. To attain this object I had recourse to vaseline and its derivatives, charged with appropriate soothing medicaments and oils. These unguents were applied by direct and indirect atomization and at frequent intervals, the patient having provided himself with a suitable system of compressed-air apparatus. Sometimes he swallowed small lumps of vaseline, which he declared afforded pronounced relief from this sensation of dryness. The best results, I think, were obtained from the inhalation of melted nebularized vaseline jelly.

During the occasional periodical exacerbations of extreme dyspnœa most excellent results were obtained from the internal administration of repeated doses of iodide of potassium, a drug which was fortunately well borne by the patient. This remedy, when promptly employed, frequently afforded relief from these attacks in a few hours, the good results sometimes lasting several weeks. By the employment of these and similar means I was enabled to keep the patient comparatively comfortable for a period extending over more than two years—in fact, up to the present year, when his paroxysms became sufficiently aggravated and unyielding in character to compel me to refuse to promise further benefit from the employment of palliative measures, to advise the performance of an early tracheotomy, and to warn him of the danger of delay. My note of warning or his own fears impelled him to consult several physicians, two of whom, members of this Association, I am glad to say, agreed with me, and I was informed as to the urgency of an external operation. One prominent practitioner, however, differed with us in recommending an internal procedure—namely, the practice of laryngeal intubation—concerning the inadvisability of which, in this case, I shall have something more to say.

This was the situation in April of this year, when I was interviewed by a member of the sick man's family, who manifested much

uneasiness by reason of the severe embarrassment exhibited by the patient in his efforts to breathe. A serious suffocative attack seemed likely to occur at any moment, and the sufferer sent word that he was perfectly willing to accept my oft-repeated advice and submit to the inevitable tracheotomy. An appointment was promptly made, my instruments were collected, and the hour for the train to depart was impatiently awaited, and had in fact almost arrived, when a telegram came instructing me not to start.

A letter soon followed this telegram containing profuse apologies for any useless trouble that might have been caused, and explaining that a remarkable improvement in the character of the respiratory symptoms had induced him to postpone submitting to an operation. A few days subsequent to the receipt of this communication I received word that the patient had quietly passed away. The following extract, taken from a letter kindly addressed to me by Dr. Kane, one of the physicians indirectly interested in the case, furnishes some interesting information concerning the patient's final illness and death:

"Toward the end of March (*i. e.*, 1891) Mr. —— had a severe attack of gastro-enteritis which lasted up to and was the principal cause of his death. At times he showed signs of improvement, but this was always followed by a relapse. During his sickness he suffered from dyspnœa to such an extent that he got little sleep, which no doubt hastened his end."

An examination of the dead man's larynx, which was removed with the upper portion of the trachea and kindly sent to me by one of the physicians in charge, revealed a small pointed projection overlapping the introitus laryngis which I recognized as the original epiglottis. Just below I observed the arytænoid prominences as two elevations lacking in all of the delicate angular features that usually contribute to make up the symmetry of the normal arytænoid.

The clear longitudinal outlines of the normal ventricular bands were replaced by a circular depression, the center of which constituted all that remained of the original rima, an insignificant chink measuring hardly an eighth of an inch in diameter.

The true vocal cords, though more or less thickened and infiltrated, substantially retained their ordinary outlines. Viewed from below, a circumscribed aggregation of warty-looking organized, granulation tissue occupied the subchordal interspace. The trachea exhibited no signs of contraction or disease.

To recapitulate, the main points of interest in this case, it seems

to me, lie in the somewhat lengthened and comparatively comfortable survival of the individual, despite the extreme narrowness of the laryngeal portion of his respiratory tract. The degree of this reduction is more readily appreciated by recalling to mind the ordinary diameters of the normal rima glottidis, its longitudinal measurement being fixed by Moure at between twenty-three and twenty-seven millimetres—say about an inch—and its transverse we may place at between a quarter and half an inch. Comparing these dimensions with that of the specimen before us, which I may safely place at an eighth of an inch or about that of the thickness of an ordinary lucifer match, some idea of the variation from the normal can be formed, though I, of course, realize that there may have been some antemortem or post-mortem swelling. As I have already remarked, the majority of the consultants visited by the patient concurred in urging the advisability of a tracheotomy procedure being undertaken for the relief of the respiratory embarrassment. One distinguished consultant, however, differed with the majority in recommending the practice of laryngeal intubation. Without desiring in any way to belittle the inestimable value of this great therapeutic measure, I feel compelled to question the advisability of its employment in this case. I am, furthermore, confident that the gentlemen who had an opportunity to examine the living larynx, recalling to mind the inaccessibility of the deformed larynx and epiglottis and the speedy supervention of alarming inspiratory spasm under the slightest provocation, will agree with me as to the inadmissibility of intubation. With regard to the formidable proportions assumed by the permanent results of the syphilitic disease, I have reason to doubt as to the patient having received the fullest benefit from local and constitutional medication in the earliest periods of his disease; for, while reminded, by a series of cases of advanced ulcerative syphilis which I can not here describe, of the difficulty sometimes encountered in controlling these pathological processes in certain cachectic conditions, I have always been, as you may remember, a strenuous advocate of the prompt and permanent beneficial results attained by careful treatment of the nasal manifestations, a result certainly not borne out in the history of this case.

With regard to the action of the potassium iodide, it was generally assumed by the several physicians interested in this case that the pulmonary asthmatic symptoms were purely due to the existence of a chronic emphysema. In a society discussion, recently published, the eminent American syphilographer, Dr. R. W. Taylor,

was reported as having given utterance to the following statement: "In pulmonary syphilis the correctness of the diagnosis could often be established by the results of treatment. We not infrequently heard of patients being cured of asthma by the iodide of potassium, and, when this was the case, there was no doubt whatever but that the asthmatic trouble was of syphilitic origin."

Recalling to mind the extensive pathological lesions observed in the upper air-passages during the lifetime of this patient, and comparing them with the laryngeal lesions described by me as having been revealed by the post-mortem, strong presumptive evidence seems to exist in favor of the view that the asthmatic symptoms were in part actually attributable to syphilitic disease of the lungs. In quoting and utilizing Dr. Taylor's important assertion, I am not unmindful of the fact that benefit has been alleged to have been obtained from the production of iodism in purely non-specific cases. Did time permit, I might cite a remarkably pronounced case of combined syphilitic pulmonary and laryngeal disease which came under my observation.

The following conclusions seem to me to be justified by the foregoing subject-matter, viz.:

That life may be sustained for years, though breathing is conducted through an aperture sufficiently small to be pronounced totally inadequate for respiratory purposes, provided due diligence and presence of mind are exercised and careful nasal breathing is resorted to.

That, contrary to what might naturally be expected, death in these cases may result from exhaustion, instead of strangulation.

That pronounced relief in these cases can be derived from the use of local agents, and particularly by utilizing the lubricating action of certain anatomized unguents.

That, when local means fail to relieve the dyspnœic symptoms due to syphilitic stenosis of the larynx, relief may be reasonably expected from the internal administration of iodide of potassium.

That the marked relief obtained by the internal exhibition of this remedy in pulmonary as well as laryngeal asthma affords strong presumptive evidence of the coexistence of disease of the lungs.

That tracheotomy should be performed in these cases at a time carefully determined by the signs and symptoms, laryngeal intubation being contra-indicated on account of the extreme narrowness and dense character of the cicatricial formation and the ready provocation of irremediable inspiratory spasm.

That the unconditional co-operation of the patient is demanded to secure the best results.

Discussion.

Dr. J. Solis-Cohen: Mr. President, I have looked at this specimen very carefully, and I can not divest myself of the opinion that if you were to cut through this stricture in the upper part of the larynx, you would find a normal glottis beneath.

Dr. Mackenzie: The paper reminds me of a case which I had several months ago at the Johns Hopkins Hospital. The patient had syphilis, and suffered very much with dyspnœa. He had been treated for eighteen months for asthma. Upon examining his larynx, I found bilateral abductor paralysis. His dyspnœa was so great that I feared his death in my office, and I got his father to take him to the hospital in a carriage, with a note to the hospital resident to perform tracheotomy at once, if another attack came on, without waiting for my arrival. The operation was done at once by the house surgeon, but the expected relief did not appear. In fact, the dyspnœa not only got worse, but expiratory dyspnœa was added to the inspiratory difficulty. This showed, to my mind, that there must be some obstruction below the seat of operation which had been overlooked. The patient sank, and in the course of a few days died. I thought that it might be due to stricture of or pressure upon the trachea. The post-mortem was made by Dr. Welch, very carefully. No trace of syphilis was found in any part of the body, except in the respiratory organs. In the apex of one lung was found a large gumma. Both recurrent nerves were compressed, and were found in a mass of half cicatricial tissue and half enlarged glands. There was pressure upon the nerves, and the trachea at its bifurcation was so narrowed by the tumor and by contraction following ulceration, that it was with the greatest difficulty that a very fine probe could be forced through the stricture. There were other ulcers in a state of cicatrization in the neighborhood. The complete examination has not yet been made, but I may state that in the nerves we found certain fibers of both recurrent laryngeal nerves in a state of fatty degeneration. This case was extremely interesting to me because of the combination of the stenosis with the degeneration of the nerves and the external pressure of a tumor. This was all subsequent to the gummatous deposit in the lungs. It is very seldom that we find this location of syphilis strictly in the respiratory organs, without being manifested in any other part of the body; it is a paradoxical expression of the syphilitic infection. The patient was in the process of cure; but the cicatricial contraction of the ulcers made pressure upon the trachea and upon the nerves and caused his death. Of course there was also a condition of hypostatic pneumonia found at the examination after death.

Dr. Asch: In a case like that reported by Dr. Jarvis I think it advisable to try dilatation; I have reported some cases which were cured

and some much improved by this treatment. Of course the amount of dyspnœa might necessitate tracheotomy; but the dilatation could be practiced after the operation.

Dr. CASSELBERRY: I am greatly interested in Dr. Jarvis's case, and wish to speak of the danger of undertaking palliative treatment in cases of this kind. I recall one case of my own which in many respects is similar to the one before us. It was a man of middle age, suffering from syphilitic contraction in the upper part of the larynx, with attacks of dyspnœa, which were sometimes of dangerous severity. Tracheotomy was recommended and refused. It was just five days afterward that he suffered a severe attack of dyspnœa and perished before aid could reach him. Now, I maintain that a man going about with such a condition of the larynx, exposed to all sorts of influences which might bring on an attack—such as cold or inhalation of dust or other irritants—is every moment in much more danger of his life than he would be from the performance of tracheotomy. I claim that palliative treatment with O'Dwyer's tubes in such severe cases is dangerous. We should perform tracheotomy first and then palliation if you choose; but first of all put the patient in a safe condition as regards his life, and treat the stricture afterward.

Dr. S. SOLIS COHEN: This specimen very much resembles the laryngoscopic image of a case in the practice of my brother. Upon cutting through the contracted portion of the larynx—a therapeutic operation undertaken during life—there was found a healthy glottis beneath. Perhaps he recalls the case.

Dr. J. SOLIS-COHEN: Yes, I remember the case you refer to.

Dr. WRIGHT: I am interested in the specimen, but less on account of its extraordinary character than its ordinary character. There are a large number of cases of syphilitic contraction of the larynx presenting themselves having the same features. I have a case now under observation in which the inflammation, commencing in the nose, extended down the throat and into the larynx with cicatricial formation; and it was much benefited by iodide of potassium. I saw several cases of tracheal syphilis last winter which lend emphasis to Dr. Casselberry's remarks. Take a case of this kind; if he were to have an attack of ordinary laryngitis he would drop dead in the street; the slightest swelling could not help but cause suffocation. The patient would die suddenly. Certainly, in these cases it is our first duty to explain the condition clearly to the patient; he may refuse an operation, but it should be explained to him so that he may understand the danger he is in without it. I am glad that Dr. Jarvis has brought this subject before us for discussion.

Dr. SAJOUS: Speaking of the dangers to be encountered in these cases, I should like to include iodide of potassium in the list. The fact that œdema sometimes follows its use should be borne in mind in treating these patients.

Dr. WRIGHT: In cases of extreme stenosis I want to say that the ad-

ministration of iodide of potassium may have the result just referred to, and if it is given, I would say, get out your tracheotomy instruments and be ready for immediate operation. I always treat these cases in a hospital, where I can keep them under observation.

Dr. SAJOUS: I would also state that in syphilitic laryngitis I noticed a connection between the administration of the iodide and the appearance of the œdema; as soon as I gave the iodide the œdema would appear, and would disappear as soon as it was stopped.

Dr. S. SOLIS-COHEN: I am glad that Dr. Sajous has brought this matter up. Few physicians keep in mind the possibility of producing œdema when they give large doses of iodide of potassium in syphilitic affections of the throat. It is not a mere theoretic danger. Professor S. W. Gross used to relate to his classes a case in which he had to sit up all night, prepared for instant tracheotomy. This danger is present in every case in which large doses are given at the first, without previous gradual increase, even where there is no local disease of the larynx. As to the specimen presented by Dr. Jarvis, any physician or surgeon who counsels against tracheotomy in such a case is taking a very grave responsibility.

Dr. J. SOLIS-COHEN: With regard to the occurrence of œdema in these cases, I must say that I can hardly see where the œdema is to come from on account of the dense infiltration of the parts; but there are other dangers than those from iodide of potassium. In several cases occurring in the practice of some of the most prominent men in the profession, in which I have urged the performance of tracheotomy which was not done, the patients afterward died. Another point is that in cases of decided stenosis there would be danger from an attack of bronchitis, since a small pellet of mucus might cause strangulation. I was surprised that any one should use O'Dwyer's tubes when I first saw them, their caliber was so small; I did not see how they could possibly benefit the patient. I always make it a rule to use as large tracheotomy tubes as possible. I afterward found that patients could breathe very well through the small tubes of O'Dwyer.

Dr. JARVIS: In reference to Dr. Cohen's remark that there is a healthy larynx inferiorly, I should state that I meant to convey the idea that the contraction was limited to the upper part of the larynx. I of course knew that the cords were not involved; this was recognized during life. I was very glad to hear the remarks made about iodide of potassium. It is a valuable remedy in these cases, but it is not necessary to give it in overwhelming doses; small doses would be safer and sufficient to afford relief. I was also pleased with the remarks made about intubation. I am sure that if any gentleman present had seen the case he would have agreed with me as to the impracticability of the O'Dwyer tubes in this case; and I think that he would have been very glad to get off without causing serious inspiratory spasm during the examination. With regard to Dr. Casselberry's remarks, I stated that tracheotomy was indicated and that I had urged the patient to submit to the operation, but he thought that as

long as he was relieved by the inhalations he would not have it done. I did not feel like sending him away just because he would not do exactly as I desired. I am glad that this report of the case has been so well received and that the discussion shows that the members agree as to the propriety of the measures suggested by me for the patient's relief.

Paper.

A CASE OF INTRINSIC EPITHELIOMA OF THE LARYNX.

By MORRIS J. ASCH, M. D.

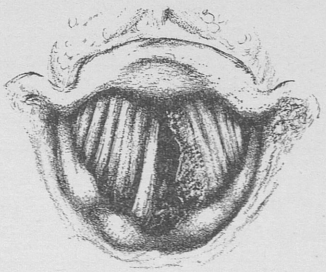
R. G., aged seventy years, came to me in the autumn of 1889, complaining of hoarseness. He had no cough or any evidence of disease beyond the interference with his voice. He was a hale, hearty man, living much in the open air, hunting during the winter in the South, and yachting and devoting himself to the care of his country place in the North during the summer. He was a retired physician, and consequently able to describe his symptoms with accuracy. He complained only of the hoarseness, which was brought to his notice by his inability to call his dogs as formerly, and which he attributed to having taken cold. There was no pain, dyspnœa, or dysphagia. A laryngoscopic examination was difficult, owing to the extreme sensitiveness of the pharynx, but the application of an eight-per-cent. solution of cocaine soon produced tolerance. Even then, owing to the thickened and depressed epiglottis, an examination was difficult, but the mirror revealed the ventricular band of the left side irregular in outline and swollen to such a degree as to conceal the vocal cord of that side. The left arytæno-epiglottic fold was unchanged; the mucous membrane darker than normal, smooth, and without ulceration. The subglottic region was invisible, owing to the narrowing of the rima glottidis. The laryngeal image was that of a chronic hypertrophic laryngitis. A few topical applications were made with apparent relief of the hoarseness, and the patient left for his Southern home. In the spring of 1890 he returned. He was full of life and vigor, was perfectly well in every way, except that the hoarseness persisted. The larynx presented nearly the same general appearance as at the previous examination, except that the deposit in the ventricular band of the left side had increased and there was some swelling in that of the right side. There was no dyspnœa or pain, and the local applications were continued and seemed to give relief; but the continuance of the swelling for so long a period and the absence of any improvement after treatment caused me to apprehend the existence of malignant disease, although there was nothing in the condition of the patient or in the appearance of the part to warrant any such diagnosis with certainty. There was no soreness over the larynx, though the thyroid cartilage was

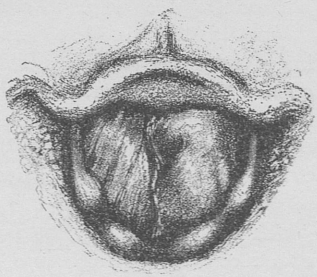
slightly enlarged; neither was there any glandular enlargement in its vicinity. In November the patient, on his way South, returned again to the city, with no change in his condition or in the appearance of the larynx. He was cheerful, and sure that a mild climate would bring him back in the spring quite cured, although he was warned of the probable gravity of his case.

In March, 1891, he presented himself unexpectedly at my office, showing evidence of great suffering. His voice was almost extinct, his breathing difficult, and he was weak and emaciated to a degree. The increasing dyspnœa had compelled him to return North thus early in order to obtain relief. Examination showed the lumen of the larynx almost entirely occluded by an irregular swelling from both sides, the merest chink remaining to give passage to air, which found its way between the irregular prominences on either side; no ulceration of any kind was visible, and the appearance was that of an irregular swelling with a smooth surface. There was a small, enlarged submaxillary gland on the left side. The patient was at once informed of the gravity of the situation and an immediate tracheotomy advised. This he declined, although the danger of delay was pointed out to him, until he could terminate certain important business affairs; to this I was obliged reluctantly to consent, though I feared that a sudden termination might occur at any moment. The dyspnœa was so extreme that comfort in respiration was only secured when the patient was at rest. He visited me daily, always refusing to permit the operation until the morning of April 5th, when he presented himself with his respiration embarrassed to such a degree that there was no longer any question as to delay. He was taken to the New York Eye and Ear Infirmary, where, in the presence of Dr. C. T. Poore and the house staff, I performed tracheotomy. The dyspnœa by this time was so intense that I deemed it unsafe to administer an anæsthetic, and I injected a few drops of a two-per-cent. solution of cocaine over the proposed line of incision, with the effect of rendering the parts insensible to pain and enabling the patient to undergo the operation without inconvenience. It was found impossible to extend the neck to any degree, as, on attempting to raise the shoulders, suffocation immediately ensued, and in consequence the operation was rendered extremely difficult, the cricoid cartilage being nearly at the level of the episternal notch. The first incisions, which were almost bloodless, having been made, the trachea was opened through the upper rings. Owing to its ossification, a partial resection had to be made to permit of the introduction of the tube, the relief from which was immediate. The patient did well for some days, when a severe attack of grippe—which was prevalent at the time—caused him considerable discomfort, and from the effects of it he did not recover for three weeks. Immediately after the operation deglutition was painful, but this soon passed away, and on April 26th, when he left the infirmary to return to his lodgings, he could swallow with perfect comfort. His only annoyance next to his weakness, which persisted, was the frequent clog-

ging of the tracheal tube with a sticky mucus, which required constant attention to prevent untoward results. As his neck was extremely thin, it was thought that perhaps this might be caused by irritation resulting from the impinging of the tube on the posterior wall of the trachea, so a new one was ordered, having a shorter horizontal member than the one in use, and with a curve of a quarter of a circle. This tube partially relieved the symptom, but not entirely. About the middle of May the expectoration was streaked with blood, which, as the lungs were perfectly sound and the external wound in good condition, gave rise to the fear that the disease might be spreading downward and ulcerating. Early in June the patient, having gained strength, was removed to his country seat on the North River, where for a time he did well. In a few weeks, however, spasmodic attacks of dyspnœa came on, which he attributed to plugs of solid mucus occluding the tube, and which he relieved by removing the tube and coughing the mass through the opening in the trachea. Desirous to have my opinion as to the cause of the trouble, he took passage on the night of the 11th of July on a night boat on the Hudson River. Soon after his embarkation a severe attack of dyspnœa came on, which his attendant was unable to relieve. A thick fog prevailing at the time prevented the captain of the boat for several hours from making a landing to obtain the services of a physician, and when finally medical aid came, he was dying from exhaustion.

Autopsy —Permission having been granted to examine the larynx only, the condition of the other organs could not be ascertained. The body was thin, but much less emaciated than before the operation. Externally, the opening of the tracheal wound was in good condition, no granulation or diseased tissues being observed, nor was there any trace of disease external to the larynx. The larynx and three rings of the trachea were removed from the body. On inspection from above, the lumen of the larynx was seen to be entirely occluded by smooth irregular masses





springing from the ventricular bands of either side. On dividing it posteriorly in the middle line and exposing the interior of the larynx, the cartilages of which were ossified, these growths were found to be in contact and to fill up the entire cavity. The left ventricular band was

enormously swollen and the vocal cord of the same side ulcerated. Extending downward from its inferior border to a point level with the middle of the tracheal opening and covering the entire laryngeal wall of the left side was a papillary mass ulcerated on its lower portion. On the right side the ventricular band was infiltrated, but not to so great a degree as the left. The vocal cord was thickened, and below it a mass of diseased growth extending nearly to the lower border of the thyroid cartilage. Just to the right of the median line at the base of the cricoid cartilage and above the upper magin of the tracheal wound was a globular pedunculated tumor of the size of a large pea. There was no erosion or growth below the level of the tracheotomy wound. The submaxillary gland on the left side was enlarged. The specimen was sent to Dr. R. G. Freeman for examination, who made the following report:

The specimen shows considerable swelling of the glottis and upper part of the larynx. Below the vocal cords, on the anterior wall of the trachea, a growth five sixteenths of an inch in diameter and three sixteenths of an inch in height projects. Just below this is the artificial opening due to tracheotomy. The upper lip of the opening is somewhat thickened. The tumor involves all the upper portion of the larynx and the anterior wall of the lower portion. Specimens were taken for examination from the posterior and lateral walls of the glottis, and from the growth from the anterior wall below the cords.

Microscopic examination showed the tumor to be an epithelioma. The cells are grouped in a reticular arrangement with a varying amount of stroma. In places they are arranged in concentric masses, forming epithelial pearls. In some parts there is an extensive production of spheroidal cells. There is some necrosis on the surface. The mucous glands are inflamed and some of their ducts are occluded by inflammatory changes.

There are certain points in this case which make it of special interest. *First*, the absence for so long a period of positive signs of malignant disease; and, *secondly*, the nature of the irritating cause producing the spasmodic attack which finally destroyed life.

The first point is accounted for by the fact that the case, being one of *intrinsic* cancer, was naturally slow in growth. There was no external manifestation of the disease, unless the slight glandular swelling could be so considered; nor was there any evidence of infection of any other organ. There was a thickening of the mucous membrane of the ventricular bands with infiltration of the muscles and loss of motion, which swelling forbade a view of the subglottic lesion, which, if visible, might probably have revealed its true nature; but there was no ulceration, no lancinating pain in the ear or elsewhere, no reddened base, nor any certain sign of malignant disease —only swelling and dysphonia; and in this case a fragment removed

for microscopical investigation might have proved deceptive, for the sections taken from the upper portion of the ventricular band showed evidences of inflammatory action more markedly than of epithelioma. Even at the last, when the increasing stenosis rendered operation necessary, there was no absolute proof of cancer. This could only be deduced from negative data by clinical experience. Tubercle and syphilis being excluded, there could be nothing to account for the condition but malignant disease.

From the point of view well taken by Butlin, that intrinsic cancers not only differ essentially from those of extrinsic origin by their limitation to a circumscribed area, but, being less actively malignant, are less likely to recur, this case would seem to have been a favorable one for excision, were it not for the advanced age of the patient warranting the opinion that tracheotomy would afford relief during the probable term of his natural life. Thyrotomy was out of the question, as the ossified state of the cartilage forbade the idea that the larynx could be sufficiently dilated to permit of a thorough operation being performed. In the treatment of the case, pyoctanin blue was employed locally and internally, but without any apparent effect. Taken internally in doses of three grains, it produced vomiting and could not be continued.

The cause of the paroxysms of dyspnœa is obscure, unless they can be attributed to the globular mass projecting into the windpipe, producing them as asthma is caused by similar proliferations into the upper air passages. I attribute the fatal termination immediately to cardiac weakness, the result of the grippe with which he was attacked after the operation.

Discussion.

Dr. Wright: I am especially interested in this case, because several months before the patient went to Dr. Asch he came to my office with his son. I can fully confirm the statement, made in the record, of the irritability of his larynx. It was only at a second sitting that I was able to see over the epiglottis at all. At that time there was very little to recognize; the larynx was simply covered with mucus, looking like chronic laryngitis. I told his son that in a man of his age, who had never had laryngeal trouble before, the outcome might be very serious.

Dr. Asch: In addition to what I have said, I would like to lay stress on the ease of performing tracheotomy with the aid of cocaine. The injection of a few drops of a two-per-cent. solution along the line of the proposed incision makes the operation absolutely painless. Another very interesting point in the case is that, a few weeks after the operation, the

patient was attacked with a peculiar form of dyspnœa, coming on in spasmodic attacks. It was a spasmodic attack of this kind which occurred while he was on the boat where it was impossible to get medical assistance, together with weakness following an attack of the grip, that caused his death.

Dr. JARVIS: I should like to ask Dr. Asch why a secondary operation involving the larynx was not indicated in his case for the relief of the spasmodic attacks? Could he not have dissected out the carcinoma by performing thyrotomy?

Dr. ASCH: I suppose Dr. Jarvis refers to such an operation as Lennox Browne reports, where he opened the larynx and dissected out the cancer. In my case this could not be done, because in so old a patient the cartilage is too much ossified to permit of such an operation.

Paper.

THE TROUBLESOME SYMPTOMS CAUSED BY ENLARGEMENTS OF THE EPIGLOTTIS, AND THE ADVISABILITY OF REDUCING THE SIZE OF THIS CARTILAGE BY OPERATIVE MEASURES.

BY CLARENCE C. RICE, M. D.

THIS subject is not a large one, nor is it one to which any great amount of attention has been paid by this Association. Enlargements of the lingual tonsil and contact between such lymphatic hypertrophies and the epiglottis have been thoroughly studied and elaborated in recent writings.

The condition of the epiglottis in tuberculosis, in syphilis, and in lupus has received due consideration, and since the lesions of these diseases are frequently limited in a characteristic manner to the epiglottis, the epiglottis has probably been examined as carefully as any other portion of the respiratory tract. Great progress was made in the treatment of catarrhal affections of the top of the larynx when it was recognized that contact between the base of the tongue and the epiglottic cartilage occasioned such symptoms as tickling in the throat, a feeling of fullness in the lower pharynx, a disposition to swallow, and eventually paroxysms of coughing. It was found also that contact between the tongue and epiglottis was a sufficient irritant to cause a chronic catarrhal laryngitis.

In a paper entitled Unusual Causes of Coughing,* read before the Medical Society of the State of New York in February, 1886,

* *Med. Record*, May 1, 1886.

at a time when I believe this subject had not been brought before this Association, I noted that in the frequent condition of contact between the tongue and epiglottis, sometimes it was enlargement of the lingual tonsil which was the primary source of the difficulty, and sometimes it was some abnormity of the epiglottis which was at fault.

It was found that an enlargement of the lingual tonsil which overhung and rested upon the epiglottis caused at first a temporary congestion, and very soon a permanent congestion and enlargement of the epiglottis. I believed then, and my opinion has not been changed, that the contact of the epiglottis, either with the tongue in front or with the lateral walls of the pharynx, was the most frequent cause of those peculiar epiglottides which are the subject of this paper—epiglottides which are sometimes enlarged vertically, sometimes laterally, which are always congested, and which are prone to attacks of subacute inflammation.

To say that such epiglottides are simply an exhibition of a chronic catarrhal process which has affected the entire larynx does not satisfactorily explain the condition, for we have all noted that the enlargement and congestion of the kind of epiglottis here described are much more marked than are the evidences of a catarrhal inflammation within the larynx proper. This epiglottis is frequently found enlarged when the remainder of the larynx is practically normal. And, again, whereas the appearances of congestion and swelling in the larynx will disappear when properly treated, the chronically enlarged and congested epiglottis either is not benefited at all by treatment, or, if improved, it quickly returns to its condition of congestion.

The fact that the epiglottis becomes congested and enlarged when the larynx remains in a healthy state, and also that these epiglottides are constantly fluctuating from a slight to a large degree of congestion, and even changing in the degree of thickening and lateral enlargement, the larynx as a whole remaining in a quiescent condition—these facts point strongly to the conclusion that the cause of the annoyance to the epiglottis is very limited in its action and is applied directly to the epiglottis, and is not one of the sources of general catarrhal inflammation which are to be found without the body.

In addition to the enlarged lingual tonsil which is the most frequent cause of enlargement and congestion of the epiglottis, there are a number of other factors to be mentioned as causative in the

production of such enlargement. It is quite proper here to lay some stress upon predisposing causes and to say that the congenital formation of the epiglottis as regards size, shape, curvature, length, and breadth, determine largely whether it will be exposed to contact with neighboring parts or to external irritants. It is unnecessary to describe the normal epiglottis; we know that its direction is vertically upward and that its free extremity is curved forward toward the base of the tongue. It is undoubtedly true, as Merkel * demonstrated by experiment, that the length of the epiglottis in man stands in a fixed relation to the antero-posterior diameter of the larynx, so that when the epiglottis covers the larynx during deglutition its margin escapes the posterior wall of the pharynx by the distance of a quarter of an inch. An epiglottis which is compressed laterally (see Fig. 1) can hardly be rubbed against by those lateral bands of lymphatic tissue which form a connection between the faucial and the lingual tonsil, though its compressed corners may rest against the posterior wall of the pharynx, while a broad epiglottis—that is, one of long diameter from side to side—is very apt to come in contact with the sides of the pharynx if there is any lymphatic enlargement (see Fig. 2).

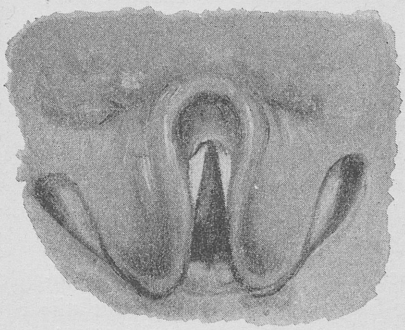


FIG. 1.

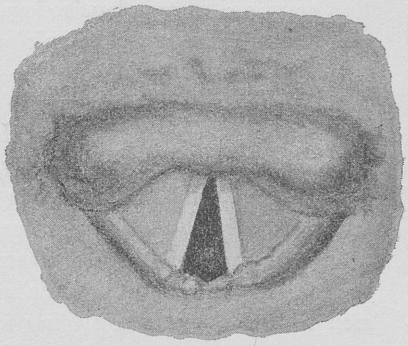


FIG. 2.

Some epiglottides have such a sharp anterior curvature at their superior margin that they can hardly escape friction with the base of the tongue (see Fig. 3). We see the opposite position of the epiglottis occasionally in health, when the laryngeal mirror shows it to be fallen over backward, covering the aperture into the glottis and resting against the posterior wall of the pharynx. This is the

* Merkel. *Die Functionen des menschlichen Schlund und Kehlkopfes.* Leipzig, 1865.

pendulous epiglottis (see Fig. 4), and Carmalt-Jones* says: "It is not a normal one, and its position is generally on account of some throat trouble." In an interesting monograph written by Sir George Duncan Gibb,† in which he gives the results of his study of the effect of the pendulous epiglottis upon the voice and upon the general

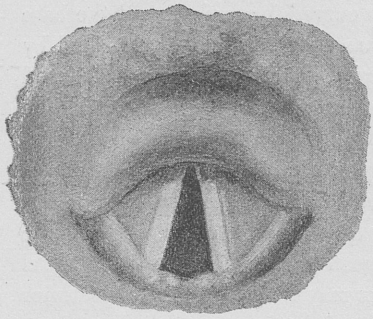


FIG. 3.

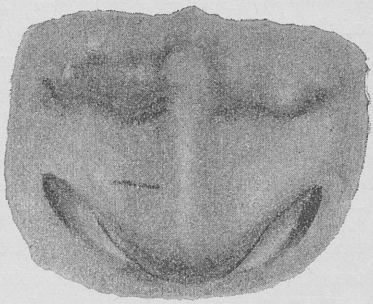


FIG. 4.

health, he states that eleven per cent. of four thousand six hundred people examined were found to have this variety of epiglottis, and that every one of two hundred and eighty natives of India, China, and Africa had a pendulous epiglottis.

He thinks this is due to the relaxation induced by living in a hot climate. He emphasizes the evil effect of the pendulous epiglottis upon voice and health in that it causes a slight dyspnœa. I have quoted from this article only because it is an unusual one.

The large pendulous epiglottis is seen most frequently in disease, and the faulty position is due largely to the increased weight of the margin of the cartilage. In tuberculosis laryngis, for example, where the edge of the epiglottis is thickened many times, it is not uncommon to find the cartilage lying far backward. The epiglottis will assume a more erect position as fast as the inflammatory weight is removed. This fact was shown to be true in a case of fibroma of the epiglottis; as the growth increased in size the cartilage was carried backward and downward, but it returned to its normal position when the growth was removed.

We see, too, epiglottides which are not symmetrical, one side of which extends nearer the lateral wall of the pharynx than does the other side. More commonly we find a prolongation of the cartilage

* Jones. *Trans. of the Internat. Med. Congress*, p. 112.

† *Trans. of the Anthropological Society*, vol. iii.

at either one of the superior corners (see Fig. 5). Occasionally there is a spur extending from a point midway in the superior margin of the epiglottis. I have always thought that these elongations of the epiglottis were due but slightly to congenital causes, but, commencing perhaps in this way, were irritated by contact with neighboring parts, and so the elongation became much more prominent than it otherwise would.

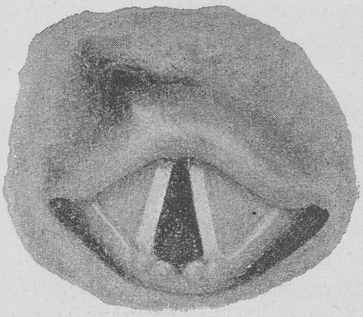


Fig. 5.

I do not know whether Dr. Donaldson * was referring to the inflammatory epiglottis in his article on the Functions of the Epiglottis in Deglutition when he said:

"The epiglottis is frequently out of proportion to the size of the rima glottidis. The free edges of this various-shaped cartilage are of such different contour that they can not fit the margin of the glottis accurately."

The epiglottis normally and pathologically presents not more than five or six radically different shapes, but each of these has numerous shades of variation in form. Browne † says the epiglottis may be looked upon as the distinctive feature of the larynx, for no part is so variable in shape and size. Audubert, ‡ in Moure's clinic, made careful record of the different-shaped epiglottides, and published his results in twenty-eight plates.

Epiglottides of such curvatures, shapes, and sizes as noted in the illustration are strongly predisposed to congestive enlargements, on account of the injury they invite from contact with parts in the neighborhood. Undoubtedly there are other factors present which make it difficult, if not impossible, to diminish the congestion or to reduce the epiglottis in size.

An unusually high position of the epiglottis in the pharynx particularly exposes it during deglutition, and impurities in the respiratory current are more harmful to it than to an epiglottis of normal size placed lower down. These enlarged epiglottides always

* Donaldson. *Trans. of the Am. Laryng. Assoc.*, vol. viii, p. 53.

† Browne. *Diseases of the Throat*, p. 63.

‡ Audubert. *Annal. de la Polyclinique de Bordeaux*, January, 1888.

seem to be especially congested and irritable in people who use tobacco and alcohol freely. The degree of the congestion of the epiglottis seems to bear a very intimate relation with the condition of the middle pharynx. The color of the mucous membrane is apt to be of the same shade in both these locations. Disturbances in digestion, gastric disorders, are apt to fire up the chronically enlarged epiglottis. In fact, the epiglottis when in this condition seems to be more nearly related to inflammatory exacerbations of the pharynx than to those of the larynx. It is possible that the enlarged epiglottis owes something of its size to either venous or arterial congestion caused by pulmonary, cardiac, or hepatic disease. In two of my most marked cases, both occurring in men about fifty-five years of age, one suffered with emphysema and chronic bronchitis, and the other had a weak, fatty heart.

The variety of epiglottis which I have tried to describe is not commonly seen. I am not speaking of epiglottides which have become moderately congested and slightly enarged by the pressure of the lingual tonsil, but of marked hypertrophies of the epiglottis. I should say that I had seen ten or twelve cases, and three fourths of them in men. We should expect this preponderance in men, because of their having a larger degree of catarrhal inflammation of mucous membrane than women, and also because of the use of tobacco and stimulants.

Enough has been said as to the manner in which the epiglottis becomes at first congested and eventually permanently enlarged. As to the pathology, a single sentence will describe the condition: It is a pure hyperchondrosis effected by an abnormally large blood supply. The mucous covering becomes somewhat thickened, the superficial blood-vessels are increased in number and size, there is seldom any œdema, the enlarged epiglottis is hard and cartilaginous throughout its entire extent. No matter how much enlarged the epiglottis is, it always presents the appearance of the normal cartilage as regards texture so well described by Collier,* who says that "on looking at the epiglottis from behind it is seen to be covered by a thin mucous membrane continued from the inner aspect of one arytæno-epiglottic fold to the other. Through the mucous membrane the well-defined and sharply cut edges of the epiglottis can be seen."

There are certain *peculiar* symptoms which are occasioned by an hypertrophied epiglottis, but it will hardly be necessary to depend upon any characteristic symptom, as the diagnosis of this condition

* Collier. *Lancet*, 1889, i, p. 882.

will readily be made the first time a laryngeal mirror is introduced into the mouth. The constant tickling and feeling of fullness in the larynx, the hard, unsatisfactory paroxysms of coughing, which may be followed by glottic spasm or by vomiting, and the partial loss of voice which remains for a time—these point to laryngeal irritation and reflex phenomena. The symptom of "empty swallowing," spoken of by Gleitsmann * in cases of enlarged lingual tonsil, is common also where an enlarged epiglottis is present. These patients frequently give the history of having swallowed foreign bodies, and they have a strong belief that the uncomfortable feeling in the throat is due to their lodgment in the pharynx. These outbreaks of coughing occur upon the slightest provocation, when the patient is talking, singing, laughing, or eating, when he lies down or when he rises, and when he first goes out of doors. Paroxysms of coughing are not so easily produced in any other disturbance of the larynx or of the lungs. The long-continued mechanical violence caused by the cough usually gives rise to a very irritable mucous membrane throughout the upper respiratory tract, and in this condition the smallest external irritant is sufficient to cause an explosion. It is not an encouraging task to control the unpleasant symptoms caused by an enlarged epiglottis in any patient, but it is especially difficult to do so in singers and in public speakers. Patients of this class are particularly unfortunate if their epiglottides are permanently enlarged, for not only will the use of the voice produce tickling, but the patient is so afraid of coughing that he holds the throat stiffly by muscular power, and this gives rise to a bad quality of tone. Fatigue of the voice is another symptom produced by an enlarged epiglottis.

Reflex cough caused by a very sensitive nasal mucous membrane, by accumulations in the auditory canal, by elongated uvulæ, by enlarged lingual tonsils, and by bronchial and pulmonary disease, should be distinguished from the cough due to an hypertrophied epiglottis.

It is only within the last year that I have treated these cases of large catarrhal epiglottides with any degree of satisfaction. If there is any astringent application which will cause any permanent reduction in their size, I have not found it. The atomization of the old mineral astringents and of tannic acid seems only to increase the irritation. Solutions of cocaine are of far more service, and I know of no better medical treatment than the application by spraying of a

* Gleitsmann. Hypertrophy of the Tonsil of the Tongue. *Medical Record*, December 17, 1887.

two-per-cent. solution of cocaine hydrochloride, followed by a coating of some one of the oily products, such as liquid vaseline, albolene, or benzoinol; but these are only temporary in their benefit, and the constant use of cocaine in the larynx is to be avoided. I have tried strong solutions of silver nitrate after the spray of cocaine, but have made little progress. Patients of this class always return to the physician after a short interval. A slight change in the weather is usually sufficient to renew the disturbance in the top of the throat.

In my first case of operative treatment upon the epiglottis I used the galvano-cautery to diminish the size of an enlargement after I had in the same instance reduced the size of a lingual tonsil by the same method. But I would state strongly that burning is not the proper way of reducing the epiglottis. This cartilage resents such treatment to a remarkable extent; it becomes very much inflamed, œdematous, and painful, and weeks will elapse before the epiglottis recovers from the burning. The patient will be hoarse, but it is a little singular that, in spite of the fact that the epiglottis is so much swollen, the cough is less severe.

I operated with long-handled scissors in two cases, in both instances cutting off perhaps an eighth of an inch from the sides of the epiglottis, where they rested against the pharynx. The epiglottis was reached by using the tongue depressor alone. One of these two cases bled rather freely, but was checked by the application of a sixty-grain solution of silver. The inflammation following the scissor-cutting was moderate in both cases, and subsided in two weeks. The larynx was sprayed with a one-per-cent. solution of cocaine in oil. In view of the bleeding which is likely to follow the use of sharp scissors, curved or right-angled cutting forceps may be employed for removing a little from the sides or the top of the epiglottis. And here let me emphasize the direction that only a narrow margin of the epiglottis should be excised. The indication is simply to prevent contact between the epiglottis and neighboring parts.

If both an hypertrophied lingual tonsil and an enlarged epiglottis exist, the lingual tonsil should first be reduced in size. When this source of irritation is removed the epiglottis will frequently lose something of its swelling and congestion. It is only as a last resort that the epiglottis should be reduced in size.

I quote an interesting case reported by Stookes *—that of a child one year old who suffered for six months with paroxysms of glottic spasm and choking. Death followed and it was found that the laryn-

* Stookes. *Brit. Med. Jour.*, November 17, 1888.

geal obstruction was caused by an epiglottis which was a third to a half as long again as normal. Sir Morell Mackenzie, in one of his editions, speaks of his epiglottotome. I have not seen it, but believe an instrument of the proper curve, acting on the same principle as the tonsillotome, would be a useful one for this operation. There are a number of laryngeal cutting instruments where a knife is drawn across a circle which might answer the purpose. Dr. William Porter,* of St. Louis, in an article on Excision of the Epiglottis, refers to a case of growth upon the epiglottis which involved a large part of the cartilage. The epiglottis was removed with cutting forceps, and the inconsiderable bleeding was checked by applying a sponge wet with Monsel's solution.

In closing, let me repeat that there are many cases where such troublesome symptoms as fullness in the throat, tickling, voice fatigue, violent paroxysms of coughing, vomiting, and glottic spasm are caused by an enlarged, congested, irritable epiglottis. In most of these cases this condition of the epiglottis has been caused by an hypertrophied lingual tonsil, removal of which will afford relief. But in some few cases the epiglottis has become so enlarged as to rub against the lateral and posterior walls of the pharynx; and as no medication will reduce the epiglottis in size, it will be found necessary to take away a small portion of the margin of the epiglottis in order to prevent frictional irritation.

Discussion.

Dr. MULHALL: Did I understand Dr. Rice to state that he had seen cases of uncomplicated, non-syphilitic, non-malignant, non-tubercular, non-traumatic primary enlargement of the epiglottis?

Dr. RICE: Yes, I have.

Dr. MULHALL: Are they not uncommon?

Dr. RICE: I think they are.

Dr. MULHALL: I have asked this question because it is to me a novel fact that there can be a case of pure, uncomplicated, simple chondritis in any part of the body. I can understand enlargement of the epiglottis from surrounding catarrhal or other inflammation, which is the usual cause. I recall the case of a lady in St. Louis who had an unyielding, irritable cough. She went abroad a year ago and consulted a prominent laryngologist, who pronounced the cause of her cough to be a distorted and enlarged epiglottis, and he galvano-cauterized it. Following this there was much irritation of the epiglottis and swelling, with more cough. This lady died a week ago with pulmonary tuberculosis. She

* Porter. *Am. Jour. of the Med. Sciences*, April, 1879.

told me that the prominent laryngologist did not examine her lungs once. I can understand a large, pendulous epiglottis as a result of irritation; but I can not understand a primary non-specific enlargement of the epiglottis. It is new pathology to me.

Dr. S. O. Vander Poel: I wish to emphasize the remarks of Dr. Rice regarding the unfavorable results following the galvano-cautery in cases of this kind. The use of the curette or sharp spoon has given me much more satisfaction. The pathological condition described by Dr. Rice, the hypertrophy of the cartilaginous elements, I am not familiar with, but I have seen enlargement, with more or less inflammation and hypertrophy, of the epiglottis in connection with enlargement of the tonsils.

Dr. Jarvis: I was much interested in Dr. Rice's remarks upon hypertrophy of the epiglottis. He explains a condition new to me—something I have never seen. The signs of congestion and enlargement from inflammation we are familiar with, but primary hypertrophy of the cartilage of the epiglottis is new. You may perhaps remember a somewhat similar condition, which was referred to in connection with our discussion of the enlargement of the septum narium at a former meeting. I then held that there might be an enlargement of this cartilage due to increase of cartilage cells, which could only be demonstrated by the microscope; and, upon making further investigation, discovered that inflammatory changes in the submucous tissue directly above the cartilage could be easily demonstrated. I think that, in all probability, in the enlarged epiglottis of Dr. Rice a similar condition will be found to exist. Change of form of the epiglottis may result from distortion and congestion. That we may have disturbance of function from these causes I am satisfied. I recall the case of a clergyman who came to me with a cough and difficult phonation. I found a swollen epiglottis, and applied cocaine in the manner recommended by Dr. Rice, and the patient experienced so much relief that he was enabled to resume his duties in the pulpit. There may be no direct advantage gained from the use of the galvano-cautery, but we must acknowledge that the psychical effect produced is often very great, whether this agent be applied to the hypertrophied epiglottis or to the tip of the nose. I believe it may have given relief from cough, but think it merely acted through the medium of the patient's mind. A much better substitute is to train patients to exercise their will, and in this way overcome the tendency to cough.

Dr. Wagner: About ten years ago I read a paper before this socitety in which I reported a case of removal of the entire epiglottis for carcinoma by a subhyoidean incision, the first case on record. Before performing the operation, I considered the several methods, and came to the conclusion that removal by the mouth of the *entire* epiglottis was impracticable. The patient experienced no ill effects after the operation, except a peculiar cough. A similar effect had been observed by an experimental physiologist at Harvard University in a number of cats upon which he had performed the operation. I have never seen a case

of ordinary catarrhal inflammation of the cartilage as described by Dr. Rice.

Dr. RICE: I certainly think that these cases of enlarged epiglottis are exhibitions of a chondritis, and can not see why we may not have cartilaginous inflammation and enlargement of the epiglottis as well as of the septal cartilage. I am at a loss to know why the gentlemen have not observed these enlarged epiglottides. In many cases I have found enlargement of the lingual tonsil to be the cause of the irritation and hypertrophy of the epiglottis, but not always, for in some cases the enlargement seems to be congenital. I do not believe that enlargement of the epiglottis is an unusual clinical condition, and this condition is almost as great a source of irritation in the larynx as is a small foreign body. That enlargement of the epiglottis and its contact with neighboring tissues produces distressing symptoms and demands appropriate treatment, I am sure must be admitted. Medicinal applications seem to be inadequate to reduce the size of the epiglottis.

Paper.

THE SURGICAL TREATMENT OF TUBERCULAR LARYNGITIS.

BY D. BRYSON DELAVAN, M. D.

IT is now several years since the suggestion was first made to the medical profession that tubercular laryngitis be treated by surgical rather than by medical means. One by one, meanwhile, various surgical procedures have been proposed and elaborated, and by degrees a considerable number of cases have accumulated upon which these methods have been tested. The progress and growth of the ideas embodied in this new departure have, however, been somewhat slow, owing in part, no doubt, to the radical differences between the new methods and the old and the peculiar difficulties in the way of procuring the acceptance of the former, and, without doubt, in some measure also to the benumbing effects of the announcement by the adherents of Koch that through his alleged discovery other means for the relief of tuberculosis were useless and therefore to be set aside. In this country, particularly, little in the direction of the subject of this paper has been attempted. Now, however, that we are unable to expect the fulfillment of the hopes excited by Koch, the fact that the testimony of a considerable number of good foreign authorities upon the value of the surgical treatment of tuberculosis is presented to us makes it impossible that we should longer refuse the latter our respectful attention. For this

reason it has seemed well to bring it before you, and to place the description of its apparently valuable methods upon the permanent records of our association.

The time-honored treatment of tubercular laryngitis is, of course, well known to all. In the light of recent investigations, however, it appears that our views regarding several important details in the pathology and treatment of tubercular laryngitis should be carefully revised, if not largely modified. For, since the time when mild topical treatment, penciling with nitrate of silver, and applications to the tuberculous ulcers of iodoform were first suggested, great advances have been made in our knowledge of the true character of tubercular disease in general, and in its successful management in other parts of the body. The presence of a specific germ has been demonstrated; the value of the surgical treatment of tuberculous joints and surfaces has been abundantly proved; and the successful results of these ideas have clearly suggested their adoption in the treatment of parts of the body to which they have not hitherto been applied. In short, the theory of the modern surgical treatment of tubercular laryngitis is based upon the broad general principles which govern us in the management of all tubercular disease.

This, then, theoretically, is a distinct advance upon the methods in former use, under which, in genuine cases, the results as regards the larynx were almost invariably unfavorable.

It must be understood from the outset that we recognize two distinct forms of ulcer which may be associated with phthisis: 1, the catarrhal form, which under proper treatment may usually be healed; and 2, the true tubercular infiltration and ulceration, which, as a rule, runs a steadily unfavorable course, and which is not amenable to the ordinary means of cure.

Reference is not made in this paper to cases of the first class—*i. e.*, catarrhal ulceration of the larynx complicating phthisis, many of which have been known to recover—but to the typical tubercular disease, tending to severe œdema, quickly breaking down into ulceration and running through the various well-known stages of that most distressing affection, and which, by a general consensus of authority, is practically incurable. It is to the treatment of this latter form of disease that attention is herewith called.

The surgical treatment of tubercular laryngitis properly includes two varieties of operation: 1. The extrinsic, including tracheotomy, as suggested by Professor Beverley Robinson, of New York, and ex-

tirpation of the larynx; and 2, the intrinsic, or operations upon the soft parts of the interior of the larynx.

With the consideration of the first variety we have nothing whatever to do. Tracheotomy, while in some cases desirable, can be nothing more than palliative, while laryngectomy is, with our present knowledge of the operation and its bad results, too radical to challenge serious attention.

It is with the second, then, that we have exclusively to deal—namely, with intralaryngeal operations upon the soft tissues of the larynx. Of these, again, there are four varieties: 1. Incision of the œdematous tissue, after the manner of Moritz Schmidt and others. 2. Heryng's method, by the subcutaneous injection of lactic acid into the soft tissues of the larynx when in a state of œdema. 3. Scraping of the laryngeal ulcer, as practiced by Dr. Heryng. 4. Actual excision of the œdematous tissue, together with scraping of the ulcers, as recommended by Professor Krause.

The first method—incision of the œdematous tissue, followed by applications of lactic acid—has met with occasional approval, but, on the whole, is not to be recommended. The second is exceedingly painful, and, in the experience of the writer and others, has not, as a rule, yielded good results. We will confine ourselves therefore to the study of the third and fourth, premising that their employment is a secondary matter and adjuvant to a far more important element of treatment—namely, to the application of some agent which shall effectually destroy the last remnant of the tuberculous disease. Just as in other departments of surgery, both Professor Krause and Dr. Heryng work upon the theory that the diseased or infected tissue should first be as thoroughly as possible removed or scraped away, and the underlying parts then treated in such a manner that there can be no possibility of bacilli being left behind. For this purpose various agents have been used, such as menthol, iodoform, iodol, soziodol, pyoctanin, aristol, and others, with indifferent results. It is to Professor Krause and to Dr. Heryng, mainly, that we owe our knowledge of the value of lactic acid in these cases. They have found that this chemical, properly diluted and thoroughly applied to the diseased tissue, produces effects not to be attained by any other known agent, and that by its use brilliant results, considering the nature of the disease, may be gained.

Dr. Heryng uses the lactic-acid treatment, applying it by first scraping a tuberculous ulcer with one of a series of small curettes

which he has devised for the purpose, and then rubbing the acid well into the surface thus abraded.

Professor Krause, on the other hand, uses one or more of a set of double sharp spoon instruments made for the especial object of cutting away any portions of diseased tissue which in his judgment may require removal, applying, after the operation, the lactic acid to the denuded part. Like Heryng, he is also in the habit of scraping tuberculous ulcers.

To explain these operations more in detail, the larynx is first anæsthetized by means of cocaine. In Dr. Heryng's operation the surface of one or more ulcers is then thoroughly scraped with the sharp curette, and, bleeding having ceased, the lactic acid is applied. In Professor Krause's operation, complete anæsthesia having been secured by injections of cocaine thrown by means of a specially constructed syringe into the submucous tissue of the larynx, one of his double instruments, with sharp spoon extremities, is introduced into the anæsthetized larynx, and the operation completed by the forcible closing of the blades of the instrument upon the diseased area and its subsequent removal. Professor Krause does not confine himself to tuberculous ulcers, but removes bodily the œdematous tissue as well, operating, if necessary, upon cases in which ulceration has not yet developed, and eradicating, as far as possible, all of the diseased tissue within reach. For the completion of the operation several sittings may be required.

The method of applying the lactic acid must be thoroughly understood. Indeed, the failure to obtain good results from it, sometimes complained of, is said to be due to lack of energy in its application. It is not enough that the surface of the ulcer or of the wound should be merely painted with the acid. Krause insists that it must be applied so intimately as actually to be incorporated with the parts under treatment, and directs that the application be made by saturating a pledget of cotton, wound upon a probe, with the acid, and then forcibly rubbing the diseased surface with this, in order that the destruction of the bacilli may be assured. The application of the lactic acid must be repeated at short intervals between the operations and until cicatrization has taken place.

The strength of the lactic-acid solution must be varied to suit the given case. From twenty to fifty per cent. is usually well tolerated and is sufficient for the purpose. Indeed, Krause believes that the effect of the solutions mentioned above is as energetic as that of the pure acid, while decidedly less irritating in sensitive cases.

Some patients, however, seem to suffer much more than others under it, and it may be necessary, in exceptional cases, to reduce the strength of the solution as low as ten per cent. As a rule, the acid is not as well tolerated by the larynx as it is by the pharynx. Careful rubbing of the acid into the surface of a laryngeal ulcer, dispensing with the scraping process, will in some cases give excellent results.

The effect of the lactic-acid treatment is very different from that of the treatment by other agents in common use; for while under some of the latter the surface of the ulcer will become tolerably well cleaned and apparently healthy, under lactic acid not only does this occur, but there is, as well, a marked tendency to cicatrization, which is distinctly not observed in the case of the first-mentioned drugs. A case in which remarkably good effects were obtained from lactic acid was reported by the writer at a meeting of the American Laryngological Association held in May, 1886.

The indications for Krause's operation are ulceration or œdema of the larynx sufficient to cause, *a*, laryngeal stenosis; *b*, pain and difficulty in deglutition; *c*, irritative cough. It is absolutely necessary to the success of the operation that the disease be quiescent—*i. e.*, that there be no perichondritis and no active inflammation of the surface present. The latter should be of the characteristic gray color, devoid of the redness which denotes recent congestion. When these precautions are disregarded there is danger that an inflammation more or less serious and widespread may be established. Indeed, the only instances in which Professor Krause has reported unfavorable results have been cases in which the presence of active inflammation was not recognized and respected, and in which the extension of the inflammation called for measures of relief.

When the case is far advanced and the symptoms are very severe, the treatment described is contra-indicated, sedative treatment alone being admissible.

In favorable cases, however, in which inflammation is not present, large masses of œdematous tissue may be removed, with most brilliant results in the relief of the dyspnœa, the cough, and the dysphagia.

The operation by Krause's method is somewhat painful, even under cocaine, and for two days after its performance the patient is liable to undergo considerable discomfort. This is particularly the case in swallowing. By way of after-treatment the patient should be kept as quiet as possible, speaking should be interdicted, unirri-

tating food should be carefully administered, and any tendency to inflammatory reaction checked by the swallowing of cracked ice, and by cold applications to the throat over the region of the larynx. Rest in bed is sometimes necessary. Indeed, in the opinion of the writer, it is desirable that these cases be treated in the wards of a hospital rather than in the outdoor department, as he believes that many of the possible sources of danger attending the operation may be lessened or actually done away with, and the convenience of the operator greatly enhanced, by having the patient under the constant control and observation of a physician for a day or two after each sitting at which any considerable amount of tissue has been removed. In cases where there is any tendency to laryngeal stenosis following Krause's operation, the writer would suggest that dyspnœa may be avoided by the employment of intubation, as the introduction of an O'Dwyer tube for a few hours would probably answer every purpose in relieving the difficulty.

Under the influence of the lactic acid healing is generally rapid, and the resulting cicatrix remarkably healthy in appearance. The most striking feature of the case is the absolute disappearance of the œdema, the interior of the larynx losing its swollen, sodden look, and the various parts of the organ appearing as in health.

More than a year ago Professor Krause stated that he had operated upon over one hundred cases. In none of these had he had bad results where no active inflammatory process was present. He had had but few failures—that is, cases in which some measure of relief was not afforded. A large majority of his patients had been helped. In a considerable number the results were brilliant. In several instances he had effected a cure. By the word "cure" it is not meant that the lungs were restored to health, but that the larynx was relieved permanently, during the life of the patient, of all of the symptoms complained of before the treatment was undertaken, the length of time varying from four years to six months. When it is remembered that in every instance these were cases which almost inevitably run a course alike unfavorable to the comfort and the prospect of life of the patient, it can not be denied that, if the statements and arguments of the advocates of Krause's method be true, we have in it a measure far in advance of those now in use, and one likely to be of incalculable benefit under most trying circumstances.

As to the testimony which others have offered concerning the value of Krause's method, it must be admitted that a number of the

best authorities, so called, have met it with vigorous opposition. I am not aware, however, that this disapproval has been based upon carefully conducted experiments, impartially undertaken to test the real merit of the operation, but believe that in the main it has been offered on purely theoretical grounds.

Thus, it is objected that the operation is difficult, requiring unusual technical skill on the part of the operator; that its application is painful and its effects attended with considerable suffering; that, in consequence of these things, patients will refuse to submit to more than one application of it; and, finally, that it is absurd to state that tubercular laryngitis can be cured when the general condition, of which it is but a local expression, is sure sooner or later to destroy the patient.

That the operation requires considerable skill is true. Still, it should be entirely within the reach of any specialist who is proficient in the higher grades of intralaryngeal work. The operation is in some cases undoubtedly painful, even although done under the influence of cocaine. The amount of pain caused by it does not, however, seem excessive, even in the more severe cases, while the suffering which follows it for several days may be greatly relieved by the use of the proper remedies and applications. The healing process is so rapid that the painful stage quickly passes away, the suffering incident to the operation being inconsiderable in comparison with the radical and permanent relief afforded.

The good effects of the operation are speedily experienced by the patients, in consequence of which they do not object to necessary repetitions of it, but continue in regular attendance at the clinic as long as may be required.

It is not claimed that by this or by any other treatment directed to the larynx a cure of general tuberculosis can be effected. It is perfectly fair, however, in referring to the local condition, to call that case cured in which all trace of active disease has disappeared from the larynx and all active symptoms referrable to that organ have passed away, particularly where there is no recurrence of the local trouble during the remainder of the patient's life.

On the other hand, both Professor Krause and Dr. Heryng have been earnestly studying this subject for over six years, and they have now a considerable array of records to substantiate their assertions. What is even more important, others have taken the matter in hand. At the meeting of the British Medical Association for 1890 Mr. Charters J. Symonds, Assistant Surgeon in Guy's Hospital, presented

Symonds concludes that: 1. Tubercular disease of the larynx should be treated on the same lines as elsewhere—that is, by destroying it by an irritant, or removing it by erasion or curettement. 2. At present lactic acid is our best application. 3. Endolaryngeal methods are sufficient to remove and treat the disease in a majority of cases.

For myself, let it be distinctly understood that I make no claim with regard to the method, either for or against it. As a matter of fact, it is based upon the accepted scientific principles of the day; it promises results which have not been attained by any other means; it is being practically tested by many competent observers abroad. It has gained in favor, apparently, where it has been given fair trial. In view of its great possible value, and of the interest which it has aroused in other lands, it has seemed important to bring it prominently before you, to urge its study, and provoke its discussion, and thus, lastly, to aid, if possible, in the final settlement of its position among the list of useful remedies for one of the most common and distressing of diseases.

Owing to the temporary abandonment of the work, due to the tuberculin excitement of last winter and to various other interruptions which have since occurred to the writer, he himself is at this moment unable to offer any statistics of value. In a private letter from Professor Krause, dated June, 1891, the latter states that he has resumed the treatment of cases by his method and with continued good results. It is hoped that within a short time an appendix to this paper may be presented, giving the results of treatment in cases now under observation.

Paper.

THE RELATION OF DISTURBANCES OF THE MUCOUS MEMBRANE OF THE UPPER AIR PASSAGES TO CONSTITUTIONAL CONDITIONS.

By BEVERLEY ROBINSON, M.D.

TO establish the connection between constitutional conditions and disturbances of the mucous membrane of the upper air passages is at times a relatively easy matter. In more frequent cases it is difficult to make out clearly the interdependence of the general and local conditions. In a certain proportion of instances, even after the most careful repeated examinations, one can not but

remain in great doubt as to whether there be any common causation of the diathetic state and the physical changes observed in the upper portion of the respiratory tract. In order to form just ideas on this subject it is important to investigate without prejudice and to scan every clinical case observed in the most thorough and searching manner. It is also required to attach due weight to the observations of learned men who have preceded us in their practice of the healing art. While this is true, we should not be over-tolerant of opinions held in the past, if later advances in our science and art prove that former beliefs are erroneous, or that clinical data handed down are unreliable by reason of lack of precision in the methods employed.

Still, there are certain judgments which have been tested so frequently and so long that we should be very careful lest we abandon them without sufficient reasons.

These remarks are but a prelude to the statement that the old notion, which was widespread, of a constitutional condition influencing every local state is fast losing ground with the modern practitioner. To my mind, there is little doubt that very many physicians of the present day are inclined to localize most human ailments to the exclusion practically of the diathetic influence. This tendency naturally makes local treatment of primary importance whenever any real disease is present which requires remedial interference. In no special departments of medicine or surgery is my statement truer than it is in those of laryngology and rhinology. Just why this view of our art has arisen may be clearly explained, as it seems to me, by the consideration of a few facts. First, modern thought in laryngology and rhinology, as in every special branch, has forcibly, as it were, limited the mental horizon of the observer. Such an one can not delve into general medicine. It has become too large and also too changeable. New discoveries and new ways of doing things are being added each day to every department. The busy and successful man—the one upon whose judgment we most rely—can not find time to go outside his special field of work and see and hear things as some others see and hear them. The result is that he is not wholly convinced of the truth of things spoken and written by those about him, as they do not thus come before his mental vision. Besides, whenever the throat specialist finds that in some instances which have come under his care a particular line of treatment has been beneficial, he is apt to assume that he can lay down general laws which should govern the action of others, and he does not allow enough latitude to the various aspects according to which even the

simplest case can be regarded. These reflections do not prevent me from fully recognizing the great strides in advance that have been made latterly by the specialists in laryngology. No one is more willing to admit that mechanical ingenuity and operative interference have relieved or cured many patients in whom the outlook without their aid was well-nigh hopeless.

And yet the human body is formed of many different organs whose structures and functions are linked indissolubly to one another, and we can not ignore any one of them as being wholly unimportant in its influence upon the others. So it is that we start out with the thought that the relation of disturbances of the mucous membrane of the upper air passages to constitutional conditions are various and intricate.

Sometimes the mucous membrane itself, by reason of its diseased condition, which has arisen in some accidental or wholly obscure manner, seems to be a focus for diseased germs—the habitat in which they will flourish and propagate readily—finally to end in constitutional disorder of an acute or chronic type. Frequently the diseased constitutional condition precedes, indeed, all physical or rational evidences of local disturbance in the mucous membrane of the upper air passages, and it is only after weeks and months that the general disease is plainly manifest in the alterations of function and structure which are clearly discernible.

The constitutional condition may be one of those in which heredity or contagion plays an essential part as an efficient causative factor, or one in which the habits, mode of life, and surroundings are obviously the powerful agencies at work, or, finally, one in which the mere development of the individual seems to be the seed which will cause the local disturbance to come into being and grow at a certain period of life with more or less certainty. The constitutional conditions we are called upon to consider may be acute or chronic. In the former we find the fevers, and among these the fevers which come to mind most prominently are typhoid fever, the eruptive fevers, and those due to malarial poison. Then we have diseases of a general and acute character, like diphtheria and acute miliary tuberculosis, which unquestionably produce different disturbances of the upper air tract. As I understand the subject of discussion, however, it was not intended to include in it the affections just mentioned, with, perhaps, the exception of the relation existing between malarial diseases and disturbances of the upper air passages. Doubtless the society had in view chronic tuberculosis,

syphilis, scrofula, carcinoma, gout, rheumatism, lithæmia, alcoholism, etc. This list, just as the former one, can be largely added to, but in so doing I should be going beyond the short introductory message that is properly expected from me. No one present, I am sure, can doubt for a moment that the constitutional condition which is shown in general chronic tuberculosis finds for itself a very frequent localization in the upper air passages. Particularly as laryngologists are we called upon to recognize this sad fact in our diagnosis and treatment of intralaryngeal disease.

Whenever laryngeal tuberculosis is distinctly evident, the clear-cut relation between the constitutional condition and the local disturbance is recognized at a glance. By this statement I do not mean to say that it can be known at once how and when the tubercular deposit has taken place in the larynx. I simply wish to affirm that there can be no doubt as to the precise nature of the disease. It can not be confounded with the ordinary chronic catarrhal laryngitis, which exists as a primary affection, or as a sequela of a mild form of acute laryngitis. The ulcerations in the larynx, the history of the patients, and the intrapulmonary condition are all sufficient, as a rule, especially when the disease is at all advanced, to allow us to make the differential diagnosis with perfect ease. If, however, the laryngeal inflammation is relatively slight in an anæmic patient in whom the chest signs are negative and no abrasion of tissue exists locally, it becomes a very delicate matter positively to decide what the exact relation is between the disturbance of the laryngeal mucous membrane and the constitutional condition. The general cachexia and impaired nervous nutrition influence very much the nature and course of the catarrhal inflammation of the larynx, and for a considerable time we are left in doubt as to whether these conditions will be followed or not by the local deposit of tubercle in the vocal organ. It is probable that, whenever the ulcerative or hypertrophied typical condition of the laryngeal structure is reached, it is brought about, in part at least, by the constant irritation which is occasioned by the passage of discharges over the laryngeal mucous membrane and by the efforts made by the patient to get rid of them by expectoration. The additional movements thus occasioned in the larynx unquestionably favor the local deposit of tubercle and the development of more marked laryngeal complications.

As in tubercular disease, so in syphilis, a chronic catarrhal laryngitis is often greatly modified as to its course, its symptoms, and its appearance by the underlying constitutional condition. A syphilitic

laryngitis presents, even without ulceration, a deeper, more persistent coloration than that due to simple catarrhal inflammation. Moreover, the painful symptoms accused by the patient are not at all in proportion with the apparent degree of the inflammatory condition. Again, the use of specific treatment with mercury and the iodides benefits the patient so rapidly and manifestly as to leave no doubt in the mind of the physician as to the distinct causal relation of the syphilitic disease to the disturbance of the laryngeal mucous membrane. In many cases the acknowledgment of the patient in regard to previous syphilitic infection will enable us to reach a decision in some very obscure cases. Of course, if the intralaryngeal congestive condition advances to ulceration, this of itself is sufficient to distinguish it from chronic simple catarrhal laryngitis. The irregular outline, yellowish exudation, and red areola of the syphilitic ulcer are readily distinguished from the ashy-gray hue and raised, thickened, pale borders of phthisical ulcers. Its march is more rapid and its symptoms are less painful. In secondary syphilis especially hyperæmia often attacks the nasal mucous membrane, and in these cases occasions the symptoms of ordinary nasal catarrh. The tendency to the formation of ulcers or mucous patches on the erythematous surface is quite marked, and particularly so among the poor, or with patients who are smokers or take snuff. The syphilitic erythema is sometimes in patches or punctate. It is difficult to differentiate from ordinary catarrhal inflammation of the pituitary membrane, except by the fact that the hue is more dusky and there is less apparent irritation than there would be from a hyperæmia dependent upon a cold. Mucous patches are occasionally seen in the larynx and trachea, but they rarely become extensive in these situations, and disappear after a few weeks of mild treatment. The diffuse connective-tissue hyperplasia, without ulceration, which occurs in the larynx in the tertiary stages of syphilis is accompanied by a dark-colored mucous membrane and a general thickening which affects the soft tissues of this organ.

Among the disturbances of mucous membrane of the upper air passages which are obviously connected with scrofula, an inflammation of a low type is the one most frequently encountered. In this form the exudation is markedly thick and sticky, and the tendency to the formation of dry scabs is most pronounced. Concomitantly we have different eruptions on the skin which manifest the diathetic nature of the lesions. Impetigo of the scalp, face, and eyelids, eczematous eruptions around the ears, in the auditory canals, and upon

the upper lip and at the nares, are commonly met with. The bones, periosteum, and synovial membranes may also show evidences of scrofulous development which, taken with the affection of the mucous membrane, leave no doubt as to the nature of the underlying dyscrasia. The more destructive ulcerative lesions of scrofula as affecting the pharynx and larynx are rarely seen in this country as compared with many parts of Europe, and notably with Germany. Unfortunately, we do occasionally meet with them in the throat in the form of those ravaging lupoid conditions which occasion such deformity and interference with normal function. The patients thus affected are often the offspring of intemperate, syphilitic, or phthisical parents. The hereditary influence is, however, not always well marked, and the scrofulous diathesis appears to be acquired by reason of poor food, lack of sunlight, and unhygienic surroundings. The alternation in these cases between a coryza, catarrhal conjunctivitis, otorrhœa, and ulceration of the cornea is frequently one of the most evident marks of the constitutional relation to the disturbance of the mucous membrane of the upper air tract. The inflammations of the larynx and bronchi are frequent and obstinate. Not seldom they extend to the pulmonary alveoli, and tuberculous deposits in the lymphatic ganglia and lung structure are prone to take place sooner or later. The diagnosis of the scrofulous disturbance of the mucous membrane of the upper air tract usually is determined in great part by its low grade of reaction, by its singular obstinacy or duration, and by the peculiar, characteristic changes which appear concomitantly and give evidence of the presence of the constitutional condition. One statement must be graven in the mind of the observer, because in regard to this subject there arise great and lamentable errors—viz.: that those chronically seamed and scarred throats, with distorted pharynx, the result of former destructive ulceration, which are not infrequently met with both in youthful and adult subjects, are not of scrofulous origin, but unquestionably syphilitic in the very large majority of cases. Koch's late discovery of tuberculin appeared at first to be of very great value in making, through injections of it, the differential diagnosis particularly in instances in which a syphilitic history or parentage could not be traced. Unfortunately, it has failed to accomplish this end in just such cases, and we are again obliged to fall back upon the results obtained, when cases are seen soon enough, by pushing the treatment by means of an iodide rapidly increased to large, repeated doses.

Of course, when great ravages are already made we can only hope

to prevent further destruction and remedy, it may be, alterations in the voice and difficult deglutition by operative interference. Gout and scrofula often exercise a decided influence on the course and manifestations of syphilis as it appears in disturbances of the mucous membrane of the upper air passages. Whenever gout is present the hyperæmia of the mucous membrane of the upper air tract presents a drier, more glazed appearance than when the syphilis is uncomplicated. When ulcerations form in the nasal passages or in the pharynx they are cured more slowly and show a tendency to return which is quite disheartening at times. Finally, the gouty diathesis tends unquestionably to cause nervous symptoms in syphilis, as shown by pains in the throat upon swallowing or in using the voice, which are not always sufficiently accounted for by the evident lesion which is present. Whenever scrofula complicates syphilis the cicatrices of ulcer in the throat take on a more irregular, puckered, and ridged appearance, and are less smooth, thin, and glistening than those distinctly characteristic of syphilis. No doubt, therefore, in many instances the syphilis is really complicated with scrofula, and the resultant ulcerations have about them all the appearances of struma, not unlike what often occurs in cutaneous ulcerations. The type of the syphilis is apt to be more inveterate and often attended by destructive bony lesions. The relation between chronic malarial infection and disturbances of the mucous membrane of the upper air tract has been noted by competent observers for a long period of time. In a paper read before this association in June, 1890, in Boston, I made known my experience in this connection. Frequently a malarial attack is ushered in, not by chills and fever, but rather by repeated sneezing or an obstinate, paroxysmal cough. Upon inspection with the laryngeal mirror or with the nasal specu lum, we may only find the usual catarrhal appearances indicative of an acute laryngitis or rhinitis. When we come to inquire into the history of these patients we shall find that these attacks come on periodically, are followed by fever and chills at times, resist ordinary remedies for cold, and are brought into subjection after a short treatment with quinine or Warburg's tincture. Frequently the spleen is enlarged, and occasionally pigmentary deposits or different forms of the *hæmatozoon malariæ* are found in the blood upon careful microscopic examination. In view of these facts, I believe that we can scarcely doubt the relation which exists between the blood dyscrasia and local attacks of the disease on mucous membrane of the upper air tract. Many cases of spasmodic asthma, apparently of the nature

of a bronchitic asthma under the immediate dependence of an inflammatory condition of the bronchial tubes, have been signally relieved by anti-malarial agents used remedially, when cauterization of the nasal membrane and sawing the septum had obviously been of little or no benefit. In any case to-day of obscure disturbance of the mucous membrane of the nose, throat, larynx, or bronchi, with a history of possible malarial exposure, and after eliminating other complicating conditions, it is wise to think of blood poisoning from *hæmatozoon malariæ* as being the efficient cause of the morbid symptoms. Judicious treatment, after proper physical and blood examinations have been made, will frequently confirm an uncertain diagnosis in just such cases. It is also true that quinine and Warburg's extract will occasionally fail to be curative in these attacks after a time, and we shall be of greater service to these patients by prescribing for them phosphorus and strychnine in moderate, long-continued doses.

The relation of carcinoma to one of the disturbances of the mucous membrane of the upper air passages has been shown in a detailed and graphic manner before this association last year. It would seem as if in the earlier stages at least of malignant disease of the larynx, some value should be attached to the infiltration of the soft tissues which interferes notably with the movements of the vocal cord on one side, to the existence of a ring of reddened infiltrated tissue around the new growth, and to the cloudy area in the vicinity of the growth which can be demonstrated by the use of transillumination. Of course the lancinating pains, swelling and induration of the glands near the cornua of the hyoid bone, the character of the secretion, and well-defined deformity will be of much value, whenever they are present, in fixing a diagnosis. The appearances of the growth and the general history of the case are often helpful. The absence or presence of syphilis or tuberculosis and the effects at times of more or less prolonged antisyphilitic treatment aid our judgment frequently as to the nature of the case with which we have to do. In like manner the microscopical examination of a portion of the tumor removed before or after death is occasionally of the highest diagnostic importance.

No doubt one of the determining factors in producing malignant disease in the larynx is the frequent occurrence of inflammatory conditions in this organ. The constant use of the voice seems to become a source of local irritation in many instances, and thus the professions of singer, teacher, public speaker, all appear to promote

the local deposit of cancerous tissue. The constant inhalation of irritating vapors and dust is also a predisposing cause in occasioning a local hyperæmia which so frequently precedes or accompanies the presence of malignant growths. Apart from all local changes, however, there is always apparently in operation the underlying constitutional dyscrasia which gives the specific character to the morbid lesions. We all know that when the chylopoietic system is out of order or performing its functions imperfectly, repeated and often obstinate pharyngeal and laryngeal irritations are apt to occur. It is only by due attention to this knowledge and by proper direction of treatment in view of it, that we are able to effect cures in cases otherwise intractable.

Chronic alcoholism is often made evident by the congested, excessively irritable pharynx or larynx, and a diagnosis otherwise obscure is thus sometimes readily made. An annoying naso-pharyngeal catarrh, with marked enlargement of the tonsils, is occasionally very distinct proof of the process of second dentition in the young lad or girl. A disordered emotional temperament or a well-marked neurasthenic state is not seldom the underlying cause of recurrent attacks of coryza which have defeated our best-directed efforts at successful local treatment. Luxurious habits and surroundings, sedentary occupations with accompanying chronic dyspepsia and constipated bowels, will sometimes produce irritability of the reflex centers of nose and throat which can only be cured by the exposures of an outdoor life and their accompanying hardships. While this is true, it is also a fact that once the catarrhal inflammation of the upper air passages has taken place, it frequently aggravates very much the pre-existing dyspepsia and the adjoined lithæmic state. Indeed, it is no uncommon thing to hear a patient say that it is the violent hawking and constant spitting from which he suffers every morning on rising that unsettles his stomach at that time, and may continue to cause inappetence or disgust for food during several hours of the day. It is an observed fact, not very infrequent, that patients who have never previously suffered in the smallest degree from any evidence whatever of one of the recognized forms of dyspepsia have developed this condition in a distinct form subsequent to the appearance of a catarrhal inflammation of the nose, naso-pharynx, or the pharynx and larynx. It is probable in such cases that some of the secreted mucus from these organs works its way down the back of the throat and is swallowed, thus starting gastric disturbance. It is also clear that the current of

inspired air, or rather the air which is swallowed after passing over masses of mucus or muco-pus, more or less in a state of putrefaction, must be very injurious to the healthy functions of the stomach, or stomach and bowels. It is well known that the "condition of suboxidation and overcharging of the blood and excretions with excretory matter in a state of faulty elaboration" is but too prone to occasion disturbances of the mucous membrane of the upper air passages. The patchy congestion of the pharynx, the epiglottis, aryepiglottic folds, and ventricular bands is often indicative of this condition. The throat is extremely irritable and the patient suffers from a harsh, dry cough. There is often marked dysphagia referred to the sides of the larynx. Appropriate general medication and hygiene generally bring these attacks to a close in a short time, and thus the therapeusis of the case seems to establish the correctness of the relation between the constitutional condition and the local manifestations.

Discussion.

Dr. MACKENZIE: The only thing that I have to complain of in the paper of Dr. Robinson is the unnecessary stress which he lays upon scrofulous inflammations of the larynx or upper air tract. I suspect that the essayist is still under the influence of the old French school, and it is owing to his early training in that school that he comes to lay such stress upon scrofulous inflammation in contradistinction to syphilitic and tubercular ulcers. I have read much of the literature of this subject and have come to the conclusion that there is very little difference between scrofula and syphilis on one hand, and scrofula and tuberculosis on the other. I think that there is no ground for belief in an ulcerative scrofulous inflammation of the throat.

Dr. JARVIS: I should hesitate to accept the radical view of Dr. Mackenzie that scrofulous inflammation is always tuberculous. We can not always demonstrate by microscopic examination the presence of bacilli. Many scrofulous disorders come more correctly under the head of constitutional syphilis.

Dr. WRIGHT: I should like to know what scrofula of the upper air passages is if it is not tuberculosis and if it is not syphilis. What is it?

Dr. JARVIS: I do not absolutely accept the term scrofula. This condition might be due to inherited syphilis. I do not believe in making the comprehensive term "tuberculosis" cover all these cases. I might mention a case of necrosis coming under my observation in which the attending circumstances, clinical history, and social surroundings make it difficult to entertain the view of inoculation with syphilis, and there was no evidence of tuberculosis. In this patient the manner and result of treat-

ment were such that we could not entertain the view that it was a case of tuberculosis or syphilis.

Dr. MULHALL: What has scrofula to do with syphilis? I remember the remark of a man with whom I had the pleasure of being associated for three years—I refer to Mr. Hutchinson, of London, who knows something of syphilis. The statement was that syphilis is not transmitted to the third generation. I offer an explanation of what we vaguely call "scrofula." In a paper published some seven years ago upon atrophic rhinitis, I gave a definition of scrofula as a peculiarity in the constitution or age of the parents by which one or both of them are unfitted for transmitting healthy offspring. For instance, the child of drunken parents may be scrofulous; the child of senile parents may be scrofulous; the child of syphilitic parents, if conceived in the stage of cachectic depression, may be scrofulous; the child of phthisical parents may be scrofulous. Therefore, scrofula affects the product of conception of parents who are in a profoundly depressed state of nutrition, whatever it may be due to.

Dr. S. SOLIS-COHEN: I have been very glad to hear this subject brought forward for discussion, since, unless we recognize an abnormal constitutional condition, which we may call scrofula, we shall not treat its subjects properly, either for local disease in the upper air passages or for local or general disease elsewhere. Dr. Mackenzie believes that Dr. Robinson is at fault in paying deference to the opinions of the older French writers. I for one would like to express my indebtedness to those French writers, and especially to Lugol. Even with all our new lights, if we turn to the writings of that great man we can certainly learn something about scrofula —a disease which the elder Gross called the child of syphilis and the parent of tuberculosis. But syphilis is not the only cause of congenital scrofula. As Lugol pointed out and as Dr. Mulhall has just said, it is the inheritance of a child whose parents are, from whatever cause, physically incompetent to produce normal offspring, and it forms a species of what we vaguely call "diathesis." We have no better way of characterizing this condition, especially from the standpoint of the modern cell doctrine, than by stating the position thus: All manifestations of life enter this world as living cells; every cell springs from a parent cell. If that parent is intrinsically deficient or by extrinsic causes rendered unable to transmit to the offspring the necessary vitality or life force, the product will be incomplete or scrofulous. The scrofulous state may likewise be acquired by depression, privation, or excess. Benjamin Ward Richardson says that the secret of long life consists not so much in any peculiar endowment of the body as in the nice adjustment of parts. Going a little farther than this, we see throughout Nature a constant balancing of opposing forces. It is exemplified alike in the revolutions of the planets, in the course of the winds, in the swing of the pendulum. As in the macrocosm, so is it in the microcosm; the heart of man throbs as the heart of the universe. In the scrofulous child there is not that nice balance of oppos-

ng forces. Either there is not enough innate constructive force to repair the tissues broken down in the exercise of function, or there is a failure from incomplete development or, in the acquired condition, from incomplete nutrition, to supply energy to meet the destructive forces of the environment. This state has been well described by a modern French writer (Jaccoud), as one of "hypotrophy" or "congenital dystrophy"; but names are less important than the fact that the organism is unfitted to survive in the struggle for life. The child under such circumstances is not necesarily born tuberculous, but may become tuberculous. Local expression of the disease in the upper air passages or elsewhere is determined by some trauma or other accidental excitant. The local expression may not differ to sight from the local expression of other causes, but its course, its rebelliousness, the general condition of the patient, help the diagnosis. I may refer to a case of scrofulous ozæna, which was neither syphilitic nor tuberculous, that I saw ten years ago in a boy whose brother and sister have since developed tuberculosis. My patient himself has not yet developed tuberculosis, though he may do so. At all events, the general history of the patient, rather than the shape of the ulcerations or the quantity of bone that necrosed, shows that his was a case of scrofula and not of tuberculosis, which his brother and sister manifested. The parents are neither tuberculous nor syphilitic, but they were, when the children were born, overworked and ill-nourished because of their poverty. I heartily agree with Dr. Robinson that in treatment, as in diagnosis, we must look upon the fundamental constitutional condition as more important than the local accident that comes under our eyes.

Dr. Glasgow: I am a firm believer in the constitutional origin of many of the pathological conditions of the upper air passages—not from a theoretical, but from a clinical standpoint. That this view is not accepted more generally seems to be due to the fact that physicians are looking too closely to the local processes. I came many years ago to the conclusion that many of the cases showing congestion of the upper air tract could be promptly relieved by proper attention to constitutional rather than local conditions.

I am thoroughly pleased to hear the term scrofula again. I know I am out of date, but to me it is one of the most expressive terms in the medical vocabulary. The influence of my early training, listening to the teachings of Scoda and Oppolzer, made such an impression that it has been difficult for me to accept the views of later German pathology. I do not see that any addition can be made to the definition of scrofula as given by Dr. Mulhall and Dr. Cohen. Clinically the term designates a certain condition of the mucous membrane when it is applied to the air passages. In persons of the strumous diathesis inflammatory processes are prone to take on a subacute or chronic character. There is great infiltration of tissue with a lessened tendency to a return to the normal condition. The modern school would embrace all the conditions formerly known as strumous or scrofulous under the general name of tubercular infiltration. To

me this seems unfortunate, when we look at the condition from a clinical standpoint, for we see many cases where we can certainly make a favorable prognosis. The name strumous would indicate this, while tubercle is a word of ill-omen. The confusion which is caused by the use of the word tubercular to indicate a variety of conditions is not justified by the fact that we often find the tubercular bacillus in this tissue. The old doctrine of Niemeyer—that "the great danger to the strumous lies in the possibility of becoming tuberculous"—is strictly in analogy with our experience at the present time, when we consider the infectious pneumonia of influenza. No one would consider this pneumonic condition as tubercular, but we do know that the pathological condition of the lung in this disease proves a most fertile soil for the growth of the tubercular bacillus, and large numbers die with an acquired tuberculosis. The bacillus grows and develops in the laboratory in several culture mediums, and is it not equally true that in the human body there exist several pathological conditions which furnish a suitable and fruitful soil?

Dr. Bosworth: In estimating the constitutional or other origin of any local disease of the upper air passages, it is necessary to differentiate between diseases of the nose and those of the naso-pharynx. I do not think that the constitutional state has much to do with catarrhal inflammations of the pituitary membrane, in a great majority of cases at least. But when you come to the naso-pharynx you will find catarrhal conditions very frequently dependent upon constitutional diseases. Disease of this region is most likely to occur between the age of eighteen and forty years. I have found that most catarrhal affections locate themselves at this point in the naso-pharynx between these ages, thus establishing conditions which are aggravated by disorders in other parts of the body. This leads to the question, What has the lymphatic system to do with these disorders? and, still further, to the discussion and definition of struma. We think that we know about all there is to know about the nose and its disorders; but we have in the lymphatic glands existing in the naso-pharynx a subject for study—one that we know comparatively little about. Catarrhal diseases located in the naso-pharynx, secondary or primary, are dependent upon disorders of the lymphatic system; the source of the lymphatic disturbance is in the underlying constitutional condition. I do not like the term scrofulosis; I prefer to call it struma. I think, if we investigate the cause of the lymphatic condition that I have mentioned, it will lead us a step farther toward comprehending what is described as struma. My main point, however, is that the constitutional state has very little to do with diseases of the nose, but has very much to do with diseases of the naso-pharynx.

Dr. Ingals: I am particularly pleased with Dr. Robinson's paper, as it directs us to a rational treatment of a comparatively large class of obscure cases whose real nature is liable to be overlooked. I can not understand why constitutional conditions should not affect the nose as

well as the naso-pharynx, and I can not agree with the last speaker that the nose is never affected in cases considered scrofulous.

Dr. WRIGHT: In answer to my question of what is meant by scrofula of the upper air passages, I have been informed what constitutional scrofula is, but have not been told how to recognize a scrofulous lesion in this location.

Dr. MULHALL: Six months ago I wrote a paper on The Effects of Diet and Exercise upon the Cure of Simple, Uncomplicated Chronic Inflammation in the Human Body. I think I proved in that paper by several new facts that constitutional conditions do affect the nose. I furthermore proved that to the dyspeptic disorders of Americans and their careless manner of eating and lack of physical exercise must be ascribed the cause of our national disease—catarrh—and not to our climate or any meteorological conditions whatever. I think that I also proved that patients, by proper hygienic treatment, by careful attention to diet, exercise, and clothing, can be cured without local treatment. I referred, as examples, to the cases of two pugilists who had catarrh, whose noses were stuffed and hyperæmic, while they were spending their time in saloons and eating and drinking too much; they were in a state of hypernutrition. They used various remedies for the catarrh, both with and without the advice of physicians, without benefit. They then went into training for a prize-ring encounter, and two weeks before training ceased the nasal troubles entirely disappeared. I also referred to other cases in which equally good results were had from improvement of the personal habits of patients with nasal catarrh. Without this hygienic help, I denounce local medicinal treatment as utterly useless, except from a financial standpoint.

Dr. ROBINSON: With all respect to Dr. Mackenzie, who credits me with not forgetting my early training, I would state that I am not unfamiliar with recent French literature and German literature also. We are not yet in a position to place an exact value upon Koch's tuberculin in diagnosis. It is not possible to decide in every case whether a lesion is a tuberculous manifestation, or simply a case of so-called struma or scrofula affecting this locality and the tuberculous deposit still remaining doubtful. All of us are aware that there are cases of this kind in which the microscope fails to prove the lesion tubercular. What, then, shall we call them if they appear in patients evidently scrofulous? I am glad that the president has also expressed his approval of the views which Dr. Cohen so very eloquently set forth in his exposition of scrofula. We must not lose sight of the general ground of medicine, otherwise we shall lose ourselves in minutiæ.

I submit that, in the presence of a scrofulous manifestation in the upper air passages, we are forced to call it something, and, if we can not pronounce it tubercular, what can we call it? We shall have to fall back upon scrofula for the want of a better name—just as, in speaking of "catarrh," as Dr. Bosworth has admitted so forcibly, in some cases we are obliged to fall back upon general ideas and provisional names, perhaps

without expressing ourselves positively as to the case being necessarily of one kind or another. For further consideration I will refer those interested to Dr. Keyes's last edition for the diagnosis between scrofulosis, tuberculosis, and syphilis of the throat, where a part of what I have said will be found.

Presentation of Instruments.

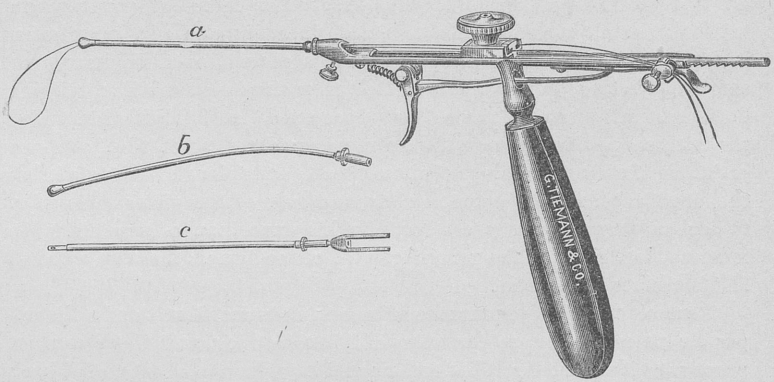
A LARYNGEAL FORCEPS.

By Dr. MULHALL.

A LARYNGEAL forceps was exhibited by Dr. Mulhall. "The instrument is the well-known forceps of Morell Mackenzie, modified to meet certain contingencies. The case for which it was designed was one of laryngeal papillomata attached to the lower surface of the vocal cords, in a deeply situated larynx, requiring the use of long blades. It was found that when the blades, from the angle to the laryngeal ends, were made of the requisite length—three inches and three quarters to four inches—the cutting lips could not be made to approximate accurately. To overcome this, a joint was made in each blade, half an inch from the angle, and the result I show you is an instrument whose lips approximate perfectly. The instrument will be made, on order, by Holekamp, Grady, & Moore, 915 Olive Street, St. Louis, Mo."

A SNARE.

By MORRIS J. ASCH, M. D.



A SNARE, combining many of the features of instruments already well known, was presented by Dr. Morris J. Asch.

BUSINESS MEETINGS.

The Thirteenth Annual Congress of the American Laryngological Association was held in the city of Washington, D. C., in conjunction with the Congress of American Physicians and Surgeons. The first session was opened by the President, Dr. W. C. Glasgow, of St. Louis, at 10 A. M. on Tuesday, September 22, 1891, at whose request the Secretary proceeded to call the roll. The following Fellows responded, or were present during the meeting:

W. C. Glasgow, St. Louis, President.
John O. Roe, Rochester, First Vice-President.
J. H. Hartman, Baltimore, Second Vice-President.
Charles H. Knight, New York, Secretary and Treasurer.
Harrison Allen, Philadelphia, Member of Council.
F. I. Knight, Boston, Member of Council.
M. J. Asch, New York.
F. H. Bosworth, New York.
W. E. Casselberry, Chicago.
J. Solis-Cohen, Philadelphia.
S. Solis-Cohen, Philadelphia.
E. F. Ingals, Chicago.
W. C. Jarvis, New York.
S. Johnston, Baltimore.
S. W. Langmaid, Boston.
J. H. Lowman, Cleveland.
J. N. Mackenzie, Baltimore.
H. C. McSherry, Baltimore.
J. C. Mulhall, St. Louis.
D. N. Rankin, Allegheny.
C. C. Rice, New York.
Beverley Robinson, New York.
J. O. Roe, Rochester.
C. E. Sajous, Philadelphia.
E. L. Shurly, Detroit.
S. O. Vander Poel, New York.
Clinton Wagner, New York.
J. Wright, Brooklyn.

Among the guests of the Association were Drs. S. Weir Mitchell, of Philadelphia; S. C. Busey, Hagner, Murray, and Chamberlin, of Washington; L. A. Dessar and W. C. Phillips, of New York; Meynen, of Long Island; and Veeder, of Schenectady. After the delivery of the President's address and the reading of papers, the Association went into executive session, and, on nomination of Drs. E. Carroll Morgan and J. N. Mackenzie and recommendation of the Council, Dr. J. H. Bryan, of Washington, was elected an active Fellow of the Association. Dr. Bryan presented an inaugural thesis entitled A Contribution to the Study of Acute Œdema of the Larynx, with Report of a Case due to Pyæmia.

The President appointed Drs. Mulhall and Jarvis a committee to audit the accounts of the Treasurer.

At a business meeting on the morning of the second day the minutes of two Council meetings held during the year were read and approved, and the reports of the Secretary, of the Treasurer, and of the Librarian were read and accepted.

Secretary's Report, 1890–'91.

The Secretary herewith presents the twelfth volume of *Transactions*. He regrets being called upon to formally announce an unusual occurrence —namely, the death since our last meeting of two active Fellows of the Association, Dr. Hosmer Allen Johnson, of Chicago, and Dr. E. Carroll Morgan, of Washington, D. C. The former was one of the original members of the Association and was elected First Vice-President in 1885. Dr. Morgan officiated as President at our meeting in 1889, and his patient and heroic struggle with wearisome disease is familiar to us all.

Two meetings of the Council have been held, the minutes of which are offered for your approval. The Secretary begs to report that, in accordance with a resolution adopted on motion of Dr. Bosworth at the last meeting, a request for a chronological list of his writings was sent to each Fellow of the Association. In response *thirteen* such lists have been received.

Treasurer's Report, 1890–'91.

THE AMERICAN LARYNGOLOGICAL ASSOCIATION

In Account with Charles H. Knight, Treasurer.

Receipts.

Brought from 1890 account . . .	$154 58	
Sale of *Transactions*, 1888 . . .	4 00	
Sale of *Transactions*, 1889 . . .	17 40	
Sale of *Transactions*, 1890 . . .	30 00	
Annual dues, 1889–'90 (5) . . .	50 00	
Annual dues, 1890–'91 (48) . . .	240 00	
Annual dinner, 1890 (23) . . .	115 00	
Photographs, etc., Dr. Lincoln . .	7 00	
N. Y. Med. Jour., Discussions, Vol. XII	34 31	
		$652

Expenses.

Annual dinner, 1890	$125 00	
Menus	6 50	
Printing, stationery, etc. . . .	32 25	
Stenographer, 1890	100 00	
Transactions, Vol. XII, 1890 . . .	219 89	
		$483 64
Balance to credit, September 1, 1891 . .		$168 65

Audited and found correct.

J. C. MULHALL,
W. C. JARVIS, } *Auditing Committee.*

Report of the Librarian, 1891.

The Librarian has to report the reception of 1 book and 10 pamphlets since the last meeting of the Association.

The contents of the library now consist of 60 bound and unbound books and 918 pamphlets. In response to the resolution asking for lists of publications of the Fellows of the Association, one list has been received by the Librarian.

At the session of 1889 your Librarian recommended the transfer of the library to the library of the Surgeon-General's Office, but, though favorable comment was made upon the suggestion, no definite action regarding its disposition has been taken. As the library contains little or nothing which can not be found in the large general libraries of the country, it serves no purpose in its present position. Your Librarian declines to accept a re-nomination should it be tendered him.

Respectfully submitted,

T. R. FRENCH, *Librarian.*

The Secretary announced the death of Dr. Frank H. Potter, of Buffalo, who had been proposed in due form for active fellowship in the Association, and whose inaugural thesis on Cystoma of the Nasal Passages, by vote of the Council, appears in the thirteenth volume of *Transactions.* The following resolution, offered by Dr. Roe, was unanimously adopted: *Resolved*, That this Association, recognizing the high intellectual and professional attainments of Dr. Frank H. Potter, deeply deplores that so bright a light should be put out on the very threshold of his professional career and on the eve of his admission to this society. That it tenders to his family its sincere sympathy in their bereavement, and mourns the loss with more than ordinary feelings of sorrow.

The following resolution, offered by Dr. Roe, was unanimously adopted: *Whereas*, The American Laryngological Association has noticed with regret a growing tendency to encourage the report of professional work in the daily press; *Resolved*, That the Association desires to place on record its earnest disapproval of the practice, believing it to be derogatory to the fame of our organization and a disgrace to our honorable profession.

The following amendments to the Constitution were brought up for consideration:

Proposed by Dr. DALY: "Candidates for membership shall present a thesis, shall be recommended by three members, and shall be balloted for at the first executive session of the meeting, the names of all candidates to be sent to the members with the notices of the annual meeting, and that Sections 4 and 6, Article III, of the Constitution be annulled." After discussion the foregoing resolution was put to vote and was declared lost.

Proposed by Dr. DONALDSON: Section 2, Article III, of the Constitution, to read: "The Fellows shall not exceed seventy-five in number." This amendment was carried with only three dissenting voices.

Proposed by Dr. DALY: An amendment to Section 3, Article V, of the Constitution, as follows: "The nominations for officers shall be made in executive session on the first day, and the ballot for them shall take place on the last day of the meeting." Carried unanimously.

The following amendment to the By-laws, proposed by Dr. INGALS, was also carried without dissent: An amendment of the By-laws relating to the Council: "Notice of any important business to come before the Council shall be sent to each member of the Council two weeks before the meeting, and any member unable to be present may send in his vote by mail on any question relating to membership or place or time of meeting."

It was moved and carried that the action of the Council in transferring the library of the Association to the Surgeon-General's Office be ratified, under the provisions indicated in the original proposition—namely, that the library shall be kept intact, shall retain its title, and shall be accessible to Fellows of the Association under the rules ordinarily observed.

In executive session on the morning of the third day, the nomination and election of officers being declared in order, the following were elected:

President.—S. W. LANGMAID, Boston.

First Vice-President.—MORRIS J. ASCH, New York.

Second Vice-President.—SAMUEL JOHNSTON, Baltimore.

Secretary and Treasurer.—CHARLES H. KNIGHT, New York.

Librarian.—THOMAS R. FRENCH, Brooklyn.

Member of Council.—W. C. GLASGOW, St. Louis.

Place of meeting in 1892, Boston, Mass.

After the usual vote of thanks to the retiring officers, the President-elect took the chair and declared the Congress adjourned.

OBITUARY.

Ethelbert Carroll Morgan, M. D.

Dr. E. Carroll Morgan died at his home in Washington, D. C., May 5, 1891, at the age of thirty-five years. He was a native of Washington and received his preliminary education at Georgetown University. He took the medical course at the University of Pennsylvania, and after graduating spent several months in special study with Schnitzler in Vienna, Fauvel in Paris, and Mackenzie in London. In 1879 he began practice and soon was appointed Professor of Laryngology in the Medical Department of Georgetown University. He held a number of professional positions of honor and responsibility, and was a member of many medical organizations. He was elected to membership in the American Laryngological Association in 1881, and was made President in 1888, after having served on the Council and as First Vice-President.

Dr. Morgan was a versatile and a clear writer, and his scientific work was characterized by a thoroughness which will give it permanent value. Brilliant as was his professional career, it may be that those who best knew him will remember him chiefly for those amiable qualities of heart which created for him a wide circle of devoted friends. The progress of science will make it necessary for others to supplement the work he has done; the influence of a noble, gentle nature such as his has no limit. The world is better for his having lived. The earnestness and honesty which marked all his undertakings demand our emulation. No one who witnessed his heroic but unequal struggle with disease could fail to be impressed by his exceptional fortitude and strength of will, qualities which enabled him to persevere with work almost to the very last.

The death of such a man is an irreparable loss to science and to humanity.

APPENDIX.

APPENDIX.

CYSTOMA OF THE NASAL PASSAGES, WITH REPORT OF A CASE.*

By FRANK HAMILTON POTTER, M. D.

CYSTIC tumors of the nasal passages are of very rare occurrence. This is apparent not only from the opinions of all writers upon diseases of the nose, but also from the very few cases that have been placed upon record. An examination of the standard works upon nasal diseases, of the reports of special societies, and of the Index Catalogue of the Library of the Surgeon-General's Office, U. S. Army, reveals but eight instances in which these tumors have been observed. This number includes all cases that are noticed either by title or by reference. It is possible, of course, that a more extended opportunity of examining the literature bearing on this subject would increase the total number of cases to some slight extent, but it is not probable that it would change materially the statement that these growths are very infrequent.

Two of these cases were reported by writers in this country, viz.: Lefferts,† who removed a large cystic tumor from the posterior nares, and Ingals,‡ who reported a case of catarrh that was relieved by the removal of a cystic growth. The other cases were observed by Johnson,# Moure,‖ Park,△ Watson,◊ Bonauno,‡ and Zahn.↕ Two

* Accepted as a candidate's thesis for membership in the American Laryngological Association. Published by vote of the Council.

† *Medical News*, Philadelphia, 1883, iii, p. 653.

‡ *Weekly Med. Review*, Chicago, 1884, ix, p. 97.

Med. Circ., London, 1864, xxiv, p. 1.

‖ *Jour. de méd. de Bordeaux*, 1886–'87, xvi, p. 64.

△ *Lancet*, London, 1841–'42, i, p. 886.

◊ *Proc. Med. Soc. London*, 1875–'77, iii, pp. 134–136.

‡ *Bull. d. r. acad. med. di Roma*, 1884, x, pp. 54–59.

↕ *Deutsche Ztschr. f. Chir.*, Leipsic, 1885, xxii, pp. 392–399.

other writers, Huguier * and Robert,† have referred to cysts in the region of the nose, but, as I am unable to obtain the original articles, and the titles of their papers are somewhat obscure, I can not say whether or not these cysts were within the nasal passages. They were not, therefore, included in the total number of cases.

Before considering the nature and treatment of these growths I desire to place on record the following case observed during the winter of 1890–'91 : J. D., of Irish parentage, aged thirty-five, appeared for treatment with the following history : He works in one of the grain elevators in Buffalo. These elevators are constantly transferring and storing grain arriving here by lake and railroad. This process is attended by immense clouds of dust of a fine, irritating character. [It is not uncommon to find the men working in these places suffering from various troubles of the upper air tract, and even an " elevator pneumonia " has been described by physicians here which they claim is due to the inhalation of this dust.] The patient is a man of fine physical development, free from syphilitic or other constitutional disease. For three months before consulting me the right nostril was entirely stopped, but for some months before that he complained of more or less catarrh on that side. This was accompanied by violent sneezing and pain in the cheek and side of the face. Thinking the pain came from a decayed tooth, he consulted a dentist, who assured him that that was the cause of the trouble and the offending tooth was removed. This had very little effect upon the pain, though he thought, possibly, it was less constant. Upon examination, the right nostril was found completely obstructed, while the left nostril and posterior nares were free of any abnormal condition. The obstruction of the right nostril seemed to depend upon a soft tumor which I at first supposed to be a mucous polyp. There was the bluish-gray color and the bright glistening surface. It was movable, but the attachment seemed rather broad. Believing it to be a polyp, the attempt was made to pass a wire loop around it. In doing this the tumor burst and there escaped a thick, tenacious fluid of a whitish-gray color. This at once revealed its character. The cyst was then evacuated as thoroughly as possible by pressure, and its walls cut from their attachment by the scissors. The nose was then washed out with a weak solution of peroxide of hydrogen (one part to six of water). For a few days thereafter the parts were kept clean by a spray of boric acid (ten grains to the ounce of water), and then

* *Bull. Soc. de chir. de Par.*, 1856–'57, vii, pp. 333–335.

† *Jour. de méd. et chir. prat. Par.*, 1858, xxix, pp. 546–550.

covered with a fine coating of benzoinol. The symptoms were entirely relieved by the removal of the growth, showing that even the pain depended upon its presence and not upon any associated condition. Three months afterward there was no sign of its reappearance. The point of the attachment of the cyst was the middle turbinated bone at about the union of its anterior and middle thirds. The attachment was rather broad, showing nothing that could be called a neck, like that frequently seen in myxomata. It was unilocular and its walls were quite resistant, excepting at the point where they pressed against the septum, at which point they gave way. No microscopical examination was made. The growth was taken home by the patient and was not returned. He claimed to have lost it.

In studying these cystic formations within the nose, we must distinguish between the mucous cyst, the cystic degeneration taking place in the myxomata, the myxomata themselves, and a meningocele protruding into the nasal passages. The mucous cyst is formed from the retention of the secretions of the glands in the mucous membranes. It begins as a cyst and continues as such, at least, until late in its history, when secondary changes may possibly occur. Now, as is well observed by Bosworth,* morbid changes in the glandular structure of the pituitary membrane seldom come under clinical notice. This would account for the few reports of these cases. The cystic transformation which is seen in the myxomata, on the other hand, is a secondary change, and occurs with more or less frequency. This transformation is due, according to Robin, as quoted by Bosworth,† to a general hypertrophy of the acinus, together with an atrophy of its duct, as a result of which there is an increased secretion which, failing of free exit, collects in the gland, whose walls gradually yield to the pressure and become dilated. This is not a constant process, however, for Billroth states that cystic degeneration may result from certain changes in the epithelial cells lining the glands, their ducts remaining patent.

From a clinical point of view, the differentiation between these varieties is not of special importance. The treatment in either case follows the same line with equally good results. The mucous cyst, in its appearance, its location, and in the general symptoms it produces, resembles closely a myxoma, and, as in my own case, is frequently mistaken for the latter on the first examination. There is,

* *Diseases of the Nose and Throat*, vol. i, p. 429.

† *Op. cit.*, p. 389.

however, as a general rule, but one cyst, while the polyp, on the contrary, is seldom alone. More than one growth, therefore, would suggest the myxomata. This differential distinction, as already indicated, as between the varieties of cystic formations, is more interesting pathologically than clinically, or as relating to treatment. Another condition which, though exceedingly rare, must be carefully differentiated from the mucous cyst, is a meningocele. Cruveilhier has reported a case where the meninges of the brain protruded into the nasal cavity, presenting the appearance of a mucous cyst or nasal polyp. The true condition was only recognized after death. As Bosworth says, the presence of pulsation in the supposed growth and the association of brain symptoms should excite suspicion.

There are other cystic formations occurring in the nose which may be mentioned, though they are not liable to be mistaken for the mucous cyst. Thus, Delavan,* writing of the tumors of the nose seen in children, mentions dermoid embryonal cysts and osseous cysts. The dermoid cysts, he says, are made up altogether or partly of hair, or they may contain cartilage, bone, fat, connective tissue, and glandular substance. Teeth have also been observed. The osseous cysts originate from the septum or inferior turbinated body. They present the characteristics of the osteoma.

The ætiology of the mucous cyst has already been indicated. In my own case we may infer that the dust in the atmosphere in which the patient worked caused a gland duct to become stopped, thus leading to the retention of its secretions and the formation of a cyst. It seems strange that not more than a single cyst was formed in this way, and that more of these cases do not occur among those engaged in this and other dusty occupations.

If left without treatment, the mucous cyst produces symptoms of catarrh with obstruction of the nasal passages. From pressure also, when it becomes of sufficient size, we may get many reflex symptoms. These appeared in the case reported. There was faceache and pain of a neuralgic character upon the corresponding side of the head. This pain was constant, but at intervals was more intense. Its dependence upon the growth was shown by its disappearance immediately upon the removal of the latter. As would be expected, the disturbance from the obstructed nostril is more annoying at night. Upon taking cold also all the symptoms become aggravated.

The treatment is simple and requires but a few words. The

* *Cyclopædia of the Diseases of Children*, vol. ii, p. 372.

tumor is best removed by a cold snare, but where this is impracticable it may be cut away with the scissors. The edges should be trimmed close to the point of attachment. The attendant catarrh requires also some attention after the tumor is excised. As these growths have not been known to recur, the patient, upon their removal, is at once and permanently relieved.

273 Franklin Street.

BIOGRAPHY OF FRANK HAMILTON POTTER, M. D.

By JOHN O. ROE, M. D.

FRANK HAMILTON POTTER was born in Cowlesville, N. Y., January 8, 1860, and died in Buffalo, N. Y., on the sixteenth day of July, 1891. He was the only son and oldest child of Dr. William Warren Potter, the present able editor of the *Buffalo Medical and Surgical Journal.*

His illness was of short duration, and his death resulted from a perityphlitic abscess for which an operation was performed, but proved unavailing.

He belonged to a family of distinguished physicians on the paternal side. He was a descendant of Nathaniel Potter, who came from England in 1650 and settled in Portsmouth, R. I., and was fourth in the line of direct descent of those who have practiced medicine. His paternal great-grandmother was the daughter of a physician, and with her husband, Dr. Benjamin E. Potter, came from Rhode Island to western New York in the early part of the present century. His great-uncle was Dr. Hamilton E. Potter, father of Dr. Hamilton Grosvenor Potter, who was, up to the time of his death in 1878, professor of anatomy in the Buffalo Medical College. The mother of Dr. Frank Hamilton Potter was the daughter of William E. Bostwick, Esq., of Lancaster, N. Y., and a lineal descendant of Ethan Allen of revolutionary fame.

Dr. Potter gave early proof of an inherited taste for medicine, and his academic training was pursued with that end in view. He entered the Buffalo Medical College in 1878 at the early age of eighteen, and was graduated four years later, having served two years prior to his graduation in the City Hospital at Rochester, N. Y.

After his graduation he began the general practice of medicine

in Buffalo, where he continued to reside until his death. In 1886 he limited his professional work to diseases of the respiratory tract, and later confined his practice entirely to diseases of the ear, nose, and throat.

On the organization of the Niagara University in 1883 he was made clinical assistant to the chair of surgery, and was afterward appointed to serve on the surgical staff of the Sisters of Charity Emergency Hospital. He was subsequently appointed lecturer on materia medica in 1884; he held the position of demonstrator in surgery and lecturer on botany in 1884 to 1885; lecturer on materia medica from 1885 to 1888; and lecturer on laryngology from 1888 to May, 1891. In May, 1891, he was elected by the faculty of the department of medicine of the University of Buffalo as clinical professor of laryngology in that college, which position he held at the time of his death.

In the summer of 1885 he went to Europe and passed nearly a year in pathological and laryngological studies in the University of Berlin.

Upon his return he was appointed a member of the Municipal Civil Service Commission of Buffalo, and served in that capacity until January, 1889, when he was removed by Mayor Becker, owing to a change in municipal administration, but was reappointed by Mayor Bishop in January, 1890. At the end of that year he resigned on account of the increasing pressure of his professional work. On June 11, 1887, he was united in marriage to Eva, daughter of Mr. Lars G. Sellstedt, the distinguished artist of Buffalo. Two children were born of this union, Lars S., born June 21, 1889, and Frank H., born March 27, 1891.

In 1889 he was elected to membership in the American Medical Association, and was chosen the same year secretary of the Section of Laryngology. In 1890, after three years' service as delegate, he was elected permanent member of the Medical Society of the State of New York, at the same session at which his father was chosen president of that body. He was also a member of the Buffalo Medical and Surgical Association, the Erie County Medical Society, and the Buffalo Pathological and Obstetrical Societies.

He was one of the founders of the Thursday Club organized in 1882 for literary work, and in 1886 became charter member of the Saturn Club, a social organization.

He was associate editor of the *Buffalo Medical and Surgical Journal* from 1886 until his death, and his frequent contributions to the

medical and literary societies of which he was a member commanded attention for their research and clearness of expression, as well as beauty of style and diction.

His reviews of books were especially strong and impartial, and the readers of the *Buffalo Medical and Surgical Journal* will miss his initials from this important department.

The following are his most important contributions to medical literature :

The Proper Use of Ergot in Obstetrical Practice, *B. M. and S. J.*, vol. xxvi, p. 55.

Tuberculosis of the Nose, Mouth, and Larynx, *B. M. and S. J.*, vol. xxvii, p. 295.

Treatment of Acute Tonsillitis in Children, *B. M. and S. J.*, vol. xxvii, p. 455.

Congenital Bony Occlusion of the Nares (Report on a Case), *B. M. and S. J.*, vol. xxviii, p. 74.

Treatment of Acute Coryza, *B. M. and S. J.*, vol. xxviii, p. 302.

The Influence of Oral Irritation in the Production of Disease of the Upper Air Tract, *B. M. and S. J.*, vol. xxix, p. 12.

The Use of Menthol in Diseases of the Upper Air Passages, *Journal A. M. A.*, February 1, 1890.

On the Treatment of Hay Fever, *B. M. and S. J.*, vol. xxx, p. 88.

Neurasthenia and Nasal Disease, *ibid.*, p. 337.

Croupous Rhinitis (two papers), *Trans. Med. Soc. S. N. Y.*, 1889 and 1891.

The Galvano-cautery in the Treatment of Enlarged Tonsils, *ibid.*, 1888.

Candidate's Thesis for Membership in American Laryngological Association, on Cystoma of the Nasal Passages : with Report of a Case.

Some After-effects of the Recent Influenza. Read at the meeting of the Central New York Medical Association, June 2, 1891. *Buffalo Medical and Surgical Journal*, September, 1891.

Among the instruments which he devised may be mentioned : nasal scissors ; mechanical nasal saw ; self-retaining nasal speculum.

Dr. Frank Hamilton Potter was endowed with a personal magnetism which attracted to him the friendship of all with whom he came into contact.

It has been said that " the boy is father to the man," and in no case can this be more truly said than that of Dr. Potter. In habits he was always gentle and retiring, preferring when at school his book

to his ball, and hard study to hard play. He was exceedingly accurate and painstaking in everything he did, and was endowed with a perseverance that brooked no defeat.

He was a man of unusual talent in his profession, a genial companion, a faithful friend, an upright citizen, a man whose powerful influence was ever on the side of right, and who has left behind him an honored name and an example worthy of emulation.

THE

CONSTITUTION AND BY-LAWS

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION.

1892.

CONSTITUTION.

Art. I.

1. This Association shall be known as the "American Laryngological Association."

Art. II.

1. The object of this Association shall be the promotion of knowledge in all that relates to Diseases of the Upper Air Passages.

Art III.

FELLOWS.

1. The Fellows of this Association shall consist of Fellows, Corresponding Fellows, and Honorary Fellows.

2. The Fellows shall not exceed seventy-five (75) in number.

3. The Corresponding Fellows shall not exceed thirty (30) in number. The Honorary Fellows shall not exceed five (5) American and fifteen (15) Foreign.

4. Candidates shall be proposed to the Council, at least one month before the first day of meeting, by two Fellows, and, on recommendation of the Council, shall be balloted for at the first session of the ensuing Annual Meeting, a list of the names having been sent to every Fellow, with the notification of the meeting.

5. A two-thirds affirmative vote of all the Fellows present shall constitute an election.

6. No one shall be eligible for active Fellowship until he shall have submitted to the Council a paper on some subject connected with Laryngological Science.

ART. IV.

HONORARY AND CORRESPONDING FELLOWS.

1. The power of nominating Honorary and Corresponding Fellows shall be vested in the Council. The election shall take place in the same manner as that of ordinary Fellows. They shall enjoy all the privileges of other Fellows, but shall not be required to pay any fee, or be allowed to hold any office, or cast any vote.

ART. V.

OFFICERS.

1. The Officers of the Association shall be a President, two Vice-Presidents, a Secretary and Treasurer, and a Librarian, who, with four other Fellows, shall constitute the Council of the Association.

2. The Secretary and Treasurer, and the Librarian, shall be permanent officers, holding office from year to year at the discretion of the Association.

3. The nominations for officers shall be made in executive session on the first day, and the ballot for them shall take place on the last day of the meeting.

4. A majority of the votes cast shall constitute an election.

5. The President and Vice-Presidents shall enter upon their duties immediately before the adjournment of the meeting at which they are elected, and shall hold office for one year.

6. The members of the Council other than the President, Vice-Presidents, Secretary, and Treasurer, shall hold office for four years; except such of them as are elected at the first meeting; the first-named of whom shall retire at the end of one year; the second-named at the end of two years; the third at the end of three years, and the fourth at the end of four years, their places to be supplied by the election of one member at each Annual Meeting.

7. Any vacancy occurring between the Annual Meetings shall be filled temporarily by the action of the Council.

8. All Officers shall be eligible for re-election.

ART. VI.

ANNUAL MEETING.

1. The Annual Meeting of the Association shall be held at such time and place as shall be designated by the Association at the final session of

the previous meeting. It shall continue for three days, unless otherwise previously ordered by the Council.

ART. VII.

AMENDMENTS.

1. This Constitution may be amended by a three-fourths vote of all the Fellows present, at an Annual Meeting, provided that previous notice of the proposed amendment has been given in writing, and it shall be the duty of the Secretary to insert the proposed amendment in the notification of the approaching meeting.

BY-LAWS.

ART. I.

PRESIDENT AND VICE-PRESIDENTS.

1. The President and Vice-Presidents shall discharge the duties belonging to their respective offices according to Robert's Manual. The President shall be *ex officio* Chairman of the Council.

ART. II.

SECRETARY AND TREASURER.

1. As Secretary, he shall attend and keep a record of all the meetings of the Association, and of the Council, of which latter he shall be *ex officio* Clerk.

2. At each Annual Meeting he shall announce the names of all who have ceased to be Fellows since the last report.

3. He shall provide a Register, in which the members attending shall record their names.

4. He shall superintend the publication of the transactions, under the direction of the Council.

5. He shall notify candidates of their election to Fellowship.

6. He shall send notifications of the Annual Meetings, one month previous to the meeting, and of the meetings of the Council.

7. At the Annual Meeting of the Association, he shall read the minutes of the previous meeting, and of all the meetings of the Council that have been held during the current year.

8. As Treasurer, he shall receive all moneys due, and pay all debts.

9. He shall render an account thereof at the Annual Meeting, where an Auditing Committee shall be appointed to report.

ART. III.

COUNCIL.

1. The Council shall meet as often as the interests of the Association may require.

2. Four members shall constitute a quorum.

3. It shall have the management of the affairs of the Association, subject to the action of the Association at its Annual Meetings.

4. It shall consider the claims of the candidates recommended to it for admission to Fellowship, and shall have the sole power of making the nominations.

5. It shall arrange the order for the scientific work at the Annual Meetings.

6. It shall not have the power to make the Association liable for any debts exceeding in total one hundred dollars, in the course of any one year, unless specially authorized by a vote of the Association.

7. It shall have the entire control of the publications of the Association, with the power to reject such papers or discussions as it deems best.

8. The President or any two members may call a meeting, notice of which shall be transmitted to every member two weeks previous to the meeting.

9. The Council shall determine questions by vote, or—if demanded—by ballot, the President having a casting vote.

10. The Council shall constitute a Board of Trial for all offenses against the Constitution and By-Laws, or for conduct unbecoming an honorable physician, and shall have the sole power of moving the expulsion of any Fellow.

11. Notice of any important business to come before the Council shall be sent to each member of the Council two weeks before the meeting, and any member unable to be present may send in his vote by mail on any question relating to membership or place or time of meeting.

ART. IV.

ORDER OF BUSINESS.

1. The order of business at the Annual Meetings of the Association shall be as follows:

General meeting at 10 A. M. each day.

1. Report of Committees.
2. Reading and Discussion of Papers.
3. Miscellaneous Business.

2. The Business Meeting shall be held during the first hour of the second morning session, at which only Fellows of the Association shall be present. The Secretary's Records shall then be read; the Treasurer's account be submitted; the Reports of Committees on other than scientific subjects be received; and all miscellaneous business be transacted.

3. Urgent business may be transacted at any meeting by unanimous consent.

ART. V.

PAPERS, ETC.

1. The titles of all papers to be read at any Annual Meeting shall be forwarded to the Secretary, not later than one month before the first day of the meeting.

2. No paper shall be read before the Association which has already been printed or been read before another body.

3. No paper other than the President's Address shall consume more than twenty-five minutes in its reading, without the unanimous consent of the members present.

4. All papers that may be read before the Association, and accepted for publication, shall become the property of the Association, and their publication shall be under the control of the Council.

ART. VI.

QUORUM.

1. A Quorum for business purposes shall be ten Fellows.

ART. VII.

ASSESSMENT.

1. Every Fellow shall pay in advance the sum of five dollars annually.

2. Any Fellow whose subscription shall be more than nine months in arrears shall be reminded of the fact by the Treasurer, in writing; in event of payment not being then made, he may, on vote of the Council, be dropped from the Association.

ART. VIII.

AMENDMENTS.

1. Any of these By-Laws may be amended, repealed, or suspended by a two-thirds vote of the Fellows present, at any meeting.

ART. IX.

1. Any Fellow who shall have failed to furnish a paper for three successive meetings, or who shall have absented himself from three successive meetings, may, on vote of the Council, be dropped from the Association.

1892.

NAMES AND ADDRESSES OF FELLOWS.

Active Fellows.

Allen, Harrison, 1933 Chestnut Street, Philadelphia, Pa.
Asch, Morris J., 5 West Thirtieth Street, New York.
Bean, C. E., Germania Life Building, St. Paul, Minn.
Bosworth, Francke H., 26 West Forty-sixth Street, New York.
Bryan, J. H., 806 Seventeenth Street, Washington, D. C.
Casselberry, William E., 70 Monroe Street, Chicago, Ill.
Chapman, S. H., 193 Church Street, New Haven, Conn.
Cohen, J. Solis-, 1431 Walnut Street, Philadelphia, Pa.
Cohen, S. Solis-, 219 South Seventeenth Street, Philadelphia, Pa.
Daly, William H., 135 Fifth Avenue, Pittsburg, Pa.
DeBlois, T. Amory, 372 Marlborough Street, Boston, Mass.
Delavan, D. Bryson, 1 East Thirty-third Street, New York.
French, Thomas R., 469 Clinton Avenue, Brooklyn, N. Y.
Glasgow, William C., 2847 Washington Avenue, St. Louis, Mo.
Hartman, J. H., 5 West Franklin Street, Baltimore, Md.
Hinkel, F. Whitehill, 305 Delaware Avenue, Buffalo, N. Y.
Hitchcock, Urban G., 51 West Twenty-ninth Street, New York.
Holden, Edgar, 13 Central Avenue, Newark, N. J.
Hooper, Franklin H., 85 Beacon Street, Boston, Mass.
Ingals, E. Fletcher, 36 Washington Street, Chicago, Ill.
Ives, Frank L., 117 East Thirtieth Street, New York.
Jarvis, William C., 142 Madison Avenue, New York.
Johnston, Samuel, 204 West Monument Street, Baltimore, Md.
Knight, Charles H., 20 West Thirty-first Street, New York.
Knight, Frederick I., 377 Boylston Street, Boston, Mass.
Langmaid, Samuel W., 373 Boylston Street, Boston, Mass.
Lefferts, George Morewood, 6 West Thirty-third Street, New York.
Lincoln, Rufus P., 22 West Thirty-first Street, New York.
Lowman, John H., 441 Prospect Street, Cleveland, O.

MacCoy, Alexander W., 1417 Walnut Street, Philadelphia, Pa.
Mackenzie, John N., 605 North Charles Street, Baltimore, Md.
Major, George W., 82 Union Avenue, Montreal.
McSherry, H. Clinton, 612 North Howard Street, Baltimore, Md.
Mulhall, J. C., 3609 Lindell Avenue, St. Louis, Mo.
Porter, William, 2830 Locust Street, St. Louis, Mo.
Rankin, D. N., 85 Lincoln Avenue, Allegheny, Pa.
Rice, Clarence C., 123 East Nineteenth Street, New York.
Robinson, Beverley, 37 West Thirty-fifth Street, New York.
Roe, John O., 28 North Clinton Street, Rochester, N. Y.
Sajous, Charles E., 1630 Chestnut Street, Philadelphia, Pa.
Seiler, Carl, 1204 Walnut Street, Philadelphia, Pa.
Shurly, E. L., 25 Washington Avenue, Detroit, Mich.
Swain, H. L., 238 York Street, New Haven, Conn.
Van der Poel, S. Oakley, 47 East Twenty-fifth Street, New York.
Wagner, Clinton, 65 West Thirty-eighth Street, New York.
Westbrook, Benjamin F., 174 Clinton Street, Brooklyn, N. Y.
Wright, Jonathan, 73 Remsen Street, Brooklyn, N. Y.

Honorary Fellows.

Garcia, Manuel, 1 Bentinck Street, Manchester Square, London, England.
* Mackenzie, Sir Morell, 19 Harley Street, W., London, England,

Corresponding Fellows.

Bruns, Paul, Tübingen, Würtemberg, Germany.
De La Sota y Lastra, R., 7 Calle de Torqueros, Seville, Spain.
Gouguenheim, A., 73 Boul. Hausmann, Paris, France.
Labus, Carlo, Via St. Andrea 8, Milan, Italy.
Meyer, Wilhelm, Nörrefarimagsgade 19, Copenhagen, Denmark.
Moure, E. J., 25 Cour du Jardin-Public, Bordeaux, France.
Stoerk, Carl, Wallfischgasse 13, Vienna, Austria.
Schroetter, Leopold v., Schwartzenberg Strasse 8, Vienna, Austria.
Semon, Felix, 39 Wimpole Street, Cavendish Square, London, England.
* Voltolini, R., Breslau, Germany.
Whistler, W. McNeil, 28 Wimpole Street, Cavendish Square, London, England.

* Deceased.