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TRANSACTIONS

OF THE

FOURTH ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION

HELD IN THE CITY OF BOSTON

JUNE 12, 13, AND 14

1882



NEW YORK
G. P. PUTNAM'S SONS
27 & 29 WEST 23D STREET
1882

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(ELECTED MAY 11, 1881.)

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TRANSACTIONS

OF THE

FOURTH ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION,

HELD IN THE HALL OF THE MEDICAL LIBRARY ASSOCIATION, BOSTON,
JUNE 12, 13, AND 14, 1882.

First day, morning session.

The meeting was called to order at 10 o'clock, June 12th, by the President of the Association, Dr. F. I. Knight, who occupied the chair. The first Vice-President, Dr. E. L. Shurley, took his place upon the platform.

The Secretary announced the following Fellows present upon the calling of the roll :

FREDERICK I. KNIGHT, M.D., Boston.	E. L. SHURLEY, M.D., Detroit, First Vice-President.
GEO. M. LEFFERTS, M.D., New York.	FRANK H. BOSWORTH, M.D., New York, Librarian.
MORRIS J. ASCH, M.D., New York.	E. W. CUSHING, M.D., Boston.
WM. H. DALY, M.D., Pittsburgh.	D. B. DELAVAN, M.D., New York.
L. ELSBERG, M.D., New York.	T. R. FRENCH, M.D., Brooklyn.
J. H. HARTMAN, M.D., Baltimore.	E. HOLDEN, M.D., Newark.
E. F. INGALS, M.D., Chicago.	WM. C. JARVIS, M.D., New York.
S. JOHNSTON, M.D., Baltimore.	S. W. LANGMAID, M.D., Boston.
R. P. LINCOLN, M.D., New York.	G. W. MAJOR, M.D., Montreal.
E. C. MORGAN, M.D., Washington.	BEVERLEY ROBINSON, M.D., New York.
J. O. ROE, M.D., Rochester, N. Y.	T. F. RUMBOLD, M.D., St. Louis.
CARL SEILER, M.D., Philadelphia.	

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The following newly elected Fellows were also present and signed the register :

T. AMORY DEBLOIS, M.D., Boston. F. H. HOOPER, M.D., Boston.
D. H. RANKIN, M.D., Allegheny City, Penna.

Among the guests were :

HENRY J. BOWDITCH, M.D.,	FRANCIS H. DAVENPORT, M.D.,
DOUGLAS GRAHAM, M.D.,	A. H. NICHOLS, M.D.,
F. H. BROWN, M.D.,	W. F. GARNETT, M.D., Boston.
J. W. MCARTHUR, M.D., Lynn.	F. H. PIERO, M.D., Chicago.
N. A. POWELL, M.D., Edgar, Ontario.	

At 11 o'clock Dr. S. W. Langmaid, on behalf of the Committee of Arrangements, delivered the following

ADDRESS OF WELCOME.

Mr. President and Gentlemen of the American Laryngological Association :

It is my very agreeable office to welcome you to Boston to attend the Fourth Annual Meeting of our Association.

While we cannot hope to vie with the lavish hospitality which has been extended to us at former meetings, in larger cities, we are greatly consoled by the thought that on these occasions you occupy the somewhat contradictory position of hosts as well as guests ; inasmuch as you bring the larger part of your entertainment with you. A glance at the programme of exercises which our efficient Secretary has placed in your hands will show how rich that entertainment is. It is doubtful if so much that is new could be presented in a programme of the meetings of any other special department of medicine and surgery. While this is a just cause for pride, I am sure we all feel that much remains to be discovered, both in the fields of diagnosis and treatment. That zeal and effort are not lacking to continue the search for what remains to be found out, is a self-evident fact from the large attendance at this meeting ; more than two thirds of all the Fellows, some of them coming from far-distant cities, having signified their intention to be present.

While we Bostonians, in a certain sense your hosts, feel grateful for the honor done our city by such an assembly, we rejoice in the knowledge that it is the subject and not the place which brings so many of you here at this time.

Gentlemen : I do not forget that at the meeting last year the time was found to be far too short for such extended discussion as seemed desirable. I feel that the moments are too precious to be wasted in mere speech-making, and I shall detain you no longer than to offer you my congratulations upon such an auspicious beginning of another meeting.

Dr. Frederick I. Knight, President of the Association, read the following annual address of the President :

PRESIDENT'S ADDRESS.

Gentlemen of the American Laryngological Association :

After another year's vicissitudes we are again assembled to promote the cause of Laryngology by a comparison, and it may be, if necessary, a conflict of ideas in regard to subjects connected with our specialty.

The progress of laryngology during the past year has been satisfactory, and its triumphs not a few ; among the latter our success at the International Medical Congress at London deserves especial mention. Laryngology, assigned for some petty reason to the position of a *subsection*, brought forth papers and discussions universally admitted to be among the very best of the Congress.

Several of our colleges have, during the past year, recognized laryngology by the establishment of professorships, though lack of time still prevents much prominence being given to it in the regular courses of study. It may be said that the progress of our specialty has been satisfactory, but is capable of much greater development. The question for us is, how we can further this object.

As professed laryngologists, we have two distinct duties : one to the specialty which we have adopted, to develop, foster, and improve it in every possible way ; and the other to the general profession and the community in which we live, to make our knowledge of the greatest possible benefit to mankind. The first of these duties we discharge by our individual studies and researches into the nature of laryngeal and allied diseases, and the proper methods of treating them ; by our contributions to special journals ; and by our papers and discussions in this Association. The second duty involves the consideration of the best means of ensuring that amount of knowledge of our specialty, particularly

of the methods of examination, which every practitioner of medicine should possess. The community are not slow to learn the real advances in our art, and are now pretty generally aware that a physician is not fulfilling his duty to them, when, for instance, he gives an opinion on the cause of hoarseness, and prescribes a remedy for it, without using the laryngeal mirror. It will be a great gain when every physician feels he must own a laryngoscope. A more important point for us here arises, how we can make him use it intelligently; how all men who graduate from our medical schools shall be given a little available knowledge of laryngology during their precious time of pupilage. If the student neglects to acquire some practical familiarity with the use of the laryngoscope while still attending the hospitals, he will probably never make it up afterward. Above most other methods of exploration it requires continued supervision by a master. As I see students, now fortunately scarcer every year, who slip along their college course without taking every available opportunity for personal contact with the patients of the hospital, I am constantly reminded of the reproof administered by the late Prof. Meigs, who, while conscientiously demonstrating some obstetric operation to his students, called out to an inattentive one: "You had better pay attention here, young man; some day when you are settled off in the country you'll have a case like this, and then you'll 'wish to God old Meigs was here.'"

The consideration of improvement in instruction in laryngology involves a consideration of the methods and means of medical instruction as a whole.

Medical instruction, as given in our schools, may be divided into two great classes: the (1) didactic, and the (2) laboratory and clinical. The latter is growing every year, where such growth is possible, at the expense of the former; and rightly. One case of laryngeal phthisis properly demonstrated to the student is worth a hundred unillustrated descriptions of the disease. Diseases of the larynx, however, cannot be demonstrated to large bodies of men, as many others can, but the student must have opportunity for personal examination, as in diseases of the chest. It does little or no good for the teacher to tell what he sees or hears; the student must see or hear for himself.

This valuable, and, I may say, usually valued, privilege, is afforded the student by few colleges in their regular course. This arises from the fact that such instruction can be given only to

very small sections, and necessitates a repetition of instruction and a consumption of time impossible in the course of study as at present carried on. So this instruction has usually been given in private courses, either by the professors themselves, or gentlemen outside the Faculty, who, nevertheless, have enjoyed the patronage of the institution. The Harvard Medical School, in its progressive, graded course, undertakes to give all its students practical instruction and personal experience in all methods of physical exploration. Its regular course of study, however, is still only three years, consequently the amount of time given each student for special courses is necessarily inadequate. Those, however, who take the four years' course, at present voluntary, have a most excellent opportunity for such work.

The practical question for us to consider and agitate, gaining more and more toward a perfect end every year, is how to ensure the best knowledge of our methods in the shortest time. It seems to me that undergraduate instruction in every branch should be under the exclusive direction of a head of the department. Exercises in the same branch by different men, more or less under the patronage of the Faculty, involve a waste of time on the part of the student. There is no doubt that an immense amount of knowledge can be gained by roaming about from one hospital to another, and taking a course here and there as fancy may dictate, but the question with the Faculty of a medical school is how to graduate its pupils with a full, well-rounded education ; men with a good knowledge of all branches, and with no sad defects to repair, or to lament their inability to repair, afterward. It seems to me that it would be wiser if all of our medical schools should lay down a more definite course, making provision for all the details of study, offering more of the school, and less of the university, system.

The graded course has, of late years, commended itself to teachers for obvious reasons. Many pupils entering medical schools are unused to study, and even if they were used to it, would be unable to distribute their time to advantage without aid. Those long engaged in teaching must naturally be the best judges of the proper division of time among elementary studies, and all study before graduation may be considered elementary. There can be no doubt that the system of graded courses is a good one ; but a complete course of medical study should include much more than is usually put into it. We find most of our schools now an-

nouncing graded courses in the grand divisions of medicine, but few of them include much knowledge of the specialties. What is the result? The student may leave the medical school with even less knowledge than formerly of diseases of the eye, ear, throat, etc., unless he supplements the regular course by private ones, because, being specialties, the professors of medicine and surgery have avoided them entirely, whereas in old times they devoted at least a few lectures to each of them. In old times the education of the medical student was undertaken by physicians in every community. This education was supplemented by the winter course of lectures and dissections at some university. Now the whole instruction of the student has been undertaken by the corps of teachers at the medical schools. In the advance of medicine and its specialties a complete education is much harder to provide than formerly, requiring expensive accommodations and paraphernalia.

Our special concern is to consider how we can promote the teaching of laryngoscopy in the schools—*i. e.*, a sufficient amount for the general practitioner.

In the first place we must strike at the root by using our efforts for a prolongation of the term of study. All of us will agree, without discussion, I think, that four years is a short enough course for a doctor of medicine. What prevents its adoption as the time required by the leading medical schools? (1) Fear of losing students. What harm in that? Would the community suffer for lack of practitioners? I think not. If there is, however, a demand for doctors of inferior attainment, let them go out with diplomas from schools of confessed second rate. There is no reason why the first-class college should now keep down the standard of its degree to accommodate the demand for second-class doctors.

(2) The second, and I fear more potent reason, is the dread of diminished income. The commercial character of our medical schools has always been a great drawback to their proper advancement. The extension of the time of study would require more time from the professor, and at first, certainly, less pay, though I apprehend much less money loss than is generally anticipated from raising the requirements for the degree. The character of medical, and in fact of all students in this country, is improving, and there are enough who want the best at whatever expenditure of time and money, to maintain a good attendance at our leading schools in spite of additional requirements.

It should be the endeavor of all interested in medical education to make the salaries of the professors independent of the fees of the students. A great step in this direction has been made at Harvard, where the pay of the professors bears no relation to the number of students who attend his course ; but here, in the absence of much endowment, the size of the salaries in general must depend on the number of students at the school. This brings us, naturally, to the subject of endowments.

Proper medical education is a very expensive undertaking. Why should not the medical schools be endowed ? In what department of education have the community a more vital interest ? Very few are so blind to the relation between a good medical school with the necessary hospital advantages, and the well-being of the community, as the trustee of one of the large hospitals in this city, who proposed to exclude students from its wards, and give the entire medical and surgical care of the patients to a few resident physicians and surgeons, shutting up the hospital like our private insane asylums. When the benefit to the practice of medicine and surgery of having a full staff of active men on duty, who should demonstrate their practice to all students, was mentioned, this trustee said he 'had always been able to get a good doctor, and reckoned he always could.' I have always held that when the subject of endowment had been properly presented to the laymen of the community, there was no object they would aid more willingly. The liberal subscriptions of this community for the erection of a new medical college for Harvard University is an illustration of this.

In order that medical education may take rank with other branches, it must have its endowments. Our profession is not given to begging, but it must make the move in this instance, for none appreciate so well the importance of the object. How shall we beg ? Select some definite object to be accomplished—the erection of a new building, the endowment of some professorship,—and then agitate it, or start a general fund for your institution, to be used at the discretion of the trustees. The various ways of solicitation will soon become familiar. A lady who was understood to have borne a prominent part in raising funds for the erection of a hospital, told me that the duty assigned to her in the matter was to write a newspaper article every week, which she did for many months, in that way keeping the object before the public. The confidence awarded to a family physician often

causes him to be selected as a witness to wills, and he may frequently without obtrusion suggest beneficiaries. There is much in fashion in such matters, which once being set, many will follow.

Allowing that we have secured time and money, how shall the teaching of our own specialty be carried on? The first need is proper hospital or dispensary accommodation for that personal examination of patients which is indispensable in this department. We are likely here to be met with a difficulty long felt, arising from the fact that most of our charities are under a different government from our medical schools. The governing bodies of the hospitals have at best only a secondary interest in the accommodation of students, consequently the rooms in which courses in laryngoscopy have been given, have been usually far too small for the mere admission of the necessary number of students, to say nothing of the serious detriment to health likely to arise from breathing an atmosphere vitiated by so many breaths and so much gas-light. In spite of some valid objections, it becomes more desirable every day that the medical college should control its clinical material and clinical lecture-rooms. The teacher of laryngoscopy needs a very large, high-studded room, in which at least a dozen students with as many patients can work at one time with comfort. There should be also small separate rooms for examination of the chest, operations, etc. With one good assistant the teacher can easily overlook the work of a dozen students, and thus much time be saved. I think that every student should have at least a six-weeks' course of daily practice in this manner. This should be supplemented by lectures on the technique of laryngoscopy, and on the diagnosis and treatment of diseases of the throat. In those of our schools which have very large classes, this plan could be carried out only by efficient corps of assistants who should conduct these practical exercises at several public clinics, under the general supervision of the professor of the department, who should see to it that this supplementary education, which is perhaps of more value than his lectures, should be systematically and thoroughly carried on. By some central supervision of these supplementary courses, the students' time can be much more profitably employed. The fact is, however, that most of the students' day is now taken up with the necessary general courses, and no proper complete system of education can be expected till more time is required for graduation. How long will our Faculties go

on in the old way, letting students pick up as they can knowledge which is recognized as of prime importance, but for which they make no provision? A great deal of this instruction has been given in summer courses, so-called,—instruction much of it of vital importance to the practitioner. The “Summer Faculty” of one of the largest medical colleges in this country has just resigned, because they felt they were not sufficiently recognized in the government of the college. I can see no way out of the difficulty except by an extension of the time of study. Then every thing which is necessary to a complete education should have its proper place and time in the curriculum, as decided by a committee of the Faculty, and there should be no supplementary courses except for graduates.

Interest in and knowledge of our specialty may also be promoted by the presentation of papers, reporting of cases, etc., to the general medical societies, and the contribution of articles to the general medical journals. Laryngology is still too young to warrant our withdrawing within ourselves, and we should not devote ourselves exclusively to special societies and journals. The practical part of our art is always of interest and eagerly sought for by the profession at large.

Allow me now to revert for a few moments to the matters of our own Association. Thus far our meetings have been thoroughly successful. The papers have been good, and the discussion amicable. The Association has been remarkably free from those petty dissensions which have often wrought much mischief to similar organizations. The good-fellowship established among men who before were strangers has been free and most cordial. It behooves us to see that this most satisfactory condition of the Association is maintained; and in this connection I would call the attention of the Fellows, *first*, to the *personnel* of the Association. It was felt by its founders that fellowship should be limited to recognized specialists, who would take an active interest in the Association, and that for some time to come fifty would include all of these. This number we approach very closely this year. Last year, however, provision was made for dropping from the rolls all who fail to attend or send a paper to three successive meetings, and a number of vacancies may be created in this way. There seems to be no reason at present for changing our limit of membership, but rather that the standard for admission should be raised. The members who have heretofore contributed, and who now contrib-

ute papers, while in the future taking the same interest in their specialty, and perhaps attending all the meetings and taking part in the discussions, may not, as private practice becomes more exacting, prepare as many papers. So we must look to it that the young men whom we admit to fill the few vacancies, are men who have not only an interest in the specialty as listeners and learners, but an aggressive interest, which will cause them, in their turn, for some years, to bring to us annual contributions. Perhaps it would be well that not only the form of a thesis, but a good one of definite length, should be a *sine qua non* of membership, and that a man who could not or would not write this should not be considered worthy of membership.

I would call your attention, *secondly*, to the place of meeting. Last year, without due consideration, the Association hurriedly voted to hold the next meeting at Niagara Falls. Becoming soon convinced that an effort to meet there would result in failure, with the approval of the Council, I issued a circular proposing the change to Boston. The thirty-eight answers received were unanimously in favor of the change. In this connection, the experience of other special societies in meeting at Niagara may be of interest. The Ophthalmological Society met in New York in 1876, twenty-six members present. In 1877 they met at Niagara Falls, six members present, and adjourned for want of a quorum. They met next year at Newport, and had twenty-four present. The Otological Society met in New York in 1876, seventeen members present. In 1877 they met at Niagara Falls, four members present, and adjourned for want of a quorum. They met next year at Newport, and had eighteen present. It must be said, however, that during the summer of 1877 there was a strike among the railroad employés, which rendered travelling somewhat uncertain. I myself feel that, as long as so large a proportion of our members live in New York or immediate vicinity, our meetings must be held within at most a night's journey from that city. As to the question between a watering-place and a city, I am at present decidedly in favor of the latter. The city affords the Fellows an opportunity, by prolonging their stay for a day, to visit hospitals, special clinics, instrument stores, etc. It also gives them an opportunity to become acquainted with the profession of the country outside of the specialty, and a better chance, as I said in my circular, "to diffuse the knowledge and promote the cause of Laryngology." The arguments which have been adduced in favor

of a watering-place for our meetings have been that the Fellows would not be drawn off by outside excitements, and that members residing in the city visited would not be burdened with the work of preparation, or led into an increasing extravagance in entertaining the Association, as one city and another was visited. In regard to outside attractions I am inclined to think that the polo at Newport and the races at Long Branch might prove as seductive as any thing to be found in the summer time in the large cities.

In regard to the second argument, I can but think that all Fellows will take only pleasure in arranging for the reception of the Association whenever it does them the honor to meet in their city. As to the temptation to extravagant entertainment, the Council has this year taken preventive action in declining the invitation of the Boston Fellows to dine, and establishing the dinner as an annual custom of the Association, each member paying for his own dinner ticket. Beyond this, I think we may rely upon the good taste of the Fellows to do nothing foolish.

In regard to the time of meeting, it seems to me that it would be better to have a fixed time, not to be changed except for extraordinary reason. It is impossible to fit our meeting upon that of the American Medical Association in such a manner as to suit all who desire to attend both, and I would recommend an entirely different time. The American Medical Association always meets the first Tuesday in the month. We might take the third Monday in May for our meetings. This would prevent conflict in either direction.

In whatever way the Association may decide to publish the papers read before it, it is imperatively necessary that the minutes of the business meeting should be published and sent to every member immediately after each meeting. In this way the expressed wishes of the Association will be laid at once before every Fellow, whether present at the meeting or not, and will stand as a needed guide to the executive officers during the year.

And now I introduce you to the papers of the day, wishing you a pleasant and profitable session of the American Laryngological Association.

The reading of communications being in order, Dr. LOUIS ELSEBERG read his paper "On paralysis of the laryngeal muscles."

Dr. Elsberg's Paper.

I HAVE for many years given names to the laryngeal muscles from their position as well as their main action; and in regard to the action of the intrinsic muscles, it is my opinion that the thyroid cartilage is fixed, relative to the movement between the several parts of the larynx. The muscles which influence the vocal bands are the following:

1. Anterior muscles, the thyro-cricoid: tensors of the vocal bands.

2. Interior muscles, the thyro-arytenoid: straighteners of the vocal bands.

3. Transverse muscle, the arytenoid: transverse adductor of the vocal bands.

4. Lateral muscles, the lateral crico-arytenoid: lateral adductors of the vocal bands.

5. Posterior muscles, the posterior crico-arytenoid: abductors of the vocal bands.

(Those whose anatomical names are derived from two cartilages, the first two and the last two muscles, are bilateral, *i. e.*, there is one on each side; the third, whose anatomical name is one word, is a single muscle.) The first four may be grouped together, as: constrictors or narrowers of the rima glottidis; the fifth comprises the group: dilators or wideners of the rima glottidis.¹

Isolated paralysis of some of these muscles occurs very rarely, of others frequently. Usually paralysis affects two or more muscles together. Sometimes not the whole of the muscle, or muscles, is involved; this complicates matters and justifies, from a practitioner's point of view, the divisions which have been made by physiologists, of some of the laryngeal muscles into two or more separate portions.

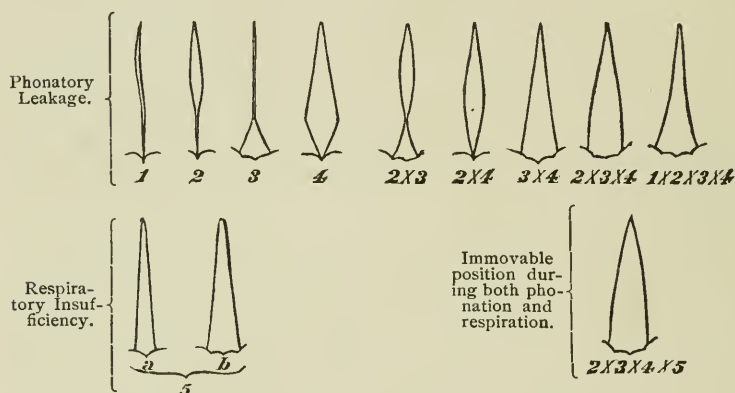
¹ The *Interioris*, in some respects the most remarkable muscle in the body, has been woefully misunderstood. After much personal investigation, I have for many years taught my students to call it the *straightener* of the vocal band, a designation which refers to one of its most general and important actions. A hundred years ago, unfortunately, the name "laxor" of the vocal band was given it, and this name, completing as it does the schema of having, as well as adductors and abductors, tensors and laxors of the vocal bands, finds some favor at the present day, but carries with it a great mistake. Morell Mackenzie, to

Again, physiologically, the combined action of some of the muscles materially alters the direction in which a particular muscle, acting singly, is exerted. Thus, the *Lateralis* muscle may by the simultaneous contraction of the *Posticus* be changed from being an adductor to being an assistant abductor of the vocal band: this occurs whenever the *Lateralis* is prevented by the *Posticus* from rotating the vocal processes inward, whereupon it pulls the arytenoid cartilage outward and downward upon the sloping articular surface, provided the *Transversus* and the other constrictors of the

whom we owe the admirable designation of the appropriate laryngeal muscles as "adductors" and "abductors," formerly shared the notion that the interior muscles are laxors of the vocal bands, but in his recent publications calls them internal tensors.

It is not my intention in this place to write an exhaustive essay on the complex action of the thyro-arytenoid muscle. The manner in which its different fibres run is more complicated than that of any other muscle that I know of, and certainly there is no other in the body within which different muscular fibres both arise and terminate to a like extent. Theoretically, it might be called a "laxor" of the vocal band, inasmuch as the contraction of those of its fibres which run from front (thyroid cartilage) to back (arytenoid) tends to bring the arytenoid cartilage nearer to the pomum Adami. The approximation to each other of the points of attachment of the vocal bands must, *all other things being equal*, unquestionably relax the bands; but, for vocalization the band must always be tense, and the varying amounts of longitudinal tension—including comparative relaxation after tension—are brought about, not so much by this muscle but by the thyro-cricoid which lifts up the front portion of the cricoid cartilage and thereby rotates the posterior plate, with all that is attached thereto, downward and backward. For the consideration of the thoughtful reader, I will add that from some points of view the action of the thyro-cricoid muscle may be compared to the coarse adjustment in a microscope, and that of the thyro-arytenoid to the fine adjustment. Coarse adjustment of the vocal bands for phonation can be more or less successfully brought about even by the action of the extrinsic muscles of the larynx; so that in some cases, f. i. in rabbits, with complete paralysis of all the intrinsic laryngeal muscles, voice has been observed so long as the hyo-thyroid and laryngo-pharyngeal muscles remained intact. Besides regulating the length of the vibratile portion by the fixation of the anterior and posterior vocal nodules, (see Elsberg's *The Throat and its Functions*, pp. 36 and 37, and Transactions of the American Laryngological Association, 1879), or perhaps also by contractions of fibres of different lengths (see Garcia, Transactions of the International Medical Congress at London, 1881), the thyro-arytenoid muscle gives the vocal band the requisite form for phonation, internal transverse and oblique tension, and firmness; its outer fibres more or less rotate the arytenoid vocal process toward its fellow and, similarly to the *Lateralis* muscle, adduct the vocal band; and one of its main actions is to cause the vocal band properly to stand out, away from the lateral wall of the larynx, and to present the sharp and *straight* edge needed in producing multi-modulated vocal sounds. Pathologically, that early master-genius of our specialty, Türck, already observed and published the laryngoscopic image which paralysis of this muscle produces, viz.: "sickle-shaped gaping of the ligamentous glottis with normal closure of the cartilaginous glottis"; yet, strange to say, subsequent authors, except Tobold, have pictured in its place the so-called elliptical paralysis, viz.: an elliptical opening between the edges of the entire vocal band, which in reality is the result of the paralysis of the thyro-arytenoid and lateral crico-arytenoid muscles combined.

rima are relaxed. Paralysis of the constrictors of the rima glottidis causes what I was the first to call "phonatory leakage" of air; paralysis of the dilatators causes "respiratory insufficiency." In the former case the characteristic laryngoscopic image is obtained in the examination during efforts



of phonation; in the latter, during respiration. In each of the isolated paralyzes of, and in combined paralyzes confined to, the constrictor muscles, respiration is not directly interfered with, nevertheless, in all severe cases the patient suffers from easily getting out of breath on account of the leakage of air; while in the isolated paralyzes of the dilatators, the voice, though never extinct, is not clear and pure on account of incomplete fixation of the arytenoid cartilages.

BILATERAL ISOLATED PARALYSES.

Isolated paralysis

of (1) the two anterior muscles produces on phonatory effort (fig. 1) a wavy outline of the inner edges of the lax-looking vocal bands;

of (2) the two interior muscles produces on phonatory effort (fig. 2), an elliptical opening between the edges of the ligamentous portions of the vocal bands, while the cartilaginous portions meet in the median line;

- of (3) the transverse muscle produces on phonatory effort (fig. 3), an opening posteriorly of more or less sharp triangular form ;
- of (4) the two lateral muscles produces on phonatory effort (fig. 4), a rhomboidal opening, the triangular opening in front, extending to the vocal processes of the arytenoids and being nearly as wide as that in the cadaveric position of the vocal bands, while the triangular space behind is quite short, extending along the cartilaginous glottis ;
- of (5) the two posterior muscles produces during respiration (fig. 5) a narrow opening between the vocal bands, not wider than the cadaveric position, more narrow during forced inspiration (*a* of fig. 5) than during full expiration (*b* of fig. 5), whereas in health the vocal bands are during forced inspiration more widely apart than during expiration.

BILATERAL COMBINED PARALYSES.

If several muscles be paralyzed simultaneously, the image seen is a resultant of the appearances described as being caused by each of the muscles involved. Paralysis of the lateral muscles is very rarely isolated ; usually there is combined with it paralysis of either the *Transversus* or the interior muscles, or both: in the first case a triangular opening results (fig. 3+4), in the second an elliptical opening (fig. 2+4), and in the third a triangular opening with slightly concave sides (fig. 2+3+4). The anterior vocal processes can be brought a little nearer together in the first case than in either the second or third,¹ and sometimes show their position by a slight projection in the straight edges of the vocal bands. I have met with a case of aphonia in which I diagnosed paralysis of all the constrictors of the rima glottidis; on attempted phonation there was a triangular opening between the vocal bands with slightly convex sides (fig. 1+2+3+4). Sometimes there is combined paralysis of the interior and transverse

¹ A fact which, through inattention of the engraver, the illustrations on p. 14 unfortunately do not show. The elliptical opening fig. 2+4 ought to be about as wide as the rhomboidal fig. 4.

muscles, while the anterior and lateral muscles are intact; this produces a more or less well-marked hour-glass shaped opening (fig. 2+3), in which usually, though not always, the posterior vocal processes actually touch each other with an elliptical opening in front of and a triangular opening behind the point of contact. In my experience, the isolated paralysis of the transverse muscles is less rare than the isolated paralysis of any others of the laryngeal muscles; next in relative frequency comes isolated paralysis of the anterior muscles. Again, paralysis of the anterior muscles is often combined with temporary or slight paralysis of the transverse muscles. Isolated paralysis of the posterior muscles comes next in the order of frequency of occurrence to that of the anterior; then that of interior, and lastly that of lateral, which is of exceeding infrequency. In cases in which paralysis of the posterior muscles coexists with that of the constrictors of the rima glottidis, there is usually not as much respiratory insufficiency combined with the aphonia and phonatory leakage as exists in isolated paralysis of the abductor muscles. This indicates that in the absence of antagonists the adductors either lose the power of being thoroughly relaxed or are thrown against the patient's will into a state of either spasm or perverse contraction during inspiration. Rosenbach has explained it as rhythmical perverse innervation, assuming that the inspiratory nerve-impulse that normally goes to the laryngeal muscles, especially the abductors, affects, and of course abnormally, only those not paralyzed.

In the combined paralysis of all the laryngeal muscles, the vocal bands, being uninfluenced by muscular action, remain during both respiration and attempts at phonation in a position that can well be called "the cadaveric position." I have an impression, however, that in laryngeal paralysis from disease or injury of the inferior laryngeal nerves,—a paralysis in which all the muscles except the thyro-cricoid, and perhaps the thyro- and ary-epiglottic, are affected, and in which, therefore, there is immobility of, and a triangular opening between, the vocal bands,—the edges of the bands are slightly concave, while these edges in the dead body, in

the real cadaveric position, are straight or even somewhat convex. At all events, in the only unquestionable case of the kind that has fallen under my observation, a case in which exclusively the two inferior nerves were involved in cancerous disease, I noticed a slight concavity of the edges of the immovable vocal bands (represented in fig. 2+3+4+5); and, on the other hand, in the case of aphonia in which, though the abductors were intact, the thyro-cricoids were in all probability involved in the combined paralysis, the edges of the vocal bands certainly were slightly convex (fig. 1+2+3+4). As the point here involved, requires, in my opinion, more confirmation, I state it as rather an impression than a positive conclusion. If it prove correct, it marks the difference between the position to which we may justly apply the term cadaveric and the position which results when all the muscles except those innervated by the superior laryngeal nerves are paralyzed.

When in injury or disease of either the brain or the pneumogastric, spinal accessory, or recurrent nerves, laryngeal paralysis is or becomes incomplete, a very curious and as yet unexplained fact has been observed, viz., that the abductor filaments are more prone to be affected than the adductor filaments, and that if, in a case in which both the abductors and the adductors are affected, recovery takes place, the adductors are apt to recover first or exclusively, and to be affected with abnormal contraction, so that the patient during the progress of recovery is in danger of a dyspnœa which, several times in my practice, has necessitated tracheotomy to prevent death. The relatively greater disposition to implication of the abductor filaments is well known to laryngologists, but the relatively greater disposition to recovery of the adductor filaments, under these circumstances, seems to have been unnoticed until I called attention to it. (*Phila. Medical Times*, July 30, 1881.)

GRADUATED, UNSYMMETRICAL, AND UNILATERAL
PARALYSES.

I have seen each of the typical, almost diagrammatic-looking, laryngoscopical images, from which the illustra-

tions have been made, in my practice; but it is relatively seldom that one observes such uncomplicated, complete, and clearly definable cases. After one has succeeded, however, in making himself thoroughly familiar with these illustrations, one is enabled to interpret any laryngoscopic image due to laryngeal paralysis. Accurate diagnosis in an individual case is not always easy; and I indulge the hope that in publishing these results of painstaking observations, I shall aid my colleagues in recognizing what particular muscle or muscles must be involved in the production of any laryngoscopic image that may present itself. I have already stated that sometimes not all the filaments of a particular muscle or set of muscles are affected, but only a number constituting a portion of the muscle. Owing sometimes to this fact and sometimes to some neuropathic or myopathic condition that cannot perhaps be fully explained, there are different degrees of paralysis met with, degrees varying from slight sluggishness or fatigability to complete immobility. It has become customary to designate comparatively slight degrees of paralysis as paresis. Cases occur in which different degrees of paralysis exist on the two sides. Sometimes such bilateral unsymmetrical paralysis persists; in a progressive disease it may in later stages become symmetrical; sometimes one side alone recovers, leaving a unilateral paralysis.

In all cases of unilateral paralysis, whether secondary or primary, a lateral half of the image or opening between the vocal bands is seen on the corresponding side. The other half of the rima glottidis presents a healthy appearance, and the healthy vocal band may even show an excess of movement during both phonation and respiration, so as to make up as far as possible for the inactive side, thus giving rise to a "lop-sided," or unsymmetrical figure. The special details of unilateral paralysis I reserve for another occasion. Occasionally it occurs that a primarily unilateral paralysis becomes a bilateral one.

Paralysis of laryngeal muscles sometimes is followed by or alternates with spasm of the same or other muscles. Sometimes it seems to cause, or, at all events, is accompa-

nied by, spasm of antagonistic muscles, a fact I have already referred to in connection with paralysis of the posterior muscles. This makes the appreciation of the laryngoscopic image produced by pure paralysis still more difficult than it would be otherwise, and has often, in my experience, led to mistakes. Sometimes spasm is a reflex effect and sometimes it is called forth by the action of the muscles; it may affect either the dilatators, or what is more usual, the contractors of the rima, and in this case may either involve all, or be limited to one or two, of the contractor muscles. Hack has pointed out that isolated spasm of the lateral muscles is more dangerous to life than complete respiratory spasm, *i. e.* spasm of all the contractor muscles. I have met with two cases, one ending fatally and one in which life was preserved by tracheotomy, which confirm Hack's experience. The laryngoscopic image of isolated spasm of the Laterales is like that of combined paralysis of the Interiores and Transversus (fig. 2+3). In Hack's case, death was averted by introducing, by the aid of the laryngeal mirror, one of Schrötter's hard-rubber No. 5 catheters. Catheterization is certainly a most valuable substitute for tracheotomy in such a case. But the full consideration of the subject of spasm of the laryngeal muscles, like that of unilateral paralysis, I must postpone.

The principal points of this paper that may be made subjects for discussion are the following six, viz.:

1. Relative to the cricoid cartilage, the position of the thyroid is fixed by the sterno-thyroid, hyo-thyroid, and laryngo-pharyngeal muscles; the usual effect of the contraction of the anterior, *i. e.*, thyro-cricoid muscles, therefore, is to lift up the front portion of the cricoid cartilage and thereby rotate the posterior plate with all attached thereto downward and backward.

2. The interior, *i. e.*, thyro-arytenoid, muscles are not laxors of the vocal bands, but internal tensors, regulators of form, and straighteners of inner edge.

3. Is my schema of images produced by paralysis of the intrinsic laryngeal muscles, isolated and combined, correct?

4. The order of the frequency of occurrence of isolated paralysis is the following, viz. : paralysis of transversus, anticus, posticus, interioris, lateralis; the latter being very rare. With paralysis of lateralis is usually combined paralysis of either the transversus or interioris, or of both. With paralysis of anticus is frequently combined that of transversus, and with the latter that of interioris. Spasm or perverse innervation of the adductor muscles is apt to occur with or after paralysis of the posticus, and spasm of the laterales with or after combined paralysis of transversus and interiores; and both conditions are dangerous to life.

5. Is there a difference recognizable in the mirror between the "cadaveric position" of the vocal bands and the position due to isolated paralysis of the recurrent nerves, and if so, is it the convexity of the edges of the vocal bands in the former case?

6. The adductor filaments are relatively more prone to recover than the abductor, and then to be affected with spasm or abnormal contraction during inspiration.

Discussion on Dr. Elsberg's Paper.

Dr. BOSWORTH observed that Prof. Elsberg had imposed something of a mental effort to follow him in his rapid survey of the subject submitted for discussion; the difficulty of which was increased by his introduction of a new nomenclature, for which there is really no excuse at present. There can be no improvement upon the nomenclature and classification adopted by Mackenzie in his earlier editions, though the speaker noticed with regret that in his last edition he had altered it materially. With regard to the thyro-arytenoid muscle it can have but one possible function, as a modifier of the tension of the vocal cord. He could not see how it could act, in the manner claimed by the lecturer, or indeed how any possible benefit could be derived from it, as a straightener of the cord; at the most this could merely be an adventitious function of the muscle, one existing possibly only in the highly trained voice.

With regard to the diagrams, of which criticism had been invited, he would merely speak of the first, which presented a sigmoid glottis. It seems impossible that this condition can be found in nature; for any paralysis that is bilateral must produce

symmetrical alterations in the larynx. How the convexity could be explained under these circumstances he failed to see. When there is unilateral paralysis, the concavity of the vocal cord of one side and convexity of the other are easily understood, but he had never seen any thing in the living larynx that could correspond with the picture presented. He would also like to make some remarks upon adductor paralysis, but as he had already expressed his opinion he did not think it necessary to repeat it. He had not been able to follow the lecturer closely, but supposed that he admitted the existence of two forms of paralysis, the neuropathic and the myopathic: the former due to nerve lesion, central or peripheral; the other caused by changes, principally inflammatory, in the muscular tissue itself, and involving one or more of the laryngeal muscles.

Dr. CARL SEILER regretted that he had been so fatigued by a long journey, that he was unable to follow the lecturer with the care that the subject deserved, and therefore would not attempt systematic consideration of it; but there was one point that he considered well worth discussion; that is, the action of the thyro-arytenoid muscle. It had been designated as a straightener of the cord; but he could not see how this is possible: some of the fibres run parallel with the cord and are inserted in the base of the arytenoid cartilage; others run obliquely and are attached to the connective tissue between the cricoid and arytenoid cartilages. The latter portion acting alone would produce relaxation of the cord, while the transverse fibres by themselves would cause separation of the ligamentous structures of the glottis; both acting together cause relaxation of the vocal cords. He could not see how the cord could be straightened by the action of either set of these muscular fibres. It is true that the function of this muscle is not perfectly understood as yet, but he had stated how it appeared to him.

Dr. ROE said that he had been much interested in the paper and in the subject; the more so because there is in Rochester a case that he thought would interest the Society. It is the case originally reported by Mackenzie in the first edition of his work. It is one of paralysis of the abductors of the larynx, which is still living. Last year the patient had an attack of partial apoplexy; there was no marked aphasia following the attack, but there was decided loss of memory; the laryngeal trouble remained unchanged. In speaking of the case to Mackenzie last summer, he

seemed strongly of the opinion that the origin of the laryngeal trouble was in the brain, and the occurrence of this later complication certainly confirms, to a certain extent, this view of its central origin. A *post-mortem* examination may throw more light upon this interesting question hereafter.

Dr. HARTMAN reported a case similar to the last, occurring in Baltimore, in which abductor paralysis existed which was undoubtedly due to brain lesion. The patient was an officer in the United States Army, and was in the asylum for some mental trouble; he afterward presented himself at the office of the speaker, when the abductor paralysis was discovered; he was subsequently sent to New York, where he was examined by Dr. Wagner and Dr. Asch. He afterward had a relapse of the mental disorder, and is now in Bloomingdale Asylum. In this patient the laryngeal paralysis was evidently due to central brain disease.

Dr. MORGAN noticed a connection between the condition represented by one of the diagrams and the production of double voice or diphthonia. One case under his care recently presented a double glottic image, almost exactly like the typical hour-glass glottis, except that the cords were not quite so straight. He believed that most authorities, or several, at least, of the more prominent, agree that this produced the double voice; the first being formed in the anterior or ligamentous glottis, the second in the cartilaginous portion, the latter being lower than the former. When first seen it was supposed that the condition was caused by paralysis of the thyro-arytenoid and the arytenoid (or transverse) muscles.

Dr. ELSBERG said that he did not seek to introduce a new nomenclature. He had merely endeavored to simplify the subject and render discussion easier by using, together with the anatomical names of the muscles, others which would indicate their physiological function and position; for instance, he thought it well, as synonyms for "thyro-arytenoideus," to use the terms "straightener" and "interior" muscle; and it is certainly easier to say sometimes "abductor" or "posterior" than to constantly repeat "posterior crico-arytenoid" throughout the discussion. With regard to the crico-thyroid, he would observe, in passing, that if the anatomical rule generally observed in giving the fixed point first as the origin of the muscle, and the movable point as the insertion after, be applied, then he thought, its name would be more correctly given as thyro-cricoid. He did not, however, in-

sist upon names, and if any one found it easier to use the ordinary titles, he could do so.

With regard to the objections that had been made to the function assigned to the thyro-arytenoid, which he had referred to as a straightener of the vocal bands, it is true that this is only one of its functions, but as such it is tacitly recognized by every laryngologist. From the first practice, almost, of laryngoscopy in disease, it has been known that when this muscle is paralyzed the vocal band is concave, and when the muscles are in action the bands are straight. If one of its functions is not that of straightening the bands, he could not understand why this is always so. It is a very important muscle, and the arrangement of its fibres is quite complicated ; he need say no more upon this point, but would say a word upon Dr. Bosworth's criticism as regards "Anticus" paralysis in particular, and Mackenzie's nomenclature in general.

The bilateral paralysis of the thyro-cricoid muscles does not always produce an exactly symmetrical figure, but may produce a figure which is symmetrical at one time and not so at another. Dr. Bosworth says that he has never seen such a case, and this can be readily believed ; for he has stated in his book that he had never seen a case of paralysis of the superior laryngeal nerve, and therefore he has not seen this condition, which is only produced by bilateral paralysis of this nerve. The peculiar wavy outline of the bands in the diagram simply indicates their relaxed condition, and is not meant to give their exact position at all times in this form of paralysis.

Dr. BOSWORTH inquired if it was intended to represent the phonatory position of the glottis.

Dr. ELSBERG replied that it was, but, as he had already stated, it is not at all a constant image, but merely indicated a relaxation of the vocal bands.

Dr. SEILER said that possibly in this condition the cords make in phonation nodal points and curves, waving to and fro.

Dr. ELSBERG replied: It simply means that the vocal bands are too long, they are relaxed, and whichever way you may choose to represent that now upon the blackboard, or in your own mind, I have no objection.

In the matter of nomenclature, that adopted by Mackenzie in his former books is a very good one, and the speaker did not wish to introduce a new classification. He would say, however, that the reason why Mackenzie had given up the name of laxor paraly-

sis was that he saw that he had been mistaken in his former view that the thyro-arytenoid was a laxator of the vocal bands. The controversy about the physiological action of this muscle is not by any means a new one. More than a hundred years ago it was called a laxor, and almost as many years ago it was proven to be not a laxor of the vocal bands. The fibres of the muscle run in such directions that when contracted they give internal tension to the vocal bands. The combined action of the transverse and oblique fibres is to make the bands firm. Although antagonistic to the external tensors they certainly are not laxors, but the oblique and transverse fibres, by their contraction, increase the internal tension, and aid the function of other muscles which maintain the equilibrium of longitudinal and cross tension of the vocal bands.

Dr. CARL SEILER read a paper on "Laryngeal asthma" by WILLIAM C. GLASGOW, of St. Louis, the author being unable to attend.

Dr. Glasgow's Paper.

THE dependence of bronchial spasm upon laryngitis has not previously been noticed. In vain we search the pages of writers on diseases of the throat, for some mention of its occurrence: Cohen, Mackenzie, Browne, Bosworth, James, Stærk, Waldenberg, Tobold, Mandl, Krishaber, Isambert, and other writers, have not recorded its existence, even if they have noticed it. Several writers on the subject, asthma, have described such cases without really recognizing the true seat of irritation; it has universally been included under the term bronchial asthma, presupposing the point of irritation to be located in the bronchi. Trousseau, Biermer, Riegel have accurately described cases of bronchial asthma in which the asthmatic symptoms were present without any evident change in the bronchi. They have also noticed, in other cases, that the signs of bronchial inflammation only become apparent after the asthma has existed for some time. These are evidently cases of primary laryngitis with a subsequent extension to the bronchi. Even Henry Hyde Salter, in his classical work on asthma, has classed these cases as bronchial asthma.

Under the term laryngeal asthma, I would positively ex-

clude those symptoms and signs that are so often met with in laryngitis, such as laryngeal whistling, laryngeal râles, and the sensation of suffocation, which is often found accompanying an inflammation and œdema of the posterior surface of the larynx. I would also exclude laryngismus stridulus.

One year ago my attention was first drawn to the occurrence of bronchial spasm, as a result of laryngitis, through the unexpected results of an application to the larynx, in the case of a child suffering from an attack of asthma. Since that time I have had the opportunity of observing and treating fifteen cases of a similar character.

The following histories will serve as examples of these cases.

CASE 1.—Last May I was called to see H. J., a child seven years of age, whose mother had been for many years a sufferer from nervous asthma. I found the little patient in a semi-recumbent posture, suffering with intense dyspnœa, and showing the laborious characteristic breathing of asthma. She was partly cyanosed with livid lips and distended nostrils. On examining the chest, the respiratory breathing was obscured by abundant sonorous and sibilant râles. Her mother stated that she had had numerous attacks of the kind during the preceding winter and spring, that the attacks would last in varying degrees of intensity through several days and nights, when a gradual amelioration of symptoms would be noticed, and the child would return to a comparatively good state of health and strength. She had noticed that these attacks seemed to be brought on by what she termed "catching cold." During the attacks of asthma the child always suffered from a constant and paroxysmal cough. Supposing this to be a case of bronchial asthma, I prescribed several of the anti-asthmatic remedies, with no benefit. The cough, too, proved intractable to anodynes; only a slight improvement was noticed from the use of the bromides and chloral. After a lapse of four days, the asthmatic symptoms gradually disappeared, and the cough lost somewhat its intensity and paroxysmal character. The following week I was again called to see the child, found her in a similar asthmatic attack, with violent paroxysms of coughing. In order to quiet the cough, an application was made to the larynx; in the revulsive action a large amount of mucus was expelled,

and immediate improvement in the asthmatic symptoms was apparent. On examining the chest, the greater part of the sibilant râles had disappeared. From this time on the patient was treated by repeated applications to the larynx; the cough and the bronchial spasm gradually disappeared. I had not heard of any recurrence of the disease during the past winter.

CASE 2.—About two weeks ago I was called to see S. M., a child four years of age; found her suffering with an intense attack of asthma; she was livid, and partly cyanosed; over the lungs numerous sibilant and sonorous râles were heard; dyspnœa was very great, with no cough. An astringent application was made to the larynx, which produced an immediate improvement in breathing, an improvement which could be recognized not only by the eye, but also by the physical signs. She was ordered ipecac., and vomited freely in the course of half an hour, bringing away large quantities of mucus. There was considerable dyspnœa through the night, which disappeared toward morning. I saw her again the next day and found her playing about the room; she was still wheezing slightly, and a few sibilant râles were perceptible over the lungs.

CASE 3.—Mr. J. H., a planter, aged 40, had suffered from cough and asthma, with intervals, during the past ten years. About six years ago he consulted me for a subacute laryngitis, but did not complain of asthma at that time. A few days ago he called on me again; he was then coughing, had great dyspnœa, with labored breathing. An examination of the larynx showed a subacute inflammation, with thickening of the whole posterior surface. Over the lungs numerous sibilant and sonorous râles were heard, mingled with an intensified respiratory murmur, the expiratory sound being prolonged and the interval of rest abolished. He stated that he had been in this condition during the past four days, and that every night about one o'clock the dyspnœa would become greatly aggravated. His distress at this time would become so great as to force him to sit upright in bed. The dyspnœa would gradually diminish toward the later morning hours. An application of a solution of the chloride of zinc to the larynx, by means of the laryngeal brush, produced an immediate amelioration of the bronchial spasm. He was ordered the nitre inhalations, which he used before retiring. He reported to me the next day that he had passed the night without an attack of asthma, and when I saw him, his dyspnœa had almost entirely disappeared,

the respiratory murmur had become almost normal, and only a few sibilant râles could be heard over the chest. The third day I saw him again; he reported that he had had quite a severe attack of asthma at the usual hour during the night. When I saw him there was considerable dyspnœa. A few sibilant râles, an intensified respiratory murmur, with prolonged expiration, was heard over the chest. He complained of great irritation, which he located at the sixth cartilage. He ascribed this attack to cold taken during the night, in sleeping under an open transom. On examining the larynx, I found it hyperæmic. An application to the larynx greatly relieved the dyspnœa. Owing to business engagements he was compelled to leave the city the same night. This gentleman had previously been under the care of several physicians, who had tried the various anti-asthmatic remedies with little or no benefit. He had also used a variety of patent asthma cures, some of which gave temporary, but none permanent relief.

CASE 4.—H. S., a merchant, aged 45, began to complain last October of tickling in the larynx, which caused constant and paroxysmal spells of coughing; about two weeks later he noticed an increasing dyspnœa, which became so intense as to compel him to give up all work. This dyspnœa was always aggravated toward midnight, and he was often compelled to spend a portion of the night in a chair. I saw him about a week later; examination of the larynx showed a subacute inflammation of the posterior surface, more especially of the interarytenoidal space and the membrane over the arytenoid cartilages; over the lungs sibilant râles, with the characteristic asthmatic breathing, were heard. Treatment of the larynx was continued for ten days; he used, in addition, the nitre inhalations. A gradual and steady improvement, not only of the cough, but of the asthmatic symptoms, was apparent until he experienced complete relief. I saw him again during the past month of April, when he came to me complaining of the same symptoms, which he ascribed to a cold he had taken. Three applications to the larynx, with the use of the nitre inhalations, gave him complete relief.

CASE 5.—Miss S. F., a young lady, twenty years of age, had suffered with asthmatic attacks and cough, with varying intervals, during the past two years. She had been under the care of many skilful physicians, and had the full benefit of general treatment, including the use of the compressed air; she had experienced slight, but no permanent relief. She consulted me first in

November last, at which time she complained of a difficulty of breathing and constant cough; sibilant râles were appreciable over the lungs on auscultation. Astringent applications were made to the larynx at intervals during the winter. There was constant and gradual improvement of symptoms until the middle of February, when she was completely relieved from cough and asthma. This long continuation of symptoms could be ascribed to repeated attacks of cold, taken at intervals during the mild winter. I saw her again in May; the larynx was normal except a slight thickening of the membrane. She said she was perfectly well.

CASE 6.—H. W., a sufferer from hay fever during the summer months, had had occasional attacks of asthma during the later stages of the disease; these attacks were completely controlled by applications to the larynx.

These six cases are typical of nine more of the same character that have been under my observation during the past year. In all we find two prominent factors: a subacute inflammation of the larynx, and bronchial spasm. The inflammation of the larynx is demonstrated by the laryngoscopic mirror; the bronchial spasm is proven by the symptoms, and the physical signs of this condition, *i. e.*, the sibilant and sonorous râles, occurring but on inspiration and expiration, or either, and the characteristic prolonged expiration of the asthmatic. We also find in these cases either an improvement or a disappearance of the asthma, as a result of applications to the larynx. In some cases, the relief is instantaneous, in others it is more gradual, and the bronchial spasm, as shown by symptoms and physical signs, only disappears with the complete subsidence of the laryngeal inflammation or hyperæmia. In the cases of immediate relief, I think we can recognize the effect of a removal of the secretions from the laryngeal cavity, by means of the brush, and also through the revulsive movement that it sometimes causes. I think we can also recognize the cessation of the spasm to be due to the altered condition of the laryngeal mucous membrane, such as results from an astringent application,—the same condition which we meet with so often, causing an immediate cessation of the cough from a similar application. These cases have hitherto been called bron-

chial asthma, but I hold that we should not locate the point of irritation in the bronchia without some evidence of a pathological change of that portion of the mucous membrane.

The physical signs of bronchitis are fixed and positive, and in their absence we have no right to recognize a bronchial inflammation; these signs, being due to pathological change, are not temporary and evanescent, but must continue even when the spasm is absent, during the ordinary course of the inflammation. The immediate disappearance, in some cases, of the signs of bronchial spasm, and the great improvement in others, as a result of an application to the larynx, is, to my mind, a conclusive proof that the point of irritation did not exist in the bronchial mucous membrane, but in the laryngeal. That asthma, dependent upon bronchial inflammation, exists, I am not prepared to deny, and that it exists in a combination with a laryngitis I am fully aware, as I have had several cases of this character—cases in which, although the cough yielded to laryngeal applications, the spasm continued. In these cases there was always evidence of bronchial inflammation, as shown by the presence of the subcrepitant râles in combination with the sibilant and sonorous. I am inclined to believe that in many of these cases the inflammation is located in the trachea and the larger tubes, and that even here the sibilant râles are the reflex signs of spasm. That the asthma accompanying hay-fever is due to an irritation of the laryngeal mucous membrane I am fully convinced, for in these cases relief is quickly and permanently given by applications to the larynx.

In removing the seat of irritation in certain cases of asthma from the bronchia to the larynx, I am simply drawing to a fuller conclusion the results already accomplished by the laryngologist in a similar class of cases. I refer to the very frequent existence of laryngitis as a cause of cough, and the comparative rarity of acute bronchitis in the adult uncomplicated by emphysema, phthisis, or syphilis.

These cases of asthma I would call laryngeal reflex

asthma. We have numerous examples of the reflex asthma as located in different organs of the body. Cases of nasal asthma, due to the existence of nasal polyps, are quite common; under the same head may be classed those cases of asthma in which the olfactory nerves seem to play an important part, such as asthma arising from emanations from different animals and flowers, etc., etc. That presence of food in the stomach and a loaded condition of the bowels produce the phenomenon of asthma, is well known and fully recognized by the profession. Not to mention other well-known sources of irritation, I would ask that subacute laryngitis be given a proper place as one of the conditions capable of producing reflex asthmatic paroxysms.

The treatment of this asthma consists in the treatment of the primary lesion, the laryngitis, and this is further aided by the use of many remedies known to be useful in controlling the asthmatic paroxysm.

That these last will, in many cases, give temporary relief, is undoubtedly true, but no permanent relief is given until the laryngitis shall have disappeared. This can only be accomplished, at least in this climate, by local applications to the larynx.

Discussion on Dr. Glasgow's Paper.

Dr. JARVIS said that in a paper read before the Association last year, he had, while speaking of hyperæmia of the larynx, brought out symptoms which might be called laryngeal asthma, in which attacks of spasmodic cough occurred which were not due to inflammation of the bronchi but to the condition of the larynx. In one case, a boy, the patient declared that he was strangling; examination with the mirror showed intense congestion of the vocal cords, which were of a purplish hue; he was unable to state whether the attack had been repeated. He had found no evidence of inflammation, emphysema, or other pathological change in the chest, but the boy had a co-existing nasal catarrh. In another case, a large muscular man with shortness of breath and cough, he had also found laryngeal disorder—chronic laryngitis would be the ordinary diagnosis,—but in his own opinion there was no pathological change whatever in the larynx; the vocal bands were deeply congested, which he referred to a co-

existing nasal catarrh ; this he treated independently of the laryngeal hyperæmia, and in proportion as the catarrh was reduced, the hyperæmia faded away, and the attacks of asthma disappeared. This he mentioned merely to show the dependence of some forms of chronic laryngeal disorder upon nasal catarrh.

Dr. RUMBOLD said that his experience agreed with that of the last speaker.

Dr. SEILER remarked that the paper was not intended to discuss nasal catarrh ; but he would point out that any obstruction in the nasal cavities, such as polypus, deviated septum, etc., must cause mouth-breathing which leads to secondary congestion of the vocal bands from contact with cold and dust-laden air ; this is not directly the cause of the asthma, but is simply a consequence of the mouth-breathing. The author has simply called attention to the fact, that whereas spasmodic cough may be produced by a point of irritation anywhere in the body, in a certain number of cases this cause of reflex action resides in the larynx, and can be relieved by local treatment. As already pointed out, many of the cases have also nasal catarrh, which may equally be the cause of cough ; but when the lesion is restricted to the larynx there is no reason why the cases should not be considered as cases of laryngeal disorder with asthmatic symptoms, and treated accordingly.

Dr. JARVIS feared that he had been misunderstood. He had made no reference to primary hyperæmia of the larynx, but called attention only to that secondary to nasal catarrh.

Dr. ROBINSON considered the subject one of considerable interest. He believed it to be a perfectly well recognized fact that obstruction in the nasal cavities often preceded attacks of asthma ; this he had noticed in his book on catarrh published two years back, but did not consider it new. It was also known that laryngeal inflammation may precede asthma, and this is not very new. In Mackenzie's book on croup he says that it is very possible that the inhalation of steam is useful in expelling the tough mucus from the vocal bands ; ascribing this as the cause of the cough. It certainly is very difficult in all cases to separate the spasm of the bronchial tubes clearly from spasm of the muscles of the larynx. Therefore, as regards the title of the paper, he regarded it as unfortunate to take a small part of a disease and elevate it into a distinct affection. Hyde Salter considers asthma as a purely nervous disorder, and it is no better treated in Mackenzie's work ; though in a greater part of the cases asthma is

proved to be connected with an organic lesion. He had never known of a case in which if he only half searched for the organic trouble he had not been able to find it. If we cannot find the cause it is due to our ignorance. He certainly would not say that in a case of asthma, if he had found a little trouble in the larynx, and after making a few applications the symptoms improved, he would not say that he had cured a separate disorder; and after using the laryngeal brush and breaking up an attack of asthma, he would hesitate to believe that he was dealing with a separate affection which might be known as laryngeal asthma.

Now, with regard to the occurrence of physical signs in the chest, we certainly can not always produce asthma by irritation of the pneumogastric nerve; and with reference to the sibilant râles they may or may not be evidence of bronchial spasm; we may have spasm combined with a bronchitic condition, or separate, but it is difficult to say whether the physical signs are due to one or the other.

Dr. ROE said that it seems that the question of asthma in any case will depend upon the diagnosis: whether due to organic change in one part or another of the air passages; in the air-cells, the bronchi, the larynx, or it may be in the nasal cavities that the source of irritation exists. In making the diagnosis it is necessary to take into consideration all these various sources which may give rise to the attacks. It may be primarily in the larynx, from local inflammation. He had often seen it in narrowing of the ventricular bands, that slight exposure to cold air or dust in mouth-breathing would bring on asthmatic spasm. There is also an immediate connection between the nasal cavities and the lungs, as well as the bronchial tubes themselves. The source of irritation may therefore reside in any portion of the tract, and when existing in the larynx the local treatment will relieve the spasm.

Dr. T. R. FRENCH, of Brooklyn, exhibited some photographs of the living human larynx.

Dr. French's Paper.

SO far as I am aware a *good* photograph of the larynx has never been taken. Czermak, Cohen, Elsberg, Cutter, and Stein have given the matter some attention, but the practical result of their work I have not seen. I have

with me several photographs, which are the first results of some experiments being made by Mr. George B. Brainerd, an enthusiastic amateur photographer of Brooklyn, and myself. Since my attention has been directed to this matter, owing to the want of time and sufficient sunlight, we have been able to make but very few experiments. These pictures were all taken last week with sunlight as the illuminating power, and in my estimation they go a long way to prove that, while the obstacles in photographing the larynx are great, they are probably not unsurmountable.

None of the pictures show the entire larynx, but it is perfectly easy to direct the strongest illumination to any desired point and bring that out most prominently.

The one thing that seems to be most needed to make these pictures satisfactory is a stronger illumination than was used. The electric light, though accessible, could not be arranged in time for a trial. This, however, we hope to do in a week or so. It is also our intention to try the light from burning magnesian wire.

The camera used was made for the purpose. It is about the size of a cigar-box, and is mounted on a tripod. The illumination was made with a plane mirror, with a central aperture $\frac{5}{8}$ of an inch in diameter. The throat mirror is attached to a flexible rod and fastened to the top of the camera.

The photographs are all of Mr. Brainerd's larynx. The time of exposure of the plates varied from 1 to 4 seconds.

In the best photograph, the one marked "June 8th, 4 P.M. Instantaneous," you will see that more than a lateral half of the windpipe is very well illuminated, showing all the structures in the larynx, and those in the first inch or so of the anterior wall of the trachea.

The practical value of photographs of the larynx must be apparent to all. If an easy method of taking photographs can be developed, the pictures can be again photographed on a block and used as we now use wood-cuts. Again, the negatives, being of glass, can be used in the lantern and the pictures thrown upon the screen for class-room instruction.

My object in presenting these comparatively unsatisfactory photographs to the Association is solely to prove that it is possible to photograph the larynx.

Discussion on Dr. French's Paper and Photographs.

Dr. SEILER asked with regard to the method of taking the pictures shown. He had, in 1871, tried, with the aid of Prof. James in London, to take photographs of the larynx, but had not obtained satisfactory negatives. He inquired why the operator used a special camera, and how the mirror was held in the throat, whether by mechanical means or by an assistant.

Dr. FRENCH said that he used dry gelatine plates. He used a special camera, because he had found the ordinary box unwieldy and in his way when he wished to look alongside of it to see if there was a good light upon the laryngeal image. The small one he had used, on the contrary, was perfectly easy to direct upward or downward as needed.

The mirror was a plain one, attached to a flexible arm, and of course placed in focus, which once found would not vary; it was steadied by resting against the patient's chin; the mirror being fastened to the top of the camera it was always in focus, and always in line with the lens.

Dr. MORGAN said that he had been interested in laryngeal photography; he had experimented with the apparatus at the Surgeon-General's office in Washington, and had made a number of ineffectual attempts to photograph the larynx. Some four years ago, while he was in Paris, he saw at Fauvel's clinic some photographs by Schmidt, of the larynx, which were also shown in Fauvel's book. Though good they were not as perfect as desirable.

Dr. ELSBERG said that he had some photographs in his possession which, however, were not quite as good as those of Dr. French. Since the introduction of the dry plates the matter is much simplified, and it is possible to succeed better than with the old process. He had in his possession a photograph of Czermak's throat, made by Dr. Stein, of Frankfort-on-the-Main, and that is really very good. The great trouble is that when you have one portion of the laryngeal image in focus, the rest of it is out, so that it is impossible to get a really satisfactory picture. No one as yet had succeeded in getting so far as to get a good photograph of a pathological lesion, although if located in only one part

of the larynx it might be possible. There is also a great difference between photographing a healthy larynx in a person well accustomed to the mirror, and attempting to get a negative of one altered by disease in a more or less untrained patient.

Dr. SEILER found the difficulty just referred to ; in photographing muscular spasm, he could not get the entire image in focus at one time. Another point is that we can easily get a photograph in a person accustomed to the laryngoscope, but he had failed in doing so in patients, as they are likely to swallow the mirror.

Dr. INGALS spoke of the new French invention by which instantaneous photographs are taken, by an instrument shaped like a revolver, so that pictures can be taken of birds upon the wing. He thought that this might be applied to laryngeal photography.

Dr. SEILER said that it had been tried in Philadelphia, and found not to be a success ; he did not see how it would overcome the difficulties already named.

Business Meeting.

At the close of the morning session, a business meeting was held for the election of Fellows ; Drs. Seiler and Bosworth being appointed Tellers, a ballot was held, and the following were elected active Fellows of the Association :

S. H. Chapman, M.D., New Haven, Ct., proposed by Drs. Cohen and Bosworth. Thesis, "The use of cold in diseases of the upper air passages."

Thos. Amory DeBlois, M.D., Boston, proposed by Drs. Knight and Robinson. Thesis, "Hypodermic medication in catarrh."

F. H. Hooper, M.D., Boston, proposed by Drs. Knight and Langmaid. Thesis, "On the treatment and recurrence of papiloma of the larynx."

Frank L. Ives, M.D., New York, proposed by Drs. Lefferts and Bosworth. Thesis, "On acute idiopathic laryngeal abscess."

D. N. Rankin, M.D., Allegheny, Pa., proposed by Drs. Daly and Cohen. Thesis, "The palatal tonsils in their hypertrophied condition."

The President appointed the following :

Nominating Committee : Drs. Langmaid, Shurley, and Lincoln.

Auditing Committee : Drs. Elsberg and Morgan.

On motion of Dr. Shurley the name of Mr. Lennox Browne, of London, was referred back to the Council for consideration and report.

Adjourned at 1 P.M.

Afternoon Session.

Dr. D. BRYSON DELAVAN, of New York, read a paper on "The question of hypertrophy of the osseous structure of the turbinated bodies, practically considered."

Dr. Delavan's Paper.

UPON the turbinated bodies,¹ their histology and their pathology, many things have, of late, been written. Indeed, the subject would seem wellnigh exhausted, were it not that in all recent contributions attention has been directed solely to the consideration of the soft parts, while the investigation of the fundamental structure of the organ, its osseous tissue, has been ignored, and the participation of this element in important pathological changes of the part denied.

It is not strange, therefore, that the true causes of morbid conditions depending upon a perverted development of these bony structures should have been misunderstood or actually undiscovered, and that, in consequence, the means employed for their relief should have failed because misdirected.

The design of this paper will be the establishing and the practical consideration of the following proposition, viz.: *The turbinated bones may, under proper conditions, undergo marked hypertrophy.* The opinion generally accepted upon this important question seems well set forth in the following paragraph, quoted from a recent standard work.²

The author says: "The term hypertrophy of the turbinated bones is a faulty one, for the reason that real hypertrophy of these bones very rarely exists. Sometimes indeed it is true that one or more of them have become softer, more spongy, and more voluminous than they are in a perfectly healthy nose, but these are infrequent cases, and the very general rule is scarcely less true, *i. e.*, that hypertrophy is confined to the mucous membrane and submucous layer which cover these structures."

¹ For the sake of exactness the term "turbinated body" will be used to describe the whole organ, while the name "turbinated bone" will be used in its literal sense.

² "Nasal Catarrh," Beverley Robinson, p. 88, 1880.

That this view is erroneous must be admitted, when due consideration is given, 1st to the theoretical reasons which weigh against it, and 2nd to the strong array of clinical evidence to which it is opposed.

1. Theoretically, the process of hypertrophy in general may occur in almost any tissue of the body. Hypernutrition is, of course the occasion of hypertrophy in bone as well as in other tissues, and to such structural changes the bones of the skull are particularly liable. To quote the familiar words of Sir James Paget: "Hypertrophy of bone presents itself in many interesting cases. It is usually a secondary process, ensuing in consequence of change in a part with which some bone is intimately connected. Just as in their natural development and growth the bones of the skull are formed in adaptation to the brain, and those of the limbs are framed to a fitness of the action of the muscles, so in disease they submit in their nutrition to adapt themselves to the more active parts."¹

The turbinated bones are not formed until a late period in the development of the fœtus. Indeed "the inferior turbinated bone is ossified from a single centre which only appears at birth."²

This tardy appearance would imply considerable activity of development later in the history of the child, and it is not impossible to believe that in some cases there should occur an actual over-growth. Again, although the condition of hypertrophy is antithetical with that of atrophy, there is no part which, being susceptible of one, is not also susceptible of the other. Atrophy of the turbinated bones, in the affection known as atrophic catarrh, is commonly met with and universally conceded to exist. Therefore, under conditions of nutrition opposite to those which characterize this disease, there should result the opposite condition of growth, namely, hypertrophy.

The probability of this result is greatly increased when we recall the peculiarly intimate relation which exists between the mucous membrane of the turbinated body and

¹"Lectures on Surgical Pathology," Sir James Paget. Lindsay and Blackiston, 1865, p. 73.

²"Sharpey and Quain," vol. i, p. 72.

the bone, through the medium of the membrana mucosa, which not only forms a fibrous network for the support of the blood-vessels, etc., but actually passes into the periosteum, the characteristics of which it more nearly resembles. Any increase of the blood-supply to the turbinated mucous membrane would be communicated, without doubt, to this periosteum in far more than the ordinary measure, and the nutrition of the bone proportionately increased. The conditions favorable to hypertrophy of the turbinated bone would seem to be:

1. *Unusual space in the nasal fossæ.*
2. *Long-continued hyperæmia of the structures investing the bone.*
3. *The existence of the above conditions during the period of greatest constructive activity.*

It is an established fact that the too free inspiration of air through the nares will produce turgescence of the nasal mucous membrane, and where long continued, chronic hyperæmia. Persons, therefore, whose nasal cavities are unusually wide, are commonly the subjects of catarrh. In the normal nasal chamber the erection of the turbinated corpora cavernosa is limited by the boundaries of the nasal cavity. The greater the possibilities for expansion, and the more the exposure leading to congestion, the less likely are the soft parts to return to their normal conditions of size and nutrition. And, of course, the greater the hyperæmia of the soft parts, the greater the hypernutrition of the bone. With the above conditions occurring early in the history of the patient the hypertrophic process would go on, not suddenly and rapidly, but slowly, and in the course of the regular growth of the individual, not attaining its maximum until the adult period.

Given, therefore, a spacious nasal fossa, a turbinated body abnormally stimulated, a turbinated bone nourished by an excessive supply of blood, in a subject, preferably rachitic, in whom the constructive processes are at their height, and there is no reason, in theory, why the bones themselves should not increase in size in equal ratio with the hypertrophy of the soft parts.

In the vast majority of instances the conditions which would furnish these factors would be congenital, and they would be found :

1. In cleft palate.
2. In deviation of the nasal septum.

In complete cleft palate the inferior turbinated bodies, unlimited as to their expansion and subject to constant irritation, frequently grow downward to such an extent that they form an almost effectual barrier to the nares against matters swallowed, and thus, to some extent at least, supply the place of the hard palate. In this general hypertrophy the bone shares.

This first abnormality however, is comparatively rare, and need only engage our attention by way of illustration.

Congenital deviation of the septum, on the other hand, is of frequent occurrence, and it is in this condition, theoretically speaking, that the largest proportion of cases of turbinated hypertrophy would appear. Of course, deflection may be produced at any time of life in a previously healthy septum : for example, by fracture or dislocation of its bone or cartilage, by pressure from an intranasal growth, etc. These instances, however, are unusual, and form the exception to the rule. That it is ever due, as held by some, to habitual blowing of the nose on one side, is improbable in the extreme ; for deflection is very commonly met with among the lower races, especially the negro, with whom the use of the handkerchief is unknown. Moreover, the curve of the septum in deflection is seldom a single one—confined to its anterior part—but double, and extending too far backward to be affected by lateral pressure upon its anterior aspect.

Reasoning by exclusion therefore the congenital origin of a large proportion of cases of deflection of the septum seems evident.

As will appear later, the middle turbinated bone is the one most frequently enlarged, and, since the septum is in a plastic condition until some time after birth, the question naturally arises, is the turbinated hypertrophy due to the deflection, or is the deflection due to the hypertrophy? If the turbinated bone was enlarged at an early date, why

would it not, by crowding against the septum, force it beyond the median line, and thus become, not the result of the deflection, but actually its cause. This seems improbable for two reasons: first, because nature is rarely asymmetrical, so that enlargement of one turbinated bone would probably be met by a corresponding enlargement of its fellow; and second, because the hypertrophied bone is almost invariably found opposite the point of greatest concavity of the septum, in which position opportunities for expansion are present in the most marked degree.

II. Turning now from theoretical considerations to the practical demonstration of the main proposition, we desire to offer some anatomical and clinical evidence based upon direct observation.

About two years ago, while dissecting the nasal fossæ in a specimen which chanced to come into the Pathological Laboratory of the New York Hospital, the writer observed three points:

1. There was well-marked deflection of the septum.
2. The side toward the concavity of the septum was completely occluded by the middle turbinated body.
3. Upon removing the soft parts from the middle turbinated bone, the bone itself was found to be in a condition of unquestionable hypertrophy.

The importance of this condition at once suggested itself, and its further investigation was immediately begun. To this end the museums of Washington, Philadelphia, and New York were visited, and careful search for illustrative specimens made in the following craniological museums.

CRANIA

Smithsonian Collection, Army Med. Museum, Wash-	
ton,	containing 4,000 "
Academy of Natural Sciences, Philadelphia,	" 2,000 "
Wistar and Horner Collection, "	" 260 "
Wood Museum, Bellevue, New York,	" 100 "
Hyrtil's Collection, College of Physicians, Phila.,	" 140 "
	<hr/>
	6,500

In all of these collections but the last the crania were derived from every variety of source, and were in all stages of degeneration, so that the bony appendages of the nasal cavities were in most instances destroyed and the specimens unfit for our purpose. Far different was it, however, in the case of the excellent and unique cabinet of Prof. Hyrtl, purchased by the Mütter fund for the College of Physicians, Philadelphia, and intended to exhibit a typical representation of every nationality in Europe. A complete history of the individual accompanies each skull, but, what is of most importance to us, each one was especially prepared, either by Hyrtl himself or by one of his own pupils, and nearly every specimen is in an absolutely perfect state of preservation, even the teeth being carefully retained. Through the kindness of Dr. Bache, curator of the museum, the writer is indebted for the privilege of examining these very interesting and beautiful preparations. The specimens were derived indiscriminately from persons of at least average good health, and with no reference whatever, of course, to the existence of any nasal deformity. In nearly every instance in which hypertrophy was observed, it was confined to the middle turbinated bone of the wider naris, which singular predelection can only be explained on the ground that, as this turbinated body occupies the position directed toward the greatest concavity of the deflected septum, its opportunities for expansion during life are greater than those of its fellows. In the case of a very few specimens the middle turbinated bones were broken.

The hypertrophy was, as a rule, symmetrical, extending throughout the whole antero-posterior course of the bone in about the same relative degree. It had about it nothing whatever of the nature of an exostosis, but the bony plates were of the same relative thickness as in the normal organ, the whole resembling a natural turbinated bone magnified in size. In some instances, however, they were notably thinner than normal, and the condition of general, symmetrical hypertrophy was by no means constant, the enlargement seeming rather to follow the course of the deflected septum.

An examination of the collection developed the following extraordinary statistics :

Of the whole number of specimens	140
There was deflection of septum in	18 = 12 $\frac{4}{5}$ %

Of these 18 there was

Hypertrophy of the middle t. b. in	11 = 7 $\frac{4}{5}$ %
Absence or atrophy of " " " "	7 = 5 %

Or,

Of the whole number of cases of deflection of septum =	18
There was hypertrophy of the m. t. b. in	11 = 60 %
" " absence of, or atrophy of, the m. t. b. in	7 = 40 %

It will thus be seen that in the above collection more than one half of all cases of deflection of the septum showed hypertrophy of the middle turbinated bone. The actual percentage of cases of hypertrophy is probably much greater than 60%, as in the several specimens in which the turbinated bones were missing, the middle turbinated bones were, without doubt, as judging from the perfect specimens, larger than normal. During the course of the above examination *exostosis of the septum* was not found in a single instance. In a number of cases the writer has demonstrated the presence of this bony hypertrophy in the living subject, by sounding, as it were, the enlarged mass with a fine needle, and observing the depth at which its point was arrested. Instead of entering the mass for some distance, as would be expected, it will frequently impinge upon bone at a point comparatively near the surface.

The figures above given will surprise those who believe that stenosis in deflection of the septum is caused by hypertrophy of the soft tissues alone, and that absolute relief will follow the removal or destruction of the redundant mucous membrane. Indeed, in several specimens examined, the middle turbinated bone had approached so nearly to the septum that it was scarcely possible to sweep a probe between them, and the occlusion was almost as com-

plete as it could have been during the presence of the soft parts. No attempt at relieving the resulting stenosis simply by the removal of the mucous membrane could have succeeded. In such a condition the free inspiration of air must have been greatly reduced, while the olfactory region was shut off most completely, and all perception of odors thereby lost. The results of nasal stenosis, and the necessity for its relief, have been ably described by many excellent writers, and need not here detain us. Heretofore operative efforts have been directed solely to the relief of the occlusion of the *narrower* nostril. For this, three general methods have been proposed.

1. Removal of the mucous covering of the convexity of the septum.
2. Removal of the mucous covering of the convexity of the septum, together with the underlying bone.
3. Boring bodily through the nostril by means of the dental engine.

In all of these operations the condition of the enlarged turbinated bone of the opposite side has been unrecognized. Any operation for rectification of the deflection of the septum would, in such a case, only result in making the occlusion of the wider nostril more complete than before. And, since the nostril toward the convexity of the septum is often more pervious than the other, the operation would fail of its object. Removal of the turbinated bone itself, entire or in part, is therefore essential. As to the propriety of the operation, there is no reason, anatomically or surgically speaking, why it should not be performed. In a recent article¹ by so eminent an authority as Morell Mackenzie it is warmly recommended, and he refers for his support to Valsalva, Ferguson, and Pirogoff, adding: "I have myself frequently removed portions of the turbinated bones without seeing any evil result follow, and it appears to me extremely doubtful whether any bad effect could result from the removal of a portion of one of them."

From what has been proven with regard to the anatomical conditions in deviation of the septum complicated

¹ Nasal Polypi, etc., These ARCHIVES, vol. iii, No. 2.

with hypertrophy of the middle turbinated bone, we feel justified in asserting that the rational and scientific plan of operation for its relief would be as follows:

1. Removal of the obstructing middle turbinated bone of the wider nostril, allowing at the same time, if possible, a remnant of the organ to remain, sufficient for the performance of its normal physiological function.

2. Straightening the deflected septum.

By this means will be obtained, we believe, all of the ends most desirable for the cure of this most uncomfortable and injurious condition.

I have ventured to dwell at some length upon this subject, believing that, heretofore, much mischief has been caused through failure to recognize its presence, and to realize its importance, and hoping also that the validity of the arguments advanced might gain additional support from a free discussion of them. The leading proposition, *i. e.*, that the turbinated bones may, under proper conditions undergo marked hypertrophy, has been, we believe, abundantly proven, and the following conclusions established.

Conclusions.

1. Hypertrophy of the turbinated bones is of frequent occurrence, especially in connection with deviation of the nasal septum.¹

2. Stenosis and catarrhal conditions resulting from such hypertrophy can be permanently relieved only by removal of the bone itself.

3. Removal of the bone is a justifiable operation.

4. In the existence of such hypertrophy no operation for the restoration of a deviated septum should be resorted to until after the removal of the opposing turbinated bone.

¹Since writing the above the splendid work of Zuckerkandl, of Vienna, on "The Normal and Pathological Anatomy of the Nasal Fossæ," has appeared. It is a pleasure to find that this distinguished observer corroborates in a few words the views expressed in this paper. In the section upon the middle turbinated bone, he says: "Die Muschel kann so stark gekrümmt sein, dass sie die Riechspalte verschliesst und die Nasenscheidewand berührt. Die Umwandlung des vorderen Muschel Endes in eine grosse knöcherne Blase ist häufig und schon Santorinus hat sie in seinen, 'Observationes anatomicæ,' beschrieben." "Normale und pathologische Anatomie der Nasenhöhle," etc., von Dr. E. Zuckerkandl, Wien., 1882, pg. 29.

Discussion on Dr. Delavan's Paper.

DR. SEILER fully corroborated the observations of the lecturer with regard to deviation of the turbinated bones. A few weeks since he had operated upon such a case as that depicted in the diagram. In this case he had punctured this bladder-like expansion of the middle turbinated bone, which was not a true hypertrophy of the cancellous tissue ; this also agrees with the statement of Zuckerkandl, who speaks of this "bladder-like expansion full of air."

There was one point, however, that he took exception to, and that is the hypertrophy of the mucous membrane which is claimed to be present. He denied any such thing as hypertrophy of the mucous membrane in the case. He had made a large number of microscopic sections, and had found in all cases that the so-called hypertrophy did not exist ; there was an increase in the turbinated corpora cavernosa, as made generally known by Prof. Bigelow, of Boston. That body is the seat of hypertrophy ; it is one in which the venous sinuses are very abundant, forming a sort of erectile condition, which by irritation and chronic hyperæmia becomes hypertrophied, but the true mucous membrane, with its basement membrane, glands, vessels, nerves, and cells, is not hypertrophied.

He had read a paper upon this subject before the Pathological Society of Philadelphia last winter, which was published in the *Philadelphia Medical Times*. The treatment advocated by Dr. Delavan was very good ; we must straighten the nasal septum at a subsequent operation after removal of the turbinated bone.

Dr. ASCH agreed with the reader of the paper in his views of the subject, both as to the character of the disease and the treatment to be employed. He had had several cases of the kind during last winter ; but in others he had noticed an absolute hypertrophy of the osseous tissue ; and in operating upon these he had not found a bladder-like expansion, but an ivory hardness that required to be drilled with a dental engine.

There was an interesting point in connection with one case, accompanied by painful symptoms. Two years before he had occlusion of the nose, which he thought came on suddenly, caused by headache, and forgetfulness of business of any kind was associated with it. The condition in this case was almost exactly like that indicated in the diagram ; the middle turbinated bone not only infringed upon the septum, but the whole bone pressed

against it. This was removed, and the headache disappeared after the operation ; he did not operate upon the septum ; this had been performed in this patient while in the hospital previously, and had done him more harm than good.

Dr. BOSWORTH said that he would not question any of the conclusions of the paper except the first, that is, as to the frequency. He had seen eight cases accompanied by deviation of the septum, and two in which the occlusion was due to the inferior turbinated bone, and not one case in which ozæna occurred from retention of secretions in the antrum. In the operation he had used the steel-wire snare of Dr. Jarvis, without finding any difficulty; there was no hard bone to cut, or, at least, the ease with which the cancellated structure was removed showed that the bone was of soft consistency.

With regard to the statement that the hypertrophy of the mucous membrane is not a true hypertrophy, he said that he had made some examination to determine the question, and had found in some only the evidence of chronic inflammation, but in others evidences of dilatation of venous sinuses and thickening of the intravenous walls and connective ; in fact, a hypertrophy of the mucous membrane in which all the elements of the structure participated.

Dr. INGALS agreed with the others in the essential parts of the paper. He asked the question, Is it certain that enlarged tonsils would cause hyperæmia ? It did not seem to him to be the case. Again, in speaking of congenital deviation of the septum, he said that he suspected that it was the hyperæmia which caused the deviation of the septum, or rather, the same thing which causes it there causes also the hypertrophied bone ; and any thing which causes increase in size of the septum must produce a deviation to one side or the other, on account of its anatomical relations and of the rigid support of its edges.

Dr BOSWORTH inquired if most cases seen by the lecturer had shown the deviation on the right side ?

Dr. JARVIS said as regards hypertrophy of the mucous membrane it is rare, as to deviation of the septum it is common, and has been brought forward as one of the active causes of nasal catarrh. But we must at the same time recognize the fact that the same result may be due to different causes. The hypertrophied turbinated tissue may cause deviation of the septum ; but he has found many cases of hypertrophy both of the mucous and sub-

mucous tissues overlying it, in which there is no true deviation of the septum. In one case of posterior inferior turbinate hypertrophy reported to the New York County Medical Society, it had led to hypertrophy of the mucous membrane over the vomer, the case originally being one of turbinate hypertrophy. From his own examinations, he thought that this condition deserves the name of hypertrophy ; there is proliferation of new cells, and also development of fibroid character, and production of new material.

Dr. DEBLOIS said that the deviation of the nasal septum, especially when occurring in childhood, is to the left, the patient being right-handed ; when the deviation occurred on the other side, the patient will be found to be left-handed. This he explained by the frequent introduction of the index finger into the nostril to clean it, as is so common in children. He thought that this would be found to be the rule, that the deviation is to the left in right-handed patients, and *vice versa*.

Dr. DELAVAN said that the bladder-like expansion mentioned by Zuckerkandl exactly corresponded with the condition he had found, but the shell of bone is sometimes thicker than he had described. In reply to Dr. Bosworth, he said that in 140 cases he had found the relative frequency as stated in the paper ; the reason he had not given the statistics of the other skulls examined was because they were so imperfect that no accurate account could be taken.

In regard to the point raised by Dr. Ingals about the influence of the turbinated bone upon the development of the septum, he observed that it has not yet been certainly established when the septum is developed ; certainly it is in the plastic condition for some time after birth, when the turbinate bones are also developing ; he would not determine which precedes the other ; this may be worked out in the future. As to the cause of the deviation of the septum, and the enlargement of the bone, this also may be worked out, but the wider nares anteriorly admit more cold air and dust, and this may be generally supposed to cause the hyperæmia.

As to the question of the cause of deviation to the right or left side, this did not come within the scope of the paper, and he did not work it up. But the operative part of the subject he regarded as of great importance. Deviation of the nasal septum is very common, far more so than most persons suppose ; in fact, in some races it may be almost the exception to find a really straight septum.

Dr. Bosworth's Paper.

IN opening a discussion on ozæna the first difficulty with which we are confronted is the question: What do we mean by the term? As we know, the word means simply to stink, and is used to define any disease of the nasal cavities which is attended with a fetid discharge. A single symptom of the disease gives name to it. Medical literature in former years has been filled with analogous sources of confusion. The term dropsy occurs readily to us as affording an instance of a similar confusion in medical nomenclature. Cardiac, renal, hepatic, and other diseases totally distinct in their origin, gave rise to the prominent symptom of dropsy, and hence the word was used as classifying a general disease until further and more careful research introduced a more scientific classification. In much the same manner, it seems to me, we have been hampered and confused by this word in our study of nasal disorders. It should be abolished. If we glance over the literature of even a late date we find ozæna treated of in the same category with syphilis and scrofula. Syphilis and scrofula give rise to typical, characteristic, and, as a rule, unmistakable symptoms and morbid conditions; hence, it seems to me, whether in the nose, pharynx, larynx, or skin, they should be called syphilis.

If we rapidly enumerate the morbid conditions which give rise to fetid discharges from the nose I think they will all be embraced under the following:

1. Syphilitic ulceration and necrosis.
2. Scrofulous ulceration and necrosis: a rare disease.
3. The presence of foreign bodies.
4. Disease of one of the accessory cavities.
5. The late stage of atrophy of the nasal mucous membrane: the rhinitis atrophica of the Germans.

This, I believe, covers the whole ground, with the exception of the rarer forms of disease, cancer, lupus, etc.; and also excluding the acute affections, such as diphtheria, scarlatina, typhoid fever, etc., which, as a rule, do not add to the general confusion, simply because the origin of the offensive discharge is easily recognized.

1. Syphilis of the nose gives rise to superficial and deep ulceration in the nasal lining membrane, the latter form generally being due to a gummatous deposit. If these processes are unchecked they lead rapidly to the involvement of the cartilages and bones, resulting in necrosis. The disease is easily recognized, and hence should be called syphilitic ulceration and necrosis, and not *ozæna*, substituting the definite term for the indefinite.

2. Scrofulous ulceration also should be recognized as such, and what has been said of syphilis applies with equal force to this affection.

3. The presence of a foreign body in the nose will, if it remain long enough, give rise to a fetid discharge. With our present means of diagnosis, by the use of rhinoscopic examination and the probe, a failure to detect the presence of such an object, it seems to me, would be inexcusable.

4. Disease of one of the accessory sinuses is occasionally, though I believe very rarely, the source of a fetid nasal discharge. The prominent symptom is a discharge of pus from the sinus, which, making its way into the cavity of the nose, lodges upon the lining membrane, is retained, and becomes the source of a fetid odor.

There are, in my observation, two methods in which this disease arises. In certain cases it would seem that the lining membrane of the accessory sinus becomes involved in a catarrhal inflammation. There is consequently an excess of mucus poured out into the sinus. This does not escape readily, consequently the retained mucus very soon becomes a source of re-infection, as it were, by which the discharge becomes purulent. A mucous discharge in a closed cavity, as a rule, very soon becomes a purulent one, as is shown by the fact that the vagina and urethra, when inflamed, discharge pus, not mucus. A purulent discharge is thus established from the accessory sinus, and the other symptoms of so-called *ozæna* soon follow.

Another method by which the same sequence of symptoms may occur, is by the occlusion of the orifice of one of the accessory sinuses, by some morbid condition in the nasal cavity. In several cases I have seen nasal polypi so

impacted in the cavity as to occlude the orifice of the antrum, resulting in an accumulation of mucus, and its purulent degeneration. There was in these cases a purulent discharge with fetor, which could only be accounted for in this way. There was no prominent disease in the nasal cavity to account for it, and the fetid symptoms yielded to a short course of treatment after the removal of the polypi. There have come under my observation also three cases, in which there was a marked enlargement of the middle turbinated bone, which seemed to completely occlude the orifice of the antrum, resulting in a purulent discharge with fetor. I should say that these were all patients above the age of 55. I have never seen this bony hypertrophy of the middle turbinated in young people. In one only of these cases was I permitted to operate. In this case I removed the bone with Jarvis' snare ecraseur. The fetid symptom yielded easily to treatment after the operation. In one other case the patient is still under treatment, which is but moderately successful. She is a lady of 65, and unwilling to submit to a painful operation.

My experience of these cases of retained secretion in the accessory sinuses is that, as a rule, the discharge is fluid pus, and that it does not form incrustations. The fetor is not very marked, certainly not approximating that of the dried incrustations of other forms of the disease. The odor in these cases is of fetid pus.

If we are to retain the name of ozæna, it seems to me that here is a good place for it. And yet it still, of course, fails to express any thing other than the one symptom of the disease.

Michel and Rouge, if I read their writings aright, have claimed that all cases of ozæna are due to disease of the accessory sinuses. This I believe goes entirely too far. The number of these cases is very small indeed. The very large majority of cases of so-called ozæna I believe are embraced under my last class of atrophic rhinitis.

5. There come under our notice very frequently cases of nasal catarrh with a fetid odor, in which there is seen, on inspection, a nasal cavity large and very roomy; the turbi-

nated bones, especially the lower, have almost disappeared, and the cavity is lined with grayish-green crusts, adhering closely to the mucous membrane. The odor is fetid and offensive, but by no means as penetrating as that of syphilis of the nose. If now we thoroughly detach these crusts and clean the cavities, we will find that the odor is absolutely removed; and, furthermore, if now we inspect the mucous membrane, we will find it absolutely intact and unbroken. There is no ulceration, not even an erosion, and no necrosis. I have been searching industriously for the ulceration in this disease for eight years. I have not seen it yet. There is nothing now remaining by which we can recognize the disease other than the roomy cavity and the shrunken turbinated bones. This is rhinitis atrophica.

This group comprises a very large proportion of the cases which come under our observation, and offers many points of interest for discussion. I believe it to be a purely local affection, a catarrhal inflammation of the nasal membrane, and atrophic from the commencement. At the recent Congress in London I reported the results of my examination of the mucous membrane in this affection, and showed it to be the result of an atrophic process.

The disease commences generally in early life, in an inflammation which is characterized by a desquamation of the epithelial lining of the acinous glands, which results in their destruction. In the specimens which I showed there was a marked diminution of the number of the glands. They had disappeared absolutely. The result of this is necessarily that the membrane is deprived of its normal supply of mucus. That which is secreted being scanty, very soon dries upon the surface of the membrane. There is thus formed a thin dry pellicle, which adheres closely and is removed with difficulty. Remaining thus it soon undergoes decomposition and gives rise to fetor. Moreover, the secretion beneath the pellicle going on is imprisoned, and a new source of fetor occurs. The imprisoned mucus soon becomes purulent. This reinfects the membrane, and a still further secretion of pus is the result. The pellicle of inspissated muco-pus which dries upon and adheres to the

membrane, clinging about the convexity of the turbinated bones, and contracting in drying, necessarily exercises pressure and obstructs the circulation. As a result of this the atrophy of membrane is still more encouraged. As we know, the deep layer of the mucous membrane in this region blends with and really forms the periosteum of the turbinated bones. We can easily see, therefore, how, as the result of the process, continuing through years, it may be, there occurs the atrophy of the turbinated bone, which characterizes the late stages of the disease, the direct result of impaired nutrition.

It has been said that this atrophic process is the late stage of the hypertrophic form of catarrh, and that the connective-tissue formation has encroached upon the acini to their destruction. In my examination of the atrophied membrane I found that the acini which remained were surrounded, not by connective-tissue changes, but by heaps of inflammatory corpuscles,—evidence of the inflammatory process, it is true, but there was no evidence of any hyperplastic process.

Various theories have been advanced to explain this atrophy of the turbinated bones. The above briefly outlined view, it seems to me, is more reasonable than any I have met. It has been claimed that the atrophy of bone is the original cause of the fetid accumulation, and that the wide passages occurring first, the mucus dries and accumulates and is retained. Without exception in the cases I have studied, the extent of atrophy has been a measure of the duration of the disease, the marked shrinking of bone only occurring in cases which have been of many years' duration.

That the fetor of these cases is due entirely to retained secretion, it seems to me, cannot be questioned. The fetor is absolutely removed by thorough cleansing. Moreover, the fetor does not return until the crusts have again formed. If crust formation is arrested or kept in abeyance, the fetor does not recur. I have seen no case of which this was not true.

As to the cause of the disease, I know of none. It commences in childhood, as a rule, and runs its course, it

may be for several years, before it develops its more offensive symptoms. That it depends on any especial diathesis I do not believe. It occurs, as a rule, in patients enjoying perfect health. Indeed, I believe it to be very rare in those manifesting any evidences of impaired health. I do not recall that I have ever seen more than one or two cases of the disease in tuberculous subjects. And I can say the same of scrofula and syphilis. I do not believe there is any connection whatever in this affection with syphilis, scrofula, or the tuberculous taint. It is a purely local disease. It may involve one or both nostrils. It may involve but a portion of one cavity. It may involve the middle turbinated bone, while the membrane of the lower turbinate is hypertrophied.

It would be interesting here to briefly notice the various conflicting theories advanced concerning the disease, as, for instance, Krause's theory, that the fetor is due to the presence of fatty degeneration, the fat globules being converted into the fatty acids. As we all know, the odor is not of rancid fat; it is of decomposing animal matter, more in the character of one of the fetid hydrogens. Or again, Fournier advocates the view that the odor is an intensification of a peculiar property of the nasal membrane, and that under this stimulus a fetid secretion is poured out, as, for instance, the body odor of the negro or the odor of the feet. The system never secretes a stink, it may excrete one; but the nose is not an excretory organ. Moreover, Fournier instances the feet; their odor is, I think, one of retained secretion.

Watson describes three forms of ozæna. 1. The eczematous or scrofulous. 2. The phthisical or lupoid form. 3. The syphilitic form. I cannot but think that this diathetic classification of local diseases tends to add much confusion to our subject. Fournier describes a dry and a moist form of ozæna. I have occasionally seen a considerable discharge of pus in the atrophic rhinitis, but it was always in connection with the discharge of incrustations. I am disposed to think that Fournier in his moist cases may be referring to cases in which there is obstruction to one of

the accessory sinuses, described under my fourth head. In these cases I have seen a fetid discharge, always fluid and with no incrustations.

The treatment of this atrophic form of disease, if my views of its cause and development are correct, is clearly foreshadowed. While the disinfection of the cavities is important, the rational method will demand a stimulating treatment. Our literature is quite full of recommendations of various antiseptic drugs as of benefit in ozæna, such as carbolic acid, salicylic acid, boracic acid, creasote, permanganate of potash, etc. I do not believe that they are any more than palliative measures, except in so far as the process of application is to an extent stimulating.

The first indication, then, is the thorough cleansing of the parts. The fluid used should be alkaline, for its solvent action on mucus; and it should be disinfectant, in order to correct the results of the decomposition which has been going on in the cavity. As good a fluid as I know for this purpose is the following :

℞		
	Acidi carbolic,	gr. j
	Sodæ bicarb.,	
	Sodæ bibor.,	āā gr. iiij
	Aquæ,	℥ j
		℥

This should be thrown in by the post-nasal barrel syringe, as by this means the fluid can be directed against the diseased part with considerable force. The success of the cleansing efforts should be tested by repeated inspection, and if the syringing it not sufficient the crusts should be removed by the probe and cotton pellet.

After the cleansing has been successfully accomplished a stimulating application is to be made. For this purpose I know nothing more efficient than pulv. galanga, used in its full strength. In many cases pulv. sanguinaria will be found equally efficient.

This process should be repeated daily, if necessary; the object being to prevent, from the outset, an accumulation of crusts in the cavity. After a while it will be found that a patient may go two or three days without treatment. In

addition to this the patient should make daily use of the douche in order to keep the nasal membrane soft and moist. The fluid used may be the cleansing solution already given.

I will only add one word more as to the prognosis. If the disease has existed for a number of years it is doubtful if a radical cure can be effected. If, however, the disease has not existed very long, I do believe that by the above plan a cure may be hoped for. I will say in regard to this point that I believe that the extent of atrophy of the turbinated bones is always an evidence as to the curability of the disease. If these have entirely disappeared, all that can be hoped for is that the patient shall be kept free from all unpleasant symptoms, by the daily use of the douche.

After the fetor has been corrected I know of nothing better for the patient to use in the douche than a solution of common salt, about a teaspoonful to a half pint of tepid water.

A reception was given in the evening by the President to the Fellows of the Association, at his residence, No. 131 Boylston Street.

Second day, morning session.

At 10 o'clock the President called the meeting to order. Dr. Lefferts read the report of the Secretary, which, upon motion of Dr. Elsberg, was accepted and filed. The Secretary also read the minutes of the two meetings of the Judicial Council, which were adopted; Dr. Elsberg calling attention to the fact that there were some points in connection with the action of the Judicial Council which the Association should pass upon at the proper time before the close of the meeting.

The report of the Treasurer was presented by Dr. Lefferts. The Chair appointed an Auditing Committee, consisting of Drs. Elsberg and Morgan, which reported that it had examined the accounts and found them correct. The Treasurer's report was then unanimously adopted.

TREASURER'S REPORT.

GEORGE M. LEFFERTS, M.D., *Treasurer*.

IN ACCOUNT WITH THE

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Postage, wrappers, etc. . .	\$16 00	Balance to new account . .	\$123 28
Expressage and incidentals . .	7 00	Dues received, 1881-2 . .	205 00
Stenographer, 1881 . . .	75 00		
G. P. Putnam's Sons, printing and binding Transactions, 1881 . . .	72 78		
H. Angell, printing programmes, etc. . . .	39 99		
	<hr/>		<hr/>
	\$210 77		\$328 28
Balance	117 51		
	<hr/>		
	\$328 28		
Audited and found correct,		June 6, 1882.	
LOUIS ELSBERG,		Balance to new account	\$117 51
E. C. MORGAN.		GEORGE M. LEFFERTS, <i>Treasurer</i> .	

The Nominating Committee submitted the following report :

REPORT OF COMMITTEE ON NOMINATIONS.

The Committee on Nominations desires to report that it recommends that the next meeting be held in New York, on the third Monday of May, 1883.

For officers of the Association for the ensuing year the following have been nominated :

For President, G. M. Lefferts, M.D., of New York ; First Vice-President, Carl Seiler, M.D., Philadelphia ; Second Vice-President, E. F. Ingals, M.D., Chicago ; Secretary and Treasurer, D. Bryson Delavan, M.D., New York ; Librarian, Frank H. Bosworth, M.D., New York ; Council, Morris J. Asch.

(Signed)

S. W. LANGMAID,
R. P. LINCOLN,
E. L. SHURLY.

On motion of Dr. Hartman the report was accepted and the committee discharged.

The Publication Committee presented a report signed by Drs. Robinson and Asch, the third member, Dr. F. H. Bosworth, having withheld his signature ; but he afterward added his name.

REPORT OF THE PUBLICATION COMMITTEE.

BOSTON, *June 13, 1882.*

GENTLEMEN :—The Committee on Publication have the honor to present the first volume of the Laryngological Transactions to the Fellows of the Association.

They recommend unanimously that the volume be accepted, that the bill of the publisher, Dr. Rumbold, be paid, and that the distribution of the volume be limited to the Active Fellows of the Association.

The Committee, in presenting this volume, desire to state that they do not hold themselves responsible for the numerous typographical errors in the Bibliography, because no proof has ever been submitted for correction.

BEVERLEY ROBINSON, *Chairman*,
MORRIS J. ASCH,
F. H. BOSWORTH.

The Secretary announced that, in order to meet the bill for publishing the first volume of the Transactions, it would be necessary to make an assessment upon the Fellows.

On motion of Dr. Hartman, the Secretary and Treasurer was authorized to levy an extra assessment upon the Fellows sufficient to meet Dr. Rumbold's bill.

The report of the Committee on Nomenclature was presented by the President for Dr. Cohen, Chairman of Committee.

REPORT OF THE COMMITTEE ON NOMENCLATURE.

To the President and Members of the American Laryngological Association.

GENTLEMEN :—The Committee on Nomenclature respectfully report that they herewith present for discussion a printed list of anatomical and pathological terms, of which copies were sent to the members previous to assembling at this meeting.

J. SOLIS COHEN, *Chairman*,
FREDERICK I. KNIGHT,
J. H. HARTMAN,
BEVERLEY ROBINSON,
A. H. SMITH.

The President suggested that the list be submitted to further examination, and that discussion upon the report be deferred for another year.

On motion of Dr. Elsberg the report was accepted, and the recommendation to send two copies of the proposed nomenclature to each Fellow of the Association adopted.

The annual report of the Librarian was read by Dr. Bosworth, and was, on motion of Dr. Hartman, adopted.

LIBRARIAN'S REPORT.

I have to report that since the last meeting of the Association there have come into my possession as Librarian the following :

Transactions of the College of Physicians, Philadelphia. Third series, vol. v, 1881.

On the Employment of the Galvano-Cautery in the Nose and Pharynx. VICTOR LANGE, Copenhagen.

Our Knowledge of Tuberculosis in Diseases of the Mouth and Throat. Dr. JOHN SCHNITZLER, Vienna.

The Examination of the Œsophagus by the Laryngeal Mirror. Prof. STÖRCK, Vienna.

Rhinoscopy. B. FRAENKEL, Berlin.

Some Improvements on the Artificial Larynx. PAUL BRUNS, Tübingen.

A Series of Papers by Dr. KRISHABER, Paris.

Transactions of the First International Laryngological Congress. Dr. C. LABUS.

Catching Cold. CARL SEILER, Philadelphia.

Jarvis' Operation. CARL SEILER, Philadelphia,

Transactions of the Michigan State Medical Society. 1881.

On the Use of the Œsophagoscope. MORELL MACKENZIE.

Notes on Operations in Syphilitic Stricture of the Larynx. W. MACNEIL WHISTLER, London, Eng.

Jarvis' Operation. F. H. BOSWORTH, New York.

Adenoma of the Pharynx. F. H. BOSWORTH, New York.

Some of the Unsettled Questions in Nasal Catarrh. F. H. BOSWORTH, New York.

A Manual of Diseases of the Throat and Nose. F. H. BOSWORTH, New York.

Making in all 14 pamphlets, 2 bound volumes.

Respectfully submitted,

F. H. BOSWORTH, *Librarian.*

The Secretary read the report of the Delegates to the International Medical Congress of 1881, in the absence of Dr. Cohen, Chairman of the Delegation.

REPORT OF THE COMMITTEE OF DELEGATES TO THE INTERNATIONAL MEDICAL CONGRESS.

To the President and Members of the American Laryngological Association.

GENTLEMEN :—Your Committee appointed to represent the American Laryngological Association in the International Medical Congress of 1881, held at London, respectfully report that they attended the sessions of the Sub-section on Diseases of the Throat, which was ably presided over by Dr. Geo. Johnson, of London. Drs. Meyer of Copenhagen, Krishaber of Paris, Schnitzler of Vienna, and Cohen of Philadelphia, presided at some of these meetings on invitation of the Chairman.

Three hundred and forty-two members visited the sessions of the Sub-section ; of whom thirty were from the United States.

The attendance was good ; the papers read were chiefly practical, and the discussions were animated.

The details of the meeting having been published in the fourth number of the the second volume of the ARCHIVES OF LARYNGOLOGY, your Committee deem it unnecessary to consume time by any recapitulation thereof, except to quote in conclusion from a current issue of the *London Lancet* :

"Both in the number of those present at the meetings, and in the distinguished position occupied in the medical world by those who took part in the discussions, the Sub-section for Diseases of the Throat may certainly be regarded as one of the most successful departments of the Congress."

J. SOLIS COHEN, *Chairman*,
GEORGE M. LEFFERTS.

On motion, the report was received and filed.

Dr. L. Elsberg of the Committee appointed to prepare a memorial notice of Dr. Frank H. Davis, presented a notice which, on motion, was directed to be entered in full in the minutes.

The Committee on Diploma for Corresponding Fellows reported progress, and presented, through the Chairman, Dr. Bosworth, a form for approval.

The Secretary said that he had notified Honorary and Corresponding Fellows that their certificates would soon be sent to them, and recommended that final action be taken upon the subject at this meeting.

On motion of Dr. Hartman it was resolved that the Committee be increased by one member, and that it be authorized to carry out the plans for the Diploma, and have a number printed and placed in the hands of the Secretary and Treasurer for distribution, and that the Treasurer is hereby authorized to pay the expense therefor.

The President appointed Drs. Bosworth and Lefferts to serve as Committee on Diploma.

Under the call for Miscellaneous Business, Dr. Elsberg brought up the matter he had already referred to. He supposed that there was nothing to do but to approve of the action of the Judicial Council in not having the table of contents and index prepared, although it was in direct opposition to the instructions of the Association at its meeting last year. Perhaps they were influenced by the state of the treasury, and he therefore moved the following :

Resolved, that the Association approve of the action of the

Council in not undertaking the expense of preparing a separate table of contents and index as ordered by the Association last year.

Dr. Lefferts thought that this had already been disposed of when the minutes were adopted.

Dr. Elsberg corrected this supposition, and said that he had at first felt like offering a motion for censure; he thought that when the Association directs the Council to do a certain thing, and distinctly orders something to be done, the Council absolutely is bound to carry out the direction of the Association. In this case it has not done so, and the least that it can do is to come before the Association and ask forgiveness for departing from instructions.

The resolution was then on motion adopted. At the request of the President the Secretary made a statement with regard to the funds of the Association, and recommended that the Fellows should be careful in ordering expenditures. He thought that the Council must have a certain discretion, and believed that it was justified in refusing to incur expense which the Treasurer had no funds to meet.

Dr. Elsberg said that the Association had just condemned the Council's neglect to prepare an index for the volume of Transactions, but he hoped that this would not be a precedent, to warrant the Council in neglecting to carry out the orders of the Association.

Dr. Bosworth offered the following:

Resolved, that the Committee on Diploma be authorized, by and with the advice and consent of the Judicial Council, to adopt and construct a seal for this Association, in order to affix it to the diplomas.

Dr. Elsberg inquired what had become of a design presented by a committee appointed several years ago for this purpose.

Dr. Lefferts said that no seal had ever been furnished to, or adopted by, the Association, although two cheap and very inartistic designs on wood-blocks had been submitted, but he did not know who was responsible for the designs.

Dr. Elsberg said that the report of the Committee on the Seal was accepted in 1879, and he understood that a design had been approved.

Dr. Lefferts explained that the matter had been referred to the Council, which referred it to a committee, and it was finally

left in the hands of Dr. Bosworth for action; and that no seal had been presented or adopted by the Association as yet.

The resolution was carried unanimously.

Dr. Elsberg on behalf of the proprietors of the ARCHIVES OF LARYNGOLOGY offered to publish the Association's papers and discussions on the same conditions as last year.

On motion of Dr. Seiler, this offer was accepted by the Association.

Dr. Ingals inquired what disposition had been made of names of candidates left over from last meeting.

Dr. Lefferts said that action upon them rested with the Judicial Council.

Dr. E. FLETCHER INGALS, of Chicago, read a paper on "Deflection of the septum narium."

Dr. Ingals' Paper.

DEFLECTION of the nasal septum consists of a bending to one side either of the cartilaginous or bony septum, or of both. It is characterized by more or less obstruction of the naris and deformity of the nose. A slight degree of deflection is very common, indeed it is so often found that it is not considered a pathological condition; but a degree of distortion sufficient to materially interfere with respiration, and to cause more or less deformity of the nose is frequently met with. It is to these latter cases that I wish to direct attention.

For the sake of convenience in description I will divide the cases into four classes: 1. Those in which there is slight bending of the whole septum. 2. Those in which there is bending of the septum and more or less depression of the nose, due to injury. 3. Those in which there is local flexion, near the nostril, of the cartilage only. 4. Those in which a ridge of considerable size runs upward and backward, from near the nostril, along the line of articulation of the vomer with the cartilage; which ridge is formed mostly of bent cartilage, but partly of the bent vomer.

Judging from my own observation, the affection usually occurs in early life, either before or about the age of puberty.

This deflection may be of traumatic origin, but usually it appears to be spontaneous. Some patients attribute it to an accident: such for example, as being thrown from a horse, or falling upon the ice; but in the majority of cases no cause is assigned, or the one given does not satisfactorily account for the condition. In searching for the cause of this affection, we usually find that the patient has been troubled with catarrhal symptoms for some time before obstructed respiration has been noticed, and this is the only symptom which is found with any degree of uniformity in the early history of these cases. Again, in many persons who are affected with chronic coryza, we find considerable distortion of the septum, particularly of its cartilaginous portion. Both of these facts point to inflammation of the nasal mucous membrane as one of the principal factors in the production of the deformity.

I have had no opportunity to observe post-mortem appearances, but from a study of clinical cases and from the examination of numerous skulls, I am convinced that the affection of the septum usually commences in the cartilaginous portion, and that the flexion of the vomer, which often exists, is of mechanical origin due to firm articulation of this bone with the cartilage.

We must bear in mind that we have a vertical septum, resting upon an unyielding base and held firmly down by the nasal bones and soft tissues of the nose, therefore no addition can be made to its edges without causing flexion. In cases of spontaneous origin the principal changes appear to have been in the edges of the cartilage, increased growth from which has caused it to bend upon itself; but in some instances there is also considerable thickening of the septum.

The process I believe generally depends upon congestion of the overlying mucous membrane, but its exact nature has not been determined. It is probably a simple hyperplasia of the cartilaginous cells due to hypernutrition; but it may possibly be of the nature of rachitis the pathology of which is obscure.

Sir W. Jenner¹ says the alterations in the bones in rachi-

¹"Green's Pathology and Morbid Anatomy," 3d Am. ed., p. 222.

tis consist in *an increased preparation for ossification, but an incomplete performance of the process.*

P. Henry Green¹ states that the zone of cartilaginous tissue which in health is being transformed into bone is very thin, but in rachitis it is greatly increased particularly at the ends of the bones, but also beneath the periostium.

It would seem, therefore, that at least one step in the development of rachitis consists in an abnormal growth of cartilage, and it is possible that the same conditions operate to enlarge the cartilaginous septum that cause the increase in rachitis. However, if we accept the theory that rachitis is due to checking of nutrition, it would appear inappropriate to class deflections of the septum as one of the manifestations of this disease; for in patients in whom deflection is observed, there is seldom any evidence of imperfect nutrition, and thus far I have not seen one presenting other signs of rachitis.

Patients with deflection of the septum generally apply for relief, because of obstructed respiration or deformity of the nose. But we usually find also that there is excessive secretion from the nasal mucous membrane, most of which passes behind the velum into the throat. We also observe that the voice has something of a nasal twang, but the progress of the flexion has usually been so gradual that the patient himself does not appreciate the change.

When distortion of the cartilage is extreme, the point of the nose is often pushed to the opposite side so as to cause considerable deformity, which is very objectionable, especially in ladies. I have found this deformity so often that I am led to think that in the majority of cases a crooked nose is the direct result of enlargement and deflection of the septum.

Upon inspecting the naris on one side we find a free space with more or less concavity of the septum, along which a narrow furrow will often be seen corresponding to the line of greatest flexure. In the opposite naris we find convexity of the septum varying in extent and position in different patients, but always greater than would at first be expected from examination of the larger naris.

¹ *Ibid.*

Contrary to the experience of others, I have observed this convexity most frequently on the right side.

In the first class of cases there is a uniform concavity of one side with a corresponding convexity of the other.

In the second class the deformity depends upon the severity of the injury, and may consist of simple depression and bending of the septum, or of this conjoined with fracture of the nasal bones.

In the third class there may be only a slight flexion of the cartilage, near the nostril, both the anterior and posterior extremities of which may be easily seen; but in many instances the bent septum passes obliquely downward, from its natural position above, to the ala, and then bends sharply upon itself so as to lie almost horizontally across the nostril. In this form of distortion the nostril is often found to be completely closed, and the point of the nose is crowded considerably to the opposite side. In such cases thorough inspection may be impossible, but by drawing the ala well outward we may usually obtain a view of the deeper parts of the naris.

In the fourth class, the deformity usually commences at the middle or upper third of the septum, and passes from that point outward and downward nearly to the floor of the naris. It then bends sharply upon itself, forming a longitudinal ridge which stands out from the normal plane from three to eight millimetres. The ridge thus formed generally passes obliquely upward and backward, a distance of two or three centimetres in a line corresponding to the articulation of the vomer with the cartilage and nasal plate of the ethmoid.

The most prominent part of the flexure is usually found about two millimetres below the normal position of the junction of the nasal cartilage with the vomer. In these cases, though upon first inspection the inferior plane of the bent septum seems to rest upon the floor of the nasal cavity, it will generally be found that a space remains beneath it sufficient to allow the passage of a probe two or three millimetres in diameter.

There can be no difficulty in making a diagnosis if both

nostrils are inspected, but it is sometimes impossible to determine the extent of the inflexion, in the deeper parts of the naris, until the cartilage in front has been removed.

In cases of spontaneous origin the process of flexion continues for a limited though uncertain time, but probably in most cases for at least two years. It finally comes to a standstill, and there seems no tendency to recurrence of the active increase in the size of the cartilage; neither is there likely to be any atrophy of it; but the deformity unless relieved by an operation will continue through life.

In traumatic cases considerable flexion results immediately from the injury, but judging from the extent of distortion in cases of this variety which have fallen under my observation, the injury is usually followed by considerable hypertrophy and subsequent bending of the cartilage.

Several operations have been recommended for the relief of this condition. The most important are: the one recommended by S. D. Gross, which I believe is the same as that proposed by Chassaignac, which consists in paring off a portion of the bent septum; the operation proposed by Wm. Adams, for forcible replacement of the bent and depressed septum; and Goodwillie's operation for perforating the septum.

Several modifications have been made in each of these operations, which have better adapted them to special cases.

In the first class of cases often no operation is necessary, though, perforation by Steel's instrument, or Adam's operation, would probably correct the deformity, yet even in these I should prefer the removal of a slender triangular piece from the lower margin of the septum.

In the second class of cases Adam's operation,¹ or the operation suggested by Dr. A. J. Steel, of St. Louis, and subsequently practised by Dr. Glasgow,² seems most likely to be followed by favorable results, especially if there is no enlargement of the cartilage, in which case, if replaced, it is of exactly the proper dimensions to restore the nose to its former shape.

¹ *British Medical Journal*, Oct. 2, 1875.

² *St. Louis Courier of Medicine*, 1879; also, *Transactions of Am. Laryngological Association*, 1881, p. 117.

In the third and fourth classes, where there is an increased growth of cartilage, no operation is likely to be permanently successful which does not include the removal of the redundant tissue.

Simple perforation of the septum is not sufficient in these cases, for although it will doubtless partially relieve the difficulty in respiration by allowing air to pass from the obstructed nostril through the enlarged naris, it will not correct the deformity of the nose. It will not usually cure the obstruction in the back part of the occluded naris, and therefore it cannot cure the catarrhal symptoms; besides, as suggested at the last meeting by Dr. Glasgow, there is a tendency to scabbing of the edges of the perforation, and deformity of the nose is liable to result from removal of large portions of the septum.

Paring off portions of the septum will answer the purpose in some cases, but it is only suitable for a small number. By this operation a thin septum would be left of the original size, and of insufficient strength to support the nose. Such a septum would be peculiarly liable to further distortion; consequently, in many cases, the operation would not only fail to correct the twisting of the nose, but it would favor subsequent depression of the external parts. The operation suggested by Dr. Jarvis I have not tried, and as it is to be fully discussed in the next paper, I will not comment upon it.

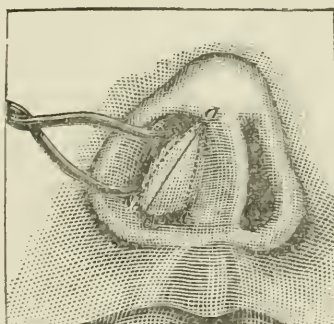
In all cases where the cartilage is much enlarged the operation which seems to me most suitable, and which I have on two occasions found very satisfactory, consists in separating the mucous membrane and removing the redundant tissue, after which the mucous membrane is stitched down and the septum retained in proper position until firm union has taken place.

The operation will sometimes require considerable time, and therefore in most instances an anæsthetic will be necessary.

Ether or chloroform may be employed, but nitrous oxide is preferable for short operations, such for example, as that to be recommended for cases of the fourth class.

Before commencing the operation, when possible, a small Eustachian catheter should be carried through the obstructed nostril to the pharynx, and through it a catgut or a well-waxed silk ligature should be passed for tamponing the posterior naris. This ligature should be attached to a suitable tampon of cotton or sponge, and tied in such a manner that about two inches of the end of the ligature may hang down the pharynx when the tampon has been placed in position. This hanging end will greatly facilitate the removal of the tampon after the operation. It is usually best to introduce the tampon before the anæsthetic is administered.

When the bent septum lies nearly horizontally across the nostril the mucous membrane over the septum should be incised from above downward and outward near the centre of the nostril as indicated by the line *a d* in drawing, and



then with the handle of a scalpel or with delicate curved spuds, the membrane should be separated from all that portion of the septum which is to be removed.

Estimating carefully the amount of tissue which it will be necessary to resect in order to secure symmetry of the nose and a straight septum, the cartilage should now be cut through from the upper to the lower outer angle of the obstructing portion *a b*, as indicated by the dotted lines in the drawing and then along the inner border from above downward *a c*. With a little care this incision can be

made without cutting through the mucous membrane in the opposite naris. The cartilage may now be seized with forceps by the angle (*a*) and drawn downward and cut off. If the flexion extends backward along the septum, a slender triangular piece also must be removed from its lower border by means of scissors, a knife, or a short cutting hook.

The incisions should be so planned that when the septum is pushed into its normal position the cut edges of the cartilage will be in apposition. The mucous membrane is now drawn down and stitched, thus holding the cartilage in a proper position; but it must also be supported by a plug or by a pledget of cotton until firm union has taken place. I have used cotton for this purpose, but the plugs recommended by Adams and Glasgow might possibly answer a better purpose. After a few days a tubular instrument of similar form would probably be more comfortable.

The twisting of the end of the nose will be found to have been remedied by replacing the cartilage, and if proper care is exercised to keep the septum in position, until union is firm, a perfect result may be confidently predicted. I have not made the experiment, but I think the after-treatment would be more easily carried out if the cartilage were either broken or incised at its upper part so as to destroy its resiliency, and thus require less pressure to hold it in its normal position.

In addition to the anterior obstruction, a large ridge sometimes runs upward and backward a distance of two or three centimetres, as in the fourth class; this may be removed at once or a second operation may be made.

In the fourth class, not only the cartilage, but usually the upper border of the vomer also, is bent; were it not for this, the operation might be readily performed by separating the mucous membrane and then paring off the cartilage with a slender probe-pointed knife. On account of the bony tissue which has to be cut through, a slender saw will be found useful in operating on these cases. I have used a slender metacarpal saw, but I am now having made a much smaller instrument which may be worked either by hand or

by a dental engine, and which will, I think, materially facilitate the operation, and possibly render an anæsthetic unnecessary in cases of this class.

In these cases the mucous membrane should be divided perpendicularly at the anterior extremity of the ridge, so as to allow the introduction of a spud; also along the lower outer angle of the deflected cartilage, at a point which will insure enough tissue to cover the cut surface of the septum. The membrane having been separated from the septum, the saw is carried beneath the projecting portion close to the crest of the maxillary bone, and the cut is made directly upward until the bone and cartilage are divided. The piece being removed, the mucous membrane falls down upon the cut surface, and may be stitched at its anterior extremity to the membrane covering the crest of the maxillary bone.

It is not often necessary to bend the septum after this operation, but if the flexion at its upper part is very great, it is advisable to restore it to its normal position, as after the operation for cases of the third class.

Dr. WM. C. JARVIS read a paper entitled, "A new operation for the removal of the deviated septum in nasal catarrh."

Dr. Jarvis' Paper.

ALTERATION in shape and size of the nasal septum commands the attention of the progressive laryngologist from its frequency and effects.

The immediate discomfort, though sometimes serious, is often insignificant when compared with the remote. Much ingenuity has been displayed in the construction of instruments to relieve the distressing deformity, occasioned by markedly distorted septa. The efforts which have resulted in the present development of this branch of surgery received much of their impulse from Dr. W. Adams and his fracture forceps. Steele's stellate forceps, Blandin's punch, Goodwillie's septum perforator, Roberts' fenestrated punch, and Weir's cartilage forceps, have, according to their in-

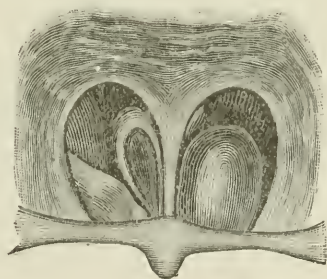
ventors, given excellent results. Like their progenitor, the end sought for is characterized more by a desire to correct deformity than to cure disease.

By one operation, restoration of the external symmetry of the nose has been followed by a direct re-establishment of its normal respiratory function. By another and more popular operation, direct nasal respiration is postponed indefinitely by perforating the triangular cartilage. The indirect air current satisfies the surgeon, because he has substituted a concealed deformity with somewhat lessened discomfort, for a visible one with much misery. I shall show that the perforations made in the septum to relieve the deformity of a deviated triangular cartilage are unnecessary. By a simple method, to be explained, the tissues which form the deviation can be removed without connecting the nasal cavities by an undesirable opening, and nasal respiration is often restored without the excision of cartilage.

It is not my intention, however, to dwell upon the respective merits or demerits of the several methods I have mentioned, as they have been already discussed by their advocates. My remarks will be largely confined to the relationship of the irregular and deviated septum to nasal catarrh. The relief of deformity will be a secondary consideration, and in many cases merely incidental. I shall deal with conditions which have attracted but little attention, and, as far as I can learn, have never been corrected. I refer especially to thickenings over the vomer and imperforate nostrils, due to fusion of the triangular cartilage with the tissues opposite.

I have found it convenient to divide deviation of the nasal septum into two varieties, *localized* and *general*. Localized non-cartilaginous deviations from the normal-shaped septum are most frequently observed in the hypertrophied mucous membrane overlying the vomer and triangular cartilage. Localized deflection of the septum usually occurs in the form of the peculiar deformity produced by displacement of the columna nasi. By the phrase hypertrophy of the tissue over the septum I at once do away

with a large proportion of the so-called cases of deflection of the septum. In adults these thickened tissues can sometimes be traced as resulting from an apparently insignificant nodule of projecting cartilage in early life, perhaps the result of an injury. This cartilaginous spur, however, would be of much consequence in the nose of a child, since the small size of its nostril would tend to bring about contact with the turbinated structures opposite, thus producing an irritative hypertrophy, its size depending upon the extent and chronicity of the local sub-inflammatory process. We may also have localized thickenings of the mucous membrane over the cartilaginous septum and vomer, resulting from the direct pressure of hypertrophied or frequently tumefied turbinated tissue. A certain amount of turbinated hypertrophy is always discoverable in these cases, and the thickened tissue lying opposite is usually localized, and corresponds in its extent with the amount of turbinated hypertrophy.



This drawing is made from a careful sketch. You observe the left post-nasal orifice is occupied by a posterior hypertrophy, above the upper edge of which, is faintly outlined an incipient thickening of the tissue over the vomer. The inferior turbinated tissue in the right naris has partially retracted, leaving on the vomer, opposite its impress, a cup-shaped mass of thickened tissue. Recognizing the floor of the nose as a gutter for the efflux of the nasal secretions, the thickened tissue over the septum often constitutes one of the most serious obstructions to drainage. There is probably no condition more favorable for the development

of nasal catarrh than a distorted nasal gutter. Retention of the nasal secretions must lead to the formation of inspissated masses of mucus, which act as most powerful intranasal irritants. It is obvious that only temporary relief can be obtained in these conditions by the use of cleansing or medicated sprays. We must resort to surgery for radical relief.

Displacement of the columnar cartilage at the tip of the nose does not always set up a nasal catarrh by pressure irritation, for it may be entirely outside of the nasal cavity. Even in these cases its excision is often called for to remove the distressing deformity.

General deviation of the septum may occur in the form of a sigmoid deflection, in which case both the upper and lower margins of the septum show a marked convexity, or a large mass of the triangular cartilage may be projected toward or against the nasal wall.

There always exists a corresponding concavity in marked general deviations. On the contrary in the tissue formations occurring over the septum, no such depression can be discerned.

The wavy outline given to the septum by alternate masses of thickened tissue in the cork-screw nostril, may simulate these depressions, but a careful examination will result in their easy differentiation.

Deviation of the nasal septum may, of course, be *osseous* or *cartilaginous*.

Deviation of the bones which form part of the septum, is seldom sufficient to give rise to any immediate discomfort. It may, however, be the cause of hypertrophy of the superimposed tissues, which in turn lead to a chronic nasal catarrh. Hence, I can, without inconvenience, exclude from my method of operating, the removal of deviations of the plate of the ethmoid, vomer, and osseous spurs of the superior maxilla, since excision of the overlying tissue renders their removal unnecessary.

I have been at a loss to account for the frequent existence of exostoses in the nasal cavity as described by some observers.

Although having access to one of the largest laryngological clinics in the country, Prof. Bosworth's, of Bellevue Hospital, I have found these osseous formations to be of rare occurrence.

Localized cartilaginous deviations at the base of the columna nasi of a bony consistence, are of frequent occurrence. An exploratory puncture needle will readily differentiate the two conditions. In my experience the projection has so often proved to be cartilaginous, that I usually verify my diagnosis by removing the tissue.

Deflection of the triangular cartilage and columna of the septum are, on account of their activity as agents in the production of catarrh, of extreme importance.

As the undisturbed foreign body in the nose of a child is invariably the cause of a nasal catarrh, so the neglected cartilaginous splinter—a deviated septum—must lead with absolute certainty to the same result. The nares may be in all other respects symmetrical, and the person in perfect health, but I believe it impossible for the delicate nasal tissue to withstand so powerful and permanent an irritant. The trouble frequently dates from a blow received upon the nostril.

These cases, as a rule, give the most favorable results when intelligently treated by my method of operating, as they often occur in persons otherwise healthy.

The mere removal of the cause of the disease must lead to a spontaneous cure.

Instruments for the operation.—The instruments I generally make use of are, my wire snare écraseur, transfixion needles, and a peculiar scissors for excising portions of the septum.

The écraseur consists of a long and short canula, the latter gliding over a screw thread cut on the former. A milled nut, fitting this thread, is intended to push the outer canula before it. Well-tempered steel piano wire is drawn through the large canula, and its ends are attached to the retention pins on the small one. As the outer canula cannot turn, there is no twisting of the wire loop formed.

The transfixion needles need no special description. They

are pointed like the ordinary glover's needle. Four sizes are made, running from one to four inches in length. Each number has a straight needle, and three others of varying curves. They are all furnished with a light, convenient handle.

The septum scissors are light instruments, with the blades curved almost at a right angle. Their shape enables the operator to obtain an easy view of the tissues to be removed.

One instrument is made after the pattern of Richardson's mouse-toothed scissors; the other has a sharp beak upon the upper blade, which sinks into the tissue of the septum, and thus enables the scissors' blades to retain their grasp while cutting through cartilage.

A ring in the fixation blade is intended to slip over the middle finger, while the knob on the movable blade is managed with the thumb.

This simple arrangement enables one to hook and divide the cartilage of the septum with great facility.

Operation.—The amount of tissue requiring removal is generally estimated by comparing the redundancy with the unaffected portion of the septum. This having been carefully determined, the base of the cartilaginous projection or hypertrophied tissue is pierced with the transfixion needle until the point reappears. The wire loop of the *écraseur* is now passed over the point of the needle projecting into the nostril, and tightened around the transfixed tissue by forcing up the outer canula with a movement of the finger against the milled nut. A few turns of the milled nut cause the wire to sever the transfixed tissue.

When the posterior surface of the deviated tissue is not well defined, it is advisable to use a curved needle, in order to bring its point in view. A little practice will enable one to determine when complete transfixion has taken place, by the change in resistance, appreciated by the touch in cases where the needle's point cannot be seen.

Pain.—The discomfort caused in removing these growths will vary with the susceptibility of the patient to pain, and the amount of care used in manipulating the *écraseur*.

Patients, as a rule, declare they do not suffer. A painless operation by this method may be converted into an agonizing one by the impatient movements of a rapid operator.

Hemorrhage.—The hemorrhage is trifling, if the operation is performed slowly. The employment of slow traction, to prevent pain, guards against the occurrence of hemorrhage. The vascularity of the mucous membrane over the septum is very slight when compared with that of the turbinated tissues.

Localized and general thickenings of the mucous membrane situated anteriorly upon the triangular cartilage can be readily removed.

The localized hypertrophies found over the vomer are sometimes difficult to remove, as the tissue is transfixed and snared when pictured in the rhinoscopic mirror.

When the cartilaginous or thickened tissue is in contact with the outer wall of the nose, I make use of the No. 4 curved transfixion needle, which has its point at a right angle with the shaft. By successfully hooking and snaring off pieces of the septum, it is possible to make an opening into the posterior nares. The patient practice of this method has enabled me to perforate even an imperforate nostril without connecting the nasal cavities by an undesirable opening.

Especially brilliant results can be obtained in relieving the common deformity produced by displacement of the cartilage of the columna. Nasal stenosis caused by a deviated cartilage is always overcome by the careful practice of this method without perforating the septum.

I would strongly urge this procedure to supply the place of the now general practice of perforating the septum with a punch. When the enthusiastic advocates of this operation explain away the discomfort caused by the collection and inspissation of nasal mucus around the edges of these false openings, I may consider their claims for its superiority.

The fact that a large proportion of even markedly distorted nasal septa give rise to little or no external disfigurement, recommends the practice of my method of operating, in the majority of cases, to cure or relieve the coexisting disease.

Discussion on the Papers of Drs. Ingals and Farvis.

Dr. MAJOR said that in looking for a cause of deviation of the septum, it had occurred to him that it might correspond with the current of air in breathing. Enlargement of the turbinated bone is more apt to occur on the side upon which the patient is accustomed to sleep, and this may be explained by gravitation of blood to this side.

Dr. DELAVAN said that he had been much interested in Dr. Ingals' paper, and regretted that Dr. Harrison Allen, who had given special attention to the general and pathological anatomy of the structures referred to, was not present to discuss it. With reference to the question just brought up by Dr. Major, a similar thing had been suggested by Dr. De Blois, who said that the direction of the deflection depended upon whether the patient was right- or left-handed, but it had occurred to the speaker that the blood supply of the brain may have something to do with it. When a person is right-handed, the left hemisphere of the brain receives a larger amount of blood than the other, on account of its greater functional activity. This may also influence the blood supply of the turbinated structures and septum. This explanation is rather hypothetical, yet some such relation may yet be found to exist. The classification according to the extent of the deflection, proposed by Dr. Ingals, is good, and his explanation of the origin of the deflection from inflammatory causes is ingenious and plausible; but the whole question is involved in doubt and uncertainty, because in early life the cartilage is almost membranous, and in studying crania no conclusions can be drawn with respect to its relations during life, as the parts are apt to be disturbed in drying, and it is impossible to tell what they had been during life. It is, therefore, difficult to say at what age the deflection occurs, and the causes of the deviation are still more obscure. As to the relatively greater frequency of its occurrence on the right side, as stated by Dr. Ingals, examination of the skulls had failed to confirm this view; according to the speaker's observation the distribution was about equal between the two sides.

As regards treatment: There was an article published by Dr. Harrison Allen in the *American Journal of the Medical Sciences*, for January, 1880, in which this whole subject was well digested and treated in a most interesting and thorough way. In this article Dr. Allen described several instruments, one very much like that presented by Dr. Ingals, with which he proposed to saw

or cut away the convexity of the septum. Dr. Delavan continued: "For my own part, with regard to this operation, as well as Dr. Jarvis' operation, I find them in a very large number of cases insufficient and superficial. I think that when the bony surroundings of the parts are well known, we shall insist upon a more radical operation as necessary for the permanent relief of the stenosis. I think also that examination of the turbinated bone will suggest a primary operation upon that before the septum is interfered with."

Dr. CARL SEILER thought the classification in Dr. Ingals' paper an admirable one; it comprises a large number of cases which can be classed under these four heads. He has had occasion to operate upon cases such as described, and had found it extremely difficult to gauge the incision, so that after taking the shaving of bone away, the edges would fall in apposition. Recalling the facts, that cartilage is an avascular tissue, is difficult to heal, as it is nourished from the perichondrium, the incision is less useful than Steel's forceps, which for general deviation he regarded as best of all. Roberts' instrument is too large; so large a division as it makes is altogether unnecessary.

Dr. Jarvis' operation in many cases is admirable; and he found the calipers very useful in diagnosis, enabling him to determine whether there was thickening, or deviation, or both: if the first, he proceeds at once to remove the excess by Dr. Jarvis' method, or if the second, he rectifies the septum with Steel's forceps.

Dr. INGALS said that with regard to the difficulty in healing the perforation, it did not suggest itself to him; because knowing that the cartilage is covered with mucous membrane, it did not appear as if there would be much trouble about the vascular supply.

Dr. JARVIS said that he had invented a saw himself, to be used with the dental lathe, but the objection to its use was the same as to the knife,—the bleeding obscures the view. This does not occur with the wire snare; the hemorrhage is limited to a few drops, which do not, however, interfere with the operation, because they do not occur until it is finished.

Dr. ELSBERG observed that he had found in a number of his cases that the transfixing needle was difficult to use, and in such cases he had found the transfixing forceps very useful, and that he used the dental burr for grinding down hypertrophied bone.

Dr. WM. E. SHURLEY, of Detroit reported cases of "Lupoid ulceration of the nasal septum."

Dr. Shurley's Paper.

THE cases about to be related have been very instructive to me, and I present them under the caption of lupoid ulceration, although there may be some question, perhaps, as to their real pathological nature.

CASE I.—A. M., male, æt. 40, married 15 years, and father of two children; speculator; good family history; temperate, rarely drinks spiritous or malt liquors, and smokes only occasionally during a week; in good flesh, but not fat; general health good, excepting headaches, migraine, probably brought on by business worry or malaria, or both. Says he may have had syphilis about 20 years ago, although the doctor whom he consulted said that the sore was only a chancroid, and he very soon recovered, never having had any sore throat or cutaneous eruption.

One of his children, a boy 12 years old, although having been delicate, so-called, shows no signs of the syphilitic taint; he rather bears the physical stamp of his mother, who is a woman possessed of what is called the scrofulous diathesis. The other child of the patient, now 20 months old, was "sickly" during the first 8 months of its existence, but thereafter seemed tolerably well nourished, notwithstanding it was bottle-fed, condensed milk being its nutriment. It is, however, rickety to a slight extent, as manifested by the ribs and bones generally. But I have never seen any thing to indicate a syphilitic taint. The patient states upon honor that he has never been affected with any venereal disease but the once mentioned, and as he is a plain, outspoken, sensible man—and not a church-member—I believe he would not disguise the truth from me.

When he came to me in the autumn of 1879, he complained of some dull frontal headache, stuffiness of the nose, as he expressed it, and the discharge of more or less crusty, non-fetid matter, mostly from the anterior nares. This had been troubling him about three months then, and, he observed, was growing progressively worse. His general health at this time was very good. Upon examination, after washing out the collection of inspissated secretion, I discovered a perforation of the cartilaginous nasal

septum, about the size of a silver five-cent piece, which was slightly ovoid, and with its upper margin close under the roof of the cartilaginous portion of the nose. The edges of the orifice, which were bevelled, were plastered here and there with masses of reddish or brownish crusts, which seemed very dry, and a *little* fetid. The mucous membrane for about a $\frac{1}{16}$ th of an inch circumferentially around the orifice was thickened, and gave the sensation of hardness to the touch, while the upper margin of the opening was by far the most sensitive. The disease progressed some during the next six months, so that the opening became irregularly elliptoid, and about as large as a twenty-cent piece, while the nose about this time had perceptibly fallen in. It seemed, however, to get no worse than this, since I found upon examination about a month ago, that the size of the perforation accorded with my last note of April, 1881.

The treatment consisted mainly in sprays or douches of sod. bibor. et ac. carbolic., pot. chlor., potass. permang., sp. of aq. picis et sod. bicarb., and other detergents; and in the persistent use of iodoform, either by insufflation or incorporated with vaseline, glycerine, petrolina oil, etc. Caustics were used but a few times, and mostly on the upper margin; and internally, the administration of potassium iodide.

CASE 2—J. E. H., æt. 16 years, German, works in a stable as hostler; family history good, so far as we could find out; his father died of some acute lung trouble, and his mother, whom I saw several times, seemed to be healthy. I saw, once, at the hospital clinic, a younger sister of his, who appeared pale and cachectic, but said that she was well. Mother stated that this boy had always, previous to his illness, been strong and healthy. Looks well now.

Patient presented himself at the out-door department of St. Mary's Hospital, Jan. 20, 1881, suffering from a sore throat, and, especially, from obstruction of the nasal passages; he had been in this condition, he said, about three weeks. Examination of throat and nose showed great swelling of the mucous membrane lining the nasal passages on both sides, so that no good view could be obtained anteriorly. Rhinoscopic examination showed swelling, with great hyperæmia of the membrane lining the nasopharynx, and quite a collection of muco-pus, as well as a few crusts. At the median line on the posterior surface of the soft palate, there was quite a depression, covered by a firm white patch. This proved to be an ulcer. There was no ulceration to

be found anywhere else. The pharynx was simply hyperæmic. He was treated with a spray of borax and ac. carb., followed by insufflations through the posterior nares of iodoform, and was given, to take internally, $\frac{1}{16}$ th gr. biniod. of mercury with 5 gr. of iod. of potass. in solution. He attended the dispensary quite regularly until March, and improved in every way during such attendance. Pot. iod. was substituted for the mercurial.

In March he came twice, the last time complaining mostly of pain in swallowing. His nose still remained obstructed, and the septum on the right side showed a small ulcerated spot, just opposite the anterior end of the lower turbinated bone. About the same line of treatment was resumed, except, in addition, the use of a little strong tr. of thymol to ulcerated spots.

April 4th, it is noted that the soft palate is perforated in the median line, and not far from its junction with the hard palate. It is noted also that the nose is obstructed and shows a small perforation of the cartilaginous septum in the place noted formerly as ulcerated. He had never had sexual intercourse, according to his statement, under the most rigorous cross-examination, so that I was led to believe he had contracted syphilis from some one of his barn companions—he worked in a private barn, not a livery-stable. Accordingly, I examined the two men associated with him, and could find no trace of syphilis about them, nor any excoriated places or scars which would lead to a suspicion of it. They also told me that they had not had any such disease for several years. There was also no evidence of hereditary syphilis. Notwithstanding all this, I still believed it was syphilis, and concluded that he must have become inoculated at the dispensary on some former occasion.

He continued under observation until July; his throat finally becoming well, excepting the perforation of the soft palate—about the size of a three-cent piece,—which still remains.

But the mucous membrane of the septum continued growing thicker, while at the same time the perforation of the septum slowly and gradually enlarged; the process producing an abundance of reddish or yellowish crusts.

The latter part of March of this year (1882), he again returned to the hospital for treatment, complaining only of his nose. An examination revealed the fact that nearly the whole of the cartilaginous and possibly a little of the anterior border of the bony nasal septum were gone. The anterior naris of the right side was

nearly obstructed by the leaning forward of the anterior remnant of the septum adjacent to the nasal column. The treatment has been both local and general: the former consisting of applications of douches and sprays for cleansing purposes, followed by iodoform and strong tr. of thymol to the edges; while the general treatment has been, as in the former case, principally by the administration of potassium iodide.

The boy is really getting better, as there seems to have been no further erosion for some time now.

CASE 3.—Mrs. E. B., æt. 42, married, mother of three quite healthy children, according to report. About thirteen years ago, after attending her brother-in-law, as nurse, through a very severe course of typhoid fever—she suckling a babe at the time,—she noticed a papular eruption on the lower lip, which at the time was regarded as a “cold sore.” This finally became a small abscess, leaving a white scar after suppuration, but was immediately followed by a tubercular sort of swelling of the skin over the left temple—in fact, two or three in different places on the scalp, all of which, however, disappeared without suppuration or any special treatment. Her husband, about this time suffered also with two abscesses on the back of his neck, which were called carbuncles. About *seven* years ago the patient noticed a swelling (hard and painful) on the back of her neck, which soon ulcerated. This could be healed by the application of certain ointments, but would soon recur, always involving new tissue after the ointment was discontinued. This ulceration on the back of the neck continued, and last autumn was about the size of a silver dollar. She came from Elmira, N. Y., to consult me about what she supposed was a chronic nasal catarrh. She stated in the course of the examination that she had consulted two eminent dermatologists in New York City, one of whom pronounced the skin affection lupus, and the other one called it syphilis. The nasal affection had developed within the two years preceding, so far as she knew; examination showed a perforation of the cartilaginous nasal septum about the size of a silver quarter of a dollar, its edges bevelled, the circumjacent mucous membrane thickened, and the secretion crusty, rather scanty, but not fetid. Diagnosing the case as lupus, I consulted Dr. Carrier, of Detroit, a very skilful dermatologist, who concurred not only in the diagnosis, but in the proposed treatment. He kindly took charge of the case, while I saw her from time to time, and she has since returned home ap-

parently cured—that is, the ulceration of skin as well as of septum stopped. The treatment consisted in the internal administration of potass. iod., the dose being gradually increased to 20 grains, 3 times daily; and, so far as the septum was concerned, the persistent use locally of iodoform, alone, and in combination with thymol and vaseline. I omitted to state that she had had about four years ago an ulceration of the soft palate, which destroyed a small amount of tissue. Dr. Carrier's notes as well as mine state "that she was questioned very closely for a specific history, and positively avowed that she had never had any sore on or about the genitals, no falling out of the hair, no eruption of the skin—except as given above,—and no osteal pains or disturbance." He also states that mercurial treatment aggravated her disease each time it was adopted.

This case was proximately one of lupus without a doubt, but whether or not we have been deceived as to any syphilitic element in its etiology, the Lord and the patient, perhaps, only know.

CASE 4.—June 2, 1882. Mrs. F. McR., æt. 56 years, widow three years; family history excellent; general health good; never had any cutaneous eruption which "amounted to any thing," she says. About three years ago began having a sensation of stuffiness in the nose, attended with watery discharge; and four years ago, for the first time, noticed a small opening in the cartilaginous nasal septum, about the size of a common pin head; up to this time she had had frequent light attacks of epistaxis.

Three years ago, during the winter season, she had more or less sore throat, and became hoarse. This condition has regularly supervened every winter since, having been more persistent, with more complete aphonia, during the last winter.

Examination shows the nasal septum, excepting anterior nasal column, entirely gone, together with most of the lower part of the bony (vomer, etc.), thus throwing the naso-pharynx and nasal passages into one large cavity, for there remains only a vestige of the upper turbinated bones.

This cavity is dry, and contains considerable inspissated secretion adhering to the several irregularities here and there, but the odor from these is not offensive.

Laryngoscopic examination shows the posterior wall of pharynx

dry and plastered with dry secretion; upper larynx not hyperæmic, but mucous membrane thickened and granular. Vocal cords thick, round, and dark pinkish color, but their surfaces are smooth.

Ordered a douche of potass. chlor. and sod. bicarb. twice daily, followed by insufflation of iodoform and pulv. g. acaciæ, equal parts.

I have tried in the narration of the foregoing cases as briefly as possible to bring out the *clinical diagnostic* points, and the *apparent* benefit derived from the plan of treatment adopted. Only Case 3 might be regarded as really lupus by some, while the other cases might be looked upon as simply ozæna or latent syphilis by other practitioners.

It is unnecessary for me, before a body like this, to consume time by quotations or abstracts from the current literature of the age, in order to substantiate the statement that the *pathogenesis* and *pathology* of scrofulosis, tuberculosis, and syphilis, together with the more local expressions of disease called lupus and ozæna, have not as yet explicitly shown the relationship between these several morbid states.

Like many families of cryptogamous plants, whose development is marked by such periods of specific phenomena as to almost differentiate them into independent species or varieties, these morbid conditions give rise, in their sometimes devious and subtle modes of ultimate development, to the most puzzling groups of local expressions. This, I believe, is especially true of scrofula, so despised and slighted by many of us. I am sincere in the belief, that we are far from being done with the so-called scrofula, and that we must yet of necessity acquire more knowledge of its pathological histology before denying it a place in the category of diseases. I am firmly convinced that ozæna and lupus, from our present knowledge, ought to be classed together as typical scrofulous disease; and I also believe, with many pathologists, that there is a certain natural relationship between tubercle, syphilis, and scrofula, the details of which are really to be worked out yet. Regarding lupus, the literature on the subject is far from extensive, but what exists goes to show, as far as I can learn, that its diagnosis from syphilis,

or tubercle, or scrofula, both clinically and microscopically, is not always certain; while empirically considered, it seems to yield, in all of its forms, to those therapeutic measures so long and successfully in use against scrofulous disease,—the antiscrofulitics.

I say, empirically, because, so far as I know, the *therapy* of scrofulous disease, or scrofula, does not rest upon a scientific basis. The predilection of lupus for attacking the skin primarily, is, of course, well known, and has constituted quite a point in differential diagnosis. But, of late, so many instances have been published, where the disease has attacked *mucous membrane* primarily, that I think in a given case of disease of a mucous membrane, the absence of any previous or concurrent invasion of cutaneous tissue ought not alone to negative the diagnosis of lupus.

Discussion on Dr. Shurley's Paper.

Dr. INGALS said that the question of syphilis was an important one in making the diagnosis of lupoid ulceration. In obtaining the history of a suspicious case he is in the habit of asking with regard to the rational symptoms, and if he finds them, he then asks directly at what time the patient had syphilis.

Dr. MORGAN said that he had a case which had been pronounced lupus of the soft palate; the patient was a woman, 35 years of age, who did not give a syphilitic history, and yet he had at first felt firm in his belief that the ulceration was specific, although there were no syphilitic antecedents as far as he was aware. There had been cutaneous manifestations of lupus for eighteen months, and they existed previous to the occurrence of disease in the pharynx. The outward manifestations were limited to the lower part of the inferior extremity. The patient was admitted into the Providence General Hospital, where the disease was pronounced lupus by those who saw it. The local disease began in the soft palate, which it perforated, and extended to the horizontal plate of the palate bone and to the palatine process of the superior maxillary bones, and also destroyed the vomer, but the cartilaginous portion of the septum appeared to have escaped. The starting of the disease in the vomer was preceded by profuse epistaxis; what was remarkable was that there was no notable pain nor dysphagia even during the ulceration of the soft palate.

The treatment was by sprays for cleansing, followed by the application of silver nitrate, and the internal administration of the proto-iodide of mercury. The case is still under treatment, but it is thought that it is now under control. He said that if this was lupus he was very much encouraged from this case, and the remarks made upon this subject at the last meeting in Philadelphia, that lupus, in some cases at least, can be controlled and perhaps cured.

Dr. SHURLEY said he had had some doubts about the diagnosis of his case ; a great many points suggested syphilis, and it would be very easy to pronounce it a syphilitic manifestation ; but he had taken a great deal of pains to follow up the history, but could find nothing to warrant this view. For a time he thought that it was syphilis, and that she might have been inoculated at the dispensary, but he afterward concluded that it was not so, but that it was really a case of lupus.

Upon looking up the literature of the subject he had found it very much mixed ; he regarded the lesion as a scrofulous manifestation, and he would hold on to this view until he was forced by good evidence to abandon it. He would, in conclusion, call attention to the treatment of the disease with iodoform. Before the craze for this agent, he had used it, in 1869, and was much pleased with its effects. In this case he had tried other forms of treatment, and finally concluded to use the galvano-cautery, and burn a ring around the disease ; but the iodoform locally with the iodide of potassium internally proved very beneficial. He did not rely upon the local remedy alone, but thought that, as in a great many other cases, we could not get along without internal treatment.

The PRESIDENT, before adjourning the morning session, announced the reception of an invitation to the Association from the Massachusetts State Medical Society, to attend its annual dinner at the Music Hall on the following day.

The invitation was accepted, and on motion the morning session was appointed for nine o'clock.

Second day, afternoon session.

BEVERLEY ROBINSON, M.D., of New York, read a paper entitled "Impaired cardiac power as an efficient cause of congestive affections of the throat."

Dr. Robinson's Paper.

WE all of us, specialists as well as general practitioners of medicine, are prone to regard certain affections of the throat as the direct outcome of cold or bad hygienic conditions. I refer particularly to those affections which should be classed among the congestions, and whether they be of acute or chronic order. Not that we are not, perhaps, aware that a visceral lesion, especially of the thoracic organs, can and does occasion throat disorders; but then we shall expect to find it tolerably evident, and are indeed inclined to search for a typical case of heart or lung disease. If we do not encounter such a one, we are disposed to ignore the influence of this factor in etiology, and search after the cause or causes of the present throat difficulty elsewhere. Owing, perhaps, to the fact that whilst, on the one hand, I have a constant interest in questions relating to laryngology as a specialty, I have, on the other hand, an every-day opportunity of examining closely many diverse cases of cardiac and pulmonary disease; the direct interdependence of chronic heart ailments and those of the throat is to me a very common matter of observation. We know that an advanced chronic lesion of the orifices or valves of the left side of the heart often occasions oppression, dyspnœa, and cough. These symptoms may be more or less marked according to the stage which the heart-changes have reached, and in relation with the age, profession, and hygiene of the individual. It is no uncommon thing to encounter an instance of advanced aortic, or mitral disease, particularly, in which congestion of the pharynx, larynx, and bronchial tubes is present, and frequent and harassing cough the natural consequence. Sometimes this cough is dry and irritative; frequently it is quite loose, and there is an abundant effusion of mucus throughout the respiratory tract. Congestions of the pharynx and larynx are specially interesting to us as laryngologists, but we cannot ignore entirely the consideration of accompanying pathological conditions, if we wish to make real progress in the treatment of these affections. Rarely is a congestion secondary to old heart disease limited to one organ; usually

it is wider in its range and extends its influence over a considerable area. This is manifest in the numerous cases of chronic bronchitis and emphysema which frequent our outdoor services for chest and throat affections. Among these, however, there are relatively few in which both larynx and pharynx are not implicated to a certain degree. Occasionally, it is true, there is no complaint of soreness of the throat or hoarseness of voice. But even in these examples direct examination will reveal to us a thickened and relaxed mucous membrane. When, as is frequently true, the patient does refer to painful sensations in the throat, and has also a husky and weak voice, we shall further remark different shades of inflammatory redness in the pharynx and larynx.

By reason of advanced age, of a profession in which irritating vapors are inhaled, of overwork, of general mal-nutrition, or exposure to great and sudden atmospheric changes, some men and women with a similar cardiac affection are greater sufferers from congestions of the respiratory mucous membrane, than others. And it is interesting to note that for good curative results to be accomplished, attention should be strictly paid to these different factors in order that the best selection of formulæ of drugs should be made and employed. Whilst I have had very frequent opportunities to observe congestive conditions of the respiratory mucous membrane following chronic valvulitis, I have noticed many patients in whom hoarseness and cough followed by constant expectoration were nothing more than a natural and almost certain sequela of dilatation of the cardiac cavities.

Of course a "cold" contracted may seemingly be the efficient cause of all symptoms, but frequently there is no proof of its existence and the cough and hoarseness are surely the result of mere fatigue. It is not essential that this *fatigue* should imply *much* physical strain in an absolute sense, for the amount of it may be small, although relatively quite sufficient to occasion notable suffering in a patient with a weak heart through dilatation.

Many such cases are overlooked because there is no mur-

mur in the præcordial region, or because percussion dullness is not very extensive, or an emphysematous left lung prevents the precise determination of the degree of cardiac power. Palpation, carefully made of the radial pulse, will then be a great help to us. It will permit us to affirm the weakened heart action when no other physical sign will. As to rational symptoms, they exist without question, yet they do not invariably enable us to state positively in what organ the abnormal condition primarily exists. With our minds alive, however, to the cardiac lesion, a well-directed treatment will clear the situation in a remarkable and rapid manner, and that, too, when previous to this time, many so-called cough mixtures had been taken without the slightest appreciable good effect. I am convinced to-day that it is not essential in some cases, in which congestion of the larynx is present, and the evident direct cause of cough, that the heart should be structurally affected. The rhythmic force and action, through functional disturbance of the cardiac ganglia, may be the real source of the cough; and late hours, excess in study, in the use of tobacco, tea, and coffee, and venereal indulgences may be the whole secret of the laryngeal or pharyngeal affection.

A functional trouble of the heart combined with the evidences of "cold" contracted, or, rather, with cough and sensations of fulness in the regions of the throat and chest, is occasionally the immediate consequence of a few hours passed in a crowded assembly, where an impure atmosphere, loaded with carbonic acid, has been exclusively inhaled.

Doubtless we have here an affair, with the irritation caused by direct contact of such an atmosphere with the respiratory mucous tract, but there is likewise a real poisoning of the system, which occasions diminished cardiac power, adds to the congestion of the throat and larynx, and thus helps to produce cough and sputa. Now, then, what is the pathogeny of most of these cases? Evidently it is simple. Lower heart power from any cause, and you predispose the respiratory tract to acute or chronic congestion. Sometimes the heart power is not lowered in amount if we compare it with a normal standard, but is nevertheless insufficient to

do the work it is obliged to perform, owing to the changed condition of its own structure or that of the blood-vessels or distant viscera.' If the cardiac fibre become degenerated after a time, one of the first rational symptoms pointing to it is cough, following upon congestion of the pharynx, larynx, or respiratory tract generally. If vascular tension be constantly increased by reason of chronic interstitial nephritis and general arterial capillary fibrosis, cough caused by a similar congestion almost invariably results at one period or another of the initial disturbance; if the liver and spleen become hard, contracted, and dense, owing to increase in their connective-tissue formation, a frequent sequela is cough brought on in the manner referred to. The venous flow through these viscera is obstructed, there is damming back through the venæ cavæ and the right heart; this organ loses its compensatory power; the pharyngeal, laryngeal, and bronchial mucous membranes become relaxed, swollen, congested, or inflamed; and cough, expectoration, hoarseness, slight dysphagia, dyspnœa, and localized fulness, pain, or oppression are not very unusual consequences.

Having shown, as I trust, in a conclusive manner, the mode of origin and development of certain forms of congestive throat affections constantly met with, how should we treat them? Perhaps the best way of answering this question, at least partially, is by narrating the history of a patient who came to consult me two years ago. He was a distinguished brother physician of New York. He was, evidently, and from the statement he made me, run down in health and strength by overwork. For six weeks or more he had been suffering from an obstinate distressing cough, from which he sought relief at the hands of a skilful specialist in throat affections. Astringent applications of different kinds, together with the best sprays and powders were almost daily employed, according to the most approved methods, and without affording him sensible relief. At last he became weary of the negative result accomplished, and came into my hands. I looked at his pale face with some solicitude, and after a few pointed questions which, how-

ever, brought back no conclusive answers, I examined his lungs and heart. The condition of the latter was not normal. I regret to say that I found in the second right intercostal space and carried down over the sternum a murmur replacing the second sound, and which I attributed without question to aortic regurgitation. Upon inspection of the pharynx it was notably relaxed, and over its surface were disseminated a considerable number of enlarged pinkish follicles, such as we find habitually in granular pharyngitis. The larynx was not affected notably in its entire superficies. The vocal cords, however, were considerably congested, lacking healthy tonicity during phonation, and separated at intervals by a deposit of gray viscid mucus, which elsewhere was also more or less present. This patient informed me, as I have stated, that he had been treated systematically during many weeks, by means of astringents locally applied, but they had not produced appreciable good effects, and his cough continued as at the beginning of his ailment. Under these circumstances I assumed that his pharyngeal and laryngeal congestion was in part due to weakened heart power, and that, in order to rid my patient of cough, it was essential to give attention to this condition. The indication was evidently to stimulate cardiac contractility, and thus do away with the secondary stagnation in the vessels of the respiratory mucous lining thus occasioned. Thereupon I gave internally a combination of a few well-known heart-tonics, such as belladonna, strychnine, and digitalis in very small doses, repeated every three or four hours. The good effects of this treatment were rapid and remarkable. In two days the cough had notably lessened, and the pharynx and larynx were of somewhat healthier coloration. In one week's time my patient was cured, in so far as any rational symptoms of irritation were concerned. The cough had completely disappeared, and with it the other symptoms which previously existed.

The foregoing case shows clearly in what direction we should seek for aids to help us ameliorate certain congestive throat conditions. At times detergent sprays or the frequent applications of local astringents of different kinds

will not help us in any evident degree. The patient will continue to cough and have more or less fulness and other annoying sensations in the regions of the pharynx and larynx. If to the above local means we add the use of one or other of the usual soothing, stimulating, or anodyne cough mixtures, we may or may not have a somewhat beneficial result. But in the cases under consideration even these will, one or all, remain inactive at times. We may then try change of climate, and in this way perhaps attain rather better results than one could hope to reach merely by employing the drugs of the class just referred to. It is, however, to the heart-regulators, the cardiac tonics, that we should in reality turn with best hopes of marked improvement or entire relief. As I have already stated, the heart may be incompetent in many ways.

1. Its muscular force may be directly impaired by advancing degenerative changes.

2. Its orifices, or valves, may be the seat of sclerotic alterations which prevent the proper closure of the intercommunicating channel between two cardiac cavities just at the moment when, normally, it ought to be perfect, and thus intra-cardiac tension is increased, which leads directly, by damming back of the venous circulation, to those congestive conditions which are obviously the determining cause of cough and expectoration.

3. The rhythmic control of cardiac action may be interfered with by lesions affecting the pneumogastrics, the grand sympathetic, the intra-cardiac ganglia themselves. Thus, imprudences in eating and drinking, physical strain, venereal excesses, study, and late hours, or finally nervous disorders, like chorea and Graves' disease, may be the *fons et origo* of the throat disorder. From all this proceed certain indications of treatment which can be readily appreciated. Let your patient thus affected enjoy relative and prolonged rest—rest for his central organ of circulation, rest for his throat, which has been injured by a fatigue which a properly understood pathological physiology shows he cannot endure.

4. Make use of cardiac and even respiratory tonics in

small doses, frequently, and, if necessary, long time continued. Nux vomica, or strychnine combined with belladonna, and digitalis are effective. And to these may be added the ammoniacal salts, and especially the carbonate, the direct action of which on the nerve centres of respiration no one can, with our actual knowledge, pretend to deny. In certain exceptional instances it has appeared to me that the wine of coca has had a good tonic effect upon the heart and respiratory mucous membrane. Never, however, has it done the work as well as those drugs I have just mentioned.

5. If the nerves which help to control heart action, and which, at the same time, distribute themselves to the pharynx and larynx, are involved, the healthy balance of their influence is restored more effectually when we make use of mono-bromide of camphor, of the bromide salts of sodium, potassium, and ammonium. In a word, holding the key-note of a complicated situation, we must make search in our therapeutical armamentarium of such means as will most surely reply to the manifest indications. To any one who has not had his practice directed in the way we have traced, the results obtained by the method advocated will prove, I am sure, very satisfactory. It will not interfere with the adoption of usual methods of treatment, if they are found to assist patients in their march toward recovery. It will surely render the course of congestive throat disorders in the majority of instances alluded to less protracted and more satisfactory.

My excuse for directing the attention of the members of this Association to the subject-matter of this brief contribution lies in the statement that in the classical text-books on throat diseases of our day it is almost wholly ignored.

*Discussion on Dr. Robinson's paper.**

Dr. E. L. SHURLEY considered the paper an admirable presentation of the subject. Such cases are continually presenting themselves to those who are more or less engaged in general practice. He had in such cases been obliged to abandon local treatment and rely upon tincture of iron and digitalis; he had not given nux

vomica, as a rule. Where constipation exists the treatment must be supplemented with laxatives, or saline waters.

It is very important that specialists should keep in mind the general condition of patients. There is a danger of paying too much attention to the condition of one organ, and not enough to the general condition upon which the disease may depend. The subject considered in the paper is a very important and interesting one, and he was glad that it had been brought to the notice of the Association in this way.

Dr. SEILER said that the subject certainly is a most interesting one, and especially from the point taken by the preceding speaker, who insists upon the importance of analyzing the condition of the whole organism, in order to ascertain other causes of disease in cases of disorder of special organs. Specialists are apt to rely too much upon their instruments of precision, and to neglect general diagnosis. He recalled a case of a young girl whom he had presented before his class at the University of Pennsylvania. She complained of irritation of the pharynx and larynx. Nothing was detected upon examination, and the disorder was referred to some remote cause, possibly uterine. Upon inquiry it was found that she had dysmenorrhœa and leucorrhœa, and other symptoms of lowered vitality. She was informed that she needed uterine treatment, and she was sent to the gynecologist. He afterward was told by the patient that if she had known that he could look all the way down to her womb, she would not have permitted him to put the mirror in her mouth at all.

Dr. DALY endorsed very fully the observations of the lecturer, and had verified his conclusions by similar examples in his own experience. As a method of general treatment for such cases, he was in the habit of making use of a combination that may seem at first a little incompatible; it is *nux vomica* with Fowler's solution and fluid extract of ergot, which he had found to be one of the best tonics to the heart's action, and the muscular coat of the blood-vessels. He would have been pleased had the lecturer extended his remarks so as to include those cases of so-called catarrh which are so universally dependent upon dyspeptic disorder. His own observation warranted the statement that a large proportion of so-called naso-pharyngeal catarrhs are dependent upon disorders of the stomach; he had frequently noticed that when the patients have their digestion in good order their throat symptoms are much better, and the throat is worse when the digestion is poor.

A paper on "Pharyngeal irritation," by HARRISON ALLEN, M.D., of Philadelphia, was read by the Secretary.

Paper of Dr. Allen.

THE study of pharyngeal irritation can not be disassociated from that of the mechanism of the pharynx. It is not proposed in this paper to analyze the complicated coördinations seen in these different movements, but to confine attention to the special points which, in the judgment of the writer, are in one way or another related to the causation of symptoms; and to the methods which have proved in his hands useful in the examination and treatment of the diseases of the pharynx.

The subject arranges itself conveniently under three heads:

The naso-pharynx.

The oro-pharynx.

The laryngo-pharynx.

In the *naso-pharynx* we have no evidence of what takes place during pharyngeal movements beyond what is seen by inspection through the nose, or in those exceptional cases where the structures may be seen through an abnormal opening. In individuals having capacious nasal chambers, the elevation of the velum and rapid adduction of the curtain-like salpingo-palatal folds can with ease be detected.

The strength of the elevators of the palate lying within these folds can in this way be estimated. In one case, which the writer saw, through the courtesy of Dr. J. Solis Cohen, the inability on the part of the patient to adduct the salpingo-palatal folds was very striking. The case was one of locomotor ataxia, complicated with progressive difficulty of speech.

In the act of deglutition any growths that may be pendent from the roof of the pharynx can be detected upon inspection from in front, by the brilliant reflections of light on their surfaces changing their positions during the elevation of the velum in the act of deglutition. In this way hypertrophy of these glandular masses can be diagnosed without the use of the rhinoscope.

The ordinary inspection of the *oro-pharynx* when the tongue is depressed, reveals the posterior wall of the pharynx from about the level of the tubercle of the axis to a line answering to the lower border of the tonsil. If the parts be at all irritable, the first evidence of resistance to pressure on the tongue is the adduction of the palato-pharyngeal folds, and the elevation of the velum, together with the approximation of the posterior edge of the last-named structure against the posterior wall of the pharynx and the eminence answering to the body of the axis. This position of the parts will remain but for a moment under observation, for gagging will at once occur and nothing further can be seen. It is sufficient, however, in very many instances to bring into view an adventitious fold lying to the median side of each of the palato-pharyngeal folds, as well as some engorged follicles on the posterior wall, at the eminence on the body of the axis. Even should these conditions not appear, a state of chronic congestion or hypertrophy of these parts may be seen.

In the throats of individuals of spare habit, with an inclination to pharyngitis sicca, the posterior pharyngeal wall presents in the median line a few inconspicuous follicles, which are often covered, even in health, with a delicate, cobweb-like layer of mucus. On either side of these, extending laterally to the palato-pharyngeal folds, is a smooth, pearly mucous membrane marked by a few enlarged veins, the whole closely resembling the mucous lining of the alveolar groove. It is loosely connected to the osseous structures beneath, and from this circumstance the palato-pharyngeal fold is enabled to move with ease forward toward the median line. The abundant glairy connective tissue behind these spaces accounts for the extreme ease with which they become infiltrated in inflammatory processes, and for the appearances of the adventitious bands or chemotic folds already described.

In many cases of pharyngeal irritation the naso-pharynx cannot be inspected by reason of the persistent elevation of the velum. The cause of this is, ordinarily, obstruction within the nasal chamber, which fact may be demonstrated as

follows: persons who have capacious throats, tractable, and free from discharge, will, after plugging the patulous nasal chamber, so elevate the velum as to make inspection of the naso-pharynx impossible so long as the plug remains in position. In like manner, individuals who are suffering with nasal obstruction, have—either as complication or coincidence—a tendency to contracture of the elevators of the soft palate, which will persist as long as the nasal difficulty itself remains. It is very evident that no amount of training by way of manipulation of the pharyngeal surfaces will make the parts tractable so long as the cause therefor remains unremoved.

When the palate is absolutely at rest and the mouth open, the space between the palato-pharyngeal folds is a symmetrical one, and from this state of rest up to the condition of utmost activity, namely: when the palato-pharyngeal folds are adducted and almost touching, and when the elevators of the palate have drawn the velum up to a dome shape, an exact symmetry is maintained between all the parts. Yet it would be unwise to infer that this condition is necessarily a normal one, for perfect symmetry often exists with paresis of the muscular structures and their not infrequent complications of pharyngitis sicca and atrophic catarrh.

But perhaps in the majority of cases reporting for symptoms referred to the pharynx, the bilateral structures of the velum are not symmetrical. Thus, while the parts are in a state of rest, one palato-pharyngeal fold may be nearly vertical and remain, as it were, in the semi-adducted condition, while its fellow of the opposite side will be oblique and held back to the lateral wall of the pharynx. This asymmetry may perhaps be best expressed by describing the shapes of the intervals between the sides of the uvula and the median borders of the palato-pharyngeal folds. Instead of their being a pair of isosceles triangles, the bases of which are formed by the plane of the dorsum of the tongue, the space on one side will have the shape of a right-angled triangle, while that of the opposite or normal side has the shape of an isosceles triangle.

The cause of this asymmetry may be traced to two opposed conditions, viz.: to contracture, that is, over-activity of the palato-glossal muscles of one side, the other remaining normal; or, secondly, to the presence of some extraneous cause, such, for example, as an engorged tonsil pushing the fold inward toward the median line and compelling it to assume a vertical position.

In yet another variety of asymmetry paresis exists. This may be confined to a single fold, which makes it impossible for perfect adduction to be effected. In the act of gagging, therefore, while the normal fold appears near the median line and assumes a vertical position, the fold of the affected side remains in an oblique position, and is imperfectly, if at all, adducted. Two cases have come under the writer's notice in which the last-named appearance was very conspicuous, palsy of the face and the pharynx having occurred from the presence of a syphilitic tumor within the brain. The last-mentioned is a much rarer form of asymmetry than the one mentioned in the preceding paragraph.

In the paresis of the velum, occurring as a sequel to diphtheria, both sides of the pharynx appear to be affected. In every case seen by the writer all the structures of the palate remained in a condition of rest, that is to say, in a condition in which the palate is drawn in anatomical works, the models for which have been the cadaver. The parts, it is true, are symmetrical, but it is the symmetry of an ineffective mechanism. In cases of diphtheritic paresis, therefore, as well, indeed, as in the throats of individuals who are the subjects of atrophic catarrh and pharyngitis sicca, we have the palato-glossal folds relaxed and drawn to the sides of the pharynx, the tonsils partially revealed and foreshortened, and the palato-glossal folds thin, pale, and almost analgesic. When the finger is placed upon the anterior velal surfaces and pushed downward and backward into the pharynx, it does not appreciate the characteristic sub-rounded edge of the velum in health, but the continuity of one structure with another is almost indistinguishable by the sense of touch.

In some persons the asymmetry appears to depend on a general want of tonicity in all the structures entering into the side of the pharynx. In such cases, while the palatopharyngeal fold of the affected side assumes the perpendicular position, it is evident that it does so not from overactivity, but from diminished activity in the part. If with this condition there exists an infratonsillar gland, which, being carried inward with all the other structures, rests against the side of the root of the tongue, persistent irritation of this spot, and through it of the entire pharynx, will ensue, precisely as though a foreign body of equal size were resting there. The writer has succeeded in relieving the most persistent irritation by removing this small but offending growth; a little operation which necessarily, nevertheless, must be only a part of the treatment, if it be accepted that the underlying cause is a want of proper muscular tone in the pharynx.

When pharyngeal irritation is excessive, and yet no cause is apparent as long as the parts are studied only in a state of rest, the tongue-depressor may be used, with the intention not only of depressing the tongue, but of causing the act of gagging. It is true that the view obtained is only momentary, but it is often exceedingly instructive. Adventitious folds, which are invisible when the palate is at rest, now appear to the median edge of the contracted palatopharyngeal folds, at the same time that the tonsils, though apparently not serving as a source of irritation when viewed by simple oral inspection, are now evidently enough hypertrophied as well as dragged back and adducted, as in the completion of the act just described.

On the whole, the sources of irritation are more numerous in the *laryngo-pharynx* than elsewhere, as the general sensibility of the surfaces is of a higher grade. A more careful inspection also is often required to detect them. Perhaps the most frequent excitant is hypertrophy of the adenoid tissue at the root of the tongue, and the writer has in more than one instance had good reason to suspect that these glands had undergone tubercular degeneration, and by their pressure against the epiglottis had excited the "hacking" so often heard in the first stage of tubercular disease.

Discussion on Dr. Allen's paper.

Dr. BOSWORTH said that he could not help thinking that Dr. Allen is wrong in considering obstruction of the nares as a source of irritation and retraction of the levator palati muscles. He could not recall a single case of nasal polypus in which he had been unable to obtain a satisfactory view with a rhinoscopic mirror. As it is, he insists upon the value of examination of the parts with the mirror. Certainly if a foreign body is introduced into the nose, it will at once excite an irritability of the levator muscles of the palate, but where it has existed for some time this irritability does not continue. He thought that the difficulty really existed in telling the patients to drop the palate; for if you tell patients to do something they do not know how to do, they are apt to do what you do not wish to have done. His rule is to tell them to do absolutely nothing, simply to keep quiet, while he makes the examination. As regards want of symmetry in muscular action, his experience had been that the muscles were moved symmetrically.

Dr. INGALS suggested that in cases where it is desired to examine both the larynx and nares, it is better to make the rhinoscopic examination first, as it is more difficult when left until later.

Dr. DALY said that we naturally prefer the method that we are most accustomed to. He was himself in the habit, when examining the posterior nares, of telling the patient to open his mouth, keep his tongue in, and breathe out through the nostrils. Very often it is a physical impossibility to breathe through the nose with the mouth open, but the effort should be made, and in a great many cases the rhinoscopist will succeed in getting a good view. He tells his patient to think of something else, and breathe through his nose; and in his efforts to breathe through his nostrils we can get a momentary view of the posterior nares, which is sufficient. Without this procedure he did not think that he would have been so successful as he had been.

Dr. RUMBOLD asks his patients to pronounce "ing" or "ungg" slowly, but without making great effort; for the effort to do so would raise the tongue; this makes them drop the soft palate. Telling the patient to drop the palate, generally ends in his raising the palate.

The PRESIDENT presented a case of spastic aphonia in a man of about 40 years of age, which was examined by the Fellows.

Case of Aphonia Spastica.

Dr. KNIGHT said that the patient exhibited a rare condition,—one to which his attention had first been called by Schnitzler's paper in 1875. The case that had come under his observation corresponded with the morbid condition present in Schnitzler's case. Since the publication of the latter, cases have been recorded also by Mackenzie, Scheff, and Prosser James. The condition known as stammering of the vocal cords is an analogous one, and may be included under the same heading. The patient was brought in, as he thought that all the Fellows who have not seen such cases would be glad to examine him. It is, as stated by Schnitzler, very different from a simple case of aphonia; it seems to be a spasm of the tensors of the vocal cords, and also of the respiratory muscles. The patient presents the appearance of one speaking during violent expiratory effort, as during the act of defæcation or parturition. The prognosis and treatment will be considered after the examination has been finished.

The affection came on comparatively suddenly, less than a year ago. There is one peculiarity in this case, making it different from those of Schnitzler, Fritsche, or others: it is that there is no symptom of spasm in the larynx during the examination; it is only during speaking that the difficulty comes on that would render any change in the larynx observable. A short time since he had noticed a slight swelling in the ventricular bands, but he had failed to detect anything like spasmodic action of the vocal cords. The disorder has been compared with writer's cramp or fiddler's cramp, as the spasm only appears during expiratory effort.

The prognosis is generally considered as unfavorable, but in a few well-marked cases that have been reported there has been improvement, but the majority have proved incurable. The only treatment that seemed efficient in those cases where improvement did take place, was by galvanism, by the plan of central application by the spine and brain especially. The Fellows were invited to suggest any other form of treatment besides electricity with tonics, such as strychnia, etc. In the case exhibited the treatment had not yet been fairly begun.

Dr. LANGMAID said with regard to the frequency of the condition and unfavorable prognosis, that there are altogether some

ten or twelve cases reported. He had himself a similar case, and had made an effort to get him to be present to-day, but was unable to find him. The records of this case had not been printed. He had known the case socially for many years. From examination one would say that the prognosis in this case was not unfavorable; but the disorder caused the patient much embarrassment; so much so that he was accustomed to fortify himself with large doses of whiskey before going into company, he being very fond of society; this enabled him to talk better, but injured his reputation, as he was supposed to be a drinker, although it was not taken from choice. About a year ago the patient came to this office, though for a different trouble. He then had severe pains in the legs, requiring the subcutaneous injection of morphia for its relief. Upon inquiry it was inferred that some form of spinal degeneration was present, but he gave no further account. It is possible that even after this long time this nervous affection, which originally caused the laryngeal disorder, may have shown itself in some other way.

Dr. ELSBERG recommended in addition to the electrical treatment, systematic exercises for the larynx; vocal gymnastics have been found most important aids in those cases where no good has been done by electricity alone. Inspiratory phonation must be prevented and expiratory regulated. Patients must be taught to breathe properly first, and then to talk. It is very much the same method as in stammering and stuttering, by which phonatory spasm is sometimes allayed. Again, it has been observed that in coming out of the chloroform-narcosis, the patient has been able to talk more freely. In the cases of Hack and Scheff this was noticed.

These cases have excited marked interest, both diagnostic and therapeutic; treatment can do a great deal, except in those cases in which there is progressive degenerative trouble of the nervous system. It consists in attending to the general health, in tonics and stimulants, electricity, and systematic training, or respiratory vocal and phonatory gymnastics.

Dr. KNIGHT thanked the speakers for their suggestions, and said that Scheff recommends, at first, and as a preliminary treatment, a long rest of the voice; afterward systematic gymnastics, and electricity. He believes that the results by this treatment have not been very successful however.

A paper on "Catarrh of the antrum of Highmore, and its treatment," by WILLIAM H. DALY, M.D., of Pittsburgh, was read.

Paper of Dr. Daly.

IN presenting the following rather unusual cases to your attention, I may state, that in a somewhat busy practice in diseases of the upper air-passages and cavities, I have met with but three cases of this kind within the past four years; and although surgical text-books and works on nasal surgery mention the subject in a general way, and though dental literature occasionally treats of it from that standpoint, yet details of actual cases from the experience of the rhinoscopist are not at all frequent, whatever may have been their observations; and two of these cases having submitted to operative treatment, are reported with a hope that more light may be thrown upon the subject of not only the extensions of purulent catarrhal disease to the antrum of Highmore and its efficient treatment, but upon the more difficult problem of similar affections of the frontal sinus, the nasal ducts, and the ethmoidal cells. That any of these cavities may become the nidus of a purulent catarrhal disease which will persistently baffle all the ordinary modern methods of treating nasal catarrh, there can be no doubt in the mind of any one who has had experience with them; at least there will be exceptional cases, and it is just those exceptional cases that we are most ambitious to deal successfully with.

CASE I.—Mr. J. V. M., ætat. 51, unmarried, wt. 175 lbs., ht. 5 ft. 6 in. Always healthful, excepting slight ailments, till 2½ years ago, when he first noticed he had nasal catarrh

There was no history of syphilis either inherited or acquired.

His attention was first attracted by a pain about the left eye, of greater or lesser severity during two or three months. This pain subsided after a copious purulent discharge from the left nostril.

He was treated by a goodly number of skilful physicians in Pittsburgh for catarrh, with little abatement of the discharge, which continued copious, soiling from three to eight handkerchiefs in the day. His disposition, naturally pleasant and social, became morbid, and believing himself an unpleasant companion, he shunned his friends.

Considering his efforts to obtain relief in America to be fruitless, he went abroad. Hearing of the skill of Dr. Smyly, the eminent laryngologist of Dublin, he placed himself under his care. The doctor removed a polyp from the left nasal cavity, and treated the catarrhal disease of the nasal cavities for some weeks, with, however, but little abatement of the discharge, which was the chief, and, it may be said, the one annoying feature of the case.

Dr. Smyly advised his return to America, and that he should place himself in the care of some one near home familiar with diseases of the nasal cavities, and undergo patient effort to be cured.

From the history given by the patient there was evidently no suspicion as to the existence of disease of the antrum on the part of any of his medical advisers, and when he placed himself under my care in October, 1880, I found extensive catarrhal inflammation of both nasal cavities, which were narrow; the left one extremely so, with the walls in contact, excepting a fissure immediately above the floor of the nostril, which would admit a No. 10 sound.

I am free to say that I, also, from the nature of the case, did not at first suspect disease of the antrum, having up to that time had no experience whatever with a case of purulent antral disease, and as the patient complained of fugitive neuralgic pains and some rheumatism, I was wont to attribute the early history of pain about the left eye to orbital neuralgia. However, after three months' most obstinate efforts on the part of both myself and patient, I determined that a large part of the discharge came from the left antrum of Highmore.

I was led to this conclusion by the patient telling me that latterly, when lying on his right side, an occasional free flow of muco-pus would come into his throat, but no pain existed in the region of the antrum.

The second bicuspid tooth was extracted, and by means of a drill the antral cavity was easily entered.

In order to verify the diagnosis, the nasal cavities were thoroughly washed out; then this nozzle, attached to a common Davidson syringe, was placed in the opening in the jaw, and a simple alkaline fluid forced in. This was attended immediately by a copious flow of thickish, rather offensive mucus from the antrum, through its orifice, into the nasal cavity. This was daily thereafter observed by means of the nasal speculum.

There was, however, a persistent discharge, small in quantity, evidently from the frontal sinus. This cavity I proposed to trephine, but not being able to assure the patient of the entire safety of the procedure, the interference was declined.

After two more months of treatment with the use of slightly stimulating and astringent injections, by means of the syringe introduced through the opening in the jaw, the discharge was diminished about $\frac{4}{5}$, when the patient felt he had somewhat recovered from melancholia and suicidal tendencies, and his youthful feelings being measurably restored, he embarked on the sea of matrimony, feeling at last that he had become, to a reasonable extent, companionable at the age of 52 years.

That this case was fully cured I am unable to say, but that the disease of the antrum was cured there can scarcely be a doubt. Nothing short of a similar treatment of the frontal sinus would secure entire relief of the discharge from that cavity.

The opening in the jawbone was fitted with a silver canula fastened to the teeth, into which was inserted the nozzle of the syringe, and by first washing out the nasal cavities the amount of muco-pus driven out of the antrum by the cleansing fluid could easily be estimated from time to time.

Comment on Case 1.

It may be wondered at that the disease of the antrum had escaped the scrutiny of so many medical men, and in fact only hit upon after I had exhausted much effort at relief; but very narrow nostrils prevented free inspection, and the long absence of pain in the antrum may account for, or rather excuse, what might otherwise pass current for either carelessness in diagnosis or lack of skill.

CASE 2 was a young attorney, G. D. L., from a neighboring county, who was referred to me by a former patient, Feb. 16, 1880. Our first interview was brief, as I declined to guarantee a cure, or to refer him to any patients whom I had cured, or, in fact, make any terms whatever, except that he submit himself to my care unconditionally. He sought other advice and care.

However, eight months afterward he again presented himself, asking for no conditions, save that I do the best I could for him.

He was aged 25 years ; wt. 182 lbs., ht. 6 ft. ; and excepting nasal catarrh had always been healthful. There was no history of syphilis. He was altogether a splendid specimen of vigor in appearance. He had been the patient of many "doctors," none, however, eligible for association with respectable medical men ; so far as I know their names are not borne on the rolls of any medical body of men. According to his own statement, he had had naso-pharyngeal catarrh for four years. Rhinoscopic inspection as recorded and taken from my note-book states :

"He has now a cartilaginous and osseous tumor growing from the left side of the nasal septum, opposite the inferior nasal fossa, one inch long antero-posteriorly, and projecting quite across the nasal cavity. The normal size of this cavity is capacious and ample.

"He has also an erectile hyperplasia springing from the anterior end of the lower turbinated bone of the right nostril, as large as a hickory nut, and blocking up the entire nasal cavity. There is a copious discharge of muco-pus from both nostrils, that from the right one being *extremely* offensive and of a burnt chestnut odor that is at once both sickening and most permanent, fixing its peculiar odor on instruments for 24 hours, even after the application of disinfectants to them. I have frequently recognized the disgusting odor of this patient in my office 14 hours after my professional interview with him, and after being thoroughly aired and disinfected.

"The pharynx and larynx are much congested and highly irritable, especially the faucial portion of the pharynx.

"The V C are intensely red, but of powerful construction."

The nasal obstruction together with the copious offensive discharge had rendered the patient unhappy, and he felt sensibly that he was disgusting to his friends, and though fond of society, was impelled to deny himself its pleasures and remain alone, owing to his infirmity.

The erectile growth was removed from the right nostril by means of the snare, and the osseous growth from the left nostril by means of biting forceps, when it was discovered, that the lower turbinated bone of the right nostril was necrosed. This was entirely cleared out, and the parts treated by cleansing and disinfecting applications carefully applied daily.

The discharge soon diminished in the left nostril, but not so with the other, which kept up both in quantity and offensiveness.

My patient had expressed the opinion at our first interview that catarrh *could not be cured*, and while he had since, to some extent, changed his opinion, he was again repossessing himself of his first views on the matter, and, becoming somewhat discouraged, expressed himself in lawyer-like fashion, as to the soundness of his originally expressed belief.

Without having any fixed symptoms referable to the antrum to base an opinion upon, I, notwithstanding, arrived at the conclusion that the offensive discharge came from that cavity.

The patient possessed a fine set of teeth, of which he was very proud, and hesitated to allow me to enter the antrum by drawing one, unless I could assure him that I would be successful in reaching the seat of the disease.

The operation was, however, finally assented to, and taking out the second molar, the antrum was entered through the cavity of its palatine fang by means of a drill.

Upon introducing a probe into the antrum through the opening, and withdrawing it, I soon detected the odor upon it, with which I had already become only too familiar. Now with the syringe loaded with diluted Dobell's solution, and first washing out the nares, I drove out through the nasal opening about three drachms of most offensive muco-pus. In fact, the odor of this fluid exceeded any that had been evacuated, and even sickened the patient to the utmost degree.

The injections used in this case were a ten-gr. solution of potassium permanganate, followed with the fluid extract of *pinus Canadensis* and the compound solution of iodine alternately.

In two weeks the discharge had diminished $\frac{1}{2}$, and had lost its offensive odor.

In a letter dated May 10, 1882, this patient says in reply to the question as to his condition at this time: "There is no discharge whatever, and my throat and nasal passages are as clear and healthy as any man could wish. I still wear the gold tube in the jaw bone which was inserted in accordance with your advice, but there is no discharge through it, and nothing offensive in odor from the cavity of the bone. *I am perfectly well.*"

Comments on Case 2.

The origin and history of this case up to the time I saw it first are similar to the many that have been subjected to

heedless and aimless treatment on the part of patients themselves, who, believing they have catarrh, resort to the innumerable snuffs and douches advertised, and a knowledge of the pathology of the given case is never sought. The word catarrh carries to their minds all that is desired to be known. And the vaunting advertisement of the mountebank tells them to apply this snuff or that douche to their ailment and be cured. They do it and are disappointed. The educated medical man has been largely responsible for this state of affairs, as formerly he neither endeavored to familiarize himself with the consequent pathology of catarrhal diseases nor treat them rationally. Nor was he always convinced that his professional brother, who had spent much time and labor in familiarizing himself with this special branch of work, to the exclusion of other no less useful branches, could better handle such cases than himself.

It is, however, a good omen, that of late years the most advanced medical men have believed that patients suffering from catarrhal diseases are entitled to more thorough investigation and treatment than is covered by the assurance that it is only trivial and that a little snuff or a gargle will suffice, without any inspection or care as to what is the actual local condition, or what the extent of inconvenience to the patient, or what the danger to the important special senses of hearing, sight, and smell, not to speak of the possible impairment of that most divine of all the attributes of humanity—the voice and articulate speech.

*Discussion on Dr. Daly's Paper.**

Dr. E. L. SHURLEY said that he had two cases under his care, one operated upon, the other not yet, and that he had therefore been much interested in Dr. Daly's paper. His experience corresponded with that of Dr. Daly, except with regard to the offensive odor. His first case was that of a young man, a bank clerk, in which there was no such bad-smelling discharge. He was led to suspect that it was antral, from the fact that the discharge would come on at a particular time of the day, about ten o'clock, and at the time of going to bed he expectorated con-

siderable pus, but no more until ten o'clock the next morning. There was no odor, probably because there was no obstruction and no retention particularly. Being quite sure of the nature of the difficulty he recommended operation, but the patient objected seriously to having the jaw-bone opened. He afterward went to Philadelphia and saw Dr. Garrettson, who urged having a tooth pulled, but the young man hesitated, as he always had had good teeth; none of them were plugged or decayed. At all events he had the tooth pulled, but after three weeks, there being no change, he decided to have the antrum opened. It was accordingly opened in the canine fossa with the dentist's drill, but no pus flowed; subsequently, he perforated the alveolar fossa, but still there was no discharge. In about twenty-four hours, however, clear pus came through the opening. Making use of the canula attached to Dr. H. Allen's nasal syringe, he used by injection a great variety of remedies to stop the discharge. He regarded the case as simply one of chronic inflammation and thickening of the lining membrane of the antrum. He could not see how a tooth could have caused it, but perhaps it is better to submit to Dr. Garrettson's judgment, as he is a skilful dentist. There is no great variety of applications necessary after opening the antrum; he had found nothing to answer as well as a solution of chlorate of potassa (a teaspoonful to a pint of warm water), used twice a day. In this case the whole family was inclined to be hypochondriacal, and the patient was decidedly so. He hoped that when the discharge ceased this would also pass away. Whether or not it has any connection with the local disease he could not say.

The other case first came to his office about four weeks before, with a catarrh of three years' standing, with involvement of the antrum. Perforation was advised, and he still has it under consideration.

There are two points of interest in connection with this condition: first, the paucity of the literature; and, secondly, the method of origin. It may arise from extension of inflammation from the air-passages along the lining membrane, or as a distinct affection, perhaps, from defective teeth. Finally, the character of the discharge may be offensive or not. Whenever, in the future, he should find the discharge offensive, he would always suspect antral disease, either as a complication or as an independent affection.

Dr. CARL SEILER reported the following case : A gentleman, a merchant, with extremely narrow nostrils filled with polypi, had them removed, and the pedicles destroyed ; but still there was considerable discharge of a thin fluid, apparently coming from the middle meatus, which he found impossible to check : this suggested antral disease. The only symptom, however, was the persistent discharge of pus, continuing for a year after the polypi had been removed, but the flow is not sufficient in the mind of the patient to warrant an operation. Probably it may be done after awhile.

Discussion on the "Nature and forms of laryngeal ulcer, especially the so-called catarrhal ulcer," opened by CARL SEILER, M.D., of Philadelphia.

Mr. President.—I was notified but a very short time ago, that the opening of the discussion on laryngeal ulcers had been allotted to me, and I have not had the time to prepare a paper on the subject, such as I would have liked to have presented to the Society. All I could do was to collect a few points in regard to laryngeal ulcers, which I trust will be sufficient to start a discussion on this interesting and important subject.

All laryngeal ulcers may be divided into two classes, viz. : superficial and deep.

At the points where the laryngeal mucous membrane is exposed to a great deal of friction, we often notice abrasions of the epithelium, occasionally covered with a pus-like secretion, which heal readily and leave no scar or cicatrix. These, like similar abrasions on the mucous membrane of the mouth of the uterus, are by many denoted as ulcers, and according to the French authors, they arise from the suppuration of the follicles of the larynx, and are termed by them "erosion glandulaire." These erosions do not, however, penetrate below the epithelial layer, and are, in the opinion of many authorities, not to be considered as ulcers.

In the same situations we find occasionally, in cases of chronic catarrhal laryngitis, small round or lenticular ulcers, which are deeper than the erosions, and are covered, as a rule, with whitish pus. Their edges are not raised above the level of the mucous membrane, and they also heal without leaving a visible scar. These are the so-called catarrhal ulcerations. All other ulcerations are dependent upon a specific poison in the system, except those produced by traumatism.

In syphilitic laryngitis we find that two kinds of ulcerations appear: the shallow, which resemble the catarrhal ulcer, but differ from it by the facts, that they are surrounded by an areola of intense inflammation; that their edges are raised above the level of the mucous membrane; that they are always symmetrical; and that on healing they leave cicatrices. The deep variety of syphilitic ulcer is crater-like, penetrating deeply into the tissue, and on healing leaves cicatrices which possess an extraordinary degree of contractile force, thus giving rise to great deformity. They are, in my opinion, always due to the breaking down of gummata in the mucous membrane. Both the shallow and the deep syphilitic ulcerations develop very rapidly. The characteristic feature of the phthisical ulcer is that its edges are on a level with the surrounding mucous membrane, which, close up to the ulcer, is of a pale ashy gray color; the pus covering the ulcer is grayish-white, and usually very tenacious; and it is usually seen on the side of the larynx corresponding to that on which the greater amount of lung implication is noticed. The phthisical ulceration develops slowly, does not usually destroy much tissue, and when it heals leaves a but slightly contractile cicatrix. It is always due to a breaking down of cheesy deposits in the mucous membrane.

The ulcerations of lupus are very similar to those of syphilis, so that it is often extremely difficult to make a differential diagnosis.

The ulcerations of carcinoma, epithelioma, and leprosy are not particularly characteristic in themselves, and can be distinguished from other ulcerations chiefly by the distinctive features of the disease giving rise to them.

Dr. BOSWORTH said that there was very little in what had just been said that he could fully endorse. The first difficulty is with regard to a definite understanding as to what ulceration is. He insisted that a correct use of terms would require that in order to have ulceration or ulcerative process, there must be progressive waste of tissue. In the first place he did not believe that in a so-called catarrhal ulcer there is progressive waste of tissue, *i.e.*, that a catarrhal ulcer does exist. In chronic catarrhal laryngitis, we see some irregularity of the tissues about the vocal cords, and what seem to be erosions; there may be indeed some superficial destruction of tissue, but not true ulceration. He could not satisfy himself therefore that the catarrhal ulcer exists until it is demonstrated better than it has been. But leaving this out,

we have no form of ulceration that is not due to specific poison : tuberculous, syphilitic, cancerous, or lupoid. Now, when we come to an undoubted case of ulceration process, we find characteristics that can be recognized as belonging to one of these groups, in all non-traumatic cases.

In the next place, Dr. Seiler speaks of a superficial and deep ulcer. Undoubtedly this does exist in syphilis ; the first in the mucous patch, and the second in the well-known syphilitic ulcer. He agreed with Dr. Seiler in his opinions with regard to the gummatous infiltration. It is usually symmetrical in the larynx, generally because the patch inoculates the other side. That the ulceration of phthisis is likewise symmetrical he could not affirm ; he had never seen it so. He regards the syphilitic ulcer as the only one coming under our observation that secretes true pus ; in other forms we have pus only if they are irritated.

There is one form of ulceration of phthisis that comes under our observation, which, whether coming on the tongue, pharynx, or larynx, is an unmistakable phthisical ulcer. It has no areola, and no depressed red edges ; but it has an appearance that La Bouillière compares to "cut bacon"; it looks like picked meal—meal that the chickens have been picking at. It was present in two cases of phthisical ulceration which came under his observation. He had not met with the difficulties referred to in diagnosis, and thought that these cases of phthisical ulceration can be recognized by unmistakable signs.

In concluding, he insisted upon the importance of understanding what ulceration is, that it is a necrosis of tissue, a solution of continuity with progressive waste. We should drop this confusion of terms by a comparison of catarrhal process which is not an ulcer and should not be called an ulcer.

Dr. JARVIS agreed with the last speaker, and said that his experience with regard to ulceration was largely that which had just been reported. He was surprised to learn of the diagnostic points of the so-called catarrhal ulcer. He recalled a case which presented what was said to be catarrhal ulcers of the cartilaginous septum, but which he pronounced perforation, and referred the case to Dr. Bosworth, who agreed with him that the best way to dispose of it was to remove the ulceration with the cartilage. The result was that the wound healed up rapidly, there was no dyscrasia, and the ulcer did not return. Now, if this had been true ulceration, as it had been described, the speaker was quite

satisfied that the progressive ulcerative process would not have ceased with the removal of the ulcer, but would have gone on to a much worse condition. On the other hand, he is very careful with regard to operating upon syphilitic ulceration, as it is liable to invite extension of the disease. Under such circumstances an operation is not justifiable.

There is another form of progressive waste of tissue, due not so much to alteration of the tone of the nervous system as to the effect of perverted secretions in the buccal cavity. In these cases we have perhaps a sharp tooth lacerating the mucous membrane, or it may be an ulcer produced by acrid secretions in the mouth. It is also desirable to recognize the existence of so-called spongy gums which, in his experience, had been demonstrated to be ulceration, non-phthisical and non-syphilitic in character: non-syphilitic because the diagnosis, as stated by Dr. Bosworth, of syphilitic ulceration, is very simple, especially from the red areola; and non-phthisical for obvious reasons. The form of ulceration referred to has been pointed out by dentists to be due to perverted secretion, butyric-acid formation in the mouth, caused solely by the acrid character of the fluids. This ulceration of the gums is certainly progressive, but he had been unable to obtain any history of specific constitutional taint to account for its progressive character.

Dr. ASCH remarked that it would have rendered discussion easier if the lecturer had defined what he meant by a "catarrhal" ulcer. He confessed that for his own part he did not understand the term, as he had not seen any such form of ulcer in his experience. Any ulcer, whether deep or not, is due to constitutional cause, *i. e.*, phthisis, syphilis, or scrofula; and in other cases, where there is no specific systemic taint, there is a lowering of the vitality. In treating the latter form the condition of the general system must be improved before healing the ulcer. He fully endorsed the remarks of Dr. Bosworth as regards the specific characters of ulceration.

In reply to a question from Dr. Elsberg, he said that the ulcer referred to by the lecturer probably was the form due to lowered vitality, but it is not due directly to the catarrh.

Dr. BEVERLEY ROBINSON said that he did not consider the question as of very great importance; at the same time, he had occasionally seen on the laryngeal mucous membrane some abrasions, lenticular in shape, to which the term ulceration could not properly be

applied, notwithstanding the fact that the loss of tissue seemed to go deeper than the epithelial coat, and extend slightly into the mucous membrane itself. Possibly we might term this abrasion—we could not, however, call it ulceration—of tissue, this condition of things, catarrhal, but on this point he was not completely satisfied himself, for this reason: when he noticed this abrasion of tissue he had not found conclusive evidence of catarrhal symptoms sufficient to produce any such condition. Possibly it would admit of the following explanation: he referred to what is commonly known as herpetic sore throat. In other words, follicles, which are pearly in appearance, filled with fluid more or less turbid, appear on the tonsils and pharynx. Sometimes these will open, and a little abrasion of tissue will be produced; upon this will form a deposit of membrane. This is well described in an article which is not perused as often as it should be; he referred to one contributed by Dr. Da Costa to the *American Journal of the Medical Sciences*, on “Membranous Sore Throat,” some years ago.

It is possible that this same process may occur in the throat; the follicles may form and burst, leaving an abraded surface not covered with membrane. It seemed that what has been termed catarrhal ulceration of the larynx might be due to this herpetic process, which may be too wet in this situation to be covered with membrane, and this makes a difficulty in finding the typical form of membranous sore throat. He thought that this lenticular ulceration or abrasion is not always a catarrhal condition, and possibly that in their mode of formation these ulcers are identical with those he had seen occurring on the tonsils in herpetic sore throat.

Dr. SEILER said that he felt that he certainly must define his position a little more clearly, especially with regard to differential diagnosis. First, in reply to Dr. Asch's question, as to what he meant by catarrhal ulceration, he could give it in few words: it is simply an ulceration attacking a mucous membrane and encircling the mucous epithelial structures extending even to the basement membrane. It is not the deep ulceration of the specific ulcer.

He accepted the explanation of Dr. Robinson as a very plausible one, that this is a form of herpetic ulceration without a false membrane giving the appearance of being covered with secretion.

With regard to the definition of Dr. Bosworth as to what constitutes an ulcer, he did not accept it as quite correct,—that it is simply a progressive destruction of tissue, for we may have ulcera-

tion which does not progress ; for instance, in old leg-ulcer, where it remains stationary for a long time.

Dr. BOSWORTH, interrupting, requested the privilege of saying one word. The lecturer had accepted Dr. Robinson's point. The illustration cited is one of granulation, but granulation is not necessarily ulceration.

Dr. SEILER replied that he was now answering the last speaker's point, and still insisted that ulceration need not always be progressive. But, to continue the discussion, there are, as already stated, several forms of ulceration of the larynx, and in some of these he had searched in vain for a specific cause. He still believed, notwithstanding Dr. Asch's explanation, that catarrhal ulceration is due to catarrhal inflammation ; he only said that the hypothesis of Dr. Robinson seemed to be a good one, but he would further say that in a condition in which lowering of the circulation of the mucous membrane occurs, with a general lowering of tone, the glands of the membrane may break down and ulceration ensue, which would be a local process. He could not say that in the larynx the secretion is truly pus, but he had seen them in the pharynx, as the result of catarrh, where he had found pus.

The session then adjourned.

Third day, morning session.

The following paper, by CLINTON WAGNER, M.D., of New York, was read by the Secretary in the absence of the author, and the specimen and drawings were presented by Dr. DELAVAN.

Dr. Wagner's Paper.

Mr. E., aged fifty-three, stated that in July, 1880, he first observed a slight hoarseness, which he attributed to a cold he had caught about that time.

During the following winter the hoarseness increased, and was accompanied by a short hacking cough, and a tickling sensation in the throat.

He first consulted me in Jan., 1881, at which time there was complete aphonia, unimpaired breathing, and the appearance of robust health.

A laryngoscopic examination revealed a large papilloma, covering the anterior third of the right vocal cord, overlapping its free border and involving the anterior commissure.

I could suggest no other treatment than the removal of the growth by evulsion with the forceps, but he declined to submit to the operation.

In Jan., 1882, one year later, he again consulted me. A remarkable change in his appearance had taken place. He was greatly emaciated, there was constant dyspnœa, with frequent attacks of glottic spasm, especially upon making the slightest physical exertion.

An examination with the mirror showed that the growth covered the entire right side, almost completely filling the box of the larynx, the only passage for air being a small space posteriorly.

I decided to attempt the removal by the forceps; they were introduced twice a week for three weeks, but it was found quite impossible to reach the mass of the growth, which was attached below the cords. Dr. Heitzman, to whom a portion of the fragments removed were referred for examination, reported the growth to be a "simple papilloma."

On Feb. 21st he was admitted into the Metropolitan Throat Hospital. On the same day tracheotomy and thyrotomy were performed. The thyroid cartilage was found to be ossified, and it became necessary to resort to Hay's saw to divide it.

While using the curette for separating the growth thoroughly from its attachments, I was struck with the apparently thickened and indurated condition of the mucous membrane covering the anterior surface of the right arytenoid cartilage, and feared that the nucleus of a recurrent growth might exist in that locality.

The patient reacted promptly from the effects of the operation; on the sixth day the canula was removed, and on the seventeenth day, the external wound having quite closed, he was discharged from the hospital in excellent condition.

About three weeks later, I observed on the anterior surface of the right arytenoid a grayish spot, which I thought was a recurrence of the growth, but which proved to be the cartilage protruding through its coverings. On his next visit he brought me the ossified arytenoid, and stated that he was suddenly seized with a violent fit of coughing, during which he had expelled it.

Remarks: The above case is unique and presents several interesting features. Before the expulsion of the arytenoid there was complete immobility of the right side of the larynx, probably from ankylosis of the crico-arytenoid ar-

tication. The place formerly filled by the cartilage now presents a flattened, sunken appearance—the right ventricular band seems to have fallen to the level of the left vocal cord, and supplies, in a great measure, the place of the lost right cord as shown by the returning voice.

True ossification has undoubtedly taken place in this case, and not mere calcification of portions of the cartilage, as a result of the perichondritis occurring in the course of ulcerative tubercular or syphilitic laryngitis. In this case there has been no destructive ulceration of the soft parts accompanying or preceding the process of ossification.

My curette probably produced a dislocation of the crico-arytenoid articulation, by which the separation and subsequent expulsion were hastened. I think we can infer that the remaining arytenoid is ossified, from the fact that the process involved the whole of the thyroid; but at present its condition cannot be ascertained by mere laryngoscopic examination.

The movements of the left arytenoid appear to be perfect and unimpaired, which is difficult to account for when we consider that the attachments of the arytenoideus muscle are necessarily destroyed on the opposing side.

The specimen presents all the distinctive anatomical features of the cartilaginous arytenoid, and the drawing by my friend, Dr. Delavan, accurately represents the appearance of the larynx when last seen.

Discussion on Dr. Wagner's Paper.

Dr. HOOPER inquired the reasons for performing laryngotomy?

Dr. LEFFERTS replied that it had been found to be impossible to remove the growth with the ordinary laryngeal forceps, as part of it was located below the vocal cords.

Dr. SEILER recalled a case of a young girl, seventeen years of age, in which ossification likewise existed. Upon examination she presented the appearance of having had syphilitic laryngitis, and upon inquiry it was found that she suffered with sore throat at six years of age, and was for several months under treatment before it was cured. The laryngoscope showed that the right cord was immovable, and that the left largely took the place of the

other in phonation ; the right arytenoid cartilage was entirely gone. The voice, however, was pretty good.

In another case, seen at Dr. Cohen's clinic, both arytenoid cartilages were expelled in a fit of coughing, and they proved to be to a great extent ossified. This also was a case of old syphilitic laryngitis. He had never, to the best of his recollection, seen a case where ossification of the arytenoid cartilages occurred, in which there was not a history of specific poisoning, as in the cases referred to.

The discussion "On the singing voice: its physiology, pathology, and treatment," was opened, by appointment, by S. W. LANGMAID, M.D., of Boston.

Dr. Langmaid said that he had only been very recently notified that he would be expected to open the discussion, and when the subject was announced to him he felt very much inclined to say, "Here's richness,"—physiology, pathology, and treatment ;—any member of this question would be enough to occupy the whole of one series of the meetings, or, at least, an entire session. Feeling the impossibility of doing justice to the subject as stated in the order of exercises, he proposed simply to bring before the Congress for consideration, one or two points from his own practice, occurring in every-day work, merely in the way of suggestion, and in the hope that at some future meeting of the Association the subject might be treated more thoroughly and worthily ; and in order that we might get more light than we now have with regard to the effect of certain changes in the physiological condition of the organs concerned, upon the singing voice. Of course, the physiology of phonation is that of the larynx, which has only one other function, that of respiration.

The first paper read at this meeting by Prof. Elsberg, on "Paralysis of the laryngeal muscles," has a most important bearing upon the pathology of the singing voice. The voice depends upon the action of the muscles and condition of the muscular structures of the larynx. Paralysis of the laryngeal muscles means impairment of the singing voice ; so that in reality most of the physiology and pathology and not a little of the treatment of the singing voice have already been brought out before in Dr. Elsberg's essay and in the discussion which followed it. To go more fully into it, therefore, would very largely be a rehearsal of what has been said.

With regard to the parts concerned in the act of singing, they

are the superior air-passages, the larynx, trachea, and lungs. The lungs, however, must be left out of sight in our consideration, except in so far, perhaps, as the subject of proper breathing is concerned in the producing of tone. The matter of tone, however, is not one that can be discussed now. Dr. Robinson's paper had something to do with the question of the influence of the morbid conditions of the mucous membrane of the trachea and larynx upon its functions, for without a healthy normal condition of the mucous membrane and trachea we cannot expect to get a normal voice—a normal production of a normal quality of voice. With regard to the effect of the paralysis of certain laryngeal muscles, the following case will serve as an illustration: A female singer, with a strong, powerful voice, accustomed to use it in public, and professing never to have found any difficulty in its use, came to me, stating that her voice was impaired, the scale was shortened, and the quality of tone was altered. Laryngoscopic examination revealed a very marked catarrhal condition of the larynx and upper part of trachea, but the cords were not injected except upon efforts at phonation, when they were seen to flush a little. The glands were a little more prominent than usual, and there was a coat of mucus over the surface of the mucous membrane which was redder in the vestibule of the larynx than normal. Upon rhinoscopic examination, the same condition of the mucous membrane was found existing throughout the upper air-passages. It was an acute affection; the posterior nares were perfectly open, and there were no signs of hypertrophy of the turbinated bones; the nostrils were also well open. Looking again at the larynx he found a state of things which he had very frequently met with, accompanied or not accompanied by the catarrhal condition: a position of the vocal cords he had very often seen in singers complaining of altered conditions of the voice; that is, one vocal cord unable to come up to the middle line, always standing a little off in phonation. The cord was relaxed; the arytenoids approached perfectly well; there appeared to be no defect in the cartilaginous glottis, but the ligamentous glottis acted imperfectly. There was an elliptical-shaped opening during phonation, such as described by Dr. Elsberg. Generally it has been the left cord which is at fault. Greatly increased effort resulted in a fairly loud but somewhat hoarse tone. The scale could be sung as far as D' (Re above the normal La). This note, with Mi and Fa above it, could only be sung with the greatest effort, and Sol could not be sounded.

Here is what the speaker would consider a typical case of disease, and it is the type of many others. Here was a pathological fault and a physiological failure induced by it, and he was very glad of the opportunity of asking Dr. Elsberg and others to say something with regard to loss of motor power in the vocal apparatus from slight catarrhal inflammation of the larynx. He had regarded the condition as a slight paresis, and had thought that this condition might possibly exist in thousands of people, who would never have recognized it unless they happened to be singers. What is the explanation of this, and what is the proof that it is the result of the catarrhal inflammation? It is this: remove the catarrhal affection and you immediately remove the want of power in the cord. This has followed so often that he was quite sure of it. The treatment, therefore, was first that for the catarrh; he advised complete rest for the voice for a day or two, using only a whispered voice, forbidding talking, and not allowing the patient to sing a note, only rarely trying to find out if the voice is there. Then by local applications the catarrhal condition is very easily removed. At present the patient is singing again. When the catarrhal inflammation disappeared, it was very agreeable to notice how soon the vocal cord regained its normal functions. Without local treatment the result would be a loss of *technique* in that voice. Generally speaking, it may be stated, that with such treatment, if attempts at singing are not begun too soon, the patient will recover the use of the voice in good condition; but if the use of the voice is continued too soon, the result may be permanently altered tone or shortened compass, or both. This may happen to the best singers, the result of a slight catarrhal condition associated with paresis of the vocal apparatus. The treatment has been indicated, the prognosis has been considered, and in conclusion, it may be added, that this condition includes a large number of cases.

With regard to one other point—the influence of the nasal structures and their abnormalities upon the singing voice. At one of the Association meetings, that in Philadelphia, Dr. Elsberg having been asked whether he had ever known tonsillotomy to impair the voice, the speaker was glad to hear him reply that he never had, for he knew that in the minds of some in the community a prejudice exists against removal of the tonsils for fear of injuring the voice. With regard to the influence of nasal disease upon the voice our knowledge is recent, and this is a subject in

which this Society has really been in advance, to establish the nature and treatment of the voice itself ; but except indirectly, in discussing disorders of the nasal spaces, nothing has been said of the immediate relation of the affections of these passages upon the voice.

Dr. Knight reported a case a short time ago in which he had removed the right inferior turbinated bone. The result was gratifying ; the lost notes were regained, and the compass of the voice was increased.

An interesting discussion is : "What is the effect of a stenosis of one nostril by an hypertrophied turbinated bone, or of the deviated nasal septum, or any other condition which produces stenosis, upon the singing voice ?"

In such cases the problem is not merely to remove this obstruction. The singer says : "I do not want this done unless its existence interferes with my voice," and this is a subject which should be considered. Dr. Jarvis had a case which interested him very much. He saw the man, and from his own comparatively small experience with this condition of the head-obstruction in a rather narrow nostril, he advised against the removal of the hypertrophied bones, which Dr. Jarvis had stated, in writing, should be removed. Of course he stated to the gentleman that Dr. Jarvis had had much more experience than he had, but he was not sure that this was a case of alteration of the voice ; it certainly was a case of persistent catarrh. He told the patient that if he had had him for a long-enough time to observe the condition, he might advise the removal of the hypertrophied structures ; he then advised him to see Dr. Jarvis again, and if he still advised the operation he should have it done. The patient did so, and the operation has been performed. The speaker, knowing the imperfection of this voice, was very curious to know the effect of the operation, and would like to see the patient again.

A few weeks before, a patient had come to him, a singer, with one of the most powerful and beautiful voices he had ever listened to. He had a catarrhal trouble, with a deflected septum, and a very narrow nostril. He had also an elongated uvula. The first question was with regard to the septum, and he had concluded to treat the catarrh first and the septum afterward. Although he had this obstruction, the speaker heard him sing in public ; he sang with ease, and his voice filled the hall. He called afterward to thank the speaker for what he had done, and said that he had

never felt so well able to sing as at that time, and yet the partial stenosis caused by the deflected septum remained.

In conclusion, Dr. Langmaid introduced for examination a case of excessive development of adenoid tissue in the posterior nasal spaces and pharynx, in a boy otherwise in good health. There was no history, and the origin of the trouble was not known. The voice was slightly changed.

Discussion.

Dr. JARVIS said that as his name had been mentioned in the introductory remarks, and as it was a subject to which he had given some attention, he would refer to some observations made at previous meetings, and some since. The relationship between disorders of the nasal cavities and the singing voice, is a very simple one, and seemed so self-evident that there could be but little disagreement upon the subject. In the first place, there is the condition of the vocal cords, of which he spoke last year: a chronic congestion of the true vocal bands, which must affect the singing voice. He had yet to see a case of chronic nasal catarrh in which the secretion passing down over the larynx did not cause this trouble; the nasal secretions in the laryngeal box act like a foreign body, thus blunting the razor-like sharpness of the free border of the bands, and causing a blending of tones. In such a condition, recognizing the nasal mucus as the source of the trouble, and recognizing the cause of its production in the nostril, it would seem that there is only one course to pursue—remove the tissues which are known to form the secretions, and relieve the hyperæmia, not so much by astringent injections to the larynx, as by removing the original cause, and relieving it from the irritating secretions from above. He had pursued this course himself with much gratification, and other Fellows had adopted it with success. The fact of the stenosis is also of marked effect upon the voice, and singers confess that when the nostrils are thus closed, they are obliged to exert more effort; he had yet to see a case in which this effort was not appreciated by the patient.

The case at present under his care, referred to by the preceding speaker, is a good illustration of the fact just stated. His idea is to remove this hypertrophied condition of the mucous membrane, especially when caused by hypertrophy of the turbinated bone, (which can always be detected) by the wire loop and the transfixion needle; and he did not know of a better demonstration of the fact

that it would be impossible to catch the tissue if it were not hypertrophied to some extent. He removed in this case two anterior hypertrophies, and one posterior hypertrophy. The portion removed was about half an inch in length; its size surprised him. There was no trouble in this case except the nasal disorder and the effect of it upon the larynx. He saw the origin of the catarrh; it was merely a deviated septum pressing upon the hypertrophied tissue opposite. Regarding this as the cause of the catarrh and the hyperæmia of the larynx, he removed the exciting cause. There was also a slight paretic condition of the vocal bands, which had followed a previous attack of catarrh before being seen by the speaker. He had now been under treatment for two months, and the disorder was wonderfully changed; he can now reach much higher notes than before. He had taken charge of the case with some reluctance, but the results were so satisfactory that he looked forward with pleasure to sending the patient again to Dr. Langmaid, for further observation of the action of the laryngeal muscles. In conclusion, he called attention to the paper read by Dr. Bosworth, with regard to the removal of posterior hypertrophies and adenomata, which will often remedy the hyperæmia of the larynx and the alteration of the voice, which had been pointed out as resulting from the nasal disease.

DR. CARL SEILER said that there were several points in connection with the subject to which he would like to call attention. In the first place, the effect of the catarrhal condition upon the vocal cords, which relation has already been explained clearly by Dr. Jarvis, when he stated that as a result of the catarrhal condition the vocal cords become spongy, and lose their normal acuteness, and it becomes impossible, therefore, to produce with ease the high notes. In 1879, he showed microscopic specimens of the vocal cords themselves, which demonstrated that the free border of the vocal band is concave, having a small sulcus running along its upper border. There is also a band of fibrous tissue (Seiler's cartilages), and it is by the stretching of this narrow band that the higher notes are formed, as pointed out by Luschka. Now, suppose a thickening from any cause occurs in this membrane, the effect of the sharp edge cannot be produced; a rounded edge will not vibrate with as much ease as the sharp edge. Secondly, there is the fact, also noticed by Luschka, which the speaker had also frequently observed, that the higher notes in such cases cannot be produced without great effort.

With reference to the effect of diseases of the nasal cavity upon voice, he referred to a paper he had read at the last meeting, which he was sorry to say appeared to have been fruitless, for he had pointed out that the effect was not so much by direct as by an indirect influence; the nasal cavity being separated from the laryngeal box, though only separated by a thin partition, to prevent a nasal tone being added to the voice. But as soon as we interfere with the physical conditions of this chamber, we have a change in the voice, no matter how small an alteration is produced. It is granted that this alteration may have existed for some time, and considered peculiar to the individual and not observed by him; but remove this obstruction and you will improve the voice, although you may take away some of its individuality.

Another point is the production of the hyperæmia and catarrhal condition of the larynx by the nasal obstruction, which causes mouth-breathing. The irritation of the cold and dust-laden air in the larynx, especially at night, due to mouth-breathing, causes local disorder, which is added to the cause already mentioned, the dropping down of mucus from the nasal passages. Therefore, the speaker concluded that the effect of nasal disease upon the voice is a great one, and he agreed with Dr. Jarvis, that obstruction with stenosis should be removed. He had found satisfactory results following the correction of the deviated septum in such cases.

Dr. ROE concurred in the remarks made by those before him. The influence exerted upon the voice is, however, a relative one, depending upon the size of the nasal cavities, and the character of the obstruction. If the nasal passages are very large, the resonance is very much greater, and a slight obstruction would be less conspicuous. The same amount of obstruction in small nasal passages would be much more readily perceived. Then, again, with regard to its position. If the obstruction is in the anterior portion of the nasal passages, and not too large, the resonance will be sufficient to overcome the difficulty; the tone of the voice is fuller and deeper in the large passages, but in a small head with narrow passages the tone is higher, and in this case a slight change is more readily perceived, and if the obstruction should be in the posterior portion it diminishes the singing voice very greatly. One point not touched upon in discussing the management of the singing voice is this: Many singers will give their voice almost complete rest during the summer, and the muscles of the larynx be-

come therefore weakened from want of use, like other muscles. In the fall they come back to their work and expect to sing as much as they did in the spring, at once over-taxing their muscles instead of using the voice gradually; these violent vocal exercises bring on a congested condition of the larynx, which causes more or less laryngeal catarrh, and damages the voice, and they complain that they cannot sing as well as when they left off in the spring. This is a point that should be borne in mind by laryngologists in their advice to singers; they should either use the voice during the summer, or else resume its exercise gradually.

Dr. RUMBOLD concurred in all that had been said with regard to the influence of nasal inflammation upon the larynx; he said that there was another subject that deserves consideration—the influence of the soft palate upon the voice, as shown by the physiological action of the soft palate itself. In 1870 a man came under his charge, whose nostril was large enough to admit the little finger, which gave him an opportunity of introducing a small mirror, and to get a reflection from the larynx. His observations extended over five weeks altogether, and included studies of speaking, singing, breathing, swallowing, etc., as far as the action of the muscles of the larynx and soft palate are concerned. He found that in uttering certain sounds the palate rested upon the base of the tongue, and in certain other sounds the soft palate and uvula were pressed against the posterior wall of the pharynx; in one case the sound issued through the mouth and nose at the same time, in the other it issued from the mouth or the nose, the uvula resting either upon the base of the tongue, or raised and pressed back against the azygos prominence and the vault of the pharynx, the effect of this being to prevent the soft palate from vibrating when the sound was passing. When the sound passed through the nostrils and mouth, the azygos process rested upon the vault of the pharynx, with small semilunar openings at each side. When there is nasal disease interfering with the mobility of the muscles of the soft palate, it would be necessary, in order to improve the voice, to remove the obstruction and restore the soft palate to its natural condition.

Dr. SEILER inquired which sounds passed through the nose, and which through the mouth, according to observation upon the case referred to.

Dr. RUMBOLD said that when the patient said "*ug*," none of the sound issued from the mouth; other sounds, like the vowels, pass entirely through the mouth.

Dr. INGALS said that there could be no doubt that the nasal cavity modifies the sound of the voice, and he had no doubt but that the gentleman introducing the discussion was of the same opinion. But there is one point upon which he would like some information ; it is with regard to the advice to be given to singers. There is no question that some patients may have nasal passages obstructed, and still have a good voice ; the effects upon the voice are immaterial. In the first case, if the voice is good, he could see no reason for removing the obstruction, except where it is required by other symptoms that are unpleasant. There is an old rule, which is as good for laryngologists as other persons, "let well enough alone." If he should have a patient with such an obstruction, who could sing as well as he desired to, he would not feel obliged to tell him that it would be necessary to have this obstruction removed right off. It is better to advise patients as long as they are well enough to let it alone. There is always a tendency to jump at conclusions, and to forget that all patients do not present the same conditions ; there may be a hundred cases requiring the same treatment, while the very next case would need one entirely different. We must not lay down invariable rules for treating our patients any more than for ourselves.

Dr. JARVIS inquired whether patients with neglected catarrhal conditions may not run the risk of ruining their voice.

Dr. INGALS.—Very possibly so, and he would not advise such neglect ; he simply asked for other reasons for operating than a simple deformity or deflection of the septum.

Dr. DE BLOIS said that during last winter he had had under his care at the dispensary one of those rare occurrences, a male soprano, who had sung on the stage, but was obliged to give it up from the fact that the voice had become cracked. Upon examining him, the posterior nares were found obstructed by mucus, and there was some adenoid growth, though not a great deal. He remained under treatment for six weeks, during which time the parts were touched with iodine ; there was great diminution of the swelling, and the mucus did not accumulate in nearly such large quantities. After leaving the dispensary the patient returned to the stage, clearly showing that, in his opinion, the removal of the obstructions made his voice again useful, and enabled him to gain his livelihood.

Dr. DALY was very much pleased by hearing testimony which confirmed opinions expressed by him at the last meeting of the

Medical Society of the State of Pennsylvania, when he presented a communication upon the effect of tonsillotomy upon the singing voice. Dr. Langmaid believes that the removal of the tonsils never injures the singing voice, and he had arrived at the same conclusion. He personally assures patients that if there is any change at all it will be for the better.

With regard to the catarrhal condition affecting the vocal bands and the larynx, it seems as if there is a tendency among laryngologists to give more and more attention to the nasal cavities and upper air-passages, which he was glad to see, as he had predicted it himself years ago. He predicted that just as there are laryngologists for the throat, we would have rhinoscopists to study the diseases of the upper air-passages, diseases which are often supposed to be in the larynx itself, a fact he had demonstrated to his own satisfaction many times. Ladies have told him, "I am complaining of my voice and you are treating my nose," but he gets good results which justify the treatment. In this class of cases he seeks out the evidence of central disease, and if any exists he treats that first, and next pays attention to the peripheral disorder; in many cases he makes no laryngeal applications whatever, or perhaps nothing more than a little spray. The tendency to extend the field of observation is a very healthy one, and he believed that American laryngologists are entitled to the credit of being the first to appreciate and apply this fact.

Dr. DELAVAN agreed with Drs. Daly and Langmaid. He thought that apparently the conflict of opinion might be explained in this way: any pathological condition in the pharynx or the nasal passages may have an effect upon the voice, but occurring in the pharynx is far more apt to do so than in the nasal chambers. He had seen cases with nasal obstruction in which the singing voice was fair, but he had never seen a case with enlargement of the pharyngeal tonsil in which the voice was good.

There is one question with regard to the treatment of chronic hyperæmia of the larynx, in which he had found that properly conducted gymnastic exercises accomplish more than local applications. If due to over-use, or strain from improper use, of the voice, rest is required at first, but afterward a course of vocal gymnastics should be instituted. The province of the laryngologist is in such cases a secondary one: he should send the patient to a good music teacher to be instructed in the correct use of the voice and muscles. The explanation may be this: the hyperæmia may be

caused by faulty vocalization, and if it is long continued the patient may already have lost his singing voice. If instructed in the use of the voice so that he becomes accustomed to control it properly, he now may avoid the cause of the hyperæmia which before existed ; he is therefore not only following a course tending to relieve the temporary condition, but one that will be of permanent good. There is another important point: it is the action of breathing, and the influence of proper use of the apparatus of breathing upon the production of tone. There are a great many defects of voice, due to defective breathing ; and some are accompanied by injection of the larynx ; nor need we go far for an illustration. In such cases well directed vocal training is very valuable ; even regarding the singing lessons as mere gymnastic efforts, they are useful. Phthisis is very rare in singers.

With regard to tonsillotomy, the importance of this is very great ; for, after all, the condition of the pharynx largely determines the quality of the tone, and any thing which interferes with the pharyngeal condition will interfere with the quality of the tone. An elongated uvula, therefore, aside from its irritating action, will also act directly in impairing the tone produced.

Dr. MORGAN said that bearing upon the subject of the physiology and hygiene of the singing voice, is a question which for some time had demanded his attention: it is the direct relation existing between many of the throat affections of adults, and the abuse of the voice during childhood.

There exists what in his opinion is a pernicious method of teaching young children, practised in our common-school system, referring to the "singing recitations" by children between the ages of eight and fourteen years. When we reflect that these little ones, with delicate, unformed vocal organs, are from day to day and month to month subjected to these singing exercises, regardless of the throat affections from which they suffer, or to which they are so liable, we can readily imagine the consequence. A child with damp clothing or wet feet, or, what is still worse, an acute tonsillitis, pharyngitis, or laryngitis, is denied that important factor for the prevention as well as the cure of throat affections—rest.

This singing method is open to the further objection of being choral, hence the slight huskiness attendant upon mild inflammatory affections is overlooked, and great injury may follow.

Moreover, greater attention is naturally given to the correctness of the recital than to the character of the vocal exercise. He had known of children with enormous tonsils being absolutely forced to sing, and he had seen two promising voices ruined in this way. This whole matter has not received the attention it merits, and save in Philadelphia, as he had been informed by an eminent teacher of vocal music, the subject has not been at all discussed. At all events, his urgent desire was to ascertain the views of the Fellows upon this point, and to call attention to what he regards as a bad system.

Dr. LANGMAID, in closing the discussion, said that he scarcely knew where to begin to agree and where to disagree. He agreed with Dr. Daly, with Dr. Jarvis as modified by Dr. Ingals, who had possibly better expressed his views than he could have done himself. He agreed with Dr. Morgan also. The illustration upon the blackboard was intended to show the position where failure was observed in the case referred to. There has possibly been more bosh written on the "registers" than upon any other subject. The beginning of the failure was D, the absolute loss of voice was at F sharp. If you will call the attention of any cultivated singer to the subject he will give you the exact tone where the voice fails. He asked, Why is it that the failures to produce tone occur at the very point about which so much dispute has been? but this he could not go into at present.

He was disappointed that Dr. Elsberg had not discussed the subject of the paresis, which was pointed out in the case where the left vocal cord did not come up to the other one. In Dr. Morgan's case of double voice, there was also laryngeal paralysis. Dr. Morgan admitted in conversation that the catarrh being removed, the voice began to reappear, and the symptom afterward entirely disappeared under the use of strychnia.

Dr. ELSBERG said, in response to Dr. Langmaid's repeated request: First, as to tonsillotomy: he believed that tonsils can be cut out in such a way that the voice can be injured, and he had not merely once, but a number of times, seen this result. This is, however, never the result of the operation when properly performed.

With regard to Dr. Daly's remark, that the Americans are *the first to appreciate and act upon* the fact of the connection between nasal affections and laryngeal disorder, he would say that, although very gratifying if true, it was not borne out by the facts. About a dozen years ago he had seen a case in Berlin, in which the singing

voice was restored by treatment directed exclusively to the nasal passages by Waldenburg, who certainly laid as much stress upon the importance of nasal disorders in throat affections as we could to-day. He mentioned this because he did not wish credit that does not properly belong to us. While attending the First International Medical Congress, held in Milan in 1880, the speaker had to report upon a case presented by Dr. Schmidhuisen, of Aix-la-Chapelle, in which a public singer, who had lost her singing voice for more than ten years, had had it entirely restored by the removal of a concretion in the pharyngo-nasal space; and other European laryngologists had related a number of interesting cases, from which it appears that they knew of this relation and had given it due consideration. It is certainly true, however, that during the last few years attention has been called to the subject more often in America than in Europe.

Now, with regard to the interior muscle, or thyro-arytenoid, and the transverse or arytenoid muscle, lying very superficially they may easily become affected by a catarrhal condition involving the mucous membrane covering them, and paresis of one or the other be noticed; even more frequently than one alone, both of these muscles become paretic in catarrhal conditions. The whole task of adduction of the vocal bands thus being thrown upon the lateral crico-arytenoid muscles, these too, after awhile, may become affected, either first with spasm and then with more or less paralysis or, more frequently, at once with paresis from overwork. Such pareses of the transverse, interior and lateral muscles are sometimes bilateral, sometimes unilateral; and it has often struck him that the muscles on the right side must generally be stronger and better able to resist these influences, for, like Dr. Langmaid, he has observed the want of action to occur more frequently on the left side. In persons with a tendency to neurotic affections and in singers, who make great demands upon their laryngeal muscles, paretic conditions are of course more easily brought about in this way than in other persons.

Dr. DALY begged to say that we have to depend upon literature for information of the progress of medical science, and he need only refer to the literature of the past two years to show that there was greater impetus given to rhinology, or diseases of the nose, during that period than for eight or ten years previously, and he had noticed especial activity in this department by American laryngologists. Although Dr. Elsberg's observation is more ex-

tended, begging his pardon, he still retained the opinion expressed.

Dr. ELSBERG, continuing, said, in reference to the physiology of the voice, that the variations in pitch are produced by different persons in somewhat different ways. Of course, these variations are produced in the case of every person by changes in the tension, length, breadth, and shape of the vocal bands, and variations of expiratory force, but different persons employ some of these factors to a different extent than others, combining them differently and still perfectly physiologically. He had shown some years ago that the divergence of opinion in regard to the production of notes of different pitch, in regard to registers, etc., by authorities both medical and musical, is to a very great extent due to this fact.

Discussion on "The utility or non-utility of local applications in chronic catarrhal laryngitis," opened by John O. Roe, M.D., of Rochester, N. Y.

MR. PRESIDENT and FELLOWS of the *American Laryngological Association* :

I was not a little sorry, on being informed by our President the day before the programmes for this meeting were issued, that I had been appointed to open the discussion on "The utility or non-utility of local applications in chronic catarrhal laryngitis." And I was especially sorry because of lack of time at my disposal to give the subject sufficient preparatory thought.

The subject of the treatment of chronic catarrhal laryngitis is not a simple one, as a superficial consideration of the subject would lead one to suppose ; but, on the contrary, many points in its etiology should be considered, to arrive at an intelligent understanding of the nature of the disease in each particular case ; and many concomitant surrounding and contributing conditions usually require to be removed before the laryngeal affection can be successfully treated.

Those who believe chronic catarrhal laryngitis to be always a purely local affection, dependent on local causes, and independent of other complications, and that the method of local applications into the larynx is the only form of treatment that is necessary to be considered, will be, in many cases, equally disappointed with those who believe it to be always a local manifestation of a general dyscrasia having a tendency to manifest itself in the larynx, and that for the removal of the laryngeal outbreak only general systemic remedies and measures are required.

When we consider the varied conditions under which the disease is manifested, and the numerous local surrounding conditions which influence and often induce it ; when we consider the influence which systemic taints, as syphilis and scrofula, have upon this affection, as well as all local diseases, we cannot say that this or that plan of treatment is the one to adopt in all cases, without taking into consideration those varied conditions with which the laryngeal affection is so commonly associated or complicated.

To lay down any definite rule of practice in the treatment of any disease, would subject us, and in justice too, to the imputation of being empirical in our practice, but there are general principles and plans which underlie the treatment of every disease which are generally found correct.

Thus, in the treatment of the disease under consideration, it will be found that local medication is the plan not only more generally successful than all others, when the various associated and contributing conditions are duly considered and treated therewith ; but it is almost always a necessary corollary to all general treatment of this disease, however much it may depend upon a constitutional cause ; for it is rare that the local manifestations in the larynx of a constitutional disease will entirely disappear under systemic medication alone without leaving traces of it behind to be excited again by local causes, if the first local outbreak is not entirely removed by proper local medication.

The disease with which chronic catarrhal laryngitis is most often associated, or by which it is most often induced, is chronic naso-pharyngeal catarrh. It is induced by it in several ways.

1st. By direct extension of the diseased surface from the naso-pharyngeal region to the larynx by direct continuity of tissue, and by the irritation produced by secretions dropping downward and finding their way into the larynx.

2d. By the laryngeal hyperæmia which diseases in the nares and naso-pharynx induce.

3d. By the irritation induced in the larynx by the mouth-breathing which is so often necessitated by the obstruction of the nostrils by diseased and hypertrophied tissue.

The marked and sometimes very intimate relations of the larynx with other organs, through nervous connection, are very frequently to be observed. The sympathy which exists between the ear and the larynx, as illustrated by the reflex irritation known as "ear-cough," is familiar to us all.

Cases of chronic laryngeal congestion or inflammation with marked hoarseness and violent paroxysms of cough, caused by foreign bodies or impacted cerumen in the external auditory canal, are not infrequently met with ; and this same irritation is sometimes caused by diseased teeth.

The sympathetic relations which exist between the nares and larynx is very frequently observed by laryngologists. Especial attention has been called to this fact by several members of this Association. The agency through which this irritation is reflected is the superior cervical ganglion of the sympathetic, which connects the fifth and pneumogastric nerves, and irritation of the terminal filaments of a branch of one of these nerves may excite a corresponding irritation in the terminal filaments of a branch of the other.

Thus, through this chain of nervous communication between the different organs, irritations in the nasal cavity, ear, or teeth, in the lungs or heart, in the liver, uterus, or other abdominal organs, are reflected to and excite irritation in the larynx.

The sympathetic connection between the uterus and the pharynx and larynx was first distinctly pointed out by Dr. Edgar Holden, in the *N. Y. Med. Journal*, April, 1877, p. 386 ; and since, by Dr. Cutter, in a paper before this Association, in 1879.

Affections of the heart are not an infrequent cause of affections of the larynx. This interdependence of affections of the two organs has been very clearly pointed out by Dr. Beverley Robinson, in his able paper before the Association at this session, on "Impaired cardiac power as an efficient cause of congestive throat affections." Diseases of the pulmonary structures and the pleura exert a similar influence on the larynx, often in a marked degree.

In addition to the sympathetic nervous connection between the nares and the larynx, we have the irritation induced in the larynx by the mouth-breathing when nasal respiration is cut off. The effect of mouth-breathing is always very marked, for when there is sufficient obstruction in the nasal cavity to necessitate breathing through the mouth for even a limited portion of the time, we rarely fail to find more or less laryngeal disease ; and, if allowed to go uncared for, sooner or later, bronchial and alveolar catarrh is liable to supervene as a direct extension of the disease. This latter association, however, often occurs in an inverse order, as the result of chronic pneumonic phthisis. Chronic pharyngitis is also a very common result of mouth-breathing, as well as a fre-

quent cause of laryngeal catarrh. It is rare that a chronic pharyngitis, particularly the hypertrophic and granular form, exists for any considerable length of time without inducing laryngeal catarrh.

This affection is also sometimes induced by the irritation produced by an elongated uvula or enlarged tonsils.

Prominent among the various constitutional diseases which not infrequently give rise to this affection are the exanthemata. How commonly do we meet cases of chronic laryngitis with marked hoarseness or aphonia dating back to an attack of measles, scarlet fever, or perhaps small-pox.

An attack of typhoid fever is not infrequently the cause of a laryngeal catarrh, and whooping-cough rarely fails to leave more or less laryngeal trouble behind it.

The exciting cause of this affection is often found in the habits and conditions of the patient.

The use of tobacco and spirituous liquors, exposure to damp and dusty atmosphere, lack of sufficient food, clothing, etc., play no insignificant part in its production.

To enter into the details of the treatment of chronic catarrhal laryngitis, both local and general, would be extending beyond the province of this discussion, which is to deal with the advisability of treating this disease by the application of remedies directly into the larynx. It is not intended, however, as I understand the question, to exclude the use of what judicious general medication may be clearly required to correct systemic conditions, or to be used in the treatment of the various systemic affections or diseases of other organs which, as I have shown, so often induce or aggravate this affection, nor is it to exclude the regulation of the habits and conditions of the patient.

In giving a direct answer to this question my experience leads me to reply most decidedly in the affirmative. I cannot, however, give this answer from personal experience in prolonged attempts at treating this laryngeal disease by general medication alone; it is by comparing the results achieved by as thorough and judicious general medication as could well be given, which had been prescribed by others, and the results achieved by local medication alone, or combined with other measures when necessary. Thus, cases which had not been improved at all by general medication alone have yielded a ready obedience to the application of medicaments topically applied into the larynx.

Therefore, on attempting the treatment of chronic catarrhal

laryngitis, we have first to decide whether it is a purely local disease, or the result of, or associated with, other local or systemic conditions or affections. If the former, then purely local treatment is our reliance. If the latter, we must direct our attention to the removal of the conditions with which it is complicated, before our efforts in the treatment of the affection will be rewarded with success.

But after removing the surrounding local or general conditions, if the laryngeal disease which has been induced thereby has been more than a temporary complication, and organic changes have taken place in the laryngeal mucous membrane, they will rarely disappear on the removal of the primary cause unless all local irritation to the respiratory passages can be entirely removed for a more or less prolonged period of time. This can hardly be accomplished in our northern latitudes, and the disease will only completely and speedily disappear under judicious, well-directed, and carefully applied local medication.

Dr. BOSWORTH said that the possibility of a question arising upon this subject is probably due to what may be seen upon the other side of the Atlantic. Those who have seen the method adopted there will probably oppose local treatment of the larynx, at least as there carried on. The clinician there dips his brush into the solution, and applies it to the patient's throat, and the treatment is over for that case at that time. Every physician in treating a case should treat the cause and remove the disease. There can be no question whatever about the value of local applications in chronic laryngeal catarrh. Such applications are indicated in the condition, and are approved by experience, but where they do not remove the condition, we will have to treat the patient for the same symptoms again and again.

The brush is the traditional method of making applications to the larynx, but he had not used it for many years. He thought that the brush is the worst thing to use for carrying medicated solutions into the larynx; he likewise condemned the sponge, and considered nothing so good as a small piece of absorbent cotton wrapped about Elsberg's sponge-holder. He regarded chronic catarrhal laryngitis as being about the only condition in which applications by the cotton are better than the spray; in most conditions the spray is better.

Dr. RUMBOLD said that his experience in modes of applying

remedies to the throat is in favor of the spray producer, which he had used for many years. He is very certain, from a study of the anatomy and pathology of the parts, that the use of the spray, which cleanses and applies the remedy at the same time, is much better than either the brush or the sponge.

Dr. FRENCH quite agreed with the writer that most inflammations of the larynx are due to catarrh in the nasal passages. It had been stated that in spraying the throat the solution does not get into the larynx. This is a mistake, for he had, by way of experiment, sprayed the larynx of a patient upon whom tracheotomy had been performed, with a fluid colored with indigo, and had afterward demonstrated the presence of the coloring matter in the trachea, as well as at the surface of the arytenoids and the vocal cords. This he had done frequently.

Dr. ROE, in conclusion, said that he disagreed with Dr. Rumbold as to the use of the spray in chronic laryngitis; the cotton-holder is much better in this condition; it is one of the few diseases which cannot be treated effectually with the spray.

BUSINESS MEETING.

At the close of the regular literary exercises the Association went into final executive session, and the election of officers being in order, the candidates proposed by the Committee on Nominations were unanimously elected on the first ballot, the result of which was reported by the tellers as follows:

For President, George M. Lefferts, M.D., of New York.

First Vice-President, Carl Seiler, M.D., of Philadelphia.

Second Vice-President, E. Fletcher Ingals, M.D., of Chicago.

Secretary and Treasurer, D. Bryson Delavan, M.D., of New York.

Member of Council, Morris J. Asch, M.D., of New York.

Dr Langmaid was appointed to conduct the President-elect to the Chair.

Upon taking the Chair the President said:

It is hardly necessary for me to tell you, Gentlemen, that I feel honored by the selection that you have made for your presiding officer during the coming year. For honor it is, and honor it must surely be felt by any one of us, to be called by the unanimous vote of his colleagues and fellow-workers to the highest office within the gift of this Association. At the same time, I feel that the compliment has not alone been paid to me on personal

grounds, but that it is likewise a recognition on your part, and your acknowledgment of the work that I have already done in the office of Secretary for our young Association during the past four years. This latter office I have held, and its work I have cheerfully performed in the interests alone of the Association. To-day the latter, well-grown and vigorous, with full ranks and earnest purpose, stands firmly. It is a success; it no longer needs the fostering care that some of us have always stood ready to give it. I have, therefore, done what I should not have done under other circumstances—deserted my early post. You have seen fit to offer me a still higher office. I accept in the same spirit, and shall endeavor to discharge the duties incident to it with the same determination to ensure the success of the Laryngological Association that I had in my former position.

But, Gentlemen, alone I can do but little. Success depends not alone upon my, but upon our combined efforts; with your aid, your earnest co-operation, I am confident of it. Let us, then, put our shoulder to the wheel together, and start this our new year—the fifth of our existence—with an earnest desire to make it a prosperous and brilliant one in our history.

Again, Gentlemen, I thank you.

The Secretary reported the receipt of several monographs, which had been placed in the hands of the Librarian.

Dr. ELSBERG said that he had from time to time received requests for the Transactions of the Association. He inquired whether the Association would authorize the sale of any copies that could be sold, and at what price. He offered the following:

Resolved, That the Council be authorized to sell extra copies of Transactions that are on hand, for two dollars each.

The resolution was unanimously adopted.

Dr. E. C. MORGAN offered the following:

Resolved, That we tender a vote of thanks to our colleagues in Boston, to the medical profession of Boston, to the Massachusetts Medical Society, and to the Somerset and St. Botolph clubs, for their kindness and hospitality during our sojourn in their city; and to the Library Association, which has so generously tendered the use of its hall for our meetings.

Dr. DALY, in seconding this motion, said that he felt that he must respond to the sentiments of the resolution. The reception by the resident Fellows was most courteous, and the Congress was most enjoyable and profitable. He felt personally that if a month

had been taken from practice instead of a few days, he would have been well repaid.

The resolution of thanks was unanimously adopted.

Dr. DE BLOIS asked and received permission to exhibit two instruments of original construction : a pair of tubular forceps, and an instrument for applying the wire snare.

Dr. SHURLEY exhibited a flexible electrode for galvano-cautery, insulated by asbestos paper.

The session then adjourned.



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Transactions of the
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