

TRANSACTIONS

OF THE

EIGHTEENTH ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION

HELD IN THE CITY OF PITTSBURGH, PA.

MAY 14, 15, AND 16

1896

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1897

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TRANSACTIONS OF THE EIGHTEENTH ANNUAL
MEETING OF THE AMERICAN LARYN-
GOLOGICAL ASSOCIATION,

HELD IN THE CITY OF PITTSBURGH, PA.,
MAY 14, 15, AND 16, 1895.

THE PRESIDENT'S ADDRESS.

By W. H. DALY, M. D.

GENTLEMEN: The replete programme before us for this congress, comprising as it does thirty-four papers, not including the theses of the candidates for membership, assures us that it is quite possible to have for our organization a congress of the first class in a city of the second class.

I am most happy to see so many of the fellows present, and especially so to be able, through your hearty co-operation, to present such an extended programme of interesting papers—a programme that has never been equaled in the history of our honored society, and one which demonstrates that the fellows of the American Laryngological Association will attend a congress in other than metropolitan cities. It also serves to admonish me to be brief in my remarks to you this morning, that we may enter at once upon the work before us, and endeavor to do it full justice by deservedly calm, dignified, and learned discussion, of which you are so capable.

I am scarcely old enough to indulge much in looking backward, but I can not refrain from doing so, just a little, and with much pardonable pride, when contemplating the value our specialty has been and is to the general practice of medicine and surgery, as also the value of our literature to that of the general science of medicine and art of surgery, and the eagerness with which the latter is sought after and studied by the profession.

These are pleasant reflections, especially to those of us who began the study and practice of this work over twenty years ago, amid the doubts, the indifference, and even the disapprobation of our best friends, the general practitioners. And it is only by the exalted character and high standard of excellence of the work done that their respect has at last been won, and I sincerely hope their appreciation will be maintained by our continued and most deserving industry.

Indeed, I was also a busy general practitioner when, over twenty years ago, I began the study of laryngology, and I have never ceased to be somewhat of a general practitioner since, and I don't intend ever to cease my interest in general medicine and its practice, believing that one can not be a good specialist in diseases of the nose, ear, and throat without large experience and knowledge of general medicine. And I do not think that any one should ever begin our specialty until he has been a general practitioner from five to ten years or more.

As a matter of fact, I never in any way announced myself as a specialist in diseases of the nose, ear, and throat, but an enormous amount of the work came to me through my writings upon these subjects, and is still coming, in these my years of riper experience, and I hope of better judgment.

There is to me the highest sense of pleasure in knowing the respect that laryngology now receives from medical men as well as the laity, and that most of our teachings have stood the crucial test of time and practical experience, and have proved so great an aid to general medical science and practice. Indeed, the aid rendered

by the laryngoscope and rhinoscope in skilled hands is now so universally conceded that to speak of it is almost trite. And there has been such substantial acknowledgment on the part of those in general practice that the men who do this sort of work mostly have multiplied enormously in number, and are well and fully equipped to aid their fellow-practitioners in the diagnosis and cure of cases, the obscurities of which can be so often revealed and made plain by the skilled employment of laryngoscopy and rhinoscopy.

I began this work twenty years ago in Pittsburgh, almost alone; now I am surrounded by dozens of capable men. I began it when there was scarcely a laryngoscope or rhinoscope in use by the medical profession west of the Alleghany Mountains, and indeed many otherwise intelligent medical men in this city at that time doubted my ability to make intralaryngeal examinations or topical applications of medicine to diseased parts within the larynx, and were disposed to joke about such pretensions as being chimerical. Now, in our more advanced state of knowledge, this seems difficult to believe, but it is none the less true.

One of the earliest cases of importance here, which attracted the attention of the profession, was that of a patient who was being treated for pulmonary emphysema (a dilatation of the pulmonary air cells), which was submitted to me for laryngoscopic examination and diagnosis. I was fresh from my London and Vienna pupilage, and easily demonstrated to my colleagues that the pulmonary condition was entirely due, not primarily to pulmonary emphysema *per se*, but to laryngeal stenosis, preventing the outflow of inspired air from the lungs. The obstructive disease was of a specific type in the larynx, and the fibrous adhesive bands, adhering to the false vocal cords, could be plainly seen with the laryngoscope. The patient was operated upon first, as a precautionary measure, by doing tracheotomy, after which the fibrous adhesive bands were removed by intralaryngeal operations, the larynx dilated, and the patient entirely cured in six months; he increased in bodily weight

from one hundred and twenty to one hundred and ninety-one pounds, and resumed his labor as a steel roller in a rolling mill.

This case presents nothing strange to us to-day, but at that time not only was it strange, but the conditions revealed by the laryngoscope were most surprising and interesting to all who observed them, and the results were brilliant and successful in the highest degree. In short, it was a triumph for laryngology.

In the matter of distinguishing whether aphonia is due to inflammatory processes or functional derangement, the laryngoscope is a most indispensable instrument, as every one is aware.

The influence of nasal obstructions, adenoid growths of the pharynx, and chronic amygdalitis upon the health of children merits a word.

There are so many robust men and women in this city to-day, of whom I had the professional charge in former years as puny, chicken-breasted specimens of childhood, with nasal obstructions, adenoid growths, and chronic amygdalitis, that I have thought it not amiss to advert to the real and permanent benefits derived from treatment for their removal, the results in every instance of which are so worthy of our best admiration.

I was accosted a few days ago by a stalwart young man, who smilingly told me that he was one who was placed under my care twenty years ago as a delicate boy, who weighed but sixty pounds when fourteen years old. He told me he had nearly doubled his weight in the two years succeeding his treatment, which consisted of the clearing out and curing of the adenoids in his upper pharynx, and the curing of a chronic amygdalitis. He is now a leading amateur athlete.

The debt that general medical and surgical science and art owe to laryngology and rhinology, then, is so apparent and real that we must be pardoned for our expression of honest pride for the part this learned and pioneer society has taken to place and maintain it on the high plane it now occupies. Let us then go forward in

the right direction, and especially endeavor to further reveal the obscurities that still surround ethmoidal and sphenoidal diseases.

We have among our number the men of broad mind and ability who have already done much in this direction. All honor to Bryan, Bosworth, Mackenzie, Wright, and others, who have accomplished so much to make these intricate and obscure diseases plainer and more amenable to proper treatment.

Before closing let me voice a sentiment that all of us so earnestly feel, and that is, all honor to Manuel Garcia, one of the fathers of the laryngoscope and laryngology. Many of us sat with him last August, in London, around the banquet table of the laryngological section of the British Medical Association, and observed with pleasure how lightly and blithely his ninety odd years sat upon his silvered head, "frosty, but kindly." And now, with bowed heads and sorrowing hearts, we also feel all honor to the name and memory of dear Dr. Wilhelm Meyer, of Copenhagen, Denmark, whose death, after ripe years full of honors and loving regard by his profession, we justly mourn. He first taught us the presence of and cure for pharyngeal adenoids.

Shall we ever forget his fatherly wisdom and kindness to us in Copenhagen, in August, 1884? And now that all Christendom is uniting to erect a monument to his memory, let us at this meeting, one and all, give with a liberal hand toward its erection, thus showing in a practical way what every one has so honestly felt in his heart.

Now, dear friends and fellows of the American Laryngological Association, I bid you a hearty welcome to this busy and, we think, very attractive city.

We are but a small band of workers, who have come to unravel scientific questions in this busy hive of mechanical industry. That we will do our best in a most intelligent manner our past history guarantees. I am sure that at the close of this meeting you will all be pleased with the work that you have done.

As the rich plains of Italy were held out to the sol-

diers of France as an inviting field for their bravery and conquest, so you have in the more peaceful and gentle field of science of your specialty a programme here before you, prepared by your able fellows, that is a field rich in promise of interest, profit, and pleasure. So again I bid you thrice welcome.

And I now declare this the eighteenth annual congress of the American Laryngological Association open for work.

Paper.

THE PROPHYLAXIS OF NASAL CATARRH.

By CARL SEILER, M. D.

THERE is no doubt in the mind of any laryngologist and rhinologist that what is generically known as nasal catarrh is due primarily to two principal causes; in fact, if I may be permitted to state my opinion, that in reality there is but one primary cause which produces this prevalent disease, and that the other is merely a predisposition called into activity by the one.

To quote the opinions of the different authors would be but a waste of time and labor, because a careful scrutiny of their writings has convinced me in the opinion which I have just expressed. They may differ apparently in their interpretation of the causes of simple nasal catarrh, merely in the sense in which I use the term; namely, not depending upon an acquired constitutional or systemic dyscrasia or disease, and in its causation by accidental lesions sustained in later life. I therefore feel justified in my belief that the well-understood causes producing acute inflammation of the anterior and posterior nasal mucous membrane lay the seed for pathological changes in that very mucous membrane, and with every reproduction or recurrence of the acute or subacute (begging to differ with Bosworth) subsequent exacerbation can have but one result, and that is an increase of the pathological changes in the mucous membrane and the turbinated tissue of the nasal chambers.

Even but a hasty review of the geographical and anthropological statistics of the prevalence of this disease in different climates and among various people, if followed out to its logical conclusion, must lead the careful observer to doubt that the disease in question is one which is not amenable to prophylaxis, but that modern civilization and modern civilized methods of rearing children, together with the long-continued, baneful inherited proclivities and hygienic prejudices, merely confirm the conclusions arrived at by the student of ancient as well as modern anthropology in its relation to modern diseases.

We must therefore logically look for the earliest causes of nasal catarrh in childhood, in children of civilized nations, in the cities, in the habitation and methods of rearing of children by so-called civilized plans of overclothing, overfeeding, and overcaretaking. It is not only the overheating, overfeeding, and overcare which do the harm; it is the method and unsystematic bringing up of children which cause one attack of simple coryza to run into another, and thus become a subacute catarrh; and also the superstition and indolence of mothers, as well as of the general practitioner, who smother the poor infant that has a cold in its head with flannels and blankets even in the midst of summer, and deny Nature's best remedy—fresh air—dosing it with drugs and antiseptics, and neglect cleanliness and pure asepsis. No wonder that the poor sufferer barely recovers from one cold in the head before he is attacked by another; and no wonder that the pathological changes result by accumulation through such repeated inflammatory processes in hypertrophic changes of the turbinated tissue, or, if any systemic inherited dyscrasia be present, speedily changes it into the atrophic form. It is therefore the duty of the medical adviser to instruct the parents in the preventive measures which should be instituted to prevent this prevalent disease, and it is the general practitioner more than the specialist who is at fault in this matter of carelessly encouraging parents in their neglect by telling them that the child will outgrow the

disease; and it is also, therefore, the duty of the specialist, who, above all, is most intimately acquainted with the baneful effects in after life of such neglect, to instruct the general profession.

As already indicated in the foregoing remarks, cleanliness not only of the whole body, but of the nasal cavities in particular, whether a cold in the head is present or not, is the primal and most important prophylactic measure that can and should be instituted to prevent recurrence of acute coryza, prevent accumulation, inspissation, and putrefaction of mucus, and then finally prevent systemic infection by the ingestion of the products of putrefaction in the most susceptible system of a child.

In dentistry for a long time this same principle of cleanliness has been insisted upon by the dental surgeons, and they have successfully instructed the parents in taking care, with brush and powder, tooth washes and antiseptic lotions, of not only their own but their children's teeth, to prevent decay, so that the general practitioner—except in remote country towns—is but rarely called upon to extract decayed molars, and the ravages of neglected dental caries, which but a quarter of a century ago were so common, are but rarely seen nowadays even among the least educated classes of our citizens.

Why, therefore, should not the rhinologist follow in the footsteps of the dental surgeon, and bring about in like manner so marked a diminution of this still commonly supposed incurable disease—nasal catarrh—by prophylaxis? It is no more difficult to teach a child to cleanse the nostrils and anterior cavities with an appropriate wash than it is to teach him, as is done in every family, to use the toothbrush; and we all know that the only difficulty encountered is the prejudice of the parents and the natural abhorrence of the child to such a procedure, which, however, are no greater obstacles than the dental surgeon had to encounter in his instituting a reform.

As in all such matters of reform, it is necessary, however, to first instruct the teacher and make him understand the necessity and the all-importance of adhering to the strict observance of minute details in the carrying out of the method to be employed; and I will therefore hastily sum up my opinions as to the best methods to pursue in preventing the growth and development of nasal catarrh in both its forms—hypertrophic and atrophic—in children; that is to say, the simple, uncomplicated, non-traumatic form of the disease, because the others, of course, need more than hygienic and prophylactic measures.

Let therefore a child, as early as possible in life, be taught to snuff up the nose a warm saline or alkaline solution, with or without the addition of antiseptics, either from the hollow of the hand or from a small cup or glass, three or four times morning and evening, and let no amount of prejudice or recommendation by advertisements or other pressure brought to bear upon the parents allow a douche or atomizer or other artificial appliance to be substituted for this natural method of nasal cleansing; because, in the first place, the natural method being more readily applicable to the child's nature, avoids the natural abhorrence of instruments of any kind in the child's mind; and, second, because they are in most instances either ineffectual in accomplishing the purpose of thoroughly cleansing the nasal cavities, or else are, if they do accomplish the purpose, harmful, as in the case of the douche, by the inordinate pressure of the solution upon the organ.

Also let the solution be of not only a chemically non-irritating quality, but also of such temperature and specific gravity that overheating or chilling of the nasal mucous membrane and osmotic action producing pain and smarting are avoided.

Of course, antiseptics may be added to the solution at the discretion of the physician to prevent putrefaction and self-inoculation with septic material.

As important, however, as this nasal cleansing is the

proper feeding and clothing of children, so that overheating of the general system may be avoided, and the skin, especially around the neck and arms, be so hardened by cold-water applications, in the form of sponging morning and night, that moderate exposure will not readily give rise to acute coryza.

Our American children in particular are, in my opinion, as a rule too much clothed, too much confined indoors, and overfed with heat-producing food, so that when they have left the nursery they are mere hothouse plants, and it takes a long course of outdoor sports with boys to inure them to exposure, with a number of often serious effects of exposure, upon the respiratory organs in particular, to make them strong and healthy; and even then, in many instances, the seeds for nasal obstruction and consequent impairment and weakness of the respiratory tract having been sown in the nursery develop into the more remote effects, and particularly phthisis, so that it is not an uncommon observation that many of our athletic college youths, after having graduated, settling down in business for life, are attacked with phthisis or tuberculosis, which was kept in abeyance only by the outdoor exercise which they had at college.

Of course, I could go on to enumerate indefinitely the well-known hygienic rules and maxims, and the baneful effects of their non-observance, but I have said enough, I hope, in my plea for the intelligent and persistent reform by the laryngologist and the physician in the bringing up of children with a view of in a great measure preventing nasal catarrh and its consequences.

Paper.

SPINDLE-CELLED SARCOMA OF THE NASAL PASSAGE.

By J. E. BOYLAN, M.D.

IN view of a somewhat more hopeful prognosis which accumulating reports of sarcoma of the nasal passages seem to hold out, I wish to add the following case to those already recorded:

In July, 1894, Mr. P., aged forty-five years, of Coburg, Canada, suffering from obstinate nosebleeding, was seen by me with his family physician. The bleeding, which had become of late severe, had occurred frequently during a period of several months, and had twice proved difficult to check. On a recent occasion, while hunting in a canoe, he had an attack which was so prolonged that he became very weak from loss of blood before it could be arrested. He had further suffered from stoppage of the nose and occasional acute pain in the head for nearly a year.

At the time of introduction, he presented an abnormally broad and flattened nose, somewhat irregular in shape, owing to a noticeable bulging on the left side under the margin of the nasal bone. There was some slight oozing of blood from the nostril, and, upon compressing the opposite side, the left passage was found to be totally occluded. Closer examination revealed the following: Upon tilting up the tip of the nose, an irregular brown-red mass at once became visible, filling in the cavity almost to its anterior opening, being quite soft to the touch, and bleeding freely upon contact with a probe. Posterior rhinoscopic examination, which was quite practicable, disclosed the growth blocking the back part of the left passage, and limited only by the posterior nares. From explorations with the probe, it was further apparent that this mass sprang from some part of the lateral wall. As circumstances rendered an early resort to a more extensive operation not practicable, and the patient was eager for relief, it was resolved to remove the growth with the wire ecraseur and curette.

A coarse loop was passed over the presenting part, and a section as large as a hickory nut removed; hæmorrhage, which was quite profuse, was arrested by plugging with iodoform gauze. At a second sitting, on the

following day, a large wire loop was passed quite through the meatus, and, being guided by a finger in the nasopharynx over to the side wall, the bulk of the growth was fairly caught, constricted, and then torn loose from its attachment. The removal of this much larger mass from the meatus was accomplished with some little difficulty with a flat forceps; in fact, it probably could not have been extracted in this way whole if it had not been quite soft and flexible. The site of the attachment was thoroughly curetted, which was the more easily accomplished on account of the dilated condition of the passage. Free hæmorrhage was again arrested by plugging with iodoform gauze. Upon inspection, the growth removed appeared as a solitary tumor of limited base, about the size of a hen's egg, being somewhat longer and much flatter, and greatly resembling in color a section of liver—its surface somewhat irregular, and covered apparently by a thin capsule—having had its attachment over about an inch and a half or an inch and three quarters of the outer wall, originating in the lower turbinated body and apparently confined to it. The remaining portion of the growth here exhibited has retained its general appearance fairly well.

MICROSCOPICAL EXAMINATION.—The first sections taken from one extremity of the growth showed a framework of myxomatous tissue inclosing numerous large and connecting spaces, which here and there contained blood, but with no true blood-vessel walls; the structure therefore suggested a venous cavernoma; deeper sections, however, soon showed the bulk of the tissue to consist entirely of new growth composed of a very scant reticulum crowded with round and spindle cells. The following report and the slides exhibited are from expert microscopists of the Cincinnati Hospital:

Transverse sections through the thickest part of the tumor showed that the growth was principally composed of spindle cells, arranged partly in bundles and partly irregularly. In some parts of the section the cells were of many shapes, round, spindle, and irregular cells being mixed together. Very little fibrous stroma was present. Along the free margin of the tumor were found the remnants of the mucous membrane, consisting principally of delicate fibrous tissue richly supplied with blood-vessels, and containing in some places extravasated blood; the epithelial cells of the membrane were wanting. The new growths had infiltrated this tissue, and in part reached the surface. Blood-vessels were abun-

dant, and their walls were more or less completely infiltrated with the spindle and round cells. Large irregular spaces were also abundant in some parts of the growth, and seemed to be venous sinuses whose walls had become partly or entirely replaced by the tumor cells. Diagnosis: Spindle-celled sarcoma.

ALLYN C. POOL. CHARLES S. EVANS.

Two days after the operation I returned to Cincinnati, and a few weeks later a communication received from the patient stated that he found himself entirely relieved of his former alarming symptoms. A little over a year from the date of operation, in August, 1895, the patient was again seen in Coburg, and it was gratifying to find that no sign whatever of a recurrence was to be detected. The nasal cavity was still abnormally large, the lower turbinated body was represented by a ridge but slightly elevated above the side wall of the passage, and lacking the contour of the normal body. A letter finally, dated May 10th, something less than two years after the operation, announces that the patient is enjoying excellent health, and has had no further trouble with his nose.

In presenting the above-cited case, it is not intended to advocate the removal of sarcomatous growths piecemeal with the snare or forceps, however alluring these procedures at times appear, the writer concurring in the views of Plicque* and many others that operations which do not aim at total removal of growths of this type, including tissue to which they are immediately attached, are to be looked upon as inefficient surgery. It is offered as a further contribution to the accumulating number of cases which must materially modify the almost unqualified hopelessness of the prognosis which we have been taught to accept regarding sarcoma. If the outlook for the disease in the remoter parts is conceded to be of the gravest, in the depths of the nasal passages, so directly continuous with the intricate recesses of the fragile central bones of the skull, it would seem so unrestricted, so recondite, that little or nothing is to be hoped from operative interference. In fact, how-

* *Ann. des mal. du larynx*, etc., March, 1890.

ever, a review of the seventy or more cases recorded will show that, even when of considerable size, these tumors may have involved the tissue so superficially that they may be successfully eradicated, and that in some instances after protracted growth and repeated recurrence they have been arrested by more extensive operations. An effort on the part of the writer to determine with some degree of accuracy the lasting results obtained from these operations has proved quite futile, owing chiefly to the impossibility of obtaining, even by those who have reported them, their subsequent history, and it is only possible therefore to state briefly results as reported.

In summing up the results of forty-two cases of sarcoma of the nasal passages found in the literature up to 1889, Bosworth * concludes that "sarcoma of the nose does not apparently present the same malignant tendencies as it does when found in other locations."

The twenty-one cases below enumerated, taken from literature since Bosworth's tabulation, do not include several to which reference was found, but which could not be obtained in detailed report; nor do they include, cases in which the growths did not originate in the nasal passage. Excluding from these twenty-one cases two (IV and V) in which no operation was attempted, and two others (XVII and XXI) in which it was admittedly incomplete, there remain seventeen cases in which an attempt was made to extirpate the growths. Of these, but two (XII and XIX) are recorded to have died from recurrence—one of them four months after the operation. In five cases (IX, XIII, XVI, XVII, and XX) no subsequent history is referred to. The remaining ten are reported as follows:

CASE I.—No recurrence after five months.

CASE II.—Probably no recurrence.

CASE III.—Recovery.

CASE VIII.—No recurrence after short time.

CASE X.—No recurrence in four months.

CASE XIV.—Cure, no recurrence.

* *Text-book on Diseases of the Nose and Pharynx.*

CASE XV.—No recurrence.

CASE VI.—No recurrence in one year.

CASE VII.—No recurrence in one year.

CASE XI.—No recurrence in eighteen months.

While these apparently gratifying results are clearly too vague to serve as a basis for definite conclusions, and are further found to be somewhat modified by detailed report, yet in the cases thus far recorded rapid recurrence has followed operation in the minority of instances, and prolonged, if not permanent, immunity in a number of those above referred to, as well as in others occurring in the nasopharynx, not only encourages but indicates a prompt radical operation whenever there appears a fair chance of removing the growths completely, and especially in the case of smaller limited tumors which may be thoroughly exposed by preliminary incision.

The diagnosis of malignant tumors of the nasal passages, and also the nice questions as to when operative interference is contraindicated, and when it is no longer justifiable, have been ably discussed in the literature (Plicque, *Ann. des mal. du larynx*, etc., March, 1890). The malignant character of the growth is usually indicated early in its course. Hæmorrhage is a symptom of the first importance, and is frequently the first to indicate disease; in the cases recorded it was rarely wanting, usually being a premonitory symptom, occurring exceptionally only upon light contact with a probe. As the disease advances, obstruction, acute pain, rapid growth, and at times the appearance of the tumor point more positively to its nature, which may be rendered certain in most instances by removing with snare or forceps a section for microscopic examination.

In concluding the above report, it is desired to urge upon those who operate upon these cases the importance in the present state of our knowledge of publishing their subsequent history over a period of several years. Until this practice is adopted, more accurate information upon the important point in question, which should be in our possession, will remain beyond it.

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Paper.

SEROPURULENT MAXILLARY SINUSITIS IN CHRONIC LEAD-POISONING.

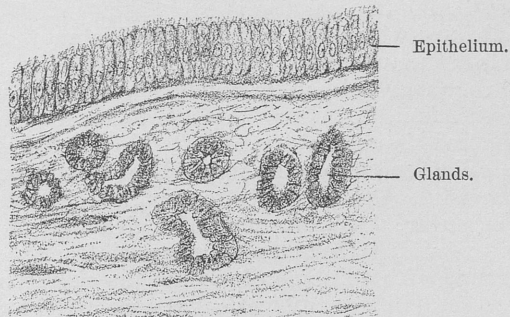
BY HENRY LEWIS WAGNER, M.D., PH.D.

THE advancement made in the study of aetiology in diseases of the nasal sinuses has greatly improved the methods of treatment. The results in this study are obtained not only by histological and bacteriological analyses, including post-mortem examinations, but also depend upon a careful examination of the whole system.

The following case fully illustrates the views on this subject:

H. M. (aged thirty-two years; occupation, carriage painter for twelve years; parents healthy) consulted me a year ago for severe neuralgia of the right supra-orbital region. These neuralgic pains had existed for three consecutive years, occurring daily at intervals of from one to twelve hours, and consequently the patient was obliged to relinquish all work. He was afflicted with hyperosmia, strong odors of any kind producing pain. Opium and various coal-tar derivatives were prescribed by his former physicians without any result, and the resection of the right supra-orbital nerve even failed to bring relief. All teeth in the upper jaw—some of them decayed and discolored—had been extracted, the source of trouble being located there, but no relief followed.

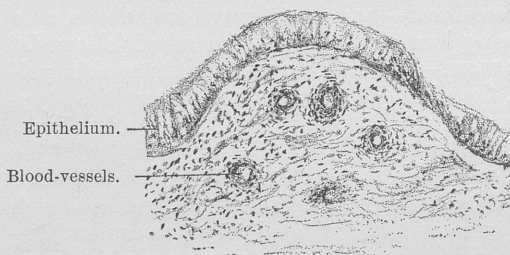
EXAMINATION.—Patient a well-built man, skin yellow in color, flesh lacking in firmness, no syphilis, eyes and ears normal, throat showed slight pharyngitis sicca. Nose: Left side normal; right, slight hypertrophy of the middle and lower turbinated bodies. At the entrance of the hiatus semilunaris a crust formed daily, which could easily be removed, and a slight seropurulent discharge, containing *Staphylococcus aureus* and a few non-pathogenic cocci, could only be observed every second



Normal antrum of Highmore.

or third day. Face: Transillumination showed little difference between the two sides. No external swelling of face. Pressure on the supra-orbital region produced no pain. Mouth: Hypertrophy of the right upper gum; no blue lead line could be detected. Pressing upon the region of the right first molar produced severe neuralgic pain. This assured me that the cause of the trouble ex-

isted in the right antrum. Being unable to probe or irrigate the antrum through the hiatus semilunaris, I entered the cavity through the hard palate under cocaine anæsthesia with the aid of a spearhead drill—this method, which is quick and painless, I employ frequently—and by injecting sterilized warm water a slight seropurulent discharge was observed coming from the right nostril. Shortly after the patient was somewhat relieved, and I decided to open the antrum through the canine fossa. This was accomplished under chloroform with a large trephine drill. The antrum showed in the lower and side walls a peculiar bluish-gray hypertrophy of the mucous membrane. Probing did not reveal any caries of bone, but touching certain places produced severe pain. Microscopical examination of the hypertrophy, made by



Seropurulent maxillary sinusitis in chronic lead-poisoning.

Dr. D. Montgomery, showed "loose connective tissue infiltrated with much serum and a fair number of round cells of inflammation; the piece of tissue had a covering of columnar epithelium. There were some micrococci in the tissue." After thorough removal of the hypertrophied tissue, dry treatment with borated gauze gave no relief, and also other methods of treatment were unsuccessful. I then decided to examine the urine for albumin, sugar, and lead, none of which were found; but, on examining fresh tissue, removed from the antrum, I found with sulphide of sodium the characteristic lead reaction. I placed the patient at once under iodide treatment, and in a few days he was relieved of all pain; the seropurulent discharge then ceased, and with it the formation of crusts.

Traces of lead were now detected in the urine. The patient has steadily improved, and has remained ever since free from pain.

In this case we must assign the diseased condition of the antrum, including the neuritis of various nerves, to

the deposit of lead, perhaps as an albuminate. Similar conditions have been observed in a few eye cases (Stood), where optic neuritis, accompanied by severe headaches, was produced by chronic lead-poisoning.

Paper.

INTERMITTENT DYSPHONIA SPASTICA.

By FREDERICK I. KNIGHT, M.D.

SINCE my last communication to this association on dysphonia spastica (in 1889) very few cases have been published, and, judging from my own observation, I must still continue to think it a rare affection. It is possible that there may be a suggestion of it sometimes in the vocal disability of acute inflammation of the larynx, but the well-marked, easily recognized chronic affection of this kind occurs very infrequently.

In the usual manifestation of this affection, when the patient attempts to speak there is such a spasmodic closure of the glottis that it is only by great effort of the expiratory muscles that enough air is forced through the glottis to produce any vibration of the vocal cords, and then only of their edges, causing a high-pitched, jerky voice. There is often a tendency to obtain relief by speaking on inspiration. It has been said that the expiratory muscles may be concerned in the spasm, but it seems more proper to consider the contraction of the expiratory muscles as wholly voluntary, trying to force air through the tightly closed glottis.

In my experience it has occurred much more frequently in men who have overtaxed their vocal organs in public speaking, or talking in a noise or to deaf relatives. No new light, to my knowledge, has been thrown on the pathology or mechanism of this condition. While most cases could be considered cases of neuroses of occupation, like writer's or fiddler's cramp, others probably would not occur except for some lesion which acts by reflex on the phonatory muscles.

I have never yet seen a complete cure. The patient

whom I exhibited to the association in 1882 wrote to me recently that his voice was better, implying that it was not well. I have recently seen one of the patients I mentioned in my paper in 1889, and there was no evidence of improvement.

Nothing new seems to have been established in the way of treatment except that more attention has been properly paid to vocal exercises, and the importance of not speaking on inspiration insisted on.

A case which I have had recently has interested me on account of the intermittent character of the affection. I have never had a patient with this affection before who did not during his visit unmistakably betray the nature of his trouble. This patient was a clergyman, who would preach half his sermon in a perfectly natural voice, and then suddenly, apparently when he was fatigued, lapse into the well-known, high-pitched, jerky voice, which continued until he brought his sermon to a close. As another illustration of the way in which rare cases come in pairs I may say that I have just heard of another patient who is intending to consult me, who is said to have this affection in an intermittent form. The one whom I have recently seen is fifty-two years of age, of gouty diathesis, and has had rheumatic fevers. He has not been subject to bronchitis or hoarseness. The affection of the voice began about a year before I saw him, and he thinks it varies with the condition of the digestion. There was nothing decidedly morbid in the appearance of the upper air-passages, except that the mucous membrane of the right vocal cord was a little rough and thick. Whether this condition of the cord may have acted in a reflex way whenever the patient had fatigued the larynx it is impossible to say, but it may have been that the phenomenon depended primarily on the condition of the larynx produced by strain or improper use (allied to writer's cramp), and, secondarily, to have been excited or developed by the local condition of the right cord, sometimes intensified by hyperæmia due to indigestion.

Paper.

TRACHEAL STENOSIS.

BY SAMUEL JOHNSTON, M. D.

OF the many diseases of the respiratory tract which confront us as specialists we meet with none more distressing to the victim or more alarming to the attendant than those where narrowing of the calibre of the trachea is a prominent feature, and we are consulted in few instances where we feel a greater demand for all the resources of our art.

In stenosis of the larynx tracheotomy, intubation, or other treatment may, in some cases, give relief to urgent symptoms; but when the respiratory space is compromised beyond the reach of these aids, the picture is sad indeed.

The affections producing tracheal stenosis may be conveniently divided into those of extrinsic and those of intrinsic origin. Among the former may be mentioned aneurysm of the innominate artery and of the thoracic aorta; bronchocele, whether of the simple, cystic, or fibroid variety; tumors of the thyroid gland, more especially those of a malignant nature; lymphadenoma; and growths in the mediastinum.

Carcinoma of the œsophagus, by pressure upon the trachea, may cause severe dyspnoea.

From within, syphilitic ulceration and its secondary consequences are by far the most frequent causes of tracheal narrowing, but tumors sometimes find their abode here.

The trachea may be pushed from its normal anatomical relations or flattened by compression. In one of my cases an aneurysm of the transverse arch of the aorta, growing backward, compressed the trachea to two thirds its normal size, as shown at the necropsy.

In the *British Medical Journal*, March 7, 1896, the following interesting case is reported by the Ashanti expedition correspondent, and I take the liberty of incorporating it in this paper:

“On the afternoon of the day that King Prempeh was taken prisoner in his own capital, Surgeon-Lieutenant Spencer, A. M. S., performed an operation on a cousin of the king's at the field hospital overlooking the palaver square. This was the removal of a large fibro-cystic bronchocele, about the size of an ostrich's egg, from the front of the trachea. This tumor had been growing for seventeen years, and involved a large part of the thyroid gland. It extended from near the point of the chin down behind the upper end of the sternum. It was firmly adherent to the trachea, and that organ was flattened out like a ribbon. This caused a great deal of dyspnoea, and there was difficulty at first in the administration of the chloroform. The operation, which lasted nearly two hours, was a distinct success, and when I saw the patient the following afternoon he was sitting up eating rice and milk. If the British occupation of Kumassi was distasteful to the royal family of Ashanti, there is one of them at least who ought, and I am sure will, bear a kindly feeling toward Englishmen—Quassie Appon, who was rescued by a young medical officer from a living death.”

Tuberculous disease of the bronchial glands, in children more commonly, sometimes gives rise to symptoms of tracheal stenosis; but the lower end of the trachea and the bronchi are usually the site of the constriction.

I have had instances under my care where in one case an aneurysm of the innominate artery, in another an aneurysm of the arch of the aorta, in another malignant disease of the thyroid gland, and in another malignant disease of the œsophagus caused tracheal stenosis. I shall not, however, give these cases in detail, but simply mention that the only relief afforded these patients was in the judicious administration of antispasmodic and anodyne remedies until death closed the scene.

The predominating symptom in stenosis of the trachea is inspiratory dyspnoea, characterized more particularly by its stridulous nature, and the cyanosis and great restlessness with which it is attended.

Gerhardt points out an important distinction between stenosis of the larynx and that of the lower air-passages.

He says: "When the obstruction is laryngeal, the head is thrown backward as far as possible. When it is tracheal, the head is stretched forward, and the chin slightly depressed, so as to relax the trachea"—a distinction to be borne in mind. The diagnosis in these cases is, in the majority of instances, a matter of difficulty, and our professional acumen must be called into action, together with the use of the great aids to diagnosis to be found in the laryngoscope, physical examination, and, I may add, the œsophageal bougie.

A careful laryngoscopic examination will reveal any disease of the upper respiratory tract, such as cicatricial contractions, tumors, ankylosis of the crico-arytænoid articulation, various paralyses, gummatous infiltration, œdema, etc.; and a thorough physical investigation will enable the educated ear to detect any abnormal condition of the thoracic contents.

The patient consults us usually with a history of failing health of many months' duration—cough, dyspnoea, and pain radiating from an ill-defined centre being the chief symptoms.

The voice is more or less husky or aphonic, depending upon the degree to which the larynx or the nervous supply to the vocal cords is involved.

Nocturnal attacks of stridulous breathing, with a feeling of impending death, are not unusual; cough is dry and irritative, and the expectoration is sometimes blood-stained. With tracheal pressure are often found evidences of involvement of the neighboring vessels, nerves, lymphatics, and thoracic duct.

A picture bearing upon my title is so graphically given by Sir Thomas Watson that I can not resist quoting his own words. He says:

"We hear the patients complain of the want of breath; and we see how they labor to satisfy this want, when it becomes urgent, by the elevated shoulders, the dilating nostrils, the energetic action of all the muscles that are auxiliary to the respiration; we perceive by the dusky and loaded countenance, the livid lips and ears and eyelids that the blood is but imperfectly arterialized.

"The diminished capability of such blood to support the functions of the brain is made evident by the vertiginous sensations and the delirious thoughts of the gasping sufferers."

The treatment must be in direct keeping with the primary cause of the stenosis.

Surgical aid should always be sought, and when an operation is feasible it should be at once performed. If this chance of relief is denied us, our efforts should be addressed to the symptoms as they arise. Rest, functional and physical, is of primary importance, together with proper nourishment and the inhalation of medicated vapors.

The administration of arsenic, iodide of potassium, morphine, ether and ammonia, and thyroid extract in suitable cases, with the inhalation of chloroform, amyl nitrite, and oxygen in emergencies, will be our best therapeutics.

In this brief but imperfect sketch of the history of tracheal stenosis I have only endeavored to describe a distressing affection, trusting that you may be able from your experience to add some suggestions which may redound to the benefit of this class of unfortunates.

Paper.

SOME REMARKS ON ACUTE DISEASE OF THE LINGUAL TONSIL.

By H. L. SWAIN, M. D.

PRIOR to 1884, when medical writers first called attention to the lingual tonsil, little had been observed about the peculiar strip of adenoid tissue situated at the base of the tongue. For many years it had been known to exist, the character of its tissue had been studied macroscopically and microscopically, and since the days of the laryngoscope its likeness had been present in every laryngoscopic picture, forming as it does the background for the epiglottis, and yet its importance had not been

dreamed of, so little attention was accorded it while looking into the more interesting and better known larynx. About that time several different writers called attention to the fact that chronic enlargement of this, like any other part of the ring of adenoid tissue which surrounds the upper part of the pharynx, could and did take place, and caused when present certain symptoms, so definite in type that from description alone one might almost diagnosticate the case.

A priori one could have readily deduced the idea that of course this tissue would also participate in all acute inflammation of adenoid tissue; yes, might itself be the only part attacked; but one finds in literature only very few observations recorded until within a few years. Nowadays one sees rather frequent allusions to this kind of acute inflammation, but I fancy that many—yes, very many—cases of this acute disease pass even to-day unnoticed, masked as they are by trouble higher up and better to be seen, and are surely deserving of much more care than is often accorded them. To judge by literature, this last point is more than emphasized, for such reports as are published are mere accounts of the abscesses, which are of very rare occurrence in proportion to the number of acute troubles of this organ, while if mention is made at all of the simpler forms, it is in the most cursory and superficial way. For example, Seifert,* writing in 1893, finds mention of some sixteen or seventeen cases of abscess from almost as many different sources, but only makes reference to eight articles where the simple form of trouble was discussed, and of these latter eight some names are included among those reporting abscesses. He had himself had at that time but three or four cases of acute inflammation of the lingual tonsil and one case of abscess.

Simonowski,† writing in the same year, found that he had twenty-two cases of acute inflammation in the

* Fraenkel's *Archiv*, Bd. i, S. 48.

† Reference in *Inter. Centralbl. für Laryngologie*, etc., July, 1894, p. 24.

lingual tonsil, eight of which had been of the peritonsillar type.

Since then a number of articles have been written on the matter, and some few cases of abscess have been reported; but, so far as my knowledge goes, none of them have considered the subject as thoroughly as the two mentioned.

In 1886 I published the results of some studies on the lingual tonsil, and have ever since been following closely the treatment of the chronic enlargement, alert for its every manifestation, yet only since 1892, when I had my first case of abscess, have I been mindful of the more acute phases. Now, however, I find the acute trouble really so frequent that I have this winter treated at least twenty cases of acute affections, and am sure that I have not corralled all that I might under that head. I have been particular to consider as such only those cases where the lingual tonsil not only looked and felt worse than any other part of the throat, but where the treatment directed to that part was the only treatment which gave any relief to the patient. In almost every case of badly inflamed fauces the lingual adenoid tissue will be red, and *vice versa*, so that the part most inflamed must be considered as claimant for the attention. Frequently, too, a faucial amygdalitis may be followed by the lingual, and, as in the former so in the latter, it may be an acute excitement on a chronically enlarged organ.

However much difference of opinion there might be as to the frequency of this form of trouble, there can be no doubt of its occasional existence, and so I beg of you to bear with me while we consider some of the details.

In considering what sort of an organ we are dealing with, it must be borne in mind that by situation and in its anatomical peculiarities it is materially different from the faucial tonsil. It consists of an irregular flat strip of tissue stretching across the base of the tongue, lying between the papillæ circumvallatæ and the epiglottis, merging sometimes by direct continuity into the lower outshoots from the faucial tonsils. It is superimposed upon a firm base of solid muscular bands, fas-

ciculæ from which run into its substance and interlace between the crypts. In thickness it is seldom more than an eighth of an inch, and when most thickened rarely measures more than three eighths of an inch. The crypts themselves, instead of being tubes, are shaped irregularly like the bowl of a lamp. Very little loose cellular tissue exists between it and the muscles, except downward and backward, where the muscles of the tongue radiate to meet their attachments on the hyoid bone, palate, and styloid process, there occurs in connection with the epiglottis some looser cellular or connective tissue. Directly over this tonsil must pass everything which goes into the œsophagus, and fluids especially have abundant chance to soak their way into its crypts and through its spongy epithelium, ready to be transported thence into the systemic circulation, for nothing could be richer than the blood and lymphatic supply of this region. So rich, indeed, is the former that the blood-vessels well-nigh form a plexus thick enough to be styled erectile. In fact, that the organ is important in this respect can be readily observed when it is considered how much dilatation the superficial veins suffer when there is any pressure on the larger trunks by enlargement of this organ, as evidenced by the varices so often seen on the base of the tongue anterior to the tonsil. The situation of the tissue further involves that every motion of the tongue in either swallowing or speaking is participated in by it, by no means a small item when it is acutely inflamed, and when enlarged it would most easily hit the epiglottis and the faucial tonsils at the side. This tonsil is developed much later than the faucial; in fact, the actual follicles which gather in the walls of the crypts, and make the distinction of this kind of tissue, are formed after birth. I have found them entirely absent in a child's tongue of six years, and very infrequent in one ten years old.

How different is everything in the faucial tonsil! Larger, thicker, loosely attached, easily adherent, earlier inflamed, and earlier developed, we should expect it to be more susceptible to acute trouble, and, the latter

present, we should expect more swelling, more retention of foul products, severer constitutional symptoms, better facilities for deepening and spreading of the inflammation and of formation of abscesses, and finally the chronic enlargement more frequent, greater in size, and more often acutely inflamed. On the other hand, the lingual tonsil is more liable to receive whatever of irritating and septic matter the ingesta of secretion of mouth and throat may contain, for all matter swallowed traverses it, and, being at the bottom of the throat, it gets the drippings from all the rest of the throat and overlying parts. However, these things seem to have little weight except as years go by; for just as in the very young child we more frequently see adenoid enlargement at the vault of the pharynx, in childhood and youth a greater tendency to enlarge the faucial, so in adult life, beginning any time after puberty, there seems to be an increasing tendency to inflame the lingual tonsil. Given, however, acute inflammation, we should expect but little swelling, as there are no adhesions, but little retention of foul products, and so more rarely circumtonsillar or deep-seated inflammation with formation of abscess. Should, however, an abscess develop, we should expect, as in quinsy, to find the formation of pus in the region where there is the nearest approach to a dead space, backward and downward toward the outer edge of the epiglottis. Swelling in this region would lead to pressure on return circulation of the surrounding parts, and there would be involvement of the epiglottis and glottis. In severe cases there would be cedema. As a matter of fact, these cases are rare, and even the severer forms are infrequent, just as we might infer from anatomical conditions. I have seen but two cases of abscess, the last being a year ago, while I have on record forty cases of undoubted acute affections of the lingual tonsil. These I have seen in the last two or three years, and of these only four or five could be called peritonsillar in type. They were all in persons over eighteen years old, and more between the years of

twenty-five and forty. Eight in every ten had had previous attacks, or at least I judged them to have had chronic enlargement previously present. They all coughed some, most of them distressingly. Otherwise they had nothing different than one finds in such cases, and certainly presented, as regards frequency of the severe type of disease, marked contrasts to the same disease in the fauces.

In speaking of my cases of the acute inflammation and involvement of this tonsil, I have been particular not to mention their character except to refer to the abscess. Whatever inflammation may attack a faucial tonsil may, of course, inflict itself upon the lingual, and so we distinguish first the simple form, when a chronically enlarged tonsil is acutely reddened, swollen, and painful; the follicular variety, where with constitutional symptoms well marked, either alone or together with the faucial, frequently following the latter on the third or fourth day, the lingual tonsil exhibits well-marked plugs of mucus, which occasionally spread to an actual membrane; the circumtonsillar type, where the deeper structures are affected, and which occasionally results in abscess; and finally, true diphtheria has begun on the lingual tonsil, or the latter has become involved in a diphtheritic process.

To go into the history of the causation of any or all of these varieties is but to rehearse all that is known on these same matters when connected with the other tonsils.

The first variety spoken of is vastly the more common, and is usually very simple when uncomplicated. The patient complains of having caught cold and has a sore throat. He generally volunteers that it is not in his tonsils, except where they are involved, but lower down, where one swallows, and points to the region of the hyoid bone. There is also the feeling of a lump, which makes swallowing painful, and commonly, if the swelling involves the lateral edge of the tonsil, shooting pains run upward toward the ear. More often than not, espe-

cially when there was much previous enlargement, cough is complained of, and, in fact, so frequently is this a cause of cough, as almost the only symptom of the trouble present, that I never fail to try the possibilities of treatment in every case of throat cough which is uncontrolled by simple remedies, or has not a known, definite, and sufficient cause. It always requires something to make a cough. Irritation exists somewhere, and especially when on lying down or going in or out the door, or on using the voice, a sudden explosion and prolonged coughing spell comes on, without raising, and due, as the patient frequently himself is conscious, to a tickle in an especial spot, one will find very often the hyoid region to be indicated. Something seems to be wrong in that region, and it is common to blame the poor larynx for it, often, 'tis true, with right. But sometimes the patient may be more accurate, and point to a spot on one side, and here, as in other cases, without his aid, if accurate observation is made, the physician can find the spot to correspond exactly with the reddest and most swollen spot in the lingual tonsil. This spot will be found to be where it can rub on the epiglottis or on one of the faucial tonsils. Contact of spots usually not in touch with each other in the throat always causes some disturbance of feeling, as is indicated by the feeling of the lump usually present in any enlargement of this tonsil. But sometimes the feeling is interpreted as a tickle which produces cough. The very contact keeps the parts irritated, and, when they become lacking in moisture, of course the friction is more severe. As stated in the anatomical remarks, the lingual tonsil possesses by virtue of its rich supply of blood-vessels possibilities of sudden enlargement by their becoming engorged, amounting to almost an erectile type. Granted now that by acute inflammation the tonsil is swollen and the parts are almost in contact, and the drying and irritating effects of mouth-breathing at night, or in going out, or perhaps mere emotion, suddenly send more blood to the parts. Immediately contact is established, and either

or both of two results must ensue. If large surfaces come into contact by the swelling, the patient is conscious, sometimes painfully so, of a lump. If a small projecting spot suffers the distention, a small irritation ensues, the exasperating tickle, which continues in spite of everything the person can do, throwing him into convulsions of coughing, if the temperament is such, until by very exhaustion, or mayhap by the skilled physician's touch, the swelling reduces. Then as by magic the cough stops, and the patient dries his tear-stained face, wondering what could have made him have such a time, and he does not have another until those spots come together again; the intervals being short in acute cases, in chronic enlargement even days. If a cough is purely laryngeal, coughing and clearing the throat accomplish something in the way of stopping it. If bronchial, it stops by raising. When it is the lingual tonsil, coughing rather of the two aggravates the trouble. Sometimes, however, as stated, there is no help given the physician by the patient in locating the trouble; in fact, he may confuse him, for, as pointed out in speaking of chronic enlargement, there is sometimes an oppressive feeling produced by this trouble, which is referred to the chest. In the same way occasionally the patient will insist there is a tickle way down in the chest, when curiously enough an application to the lingual tonsil will remove the trouble. I suppose some reflex effect on the vagus explains this deception.

I have spoken at length of this one symptom, because the others of an acute trouble generally last but a day or two, but this one is present at the start, and lasts frequently for weeks afterward; in fact, distressing cough of this type may last for months following one of these attacks. The pain, as in other acute affections, is not always commensurate with the amount of local symptoms, and frequently streaks up toward the ears with each attempt at swallowing. Sometimes an intolerable heat or burning is complained of, which at intervals is very much worse. The feeling of a lump, which is so frequently present, is so strong that frequent and

repeated attempts are made to swallow it away, or to hawk it up; each attempt, however, only adds to the pain. Loss of voice is very frequent, but is of a reflex type, fatigue being a prominent item. Often also talking produces pain. The constitutional symptoms amount to fully as much as an ordinary tonsillitis; the frequent occurrence of this variety of trouble in connection with attacks of *la grippe*, however, makes an estimate of the amount of prostration to be attributed to the local trouble very difficult.

The follicular variety, however, has much more fever, decidedly sharper local symptoms, and a quicker decline than the other variety, differing but little from it in the general history except that the pain and local symptoms frequently are closely dependent on the presence of the plugs of mucus in the crypts, and are immensely relieved by their removal. When the whole lingual tonsil is affected, there is a feeling of stiffness on the motion of the tongue. Several of this winter's cases have shown a marked tendency to affect only a part at a time, and to relapse through two or three weeks, going from one part of the tonsil to another. Where this is the case there is frequently a crescendo in the type, so that I have imagined a very small abscess may have developed in the last spot affected, for the diminuendo has been as sharp as after a quinsy; but I have no absolute assurance. Except for a case of the relapsing type, the patients improve under a simple treatment, and in from three to six days are better of the pain and soreness, the cough, as before stated, frequently being troublesome for a much longer time.

When the peritonsillar infiltration becomes a feature of the trouble, the whole aspect is much more severe. If the extent of the tonsil involved be great, the whole tongue becomes swollen, oftener on one side, so that there is hardly room in the mouth for it. All motions are very difficult, and swallowing on the fifth or sixth day will become well-nigh impossible; although the necessity for it increases owing to the salivation. The

epiglottis about this stage, if not before, has become involved, and the whole glottis may be dangerously œdematous. This swelling, aside from the threatening aspect as regards respiration, is very annoying in swallowing. The glands in the neck on one side are swollen; sometimes the entire neck in the hyoid region, and toward the angle of the jaw, will be protruding and hard. The tongue itself posteriorly has the hard, tense feeling to the finger which the palate has in ordinary quinsy. Sometimes also, as in the latter, the focus of pus can be distinctly felt as a soft, pulpy mass. Oftener, however, resorption takes place without this latter, and in the course of ten days or two weeks the patient recovers. In these cases, however, swallowing is a very serious symptom, and the lack of food and nutrition weakens the patient as in the other kind of quinsy. The cough in this variety is a most distressing symptom, for the pain it produces is agonizing. If the abscess opens spontaneously, or is lanced, there is immediate improvement, and rarely does the convalescence exceed a week thereafter.

The treatment of these various forms of lingual inflammation would divide itself into general and local, and the latter into measures carried out by the patient and by the physician. For the general treatment I have nothing further to say but that I am rather fond of trying to break up the inflammation at its beginning. Not succeeding, I always follow the initial medicines, where I have the least indication, with antirrheumatics. I am sure they help us frequently to abridge the process. The first night I invariably use a Priesnitz poultice, otherwise nothing different is done than the usual systemic treatment of a tonsillitis.

Locally early in the treatment the patient may use cold, as pieces of ice held in the mouth; later, these are also very comforting when the process is well advanced. Every two or three hours the patient is directed to gargle, if the trouble has advanced, with milk and water, half and half, and as hot as can be borne, at least a glassful

being used at once. This is followed immediately by half a glassful of water in which some alkaline preparation has been dissolved. I am accustomed to use potassium chlorate and borax together as being about as soothing and comforting as anything I can find. Between times, in the severer cases, the tedium of the distress in the throat is relieved by spraying with cold solutions of Seiler's tablets. Where the distressing cough comes into play, and, in the phlegmonous types, the swelling is intense, and there is inflammation of the glottis, steam inhalations must be adopted and used freely. The nourishment is, of course, bland, easily digestible, and mostly fluid. As often as I see the patient I apply to the inflamed areas, especially on the spots where I think contact exists, after thorough spraying with an alkaline solution, boro-glyceride, or, more strictly speaking, glycerite of boro-glyceride, and then insufflate directly on top of this a powder of tannin and morphine sulphate, the latter being in about the proportion of two and a half per cent. of the entire mass. An oily spray closes the performance. When serious congestion threatens, scarification of the tonsil gives some relief, as also do leeches applied externally in the hyoid region. If there is phlegmon present, and with it the usual œdema of the glottis, I freely incise the latter so as to let out the fluid. I also warn the patient of the danger of the swelling, and also of the liability of the abscess breaking and the matter getting into the larynx. Tracheotomy is sometimes a necessity. Unless it be to anesthetize the parts for the purpose of incision, etc., I do not ever feel justified in using cocaine, unless it is to make the patient more comfortable while taking some nourishment. Of course, if other parts of the throat are affected at the same time, there has to be something suitable done to them, but that may be considered as treated *pro re nata*.

Now, if not too weary, I will give a brief history of the last case of abscess of the lingual tonsil which I have had:

Mrs. D., aged thirty-five years, had been treated by her family physician for an ordinary tonsillitis of the faucial type, and which, having affected both tonsils—the right last—had got better. She went out one afternoon and was taken worse in the night, sent for her family physician the next morning, and he concluded from the symptoms that she had œdema of the larynx, and referred the case to me. I found the patient somewhat weak and anæmic from the previous illness, but evidently suffering no distress for want of breath. She was hoarse, but not aphonic. The temperature was normal, pulse rather rapid, but she did not make the impression of being a very sick patient. The examination showed the pharynx free from any membrane, the tonsils a trifle red, the right slightly more so than the left. The right arytenoid was very much enlarged and œdematous, the epiglottis not involved. The right vocal cord could not be seen on account of the swelling of the arytenoid and processus vocalis, which was as large as a small-sized hazelnut. The swollen parts were immediately cocaineized and scarified; this latter was followed by a decided reduction in the swelling, and a great deal of relief to the patient, whose chief complaint was that it hurt her somewhat to swallow and she felt short of breath on exercise. Inhalations of steam and very hot gargles were immediately started. Examination of the urine showed existence of no kidney trouble. In the afternoon of the same day the left side of the larynx had become involved, and the whole glottis was considerably narrowed. The most swollen parts were again scarified, and the patient seemed again relieved. The treatment was made more vigorous, inhalations being taken as hot as the steam could possibly be borne, and were repeated every hour or two if the patient was not sleeping. The nurse was directed not to leave the bedside, and the patient was left for the night. In the morning the left arytenoid was swollen to twice the size that the right was at the beginning, and that side of the epiglottis had begun to be somewhat swollen and thickened. Scarification again relieved the swelling somewhat, and by afternoon the left arytenoid was smaller than the right. On the next day the right arytenoid had increased in size, and the epiglottic ligament was œdematous. The base of the tongue, the lingual tonsil, which had before not attracted my attention, was considerably swollen and very much reddened, and the palato-epiglottic fold was also reddened and enlarged. Numerous and deep punc-

tures were made, those on the œdematous parts to relieve the serum, and on the tongue to let a little blood. The difficulty in swallowing was now a very important item; it was almost impossible for the patient to swallow half a teaspoonful at a time. Coughing was intensely painful, the pain streaking by all motions of the throat up into the ear. The status on the next day remained about the same; there was no fever, and the constitutional symptoms were in no way troublesome, except from lack of nutrition. But a very slight improvement was noted for the next three days, during which time only one puncture of the epiglottis was done. A constant ache was felt in the parts at the side of the neck, but other than that if the patient was quiet she did not suffer. On the ninth day the improvement, however, was distinctly evident, although there was still a great deal of swelling in all the parts previously mentioned, and even on the left side of the larynx the swelling persisted. From then on until the fifteenth day, although the swelling did not leave the right side of the larynx at all, the patient felt very much less pain, could swallow with greater ease, got in considerable semi-solid food, and felt better all round. I was very much at a loss to explain the continuance of the infiltration of the right side of the glottis. On the morning of the following day she complained that in the night she suddenly had become voiceless, during all the previous time having spoken in a perfectly clear voice, but not loudly. The aphonia seemed to be due to an increase in the size of the right arytaenoid. A slight pricking did not seem to relieve it at all. The patient remained in this condition in spite of all the treatment we could think of until the twentieth day, when she complained of feeling sick. The throat suddenly became very much sorer to swallow, so that she had almost as much difficulty as she had had on the fourth and fifth day. The arytaeno-epiglottic fold and the palato-epiglottic fold became very much swollen. The base of the tongue distinctly projected, and the space between the edge of the epiglottis and the right base of the tongue was almost obliterated. The tenderness was extreme. Externally over the cornu of the hyoid bone a distinct swelling appeared and became extremely tender. On the following day the patient was worse even than the day before, the swelling in the neck had increased to double the size, the voice was a mere whisper, and from the swelling internally it was thought that an abscess was developing near the base of the epi-

glottis. We applied poultices externally, and everything internally as hot as could be borne. In the evening a deep puncture was made into the most swollen area, but failed to give any relief or let out any pus. The next day the status was exactly the same, except that nothing had been swallowed for twenty-four hours and the patient was extremely prostrated. Even at this time the patient had only developed a temperature of 100°. The swelling of the parts internally was fully as great as before, but even at this stage did not cause the tongue to protrude at all, and was not accompanied by any increase in the swelling of the parts around the entrance to the larynx; the tongue could also be used with perfect comfort in talking. By evening the external swelling had become as large as a good-sized hen's egg. Another attempt was made to find the abscess cavity, but was unsuccessful. On the next morning the patient reported that up till two o'clock that night she had had no sleep. A dose of morphine, however, had finally taken effect, and she went to sleep. On awakening she found herself very much relieved, could talk audibly, and could swallow without one tenth part of the pain she had had before sleeping. Examination showed a rupture had taken place at the point where the last puncture was made, and the swelling, both internally and externally, had become very much less. From then on the convalescence of the patient was rapid and uneventful, and by the tenth day thereafter the throat was practically well.

Paper.

SOME REMARKS ON THE PRINCIPLES OF TREATMENT OF
SIMPLE ACUTE LARYNGITIS AND BRONCHITIS.

By THOMAS HUBBARD, M. D.

THE purpose of my paper is to encourage authoritative discussion on a certain question, and it can best be served by a text and brief presentation of theories and clinical facts. The literature, both authoritative and current, is full of inconsistencies to the extent of obscuring the therapeutic principles involved.

The pathology of simple acute inflammation of the upper and middle respiratory tract has received much enlightenment in this decade. We accept with modi-

fications some of the theories bequeathed to us. They have the merit of having been tested by generations of practical clinicians, and form the basis of rational therapeutic principles. They may be briefly summarized as follows:

1. A congestive reaction following exposure to cold.
2. Hyperæmia due to irritation from dust and vapors.
3. Inflammation due to chemic irritation of the mucous membrane, from vicarious elimination of the products of disturbed tissue metabolism incident to certain systemic disorders, such as a general "cold," acute indigestion, lithæmia, and, in general, disturbances caused by suboxidation.
4. Reflex vasomotor disturbances and localized angioneuroses.
5. To these we now add inflammation caused by pathogenic micro-organisms and their products. These may be inhaled, or they may invade the larynx and bronchi from diseased foci of the throat and nose, or from systemic infection.

The term "expectorant" is full of beneficence. It is an excellent thing on general principles to cast out of the pectoral organ that which offends, and likewise the exfoliated cellular *débris* and spent secretions. "Stimulating expectorant" is a still more felicitous expression. In the days when nauseant and relaxant expectorants were used heroically to unlock the emunctories, and when it was quite the rule to be made more sick in order to get well, stimulating expectorants were a Godsend. The puked, physicked, and phlebotomized patient welcomed a high degree of stimulation.

I will quote an old English medical aphorism as embodying my argument: "Never give stimulating expectorants until the skin is moist and the phlegm loose; it will do no good. You must give ipecac and relaxant expectorants as long as the skin is dry and the phlegm tough."

The gist of my contention is that we are losing sight of the proper relations of these two classes of expecto-

rants, relaxing and stimulating. We are discarding inelegant nauseants, and using indiscreetly and irrationally the stimulating expectorants fortified by sedatives. This has been brought about in part through lack of confidence in the more agreeable relaxing expectorants in popular use, and through perfection in the application of local palliatives.

A few of the essentially conservative features of acute inflammation of a mucous membrane may be mentioned. Whether the cause is of the nature of a chemical irritant, self-produced, or a pathogenic organism, the ultimate object of determination of blood to the membrane is to flush away by sero-mucous flow the offending matter, and to antagonize the specific pathogenic agents by pouring out a host of resisting leucocytes. From the depths of the glands, and from the folds and interstices, mucus and serum, both aseptic and to a limited degree antagonistic to germ life, are poured out and flush the very substance of the membrane. This is the process called "loosening" the cough. We must keep clearly in mind these essential features of acute catarrhal inflammation, and I would add another very important consideration which applies to the tracheal and bronchial membrane especially. The swelling incident to hyperæmia and congestion of a membrane lining a more or less rigid fibrous and cartilaginous tube means necessarily a condensation of the superficial tissue elements of the membrane. As the calibre of the tube is encroached upon, a given number of epithelial cells must be crowded into a smaller area. This closes the orifices of the muciparous glands and checks mucous flow. Mucus retained in the substance of the membrane may undergo chemical changes, and become acrid and irritating, even though there be no specific pathogenic ferments present. This may cause even sapræmia. Much more injurious to the integrity of delicate epithelial cells are the ptomaines of specific germ origin. The only relief in either instance comes by inducing a free mucous flow.

There is a clinical fact in this connection of great practical importance. An acute inflammation of the

respiratory tract is often progressive, much after the manner of erysipelas of the skin. Resolution may be well established in the larynx and trachea, and yet the bronchi may be in the acute stage. How very often our patients seem to have a loose cough and yet complain of a feeling of tightness and pressure over the bronchi! It is a good therapeutic maxim to direct the treatment according to the more severe condition. Neglect of this precaution encourages the development of a progressive capillary bronchitis or catarrhal pneumonia. When the larynx is in the primary acute stage, and the bronchi are in the relaxed condition and secreting freely, the prognosis for quick recovery is more favorable. Often we find that the larynx is being constantly reinfected from an unhealthy throat and nose, and once the tide of mucous flow is established from bronchi toward the throat the larynx is relieved, and speedily recovers the normal condition.

The important processes tending toward recovery are, first, a free flow of mucus and serum from the substance of the membrane, and, second, rapid expectoration. Secretions retained in the larynx and bronchi ferment and irritate the membrane. The fact is reaffirmed that we have two distinct classes of therapeutic agents with which to meet the special indications above mentioned. The skillful use of those first indicated—namely, to encourage free secretion—is the *sine qua non* of successful treatment. The too early use of stimulating expectorants encourages rather the absorption of the inflammatory products than a natural elimination. They are expectorants only after free secretion is established.

Alteratives, astringents, stimulating vapors, and antiseptics have all one predominating effect on an acutely inflamed mucous membrane, which obscures any special therapeutic influence. They are all irritants, and in varying degree antiseptics. We may add that stimulating expectorants are likewise irritating except under certain conditions to be mentioned.

The secondary effect of an irritant on mucous membrane is, as a rule, to produce a sero-mucous flow depleting the tissues. When iodine, alumnol, or nitrate of silver preparations are applied to an acutely inflamed mucous surface, the more delicate epithelial structures are offended, and the membrane weeps in self-defense. Coagulated mucin and incorporated cells, and likewise pathogenic organisms, are flooded away and antagonized. They may be called depletory antiseptics. Tissue congestion is relieved, and the symptoms may be temporarily, very rarely permanently, alleviated. As a rule, the ultimate damage to the membrane is more than the beneficial effect of lessening congestion and removing a part of the offending material, and the reaction which follows is worse than the original condition.

A class of remedies which may appropriately be called vasomotor stimulators, or arterio-capillary contractors, has come into prominence recently, more especially in the treatment of acute laryngitis. Cocaine, atropine, strychnine, and hydrastine are the more commonly used. In mild cases not associated with bronchitis or pharyngitis they may be depended on, and relieve many symptoms, but in more severe cases their use, local and internal, may retard that natural process of resolution which is the first step toward recovery.

Sedatives and local anæsthetics, such as opiates, cocaine, and menthol, should be used with caution. Opiates dry the mucous membrane and thicken the mucus. The effect of cocaine is pernicious. Menthol gives only very transient relief. The best sedative to an inflamed larynx is a flow of non-irritating bronchial mucus. All treatment should be directed toward this end, and all palliative treatment which retards it should be avoided.

Keeping the principles expressed in the precept of Fothergill clearly in mind, the first thing to determine is the choice of a relaxing expectorant. Ipecac is excellent, but very slow in action in ordinary doses. It usually destroys appetite. Vascular sedatives, such as the tartrate of antimony, lobelia, and aconite, produce so-

great a degree of vasomotor depression and general relaxation that copious diaphoresis is encouraged, and the patient catches more cold, aggravating the condition for which it was given. They may be administered only when the patient will remain in bed, and the same may be said of pilocarpine.

For about five years I have been using apomorphine, freshly compounded in acidulated mixture, and regard it as the best of all relaxing expectorants. In one-thirtieth-grain doses, at two or three hours' intervals, it rarely fails to cause a free sero-mucous flow in twelve to thirty-six hours. In cases of severe laryngitis and bronchitis rest is an essential adjuvant. Appropriate general treatment is, of course, implied. Codeine sulphate in one-fifth-grain doses, given independently *pro re nata*, is the best sedative.

Apomorphine in acidulated mixture rarely causes nausea in the doses mentioned, and in fact seems rather to aid digestion and increase the appetite for a limited period. It is slightly laxative. It can be given for many days in doses gradually decreasing as the expectoration becomes more free. Since using this remedy I find less and less use for stimulating expectorants and sedatives. The apomorphine should be administered as long as improvement is decided. A sero-mucous bronchial secretion is coughed out very easily. Only in debilitated subjects, or where there is a broncho-pneumonia, have I found it necessary to supplement this treatment with stimulating expectorants. Of these I regard the carbonate of ammonium as the best, administered in a mucilaginous vehicle or as the fresh aromatic spirits.

A clinical study of this question of relative values and indications for relaxing and stimulating expectorants, and a review of the literature over a considerable period, has prompted me to present this paper. I may add that, in fact, the comparison of results in my own practice, and also in cases under the care of others, strengthens my conviction that the aphorism of Fothergill concerning the use of expectorants is sound, and,

further, that in just so far as we have drifted away from it have we deteriorated in our principles of therapeutics of simple acute laryngitis and bronchitis.

Paper.

PRIMARY ERYSIPELAS OF THE PHARYNX.

BY WILLIAM PORTER, A. M., M. D.

ERYSIPELAS of the upper air-passages is rare—at least our recognition of it is rare—yet I can not but believe that more frequently than we know a true case, involving only the mucous membrane, may run its course without recognition.

My own experience with this type of disease in the respiratory tract is not great, and I find, in looking up the general and special literature, that the reported cases are exceedingly few. Only those cases have been cited in which there was an external inflammation some time during the course of the disease, and upon which the diagnosis was founded. Indeed, it is difficult to affirm a case to be erysipelas without cutaneous involvement, and for this reason the number of cases recognized is limited.

Again, the treatment often employed in many cases of acute pharyngitis and laryngitis is well adapted to erysipelatous disease, and it is possible that true cases are cut short, or successfully conducted as simple inflammations.

In a paper read before the association in 1880 (*Archives of Laryngology*, vol. i, No. 4) I reported two cases of primary erysipelas of the larynx. As this was before our proceedings were preserved in their present admirable form, I venture to briefly refer to these instances, and will add the history of a case of naso-pharyngeal erysipelas occurring within the last few weeks.

CASE I.—The earliest recorded case of which I have knowledge of erysipelas of the air-passages without cutaneous disease is one that came under my care years

ago at the London Hospital. As the notes of this case were published in full by Mackenzie, in his work upon *Diseases of the Larynx, Pharynx, and Trachea*, they need not be repeated in detail. The main points in the case were:

A man, aged thirty-five years, laborer, was admitted to accident ward on account of fracture of the right internal malleolus. There was nothing unusual about the case for ten days; then there was some pain in the throat, with hoarseness and a little fever, which increased until, on the second day the temperature was 102°, hoarseness was marked, and there was some dyspnoea.

The third morning he was transferred to a ward in my service and I saw him almost hourly. There was acute inflammation of the larynx with marked swelling of the ventricular bands. Dr. Mackenzie saw him on the third day. The inflammation had advanced upward, the epiglottis being now involved; it was infiltrated and eroded. There was also evidence of bronchial and pneumonic inflammation, but the dyspnoea was so great that the changed respiratory sounds could not be well defined.

At midnight of the fourth day I opened the larynx. The patient lived forty-six hours after the operation, during which time a distinct friction sound made its appearance at the cardiac apex, and an erysipelatous flush surrounded the tracheal wound. The notes of this case contain the first and, so far as I have knowledge, the only full record of an autopsy in primary erysipelas of the larynx. Without quoting them, I beg to refer to their publication as before cited.

The second instance occurred a few years later in a patient of Dr. Miller and Dr. Bond, of St. Louis, who asked me to see the patient, a merchant, aged twenty-six years, who had been exposed to erysipelas a week previous. The general appearance and symptoms were similar to those in the first case. Tracheotomy was done, the only result being to seemingly prolong life a few hours and render the condition of the patient easier. There was no autopsy.

In the third case, which has been but recently under my care, the larynx escaped, but the erysipelatous inflammation of the pharynx and nasopharynx was well marked. The patient, a prominent young business man of good habits and without knowledge of exposure, consulted me about four weeks ago, complaining of pain in the frontal region, fever, and great thirst. I found the turbinated region acutely inflamed, temperature 103°,

pulse 130, tongue furred, and patient very nervous. He had, during the previous week, had pain in the back and in the larger muscles, and, at times, chill alternating with fever.

The next morning the pharynx was involved, and there was a well-marked characteristic flush over the external surface of the nose, extending well down to the cheek. The temperature was 104.5° , and the disease made rapid progress. The right Eustachian tube became involved, and, finally, the corresponding middle ear. Under a vigorous treatment with iron, and at times pilocarpine, with free insufflations of stearate of zinc and applications of ergot externally, the symptoms yielded, although there was the usual tendency to relapse. At this writing, May 1st, the patient is entirely well, except for a gradually diminishing otorrhœa.

These three cases in my own experience, as well as some others less well defined, have convinced me that some instances of acute laryngitis or pharyngitis are of erysipelatos origin. Clinically and bacteriologically the conclusion is a reasonable one. When the external evidence follows, the diagnosis is easy, but fortunately for the patient, though unfortunately for the classification, this is not always the case.

My thought in closing is, that where we have general symptoms, such as are common in erysipelas, with acute inflammation of the mucous membrane of the air-passages, with swelling and some œdema, especially if the margin is well defined, we should suspect erysipelas, even if there is no cutaneous involvement.

[Since this was written my attention has been called to an interesting case of erysipelas beginning in the pharynx, and extending along the Eustachian tube, involving the right mastoid process. The report of this case, by Dr. L. T. Riesmeyer, is in the *Medical Review* for May, 1890.]

Paper.

SOME NOTES ON TWO CASES OF SARCOMA OF THE NASAL CHAMBERS AND ACCESSORY SINUSES.

BY ARTHUR AMES BLISS, A. M., M. D.

At the German Hospital, of Philadelphia, during the past year, we have had the unusual experience of receiving two children, one four years of age, the other nine years, suffering from large sarcomatous growths within the nasal chambers.

CASE I.—Walter W., aged four years, family history is excellent. One year ago last January (1895) it was noticed that the left nostril of this child was becoming occluded. The surgeon who examined the nares at this time pronounced the case to be one of nasal polypi, and removed considerable spongy, myxomatous tissue. Six days after this operation the growth recurred. The parents of this child state that during the succeeding eight months the occluding mass was cleared away by means of forceps as many as thirty times. After each attempt at removal, however, the growth recurred promptly, each time involving an area larger than before. The child was admitted to the German Hospital on September 2, 1895. I saw the case two weeks later. The condition presented then was as follows: A soft, fungoid mass of coarse granulations was visible just within the left naris, appearing to fill completely this side of the nose. By its pressure the septum had been forced far over into the right naris, being pressed almost against the outer wall of this side. There was tenderness over the maxillary antrum of the left side, but no swelling. The left eyeball protruded from its orbit and was forced forward and outward. The posterior naris was filled completely with a soft myxomatous tissue which pressed downward against the soft palate. The external auditory canal of the left ear was filled with a similar growth of tissue. There appeared to be no involvement of the cervical lymphatics. In attempting to clear away these masses within the nares, I decided not to resect the superior maxilla, believing that such success as we could expect from any attempt at removal would follow as well from a simpler operation. I opened the maxillary antrum of the left side by dis-

secting the cheek from the underlying bone and raising it so as to expose the canine fossa and that part of the superior maxilla forming the outer wall of the antrum of Highmore. This bony wall was then removed by means of drills and a chisel, so that a good view was obtained of the interior of the antrum. This space was found to be packed tightly with the fungoid mass, which was removed by curettes, and the bony walls scraped. The roof, separating the orbital cavity from the antrum, was found to be intact. Having freed this sinus, I broke down the inner wall by means of cutting forceps, and, using the same instruments, cleared away the tissue within the anterior nares. This resulted in the removal of the larger portion of the lower and middle turbinated bones. I then introduced a forefinger into the posterior nasal space, passing my hand back through the patient's mouth. This finger was used as a curette, and served as a guide for a cutting forceps, which was passed through the left naris into the post-nasal space. The finger, aided by the cutting forceps, removed the masses of the growth from this area, and the surrounding bony walls were scraped. Considerable hæmorrhage attended the different stages of this operation, but the area was thoroughly cleared without having made any large external wound. I packed the antrum with iodoform gauze as a daily dressing, and touched the raw surfaces with a strong solution of nitrate of silver, dusting iodoform into the nares and post-nasal space. The growth did not recur in the area operated upon, but the protrusion of the left eyeball was only very slightly reduced. During the six weeks succeeding the operation, the cervical lymphatic glands at the angle of the jaw and sub-maxillary region became greatly enlarged. The child began to manifest considerable difficulty in respiration. This was not due to any mechanical occlusion of the larynx by reason of enlarged lymphatic glands, but appeared to be of central origin. A series of short, ineffectual inspirations would be followed by a prolonged expiration, after which the child would breathe easily for a time, until another seizure of the same character would occur. The child was removed to its home on October 12, 1895, and died from exhaustion about six weeks later.

CASE II.—James S., aged nine years; family history good. Admitted to the German Hospital on April 2, 1896. The accompanying photograph illustrates very well this child's appearance, showing the growth pro-

truding from the left naris, the marked exophthalmia, and the swelling of the cervical lymphatics of the left side. Until three weeks before admission, the child is



CASE II.—Sarcoma of the left naris.

said to have been well. His general condition was wretched, and it was not deemed advisable to attempt any operative treatment. He has returned to his home and, at the time of last report, was still living.

These two cases are somewhat unusual in the rapid development of the growths and in the early ages of the patients. As no autopsy was held in Case I, we can not state in what area of the nasal chambers the sarcoma took its origin. There is, however, a certain sequence in symptoms which is suggestive. In Case I the patient complained first of pressure high within the left naris; then, of occlusion to breathing; then, of pain in the left ear and otorrhœa; then, of rapidly increasing exophthalmia.

The replies elicited from the parents of Case II give a somewhat similar history, although pointing to a much more rapid development. I would suggest,

therefore, that both growths had their origin in the middle turbinate of the left side or within the ethmoidal sinuses; that they followed the paths of least resistance from their origin, growing downward to the floor of the naris, forward, backward to the post-nasal space, outward to the antrum. That then they began to work their way into more resisting structures, the Eustachian tube of the left side, involving, perhaps, the lymphatics about it, and thus reaching the ear; into the ethmoidal sinuses, and, later, the sphenoidal sinus, thus forcing the eyeball forward and outward. Finally, they began to involve the lymphatic chain in the neck.

Case I illustrates plainly the need for most radical measures in this class of cases. If the work is not to be most thoroughly done it had better not be attempted.

The method of operation followed in this case gave us free access to all parts of the area involved except the sphenoidal sinus, and, although somewhat more effectually reached, the ethmoidal sinuses. I doubt if a resection of the superior maxilla, and of the entire body of the nose, would have enabled me more effectually to reach these distant recesses into which the growths had penetrated.

Paper.

THE TREATMENT OF DISEASES OF THE NOSE AND EAR
WITH OXYGEN GAS.

BY GEORGE STOKER, M. R. C. P. I.

SOME two years ago I made a discovery with regard to the curative effects of oxygen gas on wounds, ulcers, and suppurating surfaces when they were exposed to its influence. It was but natural that I should endeavor to apply these more general surgical results to those special conditions in which we are together interested, and it is to give you some of the results of those endeavors that I venture to ask your kind permission to read this short paper:

The cases I selected to treat with oxygen gas were (a) "ozæna," (1) syphilitic, (2) chlorotic, and (b) "chronic suppurative disease of the middle ear."

The method of applying the treatment is as follows; and I mention it now as the application to both nose and ears needs only one description. The oxygen is contained in a wedge-shaped bag made of mackintosh. This bag is placed between two boards (pressure boards), such as are used with the oxyhydrogen light. From this bag a tube leads, which terminates in a nose or ear piece. There are two taps—a large one on the bag, for the purpose of filling it, and a small one to regulate the stream of oxygen during treatment. This bag contains one cubic foot of gas, or of gas and purified air mixed in equal quantities, and this amount should suffice for six hours' treatment. In the great majority of cases I use equal parts of oxygen and purified air. This latter is prepared by being pumped by means of a bellows or hand ball through two wash bottles, the first containing some water and the second Condry's fluid. The bottles are attached to the bag for this purpose, and when the bag is half full it is then detached from the bottles and filled up with oxygen. The bag being filled, we are then ready to begin the treatment. The nose piece is passed into one nostril, the other nostril being plugged with cotton wool; the patient is directed to breathe through the mouth, the taps are turned on, and the treatment is begun. In ear cases the only difference is that the terminal piece is placed in the external auditory meatus, and in case of either ears or noses it is desirable to have several different-sized terminals to fit different-sized orifices. The oxygen should be allowed to pass into either the nose or ear from three to six hours daily. In nose cases it is best to use it about half an hour to an hour at a time, giving intervals of rest between the times. If used for more than an hour in nose cases it is apt to cause headache. The only additional treatment is using warm water to cleanse the parts during the day; the necessity for doing so seldom or often will, of course, depend on

the amount of the discharge, but it must not be done less than twice daily.

I now give the notes of four cases—i. e., two of “ozæna” and two of “suppurative middle-ear disease.” These are typically bad cases, and seem, I consider, to amply illustrate the results of the oxygen treatment:

CASE I. *Syphilitic Ozæna*.—Mrs. P., aged forty years. Had suffered from syphilitic ozæna for five years. Most of the internal parts of the nose had ulcerated away. The cartilaginous septum and turbinals had quite disappeared, and the inner wall of the right antrum was perforated and in an active state of necrosis. The nose was full of scabs or crusts, and the horrible stench characteristic of the disease was only too apparent. In the end of August, 1895, the oxygen treatment, as before described, was begun, and was continued for a month. At the end of that time her confinement was approaching and she had to leave the hospital. When she left, the ozæna was completely cured, neither smell nor crusts being apparent. In January, 1896, her condition of “wellness” was still maintained. Early in March she returned to the hospital and the condition of the nose was: the left nostril remained quite healthy, but the necrosis of the inner wall of the right antrum had progressed and extended and given rise to ozæna, but only on that side and in near proximity to the diseased bone. After a few weeks of oxygen treatment the diseased bone separated, and the patient once more was quite free from symptoms of ozæna.

CASE II. *Chlorotic Ozæna*.—A. B., aged nineteen years, had suffered for several years from ozæna. There was the usual smell, accompanied by the formation of crusts. The patient suffered also from dysmenorrhœa. She was treated with oxygen gas, as in the former case, and in three days the smell had quite disappeared, and she left in three weeks’ time completely healed. In this case a remarkable feature was the change of color of the scabs produced by oxygen; from being of a deep brown color they became in a few days quite white.

In reference to these cases, it is fair to note that they had both had prolonged and varied treatment before the oxygen was tried, and in both instances had resisted all treatment; and in the first case it is evident that the good effect of the treatment was and is permanent, so far as the soft tissues are concerned, and it was only

the existence of necrosis that caused a recurrence of the ozænic symptoms.

I may here state that I am now using oxygen in cases of purulent discharge from the accessory nasal cavities—*i. e.*, the antrum and the frontal and ethmoidal cells. So far, the results have been satisfactory, and I hope to report them to your honorable association on another occasion.

CASE III. *Chronic Suppurative Middle-ear Disease.*—A. L., a girl, aged nineteen years, had suffered for twelve months from chronic discharge from the left ear; she had occasional pain, and was very deaf on that side. The membrana tympani had suppurated away, all except the anterior superior segment. On April 18, 1896, the oxygen treatment was begun, half a cubic foot of oxygen being used at intervals of half an hour during the day. On the 22d of April the discharge had practically ceased and only a little flaky mucus came from the ear on syringing. There was no purulent discharge to be found. At the end of a week she was discharged cured, and it still remains to be seen how permanent the relief given will be.

CASE IV. *Chronic Suppurative Middle-ear Disease.*—J. G. Several years ago she had an attack of scarlet fever, and the discharge began in the second week. In the fifth week inflammation and pain set up behind the left ear. The mastoid was opened and a drainage tube put in. Afterward a dark-colored offensive discharge was most profuse from both ears, and continued more or less till the patient came under my care in November, 1895. During those seven years many and varied forms of treatment were tried and carefully carried out, but without success. The patient was under the care of a well-known London specialist.

On November 9th the oxygen treatment was begun, and was carried out about four hours daily. The improvement set in at once, and the offensive smell and discharge disappeared during the first ten days. The following are the notes of the conditions present when I first saw the patient:

November 1st. Hearing distance, watch: right ear, two inches; left ear, ten inches. Right ear, lining of meatus swollen and boggy. Profuse and most offensive discharge and constant pain. Glands below the ear

swollen and painful. Large perforation of membrana tympani.

19th. Oxygen treatment has been used for about four hours daily, at intervals. Meatus healthy, swelling disappeared. Discharge and smell almost gone.

December 18th. No pain, swelling, or discharge. Hearing distance, watch: right ear, two feet; left ear, two feet. The ear was syringed with warm water twice daily, no other treatment being employed.

All these cases speak for themselves, and I am grateful for being allowed to bring the knowledge of this system, that I have been fortunate enough to originate, before the notice of the American Laryngological Association, as I feel sure that in the great home of modern progress it will have a fair and exhaustive trial, and that its being a new system will not be any bar to its acceptance if, when it is weighed in the balance, it is not found wanting.

Paper.

SOME OBSERVATIONS IN LARYNGEAL TUBERCULOSIS.

By S. OAKLEY VANDER POEL, M. D.

LARYNGEAL tuberculosis is both a symptom and an extension of pre-existing disease. It is a symptom, because, when clearly established by laryngoscopic examination, there is no doubt that the lungs either are or will shortly become tuberculous, if not obviously so at the time; it is an extension of a disease, because, as a rule (not invariably, although it may be so), the pulmonary tissue first becomes the seat of tubercular growth, mischief appearing subsequently in the larynx.

The question of the order of time or priority existing between laryngeal phthisis and pulmonary phthisis seems to be clinically fairly well established, for most practitioners recognize it as a rule that laryngeal ulceration is preceded by a destructive pulmonary affection; and, according to my experience, I should designate it as a rule that has few exceptions; for the careful ex-

amination of the apices of the lungs with reference to the air they contain, and especially with regard to their comparative height, is of cardinal importance in determining this question. The flattening of one apex as compared to the other, as was pointed out by E. Seitz, of Giessen, permits one to recognize slight cicatricial contractions of the parenchyma at a time when the patient, without regard to this point, must have been pronounced sound, as to his lungs, as even the signs of catarrh of the apex and of diminished air contents may fail in individual cases.

It can not, however, be positively denied that exceptions to this rule do occur. For, as Buhl * contends, "Nothing wonderful is to be found, *a priori*, in such an appearance of laryngeal phthisis, as in a well-pronounced phthisical constitution the first eruption may take place in some other organ than just in the lungs, and sometimes does so take place; and furthermore, we can not deny the possibility that pieces of detritus thrown off by the laryngeal ulcers, and coarser pieces of tissue, may be drawn into the lung during inspiration and here produce phthisis." But from my own clinical experience I would assert that such an order of development is certainly extremely rare.

I would ask your attention, for a few moments, to the consideration of some of the more obscure points in the symptomatology of tuberculous laryngitis.

We occasionally meet with cases of consumption in which there is simple weakness of voice, in which speaking is effected with great effort, and is often reduced to a whisper, or in which voice is completely abolished. This occurs without any organic change in the larynx, examination showing that the tensors of the vocal cords are weakened, the cords appearing shortened and shriveled, the larynx contracting round its centre in attempted vocalization. It thus resembles the aphonia of hysteria, the chief point of difference being that in the latter case the adductors are usually affected and not the tensors,

* In Sommerbrodt, *loc. cit.*, p. 265.

although this difference is not invariable. The fact that both laryngeal nerves arise from the vagus may account for the liability of either set of muscles becoming thus paretic from irritation of the pulmonary branches of that nerve. Trousseau mentions this "nervous aphonia" in cases of pulmonary tuberculosis.

With reference to these motor disturbances which occur here so often, as has been pointed out by Rud Meyer, "We must distinguish between the muscular paresis which is so frequent at the beginning of laryngeal disease, and which appears to depend on the general anæmia of the soft parts within the larynx, and the paralysis of the right vocal cord, dependent upon paralysis of conduction of the right recurrent laryngeal nerve, which is often found imbedded and constricted in the hard, thickened pleural tissue about the apex of the right lung." The former, as has been demonstrated, may be quickly removed by appropriate treatment, while paralysis of the recurrent laryngeal, just described, is inaccessible to treatment. We have also to notice the existence of muscular paresis in the final stages, when inflammatory œdema has infiltrated the submucous tissue. This may be explained by the œdema interfering with the mobility of the crico-arytænoid articulations, at the same time causing mechanical hindrances to the locomotion of the arytænoid cartilages.

In some cases of pulmonary tuberculosis which have come under my observation I have been led to believe that there are certain premonitory symptoms in the larynx of a catarrhal character that portend the later development of laryngeal tuberculosis. I refer to cases when, at the time, there are no discernible manifestations of the tubercular process. Bosworth contends that a chronic catarrhal process in the larynx does not predispose to tuberculous disease of the organ; that they bear no definite relation to each other, either causative or otherwise; that the influence, therefore, of a chronic laryngitis as a predisposing cause of tuberculous disease is probably greatly overestimated, although it is undoubt-

edly true that a phthisical patient, suffering with a chronic laryngitis, is more liable to develop tubercular action than one in whom the laryngeal membrane is in a state of health. In this view I am inclined to concur; still, as I stated, the cases to which I refer showed symptoms which I have come to recognize as preliminary to the development of tuberculous trouble. In my cases there was at first no evidence of ulceration or of tumefaction of the posterior laryngeal wall, so characteristic of the later stages, but merely a slight thickening of the mucous membrane associated with the presence of a white, milky, somewhat purulent, mucous fluid, which secretion contains as yet no tubercle bacilli, but which I have come to consider almost pathognomonic. This secretion is chiefly to be found lodged about the aryteno-epiglottic folds, or may coat the interior of the larynx. This catarrhal condition I have seen to persist for six weeks or two months before the characteristic train of symptoms so common to the later stages developed. Then the subjacent membrane often is covered by minute white points, and when scarified they yield very little blood.

A case in point occurred in the person of a young man, twenty-five years of age, who had been the subject of pulmonary tuberculosis for three years, the disease being limited to the right apex, but which had progressed to the formation of a cavity. He had spent two years in the Adirondacks, which residence had been attended by great amelioration of all his pulmonary symptoms. Cough and night sweats had disappeared; he had gained fifteen pounds in weight; an examination of the chest which I made in August, 1894, in the Adirondacks, showed the cavity to be healed, there were no bacilli in the sputum, and I looked upon the case as one of cured phthisis.

In the following November he presented himself at my office complaining of aphonia, with slight hacking cough. His general condition was favorable, with no return of his old symptoms, and an examination of the sputum was negative; the larynx, however, presented the appearance just described—laryngeal mucous membrane

slightly swollen, of a dull gray color, and coated in part with a milky-white, somewhat purulent mucous fluid. It was not thick or tenacious and was readily removed by the spray. Repeated bacteriological examinations failed to disclose the tuberculous bacilli. The secretion was chiefly to be found lodged about the arytaeno-epiglottic folds. This condition of larynx continued for some six weeks, when it gradually assumed the typical picture of a tuberculous larynx. A further residence in the Adirondacks was of no avail and the case terminated fatally in a few months. When the disease involved the epiglottis, this shriveled and rendered deglutition difficult and painful, while if it were much ulcerated, food would find its way into the larynx.

Tuberculous infiltrations may occur over the arytaenoid cartilages and subsequently soften, or ulceration may occur in the vocal cords, chiefly at their posterior insertions. Frequently, however, the cords escape when there is most extensive ulceration elsewhere. Aphonia may be produced by very little mischief; but, on the other hand, ulceration, unless it attack the vocal cords, may be extensive without there being much aphonia. The prognosis in these cases, notwithstanding the operative interference which of late has been so much in vogue, is still somewhat disheartening.

Paper.

THE TREATMENT OF ATROPHIC RHINITIS. WITH A CASE.

By W. PEYRE PORCHER, M. D.

THE object of this paper is to elicit a consensus of opinion in regard to the best method of treatment of atrophic rhinitis. It is pitiable to find out what desperate measures are resorted to for the relief of this condition, because people believe that doctors are helpless to relieve them, and therefore willingly accept the most violent or disgusting remedies. For example, I was re-

cently informed by a comparatively intelligent man that he had been almost cured by inhaling his own urine. This he practised continually until he was induced to discontinue it by the fear of gonorrhœal or syphilitic contagion in the nose and eyes.

It is hard to find any two authors who agree upon a specific line of treatment. The journals teem with innumerable suggestions, the majority of which are generally utterly useless, because they are not directed to the cause of the disease, and very often even aggravate a condition which is already almost if not quite incurable. In order, therefore, to get the best result possible—which is at best a palliative one—it is necessary to determine what is the exact cause of the disease and what is the *status præsens* of a case which aggravates the condition and completely obviates Nature's efforts at repair.

Many theories have been advanced of the ætiology of this disease. Dr. Mackenzie says: "That atrophic rhinitis always appears as a sequel of a pre-existing catarrhal inflammation is rendered highly probable from a number of clinical and pathological facts. If the clinical history be accurately taken, it will point to a pre-existing catarrhal process. As has been indicated above, the rapidity with which the hypertrophic passes into the atrophic form of rhinitis is proportionate in all probability to the possession of some constitutional taint, such as congenital or acquired syphilis."

Dr. Bosworth says that a purulent rhinitis in childhood is a catarrhal process in the first year and a catarrhal process always, and that it consists essentially in an increased secretion of mucus in the earlier stages, together with a rapid desquamation of epithelial cells, which, running its course as a purulent disease in from five to ten years, develops finally into what is known as atrophic rhinitis. The disease, in fact, is the first stage of so-called dry catarrh or ozæna. The theory that a purulent inflammation of the accessory cavities was the cause of atrophic rhinitis was advanced many years ago by Michel.

An hypertrophied mucous membrane was found in one nostril with atrophic degeneration in the other, but that does not prove that either condition is dependent upon the other.

Syphilis frequently results in atrophic degeneration of one or both nostrils as a natural result of the ravages of that disease.

Purulent discharges originating in any of the accessory sinuses or resulting from a simple acute inflammation may likewise result in atrophic degeneration, with more or less complete destruction of the muciparous glands and follicles.

The effect of pus on the epithelia and glandular structures, especially in the nose, need not be dilated on here, but it has been a well-observed fact that atrophic degeneration almost always begins upon the middle turbinate bones, and it has also been noted that scabs which become incrustated there and elsewhere almost always contain some particles of pus incarcerated on the under surface of them. Of course, it may be said here that atrophy may result from the simple non-use of any organ without the presence of any inflammation—simple or purulent—to produce it.

Paradoxical as it may appear, but nevertheless true, the nostrils of habitual mouth breathers or those to whom the nose is little more than an ornament on the face, instead of becoming larger from atrophy of the mucosa, become narrower and more occluded, almost as though an hypertrophic instead of an atrophic process had been established, so that it can not be said that atrophic degeneration is in any case due to simple non-use of the organ—first, because of the reason above cited, and, second, because the worse cases of atrophic rhinitis are often found in those who live in workshops where they breathe the most foul air, sooty emanations, etc.

Atrophic rhinitis occurs quite often at a very early age. Large green scabs forming complete casts of the nose have been found in children of seven years and younger. In these cases the ætiology of hypertrophy—dust inhalation, etc.—has to be entirely excluded.

This was notably the case in a child of six or seven years that was brought to the writer several years ago. There was no specific taint in this case, and hence there could be but one cause to which the disease could possibly be attributed—namely, a prolonged acute rhinitis, resulting in an acute cold, which had been left to run on until the nasal mucosa was almost entirely destroyed.

It is apparent, then, as has been stated by some writers, that atrophic rhinitis is not a disease *per se*, but is the result of any inflammation, acute or chronic, specific or non-specific, whether excited by exposure to cold or continuous inhalation of irritating dust, vapors, etc., which ends in a purulent discharge, and which may or may not involve the accessory sinuses, but is sufficiently prolonged to wash away the epithelia and destroy the nasal mucosa, turbinates, etc. If this is true, what measures should best be instituted for the relief of the patient, and what hope have we that the formation of scabs may be stopped?

It would be but a simple matter to search for and give free outlet to all pus cavities, scrape away carious bone, and wash out scabs, etc., but it has heretofore been the humiliating experience of the writer, in common with other physicians, to find that the scabs continued to reform exactly as they did before, and that the douche had to be used as persistently as ever.

It is with great hesitancy, therefore, that I venture to offer a method of treatment which in one case at least has exerted a marked influence in stimulating the nasal mucosa to an almost hypersecretion, and causing the scabs to move from their former site, so that they might more easily be blown out of the nose.

The patient was a lady, aged thirty-four years, without any specific taint that I could detect, of splendid physique, and in excellent health otherwise. The scab formations were first noticed about fifteen or more years ago, following an attack of measles. Since then she has suffered much at the hands of many doctors and from varied treatments. The inferior and middle turbinates are gone on the left side and seriously injured on the right. When she came to me I first suspected involve-

ment of the accessory sinuses, but, on account of uncertainty, I resorted to almost every kind of local stimulating application in combination with iodide of potassium, freely administered internally. This was given not for its antisyphilitic effect, but on account of its influence on lacrymation, etc.

Scarcely any local improvement resulted from this. Finding, then, that the left side was the most seriously affected, I opened the antral and ethmoidal sinuses on that side thoroughly, and irrigated them daily with antiseptics, but this also failed to afford relief.

Acting upon the suggestion of the Gottstein cotton tampon, I saturated a pledget with a strong solution of iodine, glycerin, and the iodide of potassium as follows:

R Iodide of potassium..... 3 ijss.;
Iodine..... gr. xl;
Glycerin..... ʒ j.

M.

This was packed daily between the upper turbinate and the roof of the nose, and allowed to remain for twenty-four hours. Profuse lacrymation and supersecretion were caused, and the scabs were forced from their old location and collected in the lower nostril and were blown out. The scabs still continue to form, but the patient is enabled to get them out much more readily and to partially do away with the use of the nasal douche.

As already above stated, this paper is written purely in hopes that it may elicit the best practical measures for the relief of these cases, because they are surely regarded at present by the laity and general profession as the *opprobria medicorum par excellence*.

Discussion.

Dr. CARL SEILER, of Philadelphia, said: My experience has been that the Gottstein cotton tampon is the only reliable method of alleviating the suffering of atrophic rhinitis. I do not think it has been borne out that there is any earthly use in saturating the cotton with anything. The mechanical irritation of the cotton is sufficient to produce supersecretion as well as lacrymation. The accumulation of moisture which takes place supplements the lost power of the nasal organs in moistening the air. I have tried a slight modification of the cotton tampon by substituting aseptic wool for the cotton. These experiments have satisfied

me that the wool is not absorbent and does not produce the same satisfactory results that the cotton does. The cotton will absorb the moisture and filter the air as it is inhaled. As a rule I order my patients to wash out with an antiseptic solution (alkaline) and introduce the cotton tampon themselves. They wrap the cotton around a knitting needle, then pull it off and put it into the nose. I think this not only avoids the irritation produced by a foreign body but moistens the air as well, stops up the large spaces, and is thus good in absorbing scabs.

Dr. THOMAS HUBBARD, of Toledo, Ohio, said: The ultimate purpose of all treatment is to render the glands aseptic, and check fermentation within the membrane. To this end I have found that cotton, saturated in an alcoholic solution of acetanilide and dried, inserted with the Gottstein tampon, is very useful. The atrophied turbinates can be wrapped in this cotton and all depressions carefully packed. I have seen two cases apparently cured, the atrophic areas being confined to the turbinates, and I am positive of beneficial results in other cases.

Dr. GEORGE A. LELAND, of Boston, said: In the treatment of atrophic rhinitis there are two principles which must be absolutely insisted upon—viz., antiseptics and stimulation. The first is obviously necessary and requires no elucidation. As to stimulation, we use the Gottstein or other packing, with the application of iodine on swabs, etc., to bring about hyperæmia, that is, more blood for nutrition in the part which has lost its nutrition from the extreme opposite state.

Now, there is a drug which in my hands has been eminently satisfactory, and has produced far better effects than any I have previously used or seen described. It is a drug the use of which we all condemn in the nose and upon mucous membranes in general; first, because of its systemic effect; and secondly, because of the secondary congestion brought about by it; but it is the use of it in hyperæmic or hypotrophic states, and especially in the hands of the patient, which we condemn. It is just this secondary hyperæmia which is most useful in these cases of atrophic rhinitis. It is my custom to place a thin pledget of cotton saturated with a 10- to 20-per-cent. solution of cocaine upon the remains, or upon the previous location of the lower turbinated bodies; for these are not always absent, that is, as to their third or cavernous layer, even when they appear so. These

pledgets are allowed to remain for twenty or thirty minutes, when the full constrictive effect of the drug has been produced. They are then removed, and the nostrils are packed with large pledgets of some antiseptic solution—such as corrosive sublimate, 1 to 5,000 or even 2,000, or some of the other antiseptic solutions which are now being introduced. These are allowed to remain for about the same length of time. On their removal there will be, I am often astonished to find, a degree of hyperæmia in the regions of the turbinates which makes them seem to have been partially restored.

The patient is not allowed to make these applications, but comes to my office two or three times a week to have it done. The patient, however, uses an antiseptic spray or douche, together with the internal exhibition of some iodide (syrup of hydriodic acid usually), these agents seeming to produce hyperæmia in the upper air-passages.

My attention was called to the use of resorcin in cocaine solutions some years ago in my reading: I am sorry I have forgotten the author's name. I have used three or four grains to the ounce of the cocaine solution, and for two or three years I have very rarely had any systemic effect. The resorcin preserves the solution from deterioration also.

By the above-named method of treatment, I have been astonished to see cases which were apparently hopeless, after treatment lasting over many years in other hands—by the use of cauterization, strong solutions of nitrate of silver, and all the other methods which we have used for this *bête noire* in our specialty—restored to such a condition that the patients considered themselves cured after a season of two or three years' treatment (summers excepted), which is a comparatively short time for the cure of such a condition.

Dr. M. J. ASCH, of New York, said: After using many different methods I have come to the conclusion that we can not do more for these patients than to thoroughly cleanse the parts and use a mild application—a mildly stimulating solution, bringing on reaction, is all that is necessary. Putting cotton in the nose accomplishes very little more than, if as much as, the cleansing and applications. It gives the patient trouble and the prognosis is no better. Individual cases require individual treatment. Perhaps the diminishing of the size of the middle turbinated bone may be required, but in ordinary cases thorough washing and stimulation will accomplish all that can be done.

Dr. JOHN O. ROE, of Rochester, N. Y., said: In the treatment of atrophic rhinitis I have had excellent results from the use of a mild solution of nitrate of silver applied thoroughly to the diseased parts, after thorough cleansing, followed by the use of a mild galvanic current, the negative pole applied to the interior of the nostril by means of a copper wire wound with cotton, moistened with a saline solution. The combined stimulating properties of the silver and the galvanic current have in many cases given me the most excellent results. I believe, however, that many cases regarded as ozæna are simply the foetid secretions from some of the accessory sinuses drying into crusts in the nose. This readily accounts for the reappearance of foetid crusts on an apparently unabraded surface very shortly after the nose has been thoroughly cleansed and all crusts and secretions have been removed. In these cases the treatment is of no avail unless we reach the seat of the disease, which is frequently to be found hidden away in the recesses or cells and sinuses that communicate with the nasal passages.

Dr. JOHN N. MACKENZIE, of Baltimore, said: I do not think this discussion should close without a mild protest against the incautious and constant use of cocaine in the nasal passages and throat. As I pointed out years ago, aside from the possible dangers from the toxic effects of the drug, and the acquisition of the cocaine habit, the constant use of cocaine begets a permanent congestion of the parts which neutralizes all attempts to recover the normal condition of affairs. To treat, therefore, any chronic affections of the mucous membrane with cocaine is, to say the least, an injudicious and hazardous experiment.

Dr. J. E. H. NICHOLS, of New York, said: I should like to suggest the use of orthochlorphenol in these cases. It is a disinfectant and stimulates secretions very markedly. I have had better results with this than with anything else. A strength of ten per cent. is about right.

Dr. E. FLETCHER INGALS, of Chicago, said: I agree with Dr. Mackenzie that cocaine should not be used in any case unless the doctor knows just how much the patient is using and is in position to stop it at once if necessary. In these particular cases there is undoubted benefit to be derived from this drug, and if the patient does not use more than one or two grains in a week it may do good and no harm. I have seen the turbinated bodies restored under continuous use of small quantities of

cocaine. Much benefit may be derived from the use of mercurials in these cases. A quarter of one per cent. of yellow oxide of mercury in powder is a good remedy. A person approaching thirty-five is apt to get over the affection any way, but in younger people it is not so. The treatment should be cleanliness first, then oily sprays and small quantities of cocaine, and finally yellow oxide of mercury, in powder, once or twice a day.

Paper.

RECENT ADVANCES IN THE SURGICAL TREATMENT OF
MALIGNANT DISEASE OF THE LARYNX.

By D. BRYSON DELAVAN, M.D.

WHILE operations for the relief of the less malignant forms of laryngeal growths have often proved successful, the radical treatment of epithelioma of the larynx heretofore has practically resulted in failure. True, in a few brilliant exceptions, life has been lengthened and the comfort of the patient materially increased by the removal of the whole or a part of the diseased organ. A careful survey of the subject, however, will compel the admission that, in general, the lives of patients suffering from epithelioma of the larynx have been shortened rather than lengthened by the efforts of the surgeon. This statement is based upon the fact that the average duration of life in such cases, without attempted removal of the larynx, is about a year and a half. The number of cases in which the subjects of laryngectomy have survived for double that length of time is very small. In view of the total failure of other methods of relief, we are obliged at present to regard surgery as the only possible resource, and, in spite of the above-mentioned facts, rely upon its aid until something better has been proposed. It is of the highest importance, therefore, that the possibilities attending operative measures be appreciated and improved.

Fortunately, indications are not wanting that there exists for this class of operations a not altogether unpromising future. Here and there a case is reported

which among many failures proves the exception to the rule in that the result of operations has been actually to prolong the patient's life. Within the past year three papers have been published in which the proportion of successful operations has been unusually large, and while the actual number of patients operated upon has been too small to establish any positive conclusions, and the dates of most of the operations have been too recent to admit of a complete study of the cases themselves, there can be no question that the work recorded in them is, on the whole, worthy of careful consideration. The varieties of operation which have lately challenged attention by reason of the improvements which they have offered may be divided into three groups: (1) Thyreotomy, with or without partial laryngectomy, (2) complete laryngectomy by the method adopted in Solis-Cohen's case, and (3) complete laryngectomy in cases of extensive laryngeal disease with glandular involvement. Examples of all three are beginning to multiply to such an extent that it will not be long before we shall have a collection of details sufficient to afford a fairly positive knowledge of their real value, together with a fund of technical knowledge relating to the subject which can not fail to be of material aid for future guidance.

A short consideration of these methods may not be without interest. The first variety, while advocated by many surgeons here and abroad, has been studied and practised in this country chiefly by Professor Clinton Wagner, of New York, and by Mr. H. T. Butlin and Dr. Semon, of London. It consists in performing thyreotomy and removing as much of the diseased tissues as may be necessary. Mr. Butlin, in the main agreeing with many of the best surgeons of the day, has advanced the following propositions:

1. Every malignant growth of the larynx of intrinsic origin which can be dealt with should be treated by an operation in the absence of a decided indication to the contrary, and the operation should be performed with the least possible delay.
2. Every tumor of the larynx suspected to be malig-

nant, of intrinsic origin, of limited extent, and apparently within reach of free removal, justifies an exploratory thyreotomy in a suitable patient, in the absence of infiltration of the surrounding structures and of affection of the lymphatic glands.

The method of operating pursued by Butlin and Semon has been described in their published writings. It applies distinctly to cases in which the disease is absolutely confined to the interior of the larynx. Preliminary tracheotomy is done, with the insertion of the tampon cannula and its careful adjustment. The anterior part of the thyreoid cartilage is laid bare with scalpel and raspatory, it is opened exactly in the median line, and the two sides of the larynx are held apart, preferably with two strands of strong silk inserted through the anterior parts of the lateral wings of the thyreoid. After the latter has been split open, undue violence in holding the halves apart must be strictly avoided. At this stage it will generally be necessary to protect the parts from mucus and saliva by packing the lower part of the pharynx with a large aseptic sponge secured by a string and passed through the laryngeal wound upward. There are two recommendations upon which Semon lays special stress: First, the surgeon should be provided with a forehead reflector and a good light, and, as has already been suggested by the writer for deep operations in the pharynx, he should, if possible, have at hand a small two- to four-candle-power electric lamp, to be used for the purpose of securing the best possible illumination of the interior of the larynx for the detection of every possible bit of diseased tissue. Secondly, before he begins the removal of the growth the whole side of the larynx to be operated upon should have applied to it a five-per-cent. solution of cocaine, for the purpose of contracting the capillaries on that side and preventing parenchymatous bleeding, which otherwise is sure to interfere with and greatly prolong the removal of the growth proper, while at the same time it may allow suspicious portions to remain behind. The importance of the two above-mentioned measures

is strongly insisted upon. The field of operation having been thus prepared, the diseased soft tissues are thoroughly removed to at least half an inch from the periphery of the growth, and, if necessary, the underlying cartilage is scraped or even removed, the base being firmly scraped with a sharp spoon. The use of the galvanocautery will seldom be required. Every source of bleeding having been stopped, the whole interior of the wound is dusted with pulverized iodoform, or with iodoform and boric acid in equal parts, and the tampon cannula is immediately removed. The whole of the wound is then covered with cyanide or iodoform gauze.

In cases where the more extensive resection of the thyroid or even extirpation of one half of the larynx is contemplated, the parts of cartilage to be removed should be freed from their perichondrium and from the surrounding soft parts by means of an elevator. In other respects the operation is the same, only more extensive than mere thyrotomy with removal of soft parts. It is generally not necessary to prophylactically ligate the laryngeal arteries. Where the epiglottis or the arytaenoepiglottidean fold are diseased, the best means of access to them is subhyoidean pharyngotomy.

For after-treatment, both Wagner and Butlin immediately remove the tampon cannula, and from that time use no tracheal cannula whatever, and, the wound having been dressed as above described, the patient is not propped up in bed, but is placed horizontally on the side corresponding to the half of the larynx operated upon, with one small pillow under the head. Instead of plugging the wound with gauze, as formerly, Mr. Butlin dusts it at least twice daily for the first few days with the antiseptic powder by means of a powder insufflator. The application can be made to the best advantage when the patient is swallowing, as during the act of deglutition the wound in the neck is separated sufficiently to admit the end of the powder blower, so that the powder may be thrown from it directly against the raw surfaces, which should be thoroughly covered by it. The external covering of cyanide or iodoform gauze

should be removed as often as wet by secretion. Although nutrient enemata may be required for the first few days, the experiment may be tried on the day of the operation, or soon thereafter, of allowing the patient to attempt to drink a little water while leaning with the upper part of the body well over the edge of the bed. In case of any impediment to the closure of the larynx during this act, the water will run directly out of the wound and no harm result; should the experiment succeed, milk may at once be taken in the same way, and the necessity for rectal feeding avoided. The external wound gradually closes by granulations, which may have to be stimulated by applications of nitrate of silver.

Clinton Wagner * reports fifteen thyreotomies performed upon patients varying in age from sixty-four years to eighteen months. Five of the patients are now living, at periods of one year, one year plus, twelve years, twelve years, and seventeen years respectively. Of those not now living, one survived four years, two one year, one three months, and one ten weeks. In none of the latter cases was death due to the operation of thyreotomy. Classified as to diagnosis, four of them were cases of epithelioma; these patients lived, respectively, four years, one year, three months, and ten weeks; one case was one of ecchondroma, and the patient was alive when last heard from; three were papillomata and two cicatricial stenosis.

Of the cases of epithelioma reported by Dr. Semon, five patients died from the operation within periods varying from one to six days. One showed probable recurrence within four months. Of the remaining four, one operated upon by Hahn—by complete laryngectomy—lived six years and a half without recurrence, and died of heart disease. There are living and well one operated upon by Dr. Butlin at five years and a half, one at three years, and one at two years, the latter operated upon by Semon.

Comparing recent results with the general statistics lately reported by Powers—namely, eleven per cent. of

* *Medical Record*, January 4, 1896.

recoveries in complete laryngectomy and thirteen per cent. of recoveries in partial laryngectomy—it will be seen that as to thyreotomy such a distinct advance has been made that its value, as at present performed, can not be questioned.

Turning now to the method of operation classified as number two, let me call attention to the patient named Daniel Hickey, who was operated upon five years ago by Dr. Solis-Cohen, of Philadelphia. In this operation, as in several similar to it by Poppert, Schmidt, Swain, and Carmalt, and possibly at this date others, the larynx was completely removed and the severed end of the trachea brought to the external edges of the cervical incision and there retained, communication between the lungs and the pharynx being thus totally and absolutely cut off. The great advantages of this plan over the usual methods have already been demonstrated to you.

1. The danger to life from inspiration-pneumonia is greatly lessened, owing to the shutting off of the mouth from the trachea.

2. Swallowing is accomplished with great ease and as freely as under ordinary circumstances.

3. In at least three cases thus operated upon the power of phonation has been acquired with a voice fully as satisfactory as that produced by any artificial appliance, and without either the inconvenience and discomfort of an artificial larynx or the danger to the adjacent parts from the irritation of its presence. The mechanism by which phonation is accomplished in these extraordinary cases has not been explained. Cohen's patient is able to make his voice distinctly heard from one end to the other of the great hall of the New York Academy of Medicine.

4. The comfort of the patient is greatly increased, and the disfigurement of the other operation and of the wearing of the artificial larynx largely done away with. It is entirely probable that, under certain conditions, this method will prove to be the most satisfactory for complete laryngectomy of any yet proposed, and it is

to be hoped that it may be given a sufficient trial to prove whether or not the cases already reported have been but the result of a happy accident rather than the first illustrations of a definite rule.

As to the third variety of operation, it has often been insisted that, in order to insure success, malignant disease of the larynx must be treated as early in its history as possible, and at least before involvement of the neighboring glands has taken place. Unfortunately, in the history of the past, early operation has not always saved life, and, on the other hand, several eminently successful cases have been in patients who suffered from a tolerably extensive condition of disease. The management of cases of extensive laryngeal disease, therefore, becomes a matter not only of great importance, but of lively interest, especially when it is remembered that perhaps a majority of patients are not seen by the specialist or surgeon until the disease has made considerable progress and the time most favorable for operation has passed.

Several years ago operations were attempted upon such patients with only here and there an exception to the inevitably and immediately bad result. Subsequently they were pretty generally left to their fate. Of late, under the influence of improved methods and increasing knowledge, a hope, small indeed, but worthy of all encouragement, has been aroused by the excellent work of several men. Prominent among these may be mentioned the name of Mr. Watson Cheyne, of King's College Hospital, London, whose efforts in this direction are now attracting much attention, and who, in his admirable Lettsomian Lectures * upon The Objects and Limits of Operations for Cancer, delivered before the Medical Society of London last February, says: "As compared with cancer in the breast, the disease in the throat is in some ways more favorable for cure; in other ways, less so. Primary disease of the breast is by far the more favorable of the two, for there it is fully exposed to view, and there is plenty of room for its free removal without endangering important structures. In

* *Lancet*, February 15 and 22 and March 14, 1896.

the mouth and throat, on the other hand, the disease is close to if not involving many important parts, the space in which one has to work is very limited, any considerable margin of healthy tissue can not be obtained, and the early spread of the cancer to muscle, especially in the case of the tongue, tends to distribute it over a considerable area. In the throat, moreover, the disease is much less favorable for operation, because the septic element comes into play, and thus, instead of having to do with an operation as in the breast, where the mortality is practically *nil*, we have to face a very considerable risk of death from septic disease. On the other hand, cancer of the mouth and throat is more favorable as regards the glandular deposits, for in the neck we have an extensive glandular area exposed to view which can be much more thoroughly dealt with than in the case of the breast. It is true that many surgeons look on the glandular trouble as a most serious part of the disease. With this I do not agree. In another respect cancer in the throat is more favorable than in the breast—namely, that in it metastatic deposits are infrequent.”

With regard to the neighboring lymphatics, Cheyne believes that they should be removed, as in cancer of the breast. It is seldom that no enlarged lymphatic glands can be felt in these cases, and usually they are of considerable size. Whether they can be felt or not, the lymphatic area should be cleaned out. Unless the lymphatic enlargement is very extensive, or adherent to a variety of structures in the neck, and not merely to the sheaths of the vessels, the operation will be more thoroughly done, and the patient will have a better chance of recovery and cure if enlarged glands are already present.

With regard to preliminary tracheotomy, Cheyne, agreeing with many other excellent authorities, does not believe in the insertion of the tube several days prior to the performance of the main operation. Personally, I do not think his ground upon this question well taken, the objection being that in three or four days after the insertion of the tube there will be a collection of septic matter around it which may get into the trachea after

the performance of the main operation. Such an accident could probably be avoided by extending the time between the two operations to ten days or more. It is desirable, however, that this question—namely, when preliminary tracheotomy should be performed—should receive more careful attention than has hitherto been accorded it, as it is without doubt an important factor in the patient's welfare.

These three varieties of operation just described—namely, early thyreotomy with or without partial removal of the larynx, complete removal of the larynx, together with the extirpation if necessary of diseased glands, and, finally, the peculiar management of the trachea illustrated in the case of Dr. Solis-Cohen—may be said to finally represent the most recent additions to our present resources for the surgical relief of malignant disease of the larynx.

There is one question, however, which must challenge attention—namely, the second proposition offered by Mr. Butlin, that every tumor of the larynx suspected to be malignant, of intrinsic origin, of limited extent, and apparently within the reach of free removal, justifies an exploratory thyreotomy in suitable cases, in the absence of infiltration of the surrounding structures and of affection of the lymphatics. Even in the case of so experienced an operator as Mr. Butlin, this theory has not always proved a safe one, while in the hands of one less well qualified its dangers need only to be referred to. Indeed, probably nothing was further from the intention of its proposer than to advocate the performance of thyreotomy in every case of papilloma or of suspicious intralaryngeal disease. It is safe to say that were such a radical view generally adopted the amount of damage done would far exceed any possible advantage to be derived from the attempted treatment of laryngeal cancer. Mr. Butlin speaks from the standpoint of highest authority in diagnosis, aided by the best advisers that the world affords. After every possible means of diagnosis has been exhausted in such hands, he would then, and not until then, proceed to divide the larynx. It is just

here that one of the most vital questions arises—namely, that of positive early diagnosis. Until the means now at our disposal shall have been improved not even thy-reotomy will always satisfactorily and at once solve the problem.

Careful attention to some of the minor details relating to these operations, which are more or less new, have contributed not a little to recent success. Without question much good may be accomplished by the selection of patients and by careful attention to the indications for or against operation in a given case. Thus, as to the growth, it should be of undoubted malignancy, located within the larynx, and favorably situated for complete removal with the minimum of injury to the surrounding parts.

Concerning the patient the indications are:

That he should not be too old, that he should be possessed of good vitality, that he should suffer from no physical defect likely to complicate recovery or seriously annoy him afterward, and that his temperament, his intelligence, and his surroundings be such as to make it possible for him to exist with moderate comfort after operation. That these suggestions are not unreasonable is proved by general experience.

Apparently it has not always been the best general surgeons who have obtained the most favorable results in this department. On the other hand, some of the most brilliant work on record has been done by men known principally as laryngologists rather than as general operators; several of whom, let it be said, have operated in connection with general surgeons of well-known ability. No more favorable combination could possibly be made. Doubtless the best preparation for the work would be a thorough knowledge of operations upon the tongue, neck, and lower jaw in general.

It can not be insisted upon too urgently that carcinomatous cases requiring laryngectomy are desperate at the best, both as to immediate and as to ultimate results, and that, with our present limited knowledge of the subject, no amount of caution, however great, will avail in prevent-

ing a high percentage of failures. With the sources of danger so numerous, constant, and subtle, it is impossible that too great foresight or experience be brought to bear against them, or that the urgency of this demand be overstated. In the after-care of the patient, it is not by any means enough that the watchers should be ordinarily qualified in the care of severe surgical cases. Nothing short of special fitness in the department of this particular class of cases will yield the best results.

Next, such accidents as the entrance of septic or foreign matters into the air-passages must be carefully guarded against. The use of the œsophageal tube when intrusted to inexperienced hands has often been the cause of disaster. This part of the management, as proved by the records of failure, requires most careful handling. Another dangerous and preventable accident is the poisoning of the patient by the antiseptic dressings, among which iodoform has been the principal offender. The substitution for it of a mixture of equal parts of powdered iodoform and boric acid, or of the compound tincture of benzoin, has been attended with success.

In reviewing the recent progress in the treatment of malignant disease of the larynx, and in studying the manner in which these advances have been made, it must be apparent that nearly all have been the result of long and close study of the subject by accomplished surgeons, whose opportunities for clinical study have been unusually great. The time has long passed which an unsuccessful attempt at laryngectomy by one not fitted for the work can bring anything but reproach to the operator and discredit to the operation.

I am strongly of the opinion that, for a time at least, both the welfare of patients operated upon and the interests of science demand that the indiscriminate performance of capital operations upon the larynx should cease. In most great centres there are individual surgeons or groups of operators who are especially well fitted, as to both personal qualifications and hospital facilities, for the successful performance of this work, as has been proved in many cases by the records which

they have already made. Let such men surround themselves with the proper assistants, let them systematize their efforts, and use all diligence in the perfection of appliances and methods and in the study of the cases under them, and keep careful and accurate record of everything pertaining to the history of their work. Then resign to them temporarily the care of as many cases of laryngeal cancer as possible. When a sufficient amount of material has thus been collected, we shall learn whether the radical extirpation of laryngeal epithelioma is unjustifiable, or whether, as we have the best reasons for hoping, it is likely to establish for us a reliable means of cure.

Finally, with the best results obtainable, it should not be forgotten that in this disease surgery is and probably always will be a forlorn hope, and that until we have discovered some better method of dealing with it, the results of operation, even under the best conditions, will fall far short of a perfect means of cure.

Discussion.

Dr. W. P. PORCHER, of Charleston, S. C., said: Some months ago I did an operation for disease of the larynx when I really was incompetent to do it. I decided to do a laryngectomy, but previously did a tracheotomy, putting in a Trendelenburg cannula. I can not imagine anything more suitable to cause the death of your patient than this cannula, as the spring within it seems to become clogged. I barely kept my patient from dying, fortunately discovering that the opening was closed and promptly extracting it. I replaced it with a rubber tube attached to a safety pin. I first tried a hard-rubber tube, but found that it was too short to reach well into the trachea, and it frequently slipped out. The soft-rubber one was made long enough to stay in position. As to doing tracheotomy and laryngectomy at the same time, I would never do it again. It is impossible in cases of chloroform narcosis to tell whether the trouble is due to blood in the larynx or to the chloroform. In my case the patient became cyanotic, and I had to discontinue until he breathed better. The patient stood the operation, as a whole, very well, and the final result was very gratifying.

Dr. CARL SEILER, of Philadelphia, said: I am sorry that Dr. Delavan does not give enough credit to American surgeons in his paper for laryngotomy and tracheotomy. In 1885, after the Detroit meeting, I met Dr. Park, of Buffalo, who did, at a hospital in Buffalo, an excision of the larynx in a man seventy-six years of age. The man was a physician who had been through the Mexican and civil wars. A preliminary tracheotomy was performed and the case was one of epithelioma of the vocal cords. Dr. Park and I operated for an hour under chloroform and did not kill the man. Dr. Park thought he had performed a tracheotomy, but he had not. There was an extra thyroid lobe and he had got between the lobe and the trachea. We simply severed the connection, and introduced a Trendelenburg cannula. I must take issue with Dr. Porcher, as there is no such thing as a spring in the Trendelenburg cannula. It really is a most admirable instrument in preventing the ingress of septic matter into the lungs. We should be put on record in this country in this matter.

Dr. H. L. SWAIN, of New Haven, Conn., said: While the reader of the paper laid great stress upon the matter of taking out the lymphatic glands in the neck I do not think he said too much, and I should like to add my mite in emphasizing that point, as it will help the future success of the operator in laryngectomy a great deal. I had a case in New Haven a year ago, which was a good example. We had been aware of the enlargement of the glands and a preliminary tracheotomy was done with much profit. About ten days after this we did the laryngectomy, and, as the glands had become entirely normal in size, we did not cut down into the tissues around the larynx to get at them. The recurrence was from the glands, and we think that had they been removed the patient would have been alive. The preliminary tracheotomy was of good effect in this patient in that the trachea and bronchial tubes had been prepared for their new way of breathing before the operation of laryngectomy took place. The patient was much more comfortable, coughed less, and had less of the exasperating raising than patients do in whom previous tracheotomies have not been performed. It would doubtless be a great help to many patients. As regards the Trendelenburg cannula, the modified one is safe, and I do not think the majority of patients need suffer at all from it.

Dr. JONATHAN WRIGHT, of Brooklyn, said: It seems

to me that the operation of laryngectomy is one for the general surgeon, one thoroughly skilled in all the technique and possessed of all the resources of his art. It is a serious capital operation, and, in my opinion, it is not fair to the patient that one whose time is taken up with the difficult and absorbing technique of endolaryngoscopic and rhinoscopic operations should venture upon it.

Dr. THOMAS HUBBARD, of Toledo, said: Oedema of the trachea is usually secondary to oedema of the larynx, as has been said, but I have seen two cases in which the larynx showed no oedematous swelling whatever. There was a dangerous degree of stenosis in both. Intubation failed in one. Tracheotomy was performed too late. The other case was one of iodism. There was oedema of the trachea and of the fauces but not of the larynx. I could see two pale oedematous lateral swellings in the trachea. Pilocarpine was administered hypodermically, and as soon as copious diaphoresis was established the tracheal oedema subsided.

Dr. M. J. ASCH said: I am glad to hear Dr. Swain give his reasons for preliminary tracheotomy. So far as the operation of laryngectomy is concerned there is no necessity for it, as it can be done at the same time. As to the Trendelenburg cannula, I think those operating will find that after putting in a tracheotomy tube the trachea can be closed with gauze, and blood prevented from entering just as well as by a complicated apparatus.

Dr. DELAVAN called attention to statements already made in his paper. The latter he had not intended to be a complete treatise on the subject of laryngectomy, but simply an exposition of the latest improved methods for the surgical treatment of malignant disease of the throat. It was a matter of fact that in this department distinct advances had of late been made.

Paper.

INTUBATION IN THE ADULT. WITH SPECIAL REFERENCE TO ACUTE STENOSIS OF THE LARYNX.

By W. E. CASSELBERRY, M. D.

THE treatment of chronic stenosis of the larynx, especially of the syphilitic type by means of intubation, has been discussed by Dr. Joseph O'Dwyer,* who early

* *Medical Record*, June 5, 1896.

adapted his method to adult cases, and reported, in 1886, a case of chronic syphilitic stenosis of the larynx treated by means of intubation. Later, before the Ninth International Medical Congress * at Washington, he related additional and similar experiences and dwelt upon the technique of the operation.

Dr. George M. Lefferts,† also with special reference to syphilitic stenosis, opened a discussion on the subject before the Tenth International Medical Congress at Berlin, and again, in 1893, he presented a comprehensive paper to the American Laryngological Association ‡ entitled Intubation in the Adult, but in that paper the management of acute conditions received but cursory consideration.

At the Eleventh International Medical Congress at Rome, Dr. Schmiegelow,§ of Copenhagen, opened the discussion by a paper on Laryngeal Intubation in Adults. He introduced his remarks by the statement, "Intubation can not replace tracheotomy and be adopted as the principal method of treating acute stenosis in adult patients, but may claim many successes in the treatment of chronic stenosis."

Dr. W. K. Simpson,|| Dr. Max Thorner, and others have reported isolated instances of a chronic nature similarly treated.

Intubation with reference to laryngeal stenosis of tuberculous origin, which customarily assumes a chronic form, has received attention from Dr. F. E. Hopkins,^ Dr. Charles H. Knight,◇ and others. But beyond mere reference to an isolated case here and there, very few in

* *Transactions of the Ninth International Medical Congress*, vol. iv, p. 121.

† *Verhandlung des X. internationles Medicinischen Congresses*, Band v, S. 159.

‡ *Transactions of the American Laryngological Association*, 1893, p. 39.

§ *Journal of Laryngology, Rhinology, and Otology*, 1894, vol. viii, p. 240.

|| *New York Medical Journal*, February 22, 1890.

^ *New York Medical Journal*, February 27, 1892.

◇ *New York Medical Journal*, December 31, 1892.

all, I have failed to find recorded any extended notice of the management of *acute* stenosis of the larynx in the adult by means of intubation.

My own experience embraces four cases—three of laryngeal diphtheria and one of acute œdema of the larynx, which, having been detailed in a preliminary report, will here with be presented only in abstract. To these I append, through the kindness of friends, two other cases previously unpublished—one of laryngeal diphtheria and one of obscure origin, making six in all.

It does not suffice to assume that the adult may be dealt with exactly like the child, or that the management of acute stenosis, with its associated state of helplessness and exhaustion on the part of the patient, is identical with that of chronic stenosis. Novelty may yet be discerned in the presentation of the facts, as regards both the technique and the possible scope of the operation. The first glance at a patient of large stature, of unmanageable avoirdupois, with a large, thick neck, recumbent on a bed, cyanotic, and perhaps moribund, respiration being reduced to laborious gasps, will serve to flood the operator's mind with important distinctions with reference to intubation.

Such, in fact, was a preliminary case in which I did not perform intubation but substituted tracheotomy. In the absence, at that time, of published precedent, I feared lest my finger as a guide might fail to reach the larynx, or that spasm of the glottis might be provoked, or that the recumbent position, unfamiliar in connection with intubation, might so prolong the time of placing the tube that life's spark would be wholly extinguished. These contingencies deterred me then, and, in the light of subsequent experience, they must still be accorded due consideration, although in a similar case I should now feel justified in making a single attempt at intubation, with all preparations completed for a hasty tracheotomy.

CASE I.—A girl, sixteen years of age, of adult stature, presented the usual symptoms of stenosis from extension of pharyngeal diphtheria to the larynx. She was too ill

to move from the bed, the left side of which she occupied, but her head and shoulders were raised by pillows. At first I sat upon the edge of the bed to the patient's left, but was conscious then of an awkward twist in my own posture, and fearing this might imperil success, I knelt upon the bed immediately in front of the patient, which secured a juxtaposition, and, guided by the sense of touch, introduced the first size of the adults' set of tubes. Aided by antitoxine, convalescence rapidly ensued.

A more satisfactory arrangement would have been to move the patient to the right edge of the bed and to stand to her right, in which position one's operating arm rises in front of the patient's mouth without awkward twisting of the operator's body.

The next case presents particularly interesting and instructive features.

CASE II.—A young lady, aged twenty-seven years, on the sixth day of a combination of circumtonsillar abscess and pharyngeal diphtheria, had manifested laryngeal stenosis for twelve hours, intense at times and again less, the patient's strength being well maintained. By means of the laryngoscope, the epiglottis, larynx, and trachea were distinctly observed to be lined with whitish exudate. A culture disclosed Loeffler bacilli.

The patient was wrapped with a sheet to secure the arms, seated in a strong, straight-back chair, and the tube placed without difficulty in the usual manner, guided by the sense of touch. My index finger could reach only to the tip of the epiglottis and not to the arytaenoid eminences, the usual guide with children. In an hour the tube was expelled by cough. So easily had it been introduced that I deemed it unnecessary to again move the patient for reintroduction, but attempted it kneeling on the bed in front of her. To my surprise the tube would not enter. The next effort was made more deliberately with the patient seated in a chair as at first, and again failed, although I was positive the tube was properly directed. Then I sprayed the throat thoroughly with cocaine, and with the next effort made use of the laryngoscope. The patient was docile, the light good, and the larynx easily seen. Thus did I observe the end of the tube engaged in the larynx, as it were, but stopped by spasmodic contraction of the ventricular bands and interarytaenoid fold. I held the tube

firmly in position for a few seconds, when the patient made a slight cough, and with it the larynx opened for inspiration, and the tube slipped through the glottis into place.

Aided by antitoxine, the patient progressed favorably for two days and a half, when respiration became gradually but seriously embarrassed, the symptoms suggesting that extension to the lungs had occurred. However, a critical examination indicated that the lungs were not involved and that the tube itself was unobstructed, but that a mass of mucus and perhaps loosened exudate had accumulated in the trachea below and around the tube. I removed the tube by aid of the laryngoscope and found it perfectly open; some mucus only was thereafter expectorated, and the patient instantly again breathed freely. Dyspnoea did not recur, and recovery ensued in due time.

I feel that in both this and the preceding case the patients owe their lives to the combined effects of intubation and antitoxine, but in the latter case the life which was first jeopardized by diphtheria, then saved by intubation and antitoxine, was a second time placed in jeopardy by the mere presence of the tube, and again, saved only by its prompt extraction. The symptoms and physical signs produced by the mere retention of inspissated mucus in the trachea and larger bronchi closely simulated diphtheritic broncho-pneumonia, which has been the final chapter in the history of so many fatal cases. The whole chest surface transmitted rattling bronchial-like sounds and exhibited a deficient respiratory murmur, produced solely by mucous obstruction, not in the tube, but just below it. The larger size and more vigorous action of the chest in the adult facilitated the diagnosis from genuine broncho-pneumonia. How often possibly have children been permitted to die for want of a timely extraction of the tube, the operator mistaking this condition for broncho-pneumonia and deeming it unnecessary to subject a semi-moribund child and its friends to the ordeal of extraction in the face of a seemingly fatal complication!

Another point exemplified is the possibility of involuntary spasm of the glottis, preventing the ready inser-

tion of the tube. Together the muscles acted like a powerful sphincter, and the passage could not be safely forced. If this can happen in the adult, as was so distinctly seen in the laryngeal image, why not also in the child?

In fact, when one considers how readily spasm is provoked by other laryngeal manipulations, one is surprised that it is not more frequently encountered with intubation.

Dr. Hopkins * has mentioned having met with unexpected resistance in the passage of the tube in his case of chronic tuberculous stenosis of the larynx—as he says, “a resistance due largely, no doubt, to muscular spasm.” It is satisfactory to have had the suspicion of this possible obstacle confirmed by actual inspection, as in the case just recorded.

As exemplified in Cases I and II, the adult larynx at first evinces greater intolerance to the presence of the tube, so that it is commonly expelled by cough soon after its introduction. This tendency was pronounced in

CASE III, an athletic young man with pharyngeal and laryngeal diphtheria, repeatedly expelled tube after tube as rapidly as they could be introduced. Finally the manipulations, together with the cocaine used, eased respiration to such an extent that the trials were suspended, because he seemed to be doing well without a tube, and so made a good recovery.

Perhaps a tendency on the part of the operator to select at first tubes of too small size for the adult's larynx has conduced to more frequent expulsion.

CASE IV was also one of laryngeal diphtheria in a man aged about thirty-five years, the particulars of which are kindly furnished, from his practice, by Dr. T. Melville Hardie. He says: “The stenosis was great and the membrane extensively developed. The examination was easily made with the mirror, but Dr. Waxham guided the adult intubation tube into the larynx with his finger without difficulty, the man being seated in an ordinary chair. The patient recovered.”

* *New York Medical Journal*, February 27, 1892.

CASE V was one of acute subglottic stenosis of obscure origin, the particulars of which are kindly furnished from his practice by Dr. C. E. Manierre. John C., aged twenty-two years, had recently recovered from a severe attack of typhoid fever. He was referred by Dr. Storer, suffering from a rapidly increasing dyspnoea, unaccompanied by aphonia. A constant hoarse cough rendered laryngoscopic examination impossible. A large-sized tube was inserted and worn one week, when it was expelled by cough, and the patient thereafter breathed perfectly well. While the tube was in place he took food remarkably well with the head in the inverted position. At the time a tracheal gumma was suspected, although there were no other syphilitic data, and there has been no recurrence. It was probably a case of acute inflammatory subglottic cedema or infiltration.

The following case, though resulting in lamentable failure, exemplifies difficulties in the technique of intubation peculiar to adults, and is at least suggestive of a degree of hazard which pertains to this operation in acute cases, where exhaustion is already extreme.

CASE VI.—Mr. ——— was suffering with urgent dyspnoea. An examination disclosed simple cedema of the glottis with secondary cedema of the lungs. It was urged for tracheotomy, by some of the consultants, that the tube would reach lower than by intubation, to which I replied that the primary obstruction was confined to the larynx, the trachea not being subject to closure by acute cedema, and that the secondary cedema of the lungs might still subside if the larynx was cleared. All concurred in an attempt at intubation.

The conditions were unfavorable; the gasping patient, unable to move from bed or to sit upright, could not endure laryngoscopic examination. On introducing the gag it was found that the mouth could not be opened to exceed three quarters of an inch. It was explained that a chronic spasm of the masseter muscles had for years prevented wide distention of the jaws. This was a most serious obstacle, for the index finger could not pass to reach even the epiglottis as a guide. I was about to abandon the attempt and substitute tracheotomy when another intubator appeared and rather urged the effort. I made it and failed. The patient's exhaustion was measurably increased thereby. My *confrère* made a second attempt, which also failed, and the exhaus-

tion of the patient was further intensified so that he was now *in extremis*. I then performed tracheotomy below the thyroid isthmus in order to satisfy the possible opinion that swelling might extend low down in the wind-pipe. It was deemed necessary to give a little chloroform.

The operation, though hasty, was practically bloodless; soon the trachea was bared and punctured, but, unfortunately, just then the patient expired; nor was vigorous artificial respiration through the tracheotomy tube of any avail, for life was extinct.

Immediately, post mortem the opportunity was taken to further certify the nature of the impediment to intubation which was encountered, as well as to demonstrate the feasibility of the operation generally in cases of acute œdema of the glottis in adult life. The jaws being now forcibly separated, the epiglottis and borders of the larynx could be felt characteristically œdematous, and I inserted the intubation tube without difficulty, its lower end becoming visible through the tracheotomy slit and its head freely overriding the œdematous tissues. This was with the body still in the tracheotomy position, recumbent, and neck distended, I standing to the subject's right.

The complication of chronic spasm of the masseter muscles which prevented the success of intubation in this case would be but rarely encountered; but the jaw is frequently "set" in conjunction with circumtonsillar abscess, phlegmonous pharyngitis, and Ludwig's angina, conditions in which secondary œdema of the glottis may demand either intubation or tracheotomy. My experience would dictate that when the jaws are thus "set" and laryngeal obstruction demands interference, tracheotomy should be selected without further exhausting the patient by attempts at intubation.

High tracheotomy can be done with cocaine anæsthesia only, at least on many subjects, which would avoid the dangers pertaining to chloroform when the respiration is already embarrassed, and it seems that this would have been the better line of action in the case herewith reported.

Attention has been called by Dr. J. H. Metzgerott, late assistant to Professor Schnitzler, and Dr. Hajek, of

Vienna, to the liability of pressure decubitus by intubation, especially in œdema of the larynx. He says: "In a case of acute inflammatory œdema of the larynx this occurrence, directly traceable to the pressure of the tube upon the inflamed membranes, followed." He believes intubation to be therefore contraindicated in such cases. This liability must certainly be taken into consideration, but a single consequence of this nature does not settle the point, for it is likely that undue pressure was caused by an unnecessarily large tube. The smallest tube of the adults' set—that which is designed for adolescents—should be selected for first insertion in case of acute œdema of advanced degree. This would supply enough air, and if it was expelled, the next size could follow.

My own cases would indicate that the technique of intubation in acute stenosis with adults is more varied and at times more difficult than with children, and, since it is an operation the success of which is wholly dependent upon manual dexterity and rapidity of action, advance information as to methods will partake of the highest degree of utility.

The responsibility is inestimable. Time and life alike are fleeting, and a few seconds are to determine brilliant victory or ignominious defeat for both patient and operator. I have formulated the following conclusions as to technique, changes in which, however, may be suggested by additional experience:

1. For one accustomed to the use of the laryngoscope, intubation on adults is easier and more certain under its guidance; therefore for a patient of adequate composure and able to maintain the sitting posture this method should be selected.

2. A patient lacking only composure—one whose inclination is to resist rather than to assist the operator—may be closely wrapped in a blanket to pinion the arms and legs, seated in a straight-back chair, the head inclined slightly backward, the mouth gagged, and the finger used as a guide, as with children.

3. A patient lacking strength to move from the bed

and composure or strength for laryngoscopic insertion, should be placed close to the right edge of the bed so that the operator can stand to the patient's right side; the head and shoulders should be well raised by pillows, the neck moderately extended, and the method by the sense of touch otherwise carried out. Kneeling on the bed in front of the patient is unnecessary.

4. A patient who is moribund or nearly so may have the tube inserted while in the recumbent position. The operator should be to the patient's right, who should therefore be placed on the right edge of the bed. This brings the operator's right hand more immediately in front of the patient without awkward twisting of his arm or body.

Spraying the fauces with a five-per-cent. solution of cocaine facilitates introduction by whatever method, and tends to lessen the liability to premature expulsion.

The extraction of the tube is especially easy under laryngoscopic illumination; otherwise it is done in accordance with the same principles as regards the position of the patient as pertain to its introduction.

The author's posture method of feeding subsequent to intubation, by inclining the patient's head and shoulders downward, in which position fluids may be swallowed without gravitating through the tube into the lungs, can be successfully used with adults, but naturally with more difficulty at first than with children, on account of unmanageable weight and size. It is best done by hanging the head and shoulders over the edge of the bed downward nearly to the floor. Dr. O'Dwyer states that in chronic cases in adults the posture method of feeding is even more successful than with children. Here there is more time to learn the trick perfectly and to overcome timidity, which may at first impair the usefulness of the method in acute cases. Meanwhile, adults more readily than children may be fed upon semisolids, such as custards, stiff cornstarch, and oysters, which will slide over the top of the tube without entering it.

Regarding the scope of intubation for acute stenosis

in adults, the four cases of laryngeal diphtheria herewith reported, together with one other of which I have personal knowledge, all of which terminated favorably, justify the conclusion that this operation may with advantage be substituted for tracheotomy in that disease.

Concerning acute cedema of the larynx the indications are not so clear. The operation is technically feasible in uncomplicated cases, even when exhaustion is extreme, and I should consider a single attempt justifiable, provided, in order to guard against pressure decubitus, the smallest size of the adults' set of tubes was first selected.

When complicated by having the jaw "set" or by pharyngeal swellings which might obstruct the top of the tube, either or both of which conditions may be encountered in cases of acute cedema of the larynx, secondary to circumtonsillar abscess, Ludwig's angina, phlegmonous angina, retropharyngeal abscess, etc., intubation is absolutely contraindicated and fruitless; efforts thereat can only serve to intensify the exhaustion and suffering of the patient.

There are other acute conditions or acute exacerbation of chronic states which might be remedied by intubation. In a case of arthritis deformans with an acute exacerbation involving the larynx the dyspnœa was so urgent that I expected to be compelled to intubate at any moment for several days, and I believe now that much suffering and actual danger to life would have been obviated in that case had I done so.

Dr. W. K. Simpson mentions having resorted to intubation in a similar case of arthritis deformans of the larynx.

Traumatic cedema of the larynx, as by scald, corrosion, or fracture, might in suitable cases be treated in this way.

Laryngismus stridulus, or reflex spasm of the glottis, though rare in adults, might constitute another indication.

Also cedema of the larynx secondary to chronic

syphilis or tuberculosis might come within the same category, since the œdema may figure as an acute exacerbation provoking sudden and urgent dyspnoea.

The treatment of *chronic* stenosis of the larynx and trachea by intubation is not included within the scope of this paper.

Discussion.

Dr. E. FLETCHER INGALS said: I recollect, at this moment, six cases of acute stenosis of the larynx that I have treated by intubation, and there have doubtless been others. First, a man, about fifty, with acute stenosis of a few hours' duration. The tube was introduced, but gave no relief, and the man died under chloroform administered to perform tracheotomy. Second, a woman, who possibly had diphtheria, though there was no membrane in the fauces. The tube was introduced, and remained about ten hours. I was then called to remove it, but could not because my extractor was too short. Tracheotomy was done and the patient saved. Third, a man, nineteen years of age, with acute œdema and dangerous dyspnoea. He was intubated and lived. Fourth, a woman, about twenty-two, with œdema. The tube was introduced but she coughed it out. Another physician was called in who attempted to reintroduce, but the patient died during the effort. Fifth, a man with acute œdema, in whom the tube was introduced and gave perfect relief. He lived about a week with the tube in, but coughed it out, and speedily died. Sixth, a woman with acute stenosis, in whom the tube was introduced, but gave great distress, so she was unable to wear it for any length of time. There was no permanent benefit and she died for lack of tracheotomy. In another woman in whom my tube was used, dyspnoea steadily increased and tracheotomy was attempted, but she died upon the table. My experience, therefore, has not been very favorable to intubation in acute stenosis of the larynx in adults. In introducing the tube in adults it is much better to do so by aid of the laryngeal mirror. In extracting the tube it may be very difficult to reach it by the finger, so that one needs the mirror.

In acute stenosis in adults we should not waste time on intubation, for to save the life we must nearly always do a tracheotomy later, and the earlier it is done after its necessity is established, the better.

Dr. W. K. SIMPSON, of New York, said: I think the

doctor's points are well taken. We sometimes think we have an acute stenosis of the larynx, when in reality it is not so. The relief by intubation of acute stenosis produced by diphtheria and stenosis from other causes may vary considerably. In the latter instances we may have a dense underlying condition, with a superimposed acute swelling, which underlying condition may either make it very difficult to introduce the tube or entirely prevent its introduction. In the adult the tongue must be well withdrawn. It should be emphasized that where the mouth can not be well opened it is useless to try to intubate, and we should be ready to perform tracheotomy.

Dr. A. W. DE ROALDES, of New Orleans, said: I should like to call attention to a class of cases where intubation has done good, that is, in fracture of the larynx, as it holds the fragment in proper apposition.

Dr. CASSELBERRY said: The epiglottis can usually be reached by the finger with sufficient certainty to enable one to insert and extract a tube from the larynx by the sense of touch. With regard to primary oedema of the trachea, I have never seen such a case of sufficient gravity to cause dyspnoea, unless associated with chronic syphilitic stenosis of the trachea. What is termed subglottic oedema is yet in the larynx, or, at least, it involves the top of the trachea only, in conjunction with the pharynx. I did not intend to go over the whole subject of the treatment of oedema. As regards fracture of the larynx, this is covered by the part of the paper I did not read.

Paper.

A NASOPHARYNGEAL FIBROID TUMOR.

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

ALTHOUGH many cases of nasopharyngeal fibrous tumors successfully treated have been reported by laryngologists, yet the records seem insufficient in many instances to prevent the general surgeon from removing the superior maxilla in order to extirpate growths that might be quite as well destroyed through the natural passages; therefore, even if there were no other reason than enlarging statistics, I feel justified in reporting another case. In this case a method which I have not formerly tried, and have not seen recommended for the

ultimate destruction of these growths, has been attended by such satisfactory results that I wish to call the attention of this association to it, hoping that it may prove beneficial in some instances where the galvano-cautery or the knife could not well be employed.

The case was that of a boy, C. R., eleven years of age, who came to me in April, 1894. I learned that an undue fullness of the right cheek had been noticed when he was only four or five years of age, and during subsequent years he had had much trouble in breathing through the nose, with excessive discharge and loud respiration and snoring at night. For many months before consulting me he had been under the care of another laryngologist for the treatment of a nasopharyngeal growth. The patient was in general good health, his strength was fair, his appetite and digestion were normal, and his development was as good as that of most boys of his age. He had very little sense of smell, the voice had a nasal twang, and there was great difficulty in breathing through the nose. Upon examination I found the left nasal cavity half closed by deflection and exostosis of the sæptum; the right was completely occluded by a reddish growth at its posterior third, and there was a large red tumor in the nasopharynx, slightly nodular in form, and firm but elastic to the touch. The tumor upon removal was found to measure two inches by an inch and a half in length and width, and one inch in thickness. There was a small ulcer on the lower part of the tumor caused by previous treatment. The tonsils were slightly enlarged, and the pharynx was covered by tenacious mucus, which came down from the nasopharynx. Although the right cheek was abnormally full, inspection showed no indication of a tumor within it, but palpation revealed a slight thickening at the back part just beneath the zygomatic arch. I recommended an operation, but the parents decided to wait for some time, and I did not again see the boy for three months, at which time the growth had slightly enlarged, and the patient was having occasional transient pains in the jaw. The parts were anæsthetized as thoroughly as could be done by cocaine injected by means of a hypodermic syringe with a long nozzle through both nares. The cocaine solution was also sprayed up behind the palate with an atomizer having a long bent tip. Two small English catheters were then passed through the right naris and brought out through the mouth, and through these the two ends of a platinum

wire nearly three feet in length were passed, the loop remaining out at the mouth and the ends being brought out at the nostril. The catheters were then removed, and the loop of platinum wire was drawn up about the base of the tumor. The ends of the wire were then passed through the double tube of a galvano-cautery *écraseur* and made fast. The patient was told there would be considerable pain in removing the growth, but was asked to bear it as long as practicable, and told that as soon as he requested it the heat would be turned off. The platinum loop was now drawn tight, the current turned on, and kept for a second or two, until the pain caused the boy to ask that it be discontinued. He was allowed to rest for five or ten seconds; the current was then again turned on for one or two seconds, and again cut off and he allowed to rest as before. In this way we proceeded until the base of the tumor, about an inch in diameter, had been cut through. The tumor was then drawn out with forceps through the mouth. There was considerable hæmorrhage from the mucous membrane of the right naris due to abrasion of the surface by the electrode or to slight burning during the operation. This was checked by a strip of surgeon's lint packed into the naris from the nostril. This lint had been prepared by soaking it in a saturated solution of iodoform in ether, allowing it to dry, then dipping it in a saturated solution of boric acid in alcohol and drying. Two days later the packing was removed, and the patient was given a spray containing one third of a grain of thymol and four minims of the oil of cloves to the ounce of liquid alboline. A similar spray was continued throughout the subsequent treatment. The nasopharynx remained sore for some time, and no further operative measures were taken until the 28th of August, when a deep channel was burned through a portion of the growth that remained in the back part of the right naris. Six days later it was found that the breathing had been very much improved by this last cauterization. At this time I removed a small piece of the growth, about a centimetre in diameter, with the galvano-cautery snare. Nearly a month elapsed before any other cauterization was done; at that time and subsequently at intervals of from ten days to two weeks the remaining portion of the growth was cauterized four times; about six weeks later it was cauterized again, and again about a month later. One month later, February, 1895, a final cauterization was made to a small bit of the growth which still remained

in the back part of the right naris. By this cauterization the last vestiges of the tumor in the nasopharynx and nasal cavity were removed, and it did not return, though some irregularity remained in the nasopharynx as the result of cicatricial adhesions following the various cauterizations. The boy breathed freely through both sides, and had no inconvenience excepting from profuse secretion of muco-pus in the nasopharynx and posterior portion of the nasal cavity.

He was, however, beginning to be greatly annoyed by his schoolmates, who called him "Lumpy Jaw," on account of the swelling in the right cheek, due to enlargement of a portion of the tumor which had passed behind the palate bone and out beneath the zygomatic arch. This tumor, which could be readily felt, was nearly two centimetres in diameter and three centimetres in length. It passed downward and forward from a broad base, where it emerged from behind the palate bone.

A number of years ago I treated a similar case, in which I removed the growth from the nasopharynx and nasal cavity; but an offshoot into the cheek was operated on externally by the late Professor Gunn, who found great difficulty in checking the hæmorrhage, and was unable to entirely extirpate the growth; indeed, it would have been impossible to do it without removing the superior maxilla. Remembering former experience, I did not deem it wise to attempt to remove this mass with a knife. A very favorable experience in reducing the size and checking for many months the progress of the disease in two patients with malignant growths in the fauces by the submucous injection of lactic acid led me to try that agent in this case. On the 23d of April, 1895, I injected into the growth through the mouth fifteen minims of a twenty-five-per-cent. solution of lactic acid, to which had been added about fifteen per cent. of carbolic acid. When the patient reported about a week later, I found that the face had been very much swollen after the injection, so that he could not eat for two or three days, and he had been obliged to remain home from school. The inflammation and pain were so great that the injection was not repeated until about seven weeks afterward, when I employed a weaker solution. The boy was brave and patient, but still suffered much from the injection. About three weeks later, July 9, 1895, four or five minims of a four-per-cent. solution of cocaine were injected into the tumor, and this was followed by the injection of about twenty-five minims of a twenty-five-per-cent.

aqueous solution of lactic acid, containing five per cent. of carbolic acid and twelve per cent. of glycerin.

Two weeks later it was noted that the lower portion of the fibrous growth was very much smaller, though the upper part still remained quite firm and was not much reduced. At this time fifteen minims of the same solution were again injected, and two weeks later the swelling of the cheek was very much diminished. About two thirds of the tumor seemed to have been destroyed by the last two injections. It was then about fifteen millimetres in its longest diameter. The injection was again repeated, and I did not see the patient subsequently for two months, when a similar injection was made. One month later, November 9, 1895, the tumor was again injected, and December 30th a similar injection was made.

I did not see the patient again until February 21, 1896. At this time the swelling of the cheek had nearly disappeared, and it was impossible to make out distinctly any part of the growth, though an indurated mass about the size of a large pea could still be felt in the upper back part of the cheek where the growth had formerly been. It was probably partly cicatricial tissue, and partly the remains of the tumor. This was injected as at the preceding visits. I have not seen the patient since.

It is too early to report this case as absolutely cured, but a removal of fully ninety per cent. of the tumor by the injections of lactic acid convinces me that we at least have it in check, and that we shall be able to prevent its further progress by the same means. I believe that an agent so potent in the destruction of abnormal tissues must be of great value in the treatment of tumors so situated that they can not be removed by the galvanocautery or knife. In using the injections of lactic acid, it is important that the solution should not be too strong. It is well to begin with about fifteen per cent., and to increase the strength gradually to about thirty-five per cent., but never to go beyond a forty-per-cent. solution; a fifty-per-cent. solution will usually cause a slough. The acid alone in solution causes great pain, but, when combined with about five per cent. of carbolic acid, there is very little suffering. In order to prevent the immediate pain of the operation, it is important to inject a few

minims of a weak solution of cocaine. I employ a four-per-cent. solution that also contains other ingredients that I believe render it more efficient, and at the same time prevent in great degree unpleasant constitutional effects. This solution is similar to one I obtained from a dentist, who injected it into the gums to prevent pain in extraction of teeth. I have used it for several years in anæsthetizing the nasal cavities previous to operations, and since employing it I have obtained the constitutional effects of cocaine very much less frequently than formerly, and anæsthesia has been more rapidly produced. The solution contains atropine (a heart stimulant and local anæsthetic), a tenth of a grain; oil of cloves (also a local anæsthetic and antiseptic), three-minims; carbolic acid (a local anæsthetic which appears by coagulation of albumin to prevent the absorption of cocaine), ten grains; and hydrochloride of cocaine, twenty grains to the ounce of distilled water. Whether or not this particular combination is better than others I do not pretend to say, but I am sure that it is much more satisfactory than a simple solution of cocaine. The anæsthesia is obtained more quickly and maintained longer and unpleasant constitutional effects are infinitely less frequent.

Paper.

NASOPHARYNGEAL FIBROMATA.

BY CHARLES M. SHIELDS, M.D.

OF the two cases of fibroid tumors which I have to report, one occupied both nasal and pharyngeal spaces, with extensive attachments in both, while the other was distinctly a tumor of the nasopharynx:

The first was that of a young man aged twenty-three years, of Boone, N. C., sent to me February 2, 1895, by Dr. Wakefield, of Charlotte, N. C., with the following history:

For more than a year an annoying discharge from the throat, with accompanying thickness of voice and difficulty of breathing through the nose, had given to the

patient and his doctor the idea that he had catarrh, for which he was treated without improvement.

Frequent small hæmorrhages and increasing difficulty in breathing impressed both that a growth was present, and he was accordingly referred to Dr. Wakefield in September, 1894, who recognized the character of the growth, and with a cold snare removed a piece as large as a walnut. The improvement following this operation was not marked, and four months afterward, in January, 1895, the patient became so much worse that he again visited Dr. Wakefield, who referred him to me with the idea that resection of the superior maxilla would be required to successfully remove the tumor, which had greatly increased in size.

I found complete nasal stenosis, the left nostril being filled with the growth, and the right occluded by the crowding of the septum to that side by the unrelenting pressure of the tumor. In the left nostril it presented at the opening, but so completely filled the space as to prevent any determination of its attachments. I could not push a probe through either side. Examination of the pharynx with the mirror showed the growth extending down nearly to the level of the lower border of the soft palate, and apparently filling the entire postnasal space. Pressure with the finger could displace it sufficiently to make out its attachments fairly well. Its base was broad and adherent to the basilar process above and for a short distance down posteriorly on the back wall of the pharynx, as well as to the left lateral wall. It sent a short projection into the right nasal space, but so completely filled the left side as to prevent any examination with the finger there. It was red in color and unyielding to the touch. The patient had had frequent small bleedings, but only one of any considerable amount. His voice was "dead" in character, and, as a result of the pressure, he presented the typical "frog face," having associated with it the expression of apprehension, indicating the anxiety he could not conceal.

The parts were cocainized and an attempt made to engage the tumor with a curved cold-wire snare introduced through the mouth and pushed into position with the finger; but the broad base prevented the instrument from taking hold. Then a blunt hypodermic needle was pushed in the left nostril between the growth and septum and a ten-per-cent. solution of cocaine injected, which contracted the tumor sufficiently for a filiform bougie to be pushed in and through to the throat, after

considerable manipulation. To its anterior end a piece of silk was fastened, and it, in turn, to the sharply bent loop of a piece of No. 5 piano wire, which was then pulled through into and out of the mouth and shaped into a well-rounded loop. The nasal ends of the wire were carried through the cannula of the snare, and, the growth being engaged as the wire was tightened, the cannula was pulled back into the nostril until it came in contact with the pharyngeal portion of the tumor. The nut was screwed up with a pair of gasfitter's pliers for five hours, when the wire broke.

On the following day the galvano-cautery loop was carried through the nostril in the same manner and without difficulty slipped into the cut made by the cold wire. It cut its way through the remaining portion in a few moments and the separated piece was pulled down and out of the mouth with the finger. The cut base of this piece measured an inch and a quarter in its narrowest and an inch and a fifth in its widest diameter. It was found to have been continuous in front by a rather narrow attachment to the tumor in the left nasal space.

After permitting the patient to rest a few days, the latter was removed with the cautery snare. It was attached to the outer wall of the nose for about seven eighths of an inch, which was one half the distance of its length, the anterior portion being free. As a result of its pressure, most of the middle turbinated bone had been absorbed. With the relief of pressure on the sæptum it sprang back sufficiently for the right side of the nose to easily admit the cautery snare for the removal of the third piece, which projected into that side, but was only attached in the pharynx.

The three small pieces were remaining portions that were subsequently removed.

Irido-platinum wire was used and was found to be more springy and to possess greater strength than the platinum. It was heated from the street current through an Aloe converter and was kept at a red heat for about fifteen or twenty seconds at a time while it was drawn up; then the patient was allowed to rest for a minute or two, and the process repeated until the growth was cut through. By turning on the current for short periods, with a rest between, the wire never becomes hot enough to produce hæmorrhage of any consequence.

The patient returned home, feeling well, and with free nasal respiration.

The specimen shown in alcohol has become darker in color and somewhat shrunken.

The microscope shows it to be a fibroma, containing portions of an angiomatous character.

Three weeks ago (fourteen months after the operation) the patient returned for examination, and I found a projection at the site of the old growth in the left nostril, about the size of a grain of corn, which was removed. There was also a thickening at the seat of the main tumor at the vault of the pharynx which did not present sufficiently to be engaged in a snare, and was treated by galvano-cautery application.

The second case is now under treatment, and I report it thus prematurely because of the interesting fact that it occurred in a negro woman and after the age of forty-eight.

In the matter of age, while uncommon at this period, older patients have been reported. Nélaton, Gosselin, and other earlier observers had never seen a nasopharyngeal tumor in the female. Of sixty-six cases reported by Beusch only one was in a female—a girl of fourteen. Lincoln's collection of fifty-eight did not include a single woman, and Morell Mackenzie says that instances of the disease occurring in women must be looked upon as altogether exceptional; but subsequent examination of reported cases shows that the female does not possess immunity. As regards race, however, the case is unique. I have no knowledge of any instance reported in the negro. Bosworth says: "When we consider the great frequency of uterine fibroids among the colored races, we might naturally anticipate a similar frequency of fibromata of the upper air-passages, and yet, as a matter of fact, I know of no recorded instance of a fibrous tumor of the nasopharynx occurring in a negro."

The patient, Martha Turner, of Brunswick County, Virginia, gave her age as forty-eight years, but looks older, and is a nearly pure type of the negro. She stated that three or four years ago her attention was first attracted to her throat by the thickening of her voice and sensations of pressure. For two years there had been frequent small bleedings. These symptoms increasing, she consulted her doctor, who, after several visits, noticed the pushing forward of the palate and discovered the presence of the tumor. He thrust an aspirator into it,

but, finding it solid, sent her to Dr. James R. Wheat, of Richmond, who, in turn, referred her to me.

I found the growth opaque-red in color, very hard to the touch, and, at the first examination, partly covered with a little dried blood. It pushed the soft palate well forward, and, when that structure was raised, about half an inch of the tumor showed below. The finger could be passed up on either side with a little pressure, although it very well filled the entire postnasal space and was attached both to the posterior wall of the pharynx and to its vault. At the upper part it sent a short projection into the left nostril. The patient was in good health, complained of no pain, and was only annoyed by the sense of pressure in the throat and by the frequent bleedings, which, while not of sufficient amount to weaken her, kept her always apprehensive. A small piece was cut from the lower part of the tumor and submitted to Professor J. Page Massie, pathologist to the Old Dominion Hospital, for microscopical examination, who reported it a fibroid tumor.

The broad base of the tumor, and its attachment posteriorly and above, rendered its successful engagement with the cautery snare so uncertain that I decided to try electrolysis.

For six weeks this process has been repeated at intervals of three or four days, most of the application being made with needles attached to both poles. This occasioned so much pain, however, that the method was changed to that of inserting one needle in the growth and applying the other pole on a sponge electrode to the back of the neck.

There has been some reduction in the lower part of the tumor, but not enough to make me feel much encouraged to hope for its complete removal by this means.

My experience with true fibroid tumors of the upper air-passages has been limited to the two cases reported and to a third occurring in a girl of nine years, treated three or four times by electrolysis and then passing from my observation, but subsequently reported two years later as well by her mother. I do not regard the latter case as cured by the treatment, but as one of those that we know to sometimes undergo spontaneous disappearance.

As to the treatment of these tumors, I believe that there are very few, if any, that can not now be reached through the natural passages and managed with better

results than after a resection of the superior maxilla or any other preliminary operation, and resort to such measures is rarely warranted. I can not conceive of any case much more difficult to reach in this way than the first one reported, where both nasal passages were closed and the postnasal space so completely filled up, and yet persistent manipulation rendered the engagement and removal of the growth successful. The use of the ligature, chemical caustics, thermo-cautery, evulsion, etc., are not worthy of consideration in comparison with the employment of either the hot or cold snare. As to the comparative advantages of the hot and cold snare, the attending circumstances will usually determine. The cold steel wire snare has, in the estimation of some operators, the advantage of being more readily applied on account of the loop better retaining its shape. In the majority of cases, however, the finger has to be used in the postnasal space to place the wire, and then the greater elasticity of the steel is of doubtful value. In all other respects I believe the cautery snare to be preferable. It performs its work with much greater rapidity, accomplishing in a few minutes as much as the cold wire requires hours to do, and in my experience without greater pain for that length of time than attends the use of the other for the much longer period.

In employing the method of applying the current for a few seconds and allowing the patient a short rest before turning it on again, there is entire freedom from pain during the intermission and the wire does not become hot enough to occasion hæmorrhage; while at the same time we feel confident of having an instrument capable of cutting through any growth with certainty, of which fact we can not be sure in the employment of the cold snare, as is evidenced by the instances reported of the breaking of the wire or instrument in large, dense tumors, and as was my experience in its use with the first case.

Another important advantage of the hot snare is, that after being placed in position over a growth without a constricted base, the wire can at once be buried and

made to take hold by being heated a few seconds during the preliminary tightening, instead of slipping off as the cold wire often does.

Finally, while removing the growth it thoroughly cauterizes every portion of the remaining stump, doing at the same time what many operators advise after other methods of removal, the burning of the base, thus securing without subsequent manipulation any advantage that may result from that practice.

Discussion.

Dr. W. E. CASSELBERRY said: One might think that with due observance of the technique described in these papers, it was a comparatively easy matter to remove these fibroid tumors, but it is not always so. If the tumor is broadly pedunculated and not bound down by adhesions the plan will succeed, but if, as in one case of my own, the tumor is firmly attached in all directions by firm adhesions, binding it on each side to the orifice of the Eustachian tube and firmly to the posterior pharyngeal wall, the tumor itself sending prolongations into the nares, it may be impossible to envelop it by a wire. After working for hours I succeeded in removing but a small piece, and this by first cutting places for the wire through the adhesions and into the substance of the tumor. The patient passed from my observation; relieved, but not cured. I think an external operation for access to the growth would have been justified in this case, or, at least, splitting of the velum palati, to enable one to detach the adhesions and then to envelop the growth. Of course, all external operating is to be avoided when it is possible, by ingenious technique, to remove the fibroid tumor *per vias naturales*.

I recollect a case recited by Dr. Lincoln, of New York, in which he succeeded by electrolysis, and I am desirous of giving this a thorough trial for fibroma of the nasopharynx. I noted that the second paper mentioned that the bipolar method of electrolysis was the most painful. This is not my experience with electrolysis when used for the reduction of spurs of the nasal septum. It would seem natural that the unipolar method would be most painful, for with a large part of the body as resistance in the circuit a stronger current must be used.

Dr. A. W. DE ROALDES said: Dr. Casselberry's ex-

perience has been mine. It is not easy to remove a growth, for the reason he has given, and you will often find that extensive adhesions will prevent the encircling of the tumor. In one case I became aware of these adhesions by the fact of my non-success. Upon a closer inspection of the post-nasal space I found extensive adhesions that I could almost see. You will find that slitting the palate, which can be afterward sewed up, will help you considerably. As to the removal of a portion of the maxillary bone, it will facilitate the handling of the tumor. I also concur in Dr. Casselberry's remark concerning the bipolar method for the reasons he has given. The resistance is certainly less. Your electrical wedge passes between the two electrodes, and in one of the cases in which I employed this method the results were good.

Dr. J. E. H. NICHOLS said: I agree with Dr. de Roaldes. In one case in which I desired to ensnare one of these growths I found it impossible to do so. After several hours of work I finally succeeded in removing it with my finger nail. There was no hæmorrhage, and the patient made a good recovery.

Dr. INGALS said: In getting the snare about the tumor, we do not try to do it from the anterior nares. If the tumor has a large pedicle or broad it is necessary to use a hot wire.

Dr. SHIELDS said: I never thought the manipulation easy; but by persistent effort I have always succeeded. Even if it does require a long time it is better than subjecting your patient to the dangers of a preliminary operation. With regard to cutting the palate, it is my experience that this is unnecessary if you accustom your patient to the presence of your finger. I put my finger up behind the palate and stretch it thoroughly, so as to make the parts susceptible to manipulation. I have been surprised to find the amount of stretching that is possible, and in a fairly good patient you can put your finger almost anywhere in the post-nasal space. Even if the attachments of the tumor are great, if you insert your finger for a moment to place the loop well up around the base, then remove it, and immediately turn on the current, you can accomplish your object. The heated wire will usually be found to be sufficiently buried to retain its position without slipping.

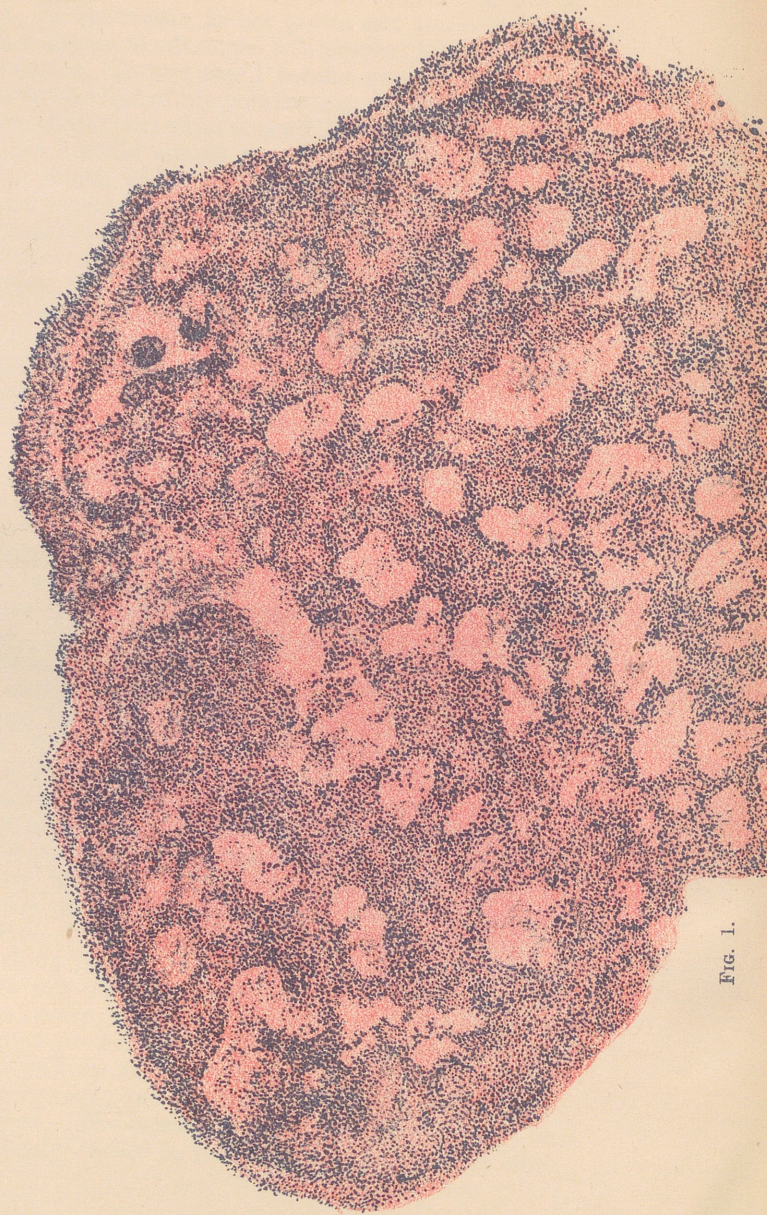


FIG. 1.

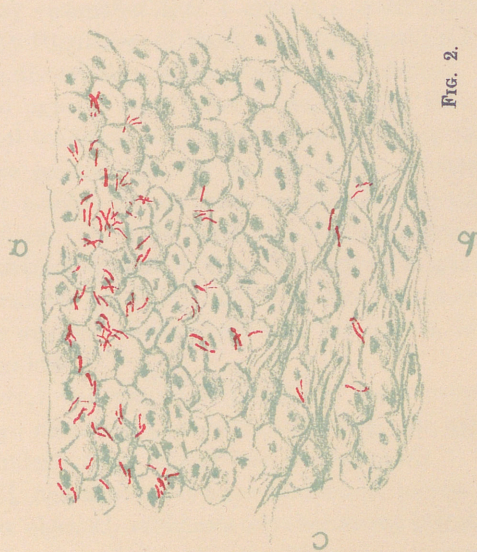


FIG. 2.

DR. WRIGHT'S ARTICLE ON TUBERCULOUS INFECTION OF
THE LYMPHOID TISSUE OF THE PHARYNX.

Paper.

TUBERCULOUS INFECTION OF THE LYMPHOID TISSUE IN
THE PHARYNX, WITH SOME REMARKS ON LARYNGEAL
INFECTION.

By JONATHAN WRIGHT, M. D.,

IN making the few remarks which follow, I do so as a sort of addendum to the paper which I hastily prepared last year for the discussion on tuberculosis of the upper air-passages by this association.

You may remember that I quoted a short abstract of a paper by Dieulafoy, of Paris, upon the lymphoid tissues of the throat as a tuberculous manifestation. In reading the paper * itself since then I found that his experimental evidence consisted of the following facts: In sixty-one guinea-pigs, he inoculated the peritoneal cavity with palatal tonsils from apparently non-tuberculous children. Of these, eight, or a little less than one in eight, contracted tuberculosis. In thirty-five guinea-pigs he inoculated lymphoid tissue from the nasopharynx in the same way, and seven of them, or one in five, developed tuberculosis.

Lermoyez,† you will also remember, had previously reported two cases of tuberculosis following, and apparently dependent upon, operations for adenoids.

Dansac ‡ had also made examinations of tonsils and found, as he claimed, evidences of tuberculous infection.

Now, if enlarged tonsils are tuberculous manifestations either in the oropharynx or in the nasopharynx, or if any considerable number of them, as above appears, really contain any tuberculous foci, laryngologists should know of it. Certainly we have been familiar with these growths for a long enough time to observe them carefully, and every laryngologist's observation has been wide enough to convince him that there

* *Archives de laryngologie et rhinologie*, July and August, 1895.

† *Annales des maladies de l'oreille*, etc., October, 1894.

‡ *Ibid.*, July, 1893, p. 564.

must certainly be some mistake in the assertion that any considerable number are more than simple hypertrophies of pre-existing lymphoid elements.

Several years ago Massei, of Naples, wrote to me inquiring if I had ever found the tubercle bacillus in the healthy nose, and asking me to make inquiry of other observers. A well-known physician of Brooklyn, a skilled bacteriologist, at that time told me that he had found tubercle bacilli in his own nose, after a prolonged stay in the phthisical wards of one of our hospitals. He was and still remains, after a lapse of five or six years, a perfectly healthy man. This communication I forwarded to Massei with the statement of my belief that the bacilli would not infrequently be found to exist under such conditions in healthy noses and throats. Several years later, Strauss, in Paris, reported his examinations by which he showed that such is the fact. Massei has lately published an address,* in which he says that inquiry among many laryngologists by a circular letter had elicited only a few answers, and in addition to my own, only one in the affirmative, from Liebermeister, to the question as to whether tubercle bacilli were found in healthy throats. This was in 1892, and Strauss's work was published in 1894. The investigations of Baumgarten, Sims Woodhead, Krückmann, and others prove pretty conclusively that the bacilli do get through the epithelium of the throat and into the cervical lymphatics in tuberculous subjects and in animals fed on tuberculous food. Were it not for clinical experience, therefore, and such investigations as those of Dr. Hodenpyl, it would seem extremely probable that the lymphoid tissues of the throat should contain tubercle. Dr. Hodenpyl † examined about two hundred sections for bacilli and found none, nor anything like tubercle in tonsils.

The matter standing thus, I determined to repeat some of Dieulafoy's experiments. On looking over the catalogue of the pathological specimens which I had

* *Diagnosi e cura della tubercolosi della laringe*. Estratto dal supplemento al *Policlinico*, anno ii, v. 5, 6.

† *American Journal of the Medical Sciences*, March, 1891, p. 257.

examined microscopically in the last six or seven years, I found among them about sixty tonsils and adenoids. These had been hardened and stained in various ways and examined histologically with no special search for evidences of tuberculosis, but of the whole number, which must have consisted of several hundred sections, none had ever presented an appearance which had made me even think of tuberculous tissue. One or more slides from nearly all of these specimens had been preserved, and I again went over them for evidences of tubercle. Occasionally, in an area of recent inflammation of a tonsil a giant cell would be seen, but never perfectly typical. No "coagulation necrosis" or other evidence of tubercle could ever be found. These specimens had never been examined for bacilli, and most of them had been soaking so long in the alcohol that they would be useless for bacterial examinations. I took seven of the more recent celloidin blocks, however, and stained four sections from each for tubercle bacilli with Ziehl solution that was giving positive results with sputum and tuberculous tissue.

As the cases came into my clinics last winter for operation, tonsils and adenoids in unselected cases were cut out with sterile instruments. Half of each specimen was put in a sterile test tube, sometimes with and sometimes without sterilized water; and the other half was put in ten-per-cent. formalin for twenty-four hours, then in alcohol, ether, and celloidin, blocked, cut, and stained with Ziehl solution. The pieces in the sterilized tubes were sent to my friend Dr. W. H. Park, who put them into the peritoneal cavities and subcutaneous tissues of guinea-pigs. The number of these experiments was for faucial tonsils five, for postnasal "adenoids" seven. Of this series of experiments and examinations all resulted negatively. No bacilli of tubercle were found in the sections and no tubercle developed in the guinea-pigs, though three died of septicæmia.

Of course these few experiments, twelve in all, and negative in result, are not presented to refute Dieulafoy's more extensive work; but even had I obtained any posi-

tive results in the animal experiments, I should not have been able to say that I escaped the criticism which Cornil offered to Dieulafoy's work. Bacilli in his cases might have existed in the crypts and on the surface of the tonsil and not in its structure. What I have said in regard to the presence of tubercle bacilli in normal respiratory passages adds force to this suggestion.

While these experiments were being carried on I was asked by Dr. Walter F. Chappell to see a case at the Manhattan Eye and Ear Hospital. He has kindly furnished me with a report of the history and a drawing of the clinical appearances in the case, taken from a paper read at the New York Academy of Medicine before the laryngological section, and published in the *New York Medical Journal* for September 19, 1896. On reference to his paper it will be noted that symptoms of tuberculosis of the nasopharynx followed within a week after operation for adenoids, the patient being exposed to infection by attendance on a sister dying of phthisis pulmonalis.

From the history, I am inclined to think that the patient already had a tuberculous focus in her nasopharynx at the time of the first operation. The supervention of the symptoms only a week afterward could hardly be attributed to primary tuberculous infection, as we do not get such a speedy reaction as this, even in guinea-pigs.

Dr. Chappell, however, I believe, is of the contrary opinion as regards this case. A piece of tissue was taken from the nasopharynx and given to me for examination, and upon it I was able to make the following report:

The specimen received from Dr. Chappell was a piece of tissue about ten millimetres in its long diameter and five millimetres in its short. Half of this was sent to Dr. W. H. Park, who inoculated two guinea-pigs with it. Dr. Park reports that one of the guinea-pigs died in twenty-one days of septicæmia, and showed in addition to this perfectly typical tubercle in the spleen and other organs, the tubercles containing bacilli. Four months later the second guinea-pig, which had presented signs

of disease, was killed and found to be suffering from disseminated tuberculosis. The other half of the specimen was put in absolute alcohol, then in alcohol and ether, and imbedded in celloidin. Sections examined under a low power show a lymphoid tissue crowded with tubercle, presenting the picture shown in the plate (Fig. 1). Examined with higher power, the characteristic structure of tubercle with many giant cells may be seen, the areas of coagulation necrosis being shown as light spots in the drawing. Sections were stained for tubercle bacilli. A few were found in two or three sections out of about forty examined. The bacilli were never more than one to a tubercle granulum, situated usually in the centre of it, and sometimes in a giant cell.

Diagnosis.—Miliary tuberculosis of lymphoid tissue.

Thus it will be seen that the methods used in the twelve unsuspected cases, with negative results, gave a positive result in a case that was clinically perfectly apparent.

I have had colored drawings made, and you will note in Fig. 1 the striking appearance of the miliary tubercle under the low power (A *). I desire here to refer to a paper by Dr. Ricardo Botey in the *Archivos latinos de rinologia*, etc., December, 1895, on Two Cases of Amygdalar Hypertrophy with Larval Tuberculosis.

His experiences resembled my own very much. He had also found giant cells in the section of a tonsil, but thought of them only as an inflammatory manifestation. In nineteen other tonsils, especially examined for them, he found giant cells only in two, but never found the bacillus.

In two cases which he saw later he found the tubercle bacillus in tonsillar sections and got positive results by animal experiments, but in both these cases there was, to judge from the histories, ample evidence of pre-existing tuberculosis elsewhere. After this Botey inoculated ten guinea-pigs with tonsils from non-tuberculous cases and obtained negative results, except in one case which died of a pulmonary and splenic tuberculosis, but

there was no tubercle at the site of inoculation. From his experiences he deduces the following conclusions:

"1. That there exist certain forms of amygdalar hypertrophy of a primary tuberculous character, impossible by simple inspection to distinguish from the common hypertrophy of those organs with which every one is familiar.

"2. This condition, which constitutes a kind of larval (*larvada*) tuberculosis in some cases and latent in others, is a serious menace to the organism and a danger for the future, more or less certain, according to circumstances.

"3. This larval tuberculosis of the tonsils is present, especially in adolescence, without the least pulmonary or intestinal lesion which would make us suspect the evil.

"4. In some rare cases it is possible to diagnosticate it in time, with the help of the microscope and of inoculations.

"5. It is probable that the majority of the cases of hypertrophic amygdalitis are not tuberculous, for although in our experiments there occurred ten per cent., nevertheless, we do not know the proportion of one to the other, and simple ocular inspection reveals nothing.

"6. This does not signify that all the cases of larval amygdalar tuberculosis, even supposing that they are diagnosticated opportunely, are surely followed by different cervical adenopathies, terminating in a pulmonary phthisis. On the contrary, it is probable that in many cases everything subsides into ganglionic infarcts without the tubercular germs reaching later the pulmonary parenchyma," etc.

As for my own impressions in this matter: In spite of the recent evidence here presented, I am inclined, both from clinical and pathological evidence, to agree with Dr. Hodenpyl when he says that tuberculous amygdalitis is a rare affection, and that the tonsils are rarely the seat of primary inoculation.

Considering the chances of primary, and especially of secondary infection, it certainly is rather remarkable that these structures should escape so constantly as they

do. Moreover, tubercle bacilli have been found in the bronchial and mesenteric glands of apparently non-tuberculous people. They have been shown to exist in these lymphatic structures by animal inoculation when they could not be demonstrated by the microscope. That the same thing should be demonstrated in tonsils should not be a matter for surprise, but we should expect it to occur more frequently than appears.

I want to take this opportunity of presenting a drawing of a section which is more directly connected with the subject of tubercular invasion of the larynx than of the lymphoid tissues, and I have had a colored drawing made on stone for the same plate as the drawing of the tuberculous lymphoid structure.

The question of tubercle bacilli penetrating through epithelial structures has frequently been discussed, and very frequently such penetration has been denied. Last fall, in examining sections from papillomatous tissue removed from a tubercular larynx in a patient far advanced in pulmonary and laryngeal phthisis, I met with the picture which you see reproduced on the plate in Fig. 2.

You will note that a veritable stream of tubercle bacilli is pouring into and through the thickened, squamous epithelial covering of the laryngeal mucous membrane. The epithelial cells are swollen and cloudy. The evidence of the penetration of tubercle bacilli through epithelial cells is here perfectly apparent. It is said by Lake * and others that pyogenic cocci first create shallow ulcers through which the tubercle bacillus finds its way. This would appear not to be the case in this specimen.

As to whether the tubercle bacillus can penetrate the normal laryngeal epithelium of a healthy individual, it may still be considered a matter of some doubt.

This laryngeal case of mine ran the ordinary course of pulmonary and laryngeal tuberculosis, and terminated fatally, I should think, in about nine months. The case of Dr. Chappell's was more rapid, terminating in less than six months with general tuberculosis.

In the latter case the lymphoid tissue contained so

* *American Journal of the Medical Sciences*, 1895, i, cix, p. 407.

few bacilli, notwithstanding the large amount of tubercle, that it required prolonged search through many sections to find even one. The enormous number in the epithelium from the larynx made a striking contrast. It is impossible at present to explain the difference. The results produced by the infecting organisms in the two cases bear no proportion to their numbers, and this fact is a good one to bear in mind in watching the results of the researches into the real ætiology of tuberculous infection.

Discussion.

Dr. H. L. SWAIN said: I consider this one of the most valuable contributions we have had on this subject. We are all aware that the glands of the neck are frequently enlarged in cases of adenoids and of enlarged tonsils, and it is a relief to my mind to know that such swelling is probably hardly ever tuberculous. It has been demonstrated by excision of these enlarged glands in the adult that they may be tuberculous, and I have always had a suspicion that this condition was left over from the lymphadenitis of childhood. Another good point was brought out by these pictures—the bacilli wandering through the epithelium of the larynx, which is always more dense and seemingly more resisting than in the tonsils. Those who have made many sections of these latter organs must have been impressed with the condition of the epithelium in every case of enlarged tonsil, as it is perforated by many thousands of holes through which the leucocytes pass, so that it resembles a honeycomb. When we think of the possibility of infection, it is a wonder that the tonsils are not literally a hotbed of the tuberculous infection. This bears very nicely upon the point that the tonsils must have some protective action in the matter, or are very non-absorptive.

Dr. WRIGHT said: The large glands in the neck, I think, are very frequently tuberculous, and the fact that tubercle bacilli can not be found does not prove that they have not been there. It has been shown that the tonsils are very poor structures for absorption, and very little evidence of absorption through the tonsils has been obtained. Whether bacilli have passed through but have not lodged it is impossible to say, but it is a fact that they are frequently found in the lymphatic glands below. It has been said that in adults with phthisis the tuberculous

infection has been a retrogressive one, from the root of the lung upward, whereas in children the evidence shows that the infection has been downward.

Paper.

THE RELATION OF ACUTE DISEASES OF THE NOSE AND THROAT TO DISORDERS OF DIGESTION.

BY MOREAU R. BROWN, M. D.

CLINICAL experience demonstrates that there are certain well-defined relations existing between acute inflammatory conditions of the nose and throat and other disordered organs of the body. In some cases these relations are easily explained; while in others they are shrouded in mysteries which pathology has as yet failed to unfold, and which all attempts to account for can be, at present, but matters of theory, not based on the result of completed scientific investigation. Not that the pathologist or laryngologist has been derelict in searching for the ætiological relations, but rather that the limits of science have precluded their discovery. The connection between acute inflammation of the upper air-passages and disorders of digestion, although a matter of clinical observation, is no exception to this statement, and the surprising fact is that there is such a scant amount of literature bearing on the subject.

Bosworth, in his work on Diseases of the Nose and Throat, briefly refers to the changes occurring in the pharyngeal mucous membrane in stomachic disorders, and further calls attention to chronic inflammation of the upper air-passages as being an important ætiological factor in acute inflammation of the same region. He considers the involvement of the pharynx in gastric disorders as due to the fact that the pharynx is a part of the digestive tract, being the point where the air-passages cross it, which may, in some cases, account for the extension of the inflammatory process.

In his Lettsomian Lectures, T. Lauder Brunton refers to stomach cough as being due to mild inflamma-

tory changes in the upper air-passages, plus the digestive disturbances. He cites a case of stomach cough wherein the pharynx was decidedly hyperæmic, and although no laryngeal examination was made, it was concluded from the symptoms that the larynx was similarly involved. The cough and inflammation failed to respond to treatment until a blue pill had been administered. The following case, in my own practice, serves to illustrate the condition rather more forcibly:

Mr. —, aged about forty-five, restaurant keeper by occupation, a healthy, robust-looking man, fond of rich food, consulted me first about five years ago for a rather severe attack of acute inflammation in the upper air-passages (nose, pharynx, and larynx) accompanied with asthma. As a history, he stated that such attacks were generally preceded by gastro-intestinal disorders, and a few days previous to the present attack he had suffered considerable digestive disturbance, such as loss of appetite, disgust for food, nausea, headache, abdominal distress and pain, eructation of gas, constipation, and mental depression. The treatment directed to the inflammation of the upper air-passages was carefully carried out for a short time, but failed to give relief until a saline laxative, followed by such treatment as was calculated to restore the digestion, was ordered and taken. Afterward, appropriate treatment, carried on for some time, checked further asthmatic attacks, but I have seen him a few times since with acute inflammation of the upper air-passages which responds readily to remedies directed to the digestive organs.

I have searched the medical literature within my reach for other authorities bearing on this subject, and I am able to give the following reports:

Edema of the larynx in the angeioneurotic, connected with gastric disturbances generally, is mentioned by Collins, Osler, Lovett, and also by Pryor (*Med. Record*, July 28, 1894).

Nogano (*Courrier méd.*, Paris, September 23, 1893) records a case of hæmorrhage of the larynx in a forty-five-year-old man who had suffered from cirrhosis of the liver and cardiac disease.

Cackle (*Medical Times and Gazette*, August 4, 1884)

records a case with symptoms resembling those of laryngeal phthisis. Later two attacks of unconsciousness followed in quick succession, the latter being fatal. At the autopsy, latent hepatic abscess was found, also a small ulcer of the left vocal cord, the nature of which was not stated. No signs of tuberculosis were discovered.

Ed. Löri (*Die durch anderweitige Erkrankungen bedingten Veränderungen des Rachens, des Kehlkopfs und der Luftröhre*, Stuttgart, 1885) thinks that "gastro-intestinal catarrh may be either the cause or the result of chronic throat and laryngeal catarrhs." He mentions also hæmorrhagic affections of the larynx in liver cirrhosis and echinococcus.

Ed. Löri (*Jahrbuch für Kinderheilkunde*, xxi, 1884; *Centralblatt für Laryngologie*, i, 360; *Orvosi Hetilap*, 1884, No. 12; *Pest. med. Presse*, No. 31), speaking of gastric complications of laryngeal disease in children, says: "Laryngeal disease may affect the stomach by continuity, by swallowing secretions of ulcerated sores, cankers, etc., and gastric disturbances are often produced in a reflex way from the larynx. Especially do we frequently observe meteorism and anorexia with inflammatory disease of the posterior laryngeal walls, and also gastric dilatation and vomiting."

Turek has also recently demonstrated the bacterial origin of stomachic disorders from nasopharyngeal infection, finding similar micro-organisms in both regions, and the former relieved after relieving the latter. Further bacteriological research may be able to demonstrate the reverse of this position, and establish that stomach disorders are causal factors of laryngeal inflammations, though, as far as I can learn, no one has undertaken the task.

Steffin (von Ziemssen's *Cyclopædia*) says spasm of the glottis may be favored by elevation of the diaphragm, owing to overfilling of the stomach, or by overdistention of the intestines by fæcal masses, or by serous swelling of the liver. Among the conditions found present in spasm of the glottis are swelling, and yellow or yel-

low-gray color of the liver, and a considerable deposit of fat within its cells.

Ariza (Madrid, *Laringismo gastrico*, *Centralblatt*, ii, 446; *El Distancen*, No. 44, p. 211, May 20, 1885) cites a case (Virchow's *Annalen*) of aphonia from indigestion relieved by an emetic. He distinguishes three varieties of laryngeal disturbance from gastric disorders:

1. Laryngeal hyperæsthesia, with normal aspect of the fauces and larynx, the patients complaining of burning sensations, pain, etc. All these patients suffer from dyspepsia. He reported cases at the Laryngological Congress at Milan.

2. "Laringismo gastrico plastico." The vocal cords and surroundings are hyperæmic and painful, and vary with the gastric disorder. This form especially occurs with chronic gastric disease.

3. "Laringismo gastrico paralitico." He says that he can not explain the aphonia and dysphonia in cholera cases, except by a temporary reflex paralysis of the larynx. He finds, however, in the literature, no laryngoscopic observations, and thinks they would be difficult to make. Kispert, who abstracts his paper, says that Matterstock made some good observations of this kind in the Wurzburg epidemic, and found this paralysis frequent, especially on the left side.

So much for authorities. The explanation of the conditions of the simultaneous occurrences is not easy, but the following may be suggested: In œdema of the larynx, occurring during the course of liver disorders, it is apparent that we must look to the obstruction of the portal circulation as a cause, and in the inflammation produced by the imbibition of alcohol rather to the venous stasis which follows its use. This is particularly the case in cedema of the upper air-passages ensuing upon a debauch, as shown by the rapidity with which it disappears on taking further liquor early the next day, and the subsequent increase of the cedematous condition, or by the more rapid recovery following an evacuation of the gastro-intestinal tract.

In acute catarrhal inflammation of the nose and

throat, supervening on disorders of digestion, we have an entirely different element to deal with. In offering an explanation for this condition we must largely theorize. It has been, in times past, the custom to call to our aid the old theory of reflexes, and it may not be unreasonable to suppose that these views are not entirely without foundation. It is a recognized fact, as so aptly put by M. Gross (*New York Medical Journal*, May 4, 1895), that "every affection of the stomach is reflected back on the other organs; and inversely, every disorder of the organs reacts upon the stomach." Yet in the present day of bacteriological research, when the micro-organism theory of inflammation is generally recognized, we must agree with Bosworth, who, in a paper read before this association last year, states: "I think that as we become more familiar with the disorders of the upper air tract we shall in many cases be able to abandon this somewhat indefinite and obscure term 'reflex,' and adopt the theory that many of the so-called 'reflexes' are the direct result of morbid action upon either the nerve centres or the tissues involved in the inflammatory process" (*New York Medical Journal*, November, 1859, page 655).

What bacteriological research has failed to fully establish is demonstrated clinically—namely, that an acute inflammation of the upper air-passages will create disorders of digestion by direct infection through the mass of muco-purulent secretion, loaded with bacteria, which finds its way into the stomach. But, as to the reverse process, is it probable that the upper air-passages become inoculated directly by the stomach contents? The irritation of the larynx and pharynx, or, less often, the nasopharynx, from the eructation of the contents of the stomach, is to be ascribed more to the direct irritant effect of the secretion than to inoculation. Yet the irritating effect may be so intense and prolonged that acute inflammation follows. In this case it may be that the secretion furnishes a proper soil for the bacteria which light up the inflammation.

J. E. Free (*New York Medical Journal*, December 7,

1895) states: "If there is a morbid process at work in the stomach, there will be established in it colonies of bacteria in abundance, the toxins may be absorbed, and nourishment to the tissues thus contaminated, and every tissue of the body compelled to feed on this contaminated blood."

Warren, in his *Surgical Pathology* (page 122), says: "Van Buren explains catching cold 'by arrest of the function of the skin as an emunctory, whereby certain effects, and presumably noxious materials which should be eliminated, are retained and act as blood poisons.' This view of auto-infection is used to explain any febrile and inflammatory disturbances due to ptomaine absorptions arising from gastric and intestinal disorders."

We know that the presence in the circulatory blood of certain toxic products of some micro-organisms favors the development of foci of inflammation, and the site of a chronic inflammation seems sufficient to predispose to infection. Orloff (*Materialien zur Frage über die Eintrittswege der Mikroben in den thierischen Organismus, Centralblatt f. Bacteriologie u. Parasitenkunde*, Bd. cxi, No. 15) fed pure culture of staphylococcus to six healthy animals. He then made a subcutaneous fracture in all six animals, and found that suppuration ensued at the point of fracture. This demonstrates that bacteria and toxins in the stomach will infect any weak point in the system. We may therefore surmise that in this manner the nose and throat may be infected through disorders of digestion. Another explanation of this condition might be that digestive disorders would lower the vitality to such a degree that the patient would become more liable than the healthy to attacks of acute inflammation, and this would be more apt to occur at points weakened by chronic inflammatory changes, such as we find in the upper air-passages of the majority of individuals.

There is one disease of the gastro-intestinal tract in which laryngeal complications have been extensively studied, and while typhoid fever may not be considered as falling within the scope of my subject, yet the

inference is legitimate that if typhoid fever does produce laryngeal complications, so also may gastritis have an analogous influence on the larynx and other upper air organs.

Laryngeal complications occurring in typhoid fever have attracted no little attention, and literature abounds with reports of cases and theories advanced as to the relation they have to each other. The laryngeal changes vary from a slight degree of hyperæmia to rather extensive loss of tissue. In some cases there is what appears to be a simple catarrhal laryngitis, or there may be œdema, infiltration of tissue, ulceration, or perichondritis. The larynx is, at times, left in a state of extensive deformity. The changes may occur at almost any stage of the typhoid period, occasionally ushering in the disease. Voltolini (*Archives of Laryngology*, vol. i) describes a case where a patient, after exposure to wet and cold, had a severe laryngitis; in the course of a few days regular typhoid fever set in, and, running its usual course, the laryngeal condition progressed rapidly to the stage of ulceration.

The laryngeal complications seem to bear no relation to the typhoid symptoms. The deeper tissues are seldom involved in the early stages of the disease; ulceration, œdema, and perichondritis occur in the latter stages or during convalescence, sometimes as late as two months after the onset of the disease (*Union méd.*, March 10, 1892). As may be surmised, the symptoms may be serious from stenosis, or from the dangers of necrosis. The condition, in some cases, may result in loss of life; tracheotomy or intubation may be required; and the resulting deformities may necessitate the indefinite retention of the tube. The lesions generally involve the epiglottis, ary-tænoids, and cricoid cartilages.

Lucatela (*Gazzetta degli Ospedali*, 70, 132) and others report finding Eberth's bacilli in the larynx in fatal cases. Brieger and Fränkel failed to demonstrate the presence of typhoid bacilli in these laryngeal ulcers (Kanthack and Drysdale, *Journal of Laryngology*, April, 1896), but the weight of evidence seems to favor the

specific origin of laryngeal ulcers in typhoid. Taken alone, the argument from analogy is not convincing, but it seems to be plausible enough to infer that if the typhoid bacilli can infect the larynx, so may other forms of bacilli, which have their origin in the stomach, be able to invade and infect, likewise, the upper air-passages.

To sum up the subject, then, I would say that no proof has yet been presented of the direct causation of acute inflammatory processes in the upper air-passages by stomach disorders; but that clinical observation is abundant in favor of such causation, and that the hope may be entertained that the bacteriologists will soon be able to supply direct proof.

Paper.

THE RELATION OF CHRONIC DISEASES OF THE NOSE AND THROAT TO DISORDERS OF DIGESTION.

By THOMAS R. FRENCH, M. D.

THE relation of chronic diseases of the throat, nose, and ear to disorders of the digestive tract is apparently not fully appreciated by the majority of even modern writers on these subjects. The relationship is not mentioned in some of the text-books, dismissed with a few words in others, and, in the writer's opinion, is not sufficiently emphasized in any. While, perhaps, the majority of writers mention dyspepsia and hepatic derangements as causes of pharyngitis, they lay, with few exceptions, but little stress upon such causes, evidently considering them of minor importance. This is shown by the liberal use of the text in describing methods for the local treatment of the disease and the omission of the suggestion for the necessity of treating the underlying cause. It is believed that a free discussion of the subject will result in a much better understanding of the degree in which diseases of the upper air tract are dependent upon digestive disorders and stimulate further researches in this direction.

The causes of chronic catarrhal pharyngitis men-

tioned in text-books on diseases of the throat, nose, and ear, and in monographs on pharyngitis, are very numerous. The conditions and diseases which are given the most prominence, and upon which accepted authorities are more or less agreed, are: Frequent attacks of acute pharyngitis. Extension of catarrhal inflammation from the nasal passages or nasopharynx. Nasal stenosis. Nasal polypi. The excessive use of tobacco or alcohol. Improper use of the voice. Reflected irritation from a disordered digestion or diseases of the genito-urinary tract. Diseases of the glandular and nervous systems. Congested portal venous circulation. Lithæmia. Rheumatic and gouty diathesis. Dust. Smoke, in which acid fumes are inhaled, and sudden changes of hot and cold foods. While it is possible that all the above-mentioned conditions may play important parts as factors in the production or aggravation of catarrhal pharyngitis in certain cases, my belief is that in a very large majority of cases the cause of this disease will be found in some portion of the gastro-intestinal tract. Except in a few of those who have grossly abused the vocal apparatus in speaking and singing, I do not recall having examined a patient with chronic catarrhal or follicular pharyngitis in whom some disturbance of the digestion could not be detected. Indeed, I believe that some degree of indigestion in some portion of the digestive tract can be found in every case of pharyngeal catarrh, but whether the relationship of cause and effect always exists between these conditions is, perhaps, yet to be demonstrated. Nevertheless, that which I believe to be demonstrable is that one rarely, if ever, exists without the other, and this is in itself highly suggestive of a distinct relationship, and, perhaps, interdependence. It seems to me to be quite reasonable to suppose that many of the diseases and conditions mentioned as causes of pharyngeal catarrh may act indirectly as factors by first causing the disorder of the digestion.

Nasopharyngeal catarrh is often spoken of as our national disease, and I presume it is a fact that the disease is more prevalent here than in other countries. This is

commonly attributed to the climate and its changeable character, to our unclean and dusty cities, and to various other conditions. In comparison with the inhabitants of other countries, we are a fast-living people, and our modes of life are highly conducive to the establishment of digestive disorders. There is probably no other country in which disturbances of the digestive function are more common than in ours. Catarrhal affections of the upper air-passages are known to be most prevalent where the climatic changes are the greatest, but I believe it will be found that catarrh of the pharynx, at least, prevails in communities where the general air of activity causes the habit of eating in haste and at irregular intervals. It is, perhaps, safe to say that the commonest error committed by the average American in ordinary daily life is that of eating hastily. Even in regions where catarrhal diseases are little known, as, for instance, the mountains in the northern part of New York State, but where the habit of eating improper food and eating rapidly prevails, especially among the working classes, I have rarely found what may be called a normal pharynx.

I refer in these remarks more particularly to the catarrhal form of pharyngitis, though I have observed many cases in which the follicular variety seemed to have been produced in the same way, or, perhaps, as the result of a pre-existing catarrhal inflammation, there being no history or appearance of lymphatic disturbances elsewhere.

With the view of assisting in determining the frequency of the concurrence of pharyngeal catarrh and gastric or intestinal indigestion, and also to show the almost universality of catarrh of the pharynx, I examined the throats and nasal cavities and asked questions in regard to the digestive function of fifty students of the Long Island College Hospital, none of whom had symptoms of sufficient importance to prompt them to seek medical advice, and most of whom were unaware that their pharynges were not absolutely normal. Objection may be made to the selection of medical students

for an investigation of this character on the ground that they live hurried and irregular lives. This is undoubtedly true, but I do not believe that they exceed in either particular the average man in large American communities. They represent a class of people living under the average conditions existing in the life of a large city, as well as that of smaller towns and villages, where the majority of these men have spent most of their lives. While, of course, the result of the examination of so small a number is not offered as in any sense conclusive, it is, nevertheless, highly significant.

Each one of the fifty was found to have a catarrh of the pharyngeal and faucial mucous membrane, varying in degree from a mild congestion to the atrophic variety of the disease. All but three gave unmistakable evidence of disturbed digestion of the stomach and intestines, fourteen of whom were the subjects of habitual constipation, and in one only was the tongue found in anything like a normal condition. Forty-five admitted that they were in the habit of eating rapidly, and often assisted the passage of the bolus by mixing fluids with the food in the mouth. Thirty-three were smokers. Sixteen had nasal obstruction, causing more or less mouth-breathing, and two were mouth-breathers at night, but without nasal obstruction.

The habit of rapid eating, which was found to be present in all but five of the students, would of itself have been sufficient to cause the disordered digestion from which they suffered. Even if the cause of the pharyngeal catarrh should be assigned to mouth-breathing in all of the eighteen cases mentioned, then only about one third of the whole number could have been caused in that way.

Thirty-three of this group were smokers. While tobacco smoke acts, no doubt, as an irritant in catarrhal diseases, as a matter of fact in the investigation of the throats of the students I did not find a greater degree of congestion in those who were moderate smokers than in those who did not use the weed at all; but in those who used tobacco to excess the evidences

of the habit were well marked upon the pharyngeal mucous membrane. Whether the effect upon the pharynx is direct or indirect, by causing the indigestion, it is impossible to say, but in whatever way it is produced it is quite certain that the use of tobacco alone is not sufficient to give rise to the amount of disease often seen in the throats of smokers. Many of the students who were brought up and had lived inland until they came to the seaboard to pursue their medical studies stated that there was a decided exacerbation of their catarrhal symptoms since coming to the city, but in nearly every instance they admitted that symptoms of indigestion had appeared which they had not had before, or that the symptoms which they had before were greatly augmented.

In only one of the students was the tongue found in a comparatively normal condition. A foul tongue is always accompanied by a catarrh of the pharyngeal mucous membrane, but a pharyngeal catarrh may present in connection with a tongue of nearly normal appearance.

Unless an analysis of the contents of the stomach is made, a diagnosis of a functional disorder of the stomach must be arrived at almost entirely from subjective symptoms. By the latter method we may readily fall into error as to the character of the disease, but with the aid of the stomach tube a comparatively exact diagnosis of gastric disorder can be made. With a knowledge of the stomach affection obtained in this manner the relationship of gastric disorders to catarrh of the upper air-passages can be more accurately determined.

In order to ascertain the pharyngeal condition in subjects of gastric disorder, the diagnosis of which had been made by an analysis of the stomach contents, Dr. Charles S. Fischer, of the Vanderbilt Clinic, in New York, kindly afforded me the opportunity of examining the throats and nasal passages of twenty-three of his patients whose stomach contents, after a test breakfast or dinner, he had analyzed. I am indebted to Dr. Fischer not only for his ready co-operation, but also for furnishing me with a copy of the record of each case, which contained the history, physical examination,

chemical analysis, and diagnosis. A trifle more than half of the cases were neurotic in character. The remainder were mainly cases of chronic gastric catarrh. A pharyngeal catarrh, varying in degree, was found in every one of these cases. In four of the twenty-three cases the tongue presented a fairly healthy appearance. In four of the cases there was marked nasal obstruction, causing habitual mouth-breathing. In three, there was sufficient nasal obstruction to cause mouth-breathing during sleep, and in one there was habitual mouth-breathing without apparent cause. I asked Dr. Fischer to supply only female cases for my examination, and so eliminate the effects produced by the use of tobacco, and also to offset the investigation of the medical students. While in the students' cases the contents of the stomach were not analyzed, nearly all of them presented subjective symptoms of gastric or intestinal indigestion, and, therefore, the two classes of subjects were in a general way alike. With the exception of those who smoked to excess there was no marked difference between the pharyngeal conditions in the two sexes, the degree averaging about the same in those whose stomach contents had been analyzed and those in whom the diagnosis was made from subjective symptoms. A careful study was made to determine, if possible, whether any constant pharyngeal condition existed in relation to the portion of the digestive tract affected or to the chemical character of the stomach contents in Dr. Fischer's cases, but with negative results. The appearances of the pharynx varied in cases in which the diagnosis of the digestive disorder was the same as much as in those in which it was found to be markedly different. While in two or three cases of gastric catarrh with gastroptosis the pharyngeal conditions were seen to be quite similar, the same conditions were found in the subject of a neurotic disturbance of the stomach.

Prominent among the causes of pharyngeal catarrh mentioned by modern writers is mouth-breathing due to nasal obstruction. Unquestionably, the continued mechanical irritation from cold, dirty, and dry air over

the pharyngeal mucous membrane is quite sufficient to excite a considerable amount of disturbance by perverting the function of the secretory glands; but, as food must also pass through the mouth and must be hastily swallowed to free the way for air, the consequent over-taxation of the stomach and duodenum to digest food containing little or no saliva and not sufficiently disintegrated, results eventually in a chronic gastric catarrh, which, to my mind, is the more important factor in the production of the pharyngitis.

A chronic pharyngeal congestion is frequently found in the throats of speakers and singers, and it is the common belief that the disease in such cases is caused by strain of the vocal apparatus. Strain is frequently an important factor, and, at times, even the main cause, but in a large number of cases it is probable that the strain of the voice acts as an excitant of an already existing pharyngeal and laryngeal congestion which, without the strain, might never have been brought to notice.

From a clinical standpoint there is reason for the belief that functional disorders of the digestive tract are capable of producing vasomotor reflex irritation of the inferior turbinated bodies, as is evidenced by swelling of those bodies at certain times, as, for instance, on rising in the morning, and during attacks of acute gastric or duodenal catarrh. The proof of the connection is not only in the occurrence of the two affections at the same time, but also in the fact that the nasal irritation disappears after the acute indigestion has passed, or is diminished after improvement of the chronic condition of the stomach.

Beverley Robinson, in his very valuable paper on Dyspepsia as reflected in the Mucous Membrane of the Upper Air-passages, which was read before this association in 1888, suggests the probability of the mucopus from a catarrh of the upper air-passages being capable of exciting a gastric disturbance. Such a relationship of cause and effect seems to me to be highly plausible, though I am well aware that it is not generally credited. It is a mooted question as to whether the

discharge from a chronic catarrhal inflammation in the nose is irritating in its character. The frequency with which catarrhal pharyngitis and laryngitis exist in association with catarrh of the nasal passages would suggest this, for it would not seem to be necessary to attribute such conditions to reflex irritation from the nose. The oropharynx will, I believe, always be found the seat of a catarrhal process when gastric catarrh is present. Laryngeal catarrh does not often exist as a result of a catarrh of the oropharynx alone, as that is a comparatively mild disorder and is not attended with much discharge; but when the nasal cavities and nasopharynx are involved in the process, because of the nature and extent of the glandular structures in those situations, the discharge is far more copious, and finds its way, to some extent, into the larynx, giving rise to a catarrhal inflammation of that cavity, but to a much greater extent is carried by gravity and the acts of swallowing into the stomach. If the catarrhal secretions flowing from the nasal passages are sufficiently irritating to excite congestion of the posterior pharyngeal wall, the mucous membrane covering the arytenoid cartilages, and, at times, even the vocal bands, they, in all probability, are sufficiently irritating to cause a disturbance of the circulation of the mucous membrane of the stomach. But whether the discharges of muco-pus from a catarrh of the upper air-passages are in themselves sufficiently irritating to excite a gastric disturbance is, perhaps, of little consequence when we consider that the process of fermentation of that material, which must occur in the stomach, would in itself be sufficient to cause irritation, not only of the mucous membrane of the stomach but of the intestinal tract as well.

The Eustachian canals and middle ears are not necessarily involved when the pharynx is the seat of catarrhal disease. Indeed, we do not know why it is that an extension into the ears occurs in one case and not in another, but it is safe to say that at least seventy-five per cent. of cases of chronic catarrh of the middle ears are caused by a catarrh of the nasopharynx. If my premises

are correct, then a large proportion of the cases of middle-ear catarrh, dependent upon a pharyngitis, are indirectly caused by a gastritis or enteritis, and a proper appreciation of such an association would materially aid us in the treatment of that most persistently progressive form of ear disease.

A good voice, even for the purposes of singing and public speaking, is compatible with a moderate degree of pharyngeal and laryngeal catarrh, but when the limits of reasonable use are exceeded, the circulation in the upper air tract is disturbed, active symptoms are presented, and loss of function ensues. It is that class of voice-users, where there is to be found an underlying catarrhal condition of the pharynx and larynx of mild degree, which we, as physicians, are most called upon to treat for impairment of the vocal function. If, as I believe, the underlying cause of the catarrh is in the majority of cases an impaired digestion, we render our patients but poor service unless we extend the treatment to parts lying far below the throat. Any treatment which has for its aim the arrest of a pharyngeal or laryngeal catarrh, partly or wholly dependent upon a disordered digestion, will surely fall short if it does not include such remedies and measures as a scientific investigation may reveal the need of to assist in the physiological and chemical performance of the digestive function.

The study of the stomach and its diseases has received a large amount of attention of late years, and, though much has yet to be learned, we are far better prepared than ever before to treat successfully the functional disorders of that viscus. An analysis of the contents of the stomach, after a test meal, made by a competent analyst, once in three or four weeks, will enable us to adopt the best course of treatment for a pharyngitis dependent upon a gastric disorder. Indigestion, even when not dependent upon organic disease of the thoracic or abdominal viscera, is commonly of such an obstinate nature that nothing short of a most careful study of each individual for causes and thorough atten-

tion to detail in the matter of diet and the administration of appropriate remedies will accomplish a cure. If the indigestion is improved or cured, and the pharyngeal disease is not eradicated, then such local remedial measures as are appropriate may be employed with markedly beneficial results.

When we consider the almost certain deterioration of the vocal powers, and the liability of the implication of the auditory apparatus from the steady progress of a pharyngeal catarrh, it behooves us to give to the study of this disease our best thought and closest scrutiny.

Discussion.

Dr. JOHN O. ROE said: There is no question but that the upper air-passages are markedly affected by disturbances or diseased conditions of the stomach. This is well illustrated by the frequent occurrence of influenza or a cold in the head, after excessive eating or drinking, which very often occurs after wine dinners and the like, as a result of the gastric irritation which is reflected from the stomach to the nasal passages, through the sympathetic nerves, producing in the nasal cavity excessive turgescence of the vessels from the lack of inhibitory control. Headaches that so frequently follow the excessive indulgence of the appetite are produced in the same manner. And in the treatment of these disturbances nothing is of more assistance in quickly relieving a cold in the head or a headache arising from this cause than a brisk saline laxative, one of the most serviceable of which I have found to be liquor magnesiæ citratis. Affections of the stomach are also caused in many cases by disease in the upper air-passages. The principal manner in which diseases of the upper air-passages affect the stomach is by the passage of secretions from the nose and throat into the stomach, carrying with them the bacteria which produce fermentation or decomposition in the stomach, and in some cases very well marked disturbances.

Dr. WRIGHT said: I have been struck by some Italian observations in regard to the bacterial condition of the nasal mucus during acute coryzas. *Sarcinæ ventriculi* were found in normal cases in moderate numbers, but in acute coryza they are much increased. In children, acute coryza frequently ends in a disturbance of the stomach. Possibly there may be some ætiological

connection between the two. In adults one is not so apt to find stomach disturbance, as they do not swallow their mucus as a rule. In chronic coryza and post-nasal catarrh I have never noticed any special tendency to dyspepsia. Both affections are too common in America to reason from one to the other in regard to cause and effect.

Dr. W. E. CASSELBERRY said: Dr. Turck, of Chicago, has made an effort in a scientific way to determine the dependence of stomach diseases upon nasopharyngeal affections. The instrument he has devised he calls a gyromele, with which he swabs out the stomach. He subjects the secretions thus extracted to bacteriological examination, and asserts that in several cases of pharyngeal disease with muco-purulent secretions he has discovered the same micro-organisms in the stomach that were present in the nose and nasopharynx. He asserts also that in these cases, without other treatment, the correction of the nasopharyngeal trouble by a laryngologist, to whom the cases were referred, has cured the stomach disease. I do not know how accurate this is, but it seems to be a step along the proper line. It is of more value than examinations from a clinical standpoint only, as, unsupported by experimental work, clinical observation must always leave a doubt in this matter. The next step would be for others to be able to confirm Dr. Turck's interesting experiments.

Dr. G. V. WOOLEN, of Indianapolis, in continuing the discussion of papers by Dr. Brown and Dr. French, said: Since Dr. Wright published his paper a few years ago, showing what a number of bacterial agents could be found in the nasopharyngeal mucus, I have accepted it as a fact that the gastro-intestinal trouble was due to this. The trouble in the stomach may cause or be the cause of the nasopharyngeal trouble, and investigations have proved this. I have been accustomed to say to my patients, in order to discourage the swallowing of this mucus, that I believed the nastiest part of the whole human organism was the nasopharynx, and I believe this to be true. I must object to Dr. Wright's remark that adults do not swallow their secretions, and I think you will bear me out in this. You will oftentimes see a collection on the posterior wall of the pharynx, and before you can tell your patient to clear his throat the collection will have passed into the stomach.

Dr. ROE said: While in Atlanta, attending the meeting of the American Medical Association, last week, I had

an interesting conversation on the subject with Dr. Turck, of Chicago, who has given the subject of bacteria of the stomach a very large amount of attention. He said that he found in many cases the same bacteria attached to the walls of the stomach that he found in the nasopharynx, which had originated in the nasopharynx and found their way into the stomach. Recognizing the fact that the bacteria in the stomach had originated in the pharynx, he invariably referred such cases to the laryngologist for the treatment of the nasopharynx.

The finding of the same bacteria in the stomach that are found in the nose would not be a proof that gastric disease is caused by the nasal trouble. So far as I know, nothing has been advanced to show that pyogenic bacteria, the characteristic pathogenic micro-organisms of the nose, have any irritative effect on the intact mucous membrane of the stomach. It seems probable, however, that the raw albumin of the post-nasal secretions swallowed may cause dyspepsia.

Dr. F. E. HOPKINS, of Springfield, Mass., said: There is one point to be borne in mind, and that is, that although the nasopharynx and the nasal passages may contain bacteria, we must remember that we can cut into the tissues without producing any serious results from the local irritation of the bacteria, and if they do not produce serious results in the open wound it is worthy of further thought whether much irritation would be produced upon the mucous membrane of the stomach.

Dr. BROWN said: I did not attempt to state that the relationship existing between acute inflammation of the nasopharynx and of the stomach was a matter of theory, but that clinical evidence seemed to demonstrate that there was a relation between the two. Regarding Dr. Turck's observation—*i. e.*, that he found the same organisms in the upper air tract and in the stomach—he has reported some nine cases in which careful bacteriological examinations were made of the secretion taken from the nose and throat, and then using a gyromele in the stomach he finds the same organisms present. After restoring the mucous membrane of the nose and throat to a healthy condition the bacteria disappear from the stomach. He mentions one case in particular of an acute inflammation in which the same organisms were found in the nasopharynx and in the stomach. The condition of the stomach improved after relieving the inflammation of the upper air-passages.

Dr. FRENCH said: When Dr. Robinson, in the paper which he read before this association several years ago, expressed his belief that discharges from the nasopharynx were capable of exciting gastric catarrh, exception was taken to the statement by some of the members speaking to the paper.

I have been much gratified, therefore, in the discussion to-day to hear this belief indorsed. Boas, of Berlin, the specialist in gastro-intestinal disorders, is a strong believer in this theory, as is also Fischer, of New York, who devotes himself to the same specialty.

I had expected, in the discussion of the relation of digestive disorders to acute diseases of the nose and throat, that Dr. Duncan Bulkley's theory of the cause of common colds would be mentioned. He believes that colds are due to a hyperacidity of the gastric secretions, and that the administration of an alkali, preferably the bicarbonate of sodium, will often abort them if given in time, or materially improve the nasal and throat conditions if given at any time during the course of the attack. I have tried this method of treatment in many cases and with such gratifying results that I can not but believe that there is much truth in the theory. Chemical analyses, which I believe are now being made, will, no doubt, soon settle this question. If the theory is a correct one it constitutes a very strong argument in favor of the intimacy of the relationship between the diseases of the digestive and those of the upper air tracts.

Paper.

A CASE OF MYXŒDEMA OF THE THROAT.

By JOHN W. FARLOW, M. D.

Miss A. B., aged forty-six years, consulted me two years ago and gave the following history: Her family had always been healthy. At the age of twelve she had chorea and rheumatism, and thinks the heart was slightly affected. Eight years ago she suffered from hoarseness, which lasted a short time. Her speech has gradually thickened the last four or five years, but there has been no trouble in swallowing. She has had to keep the mouth open, because there has been much difficulty in breathing through the nose, and is a very bad sleeper and snorer. Much thin mucus flows from the mouth. She says people do not recognize her, as she looks so

swollen in the face and her skin is darker. The eyes project somewhat, and she is thick and stiff under the lower jaw.

She has grown weaker the last two years, and has lost about fifteen pounds, weighing now a hundred and eighty-five. There are dyspnœa and quick respiration, 30 to the minute. The appetite, digestion, and bowels are normal. Menstruation has been normal, but is now disappearing. She is nervous, and the hands and feet twitch. There is no itching. She used formerly to sweat, especially about the head, and still does so somewhat. The hair is not dry and has not come out to any extent. She thinks her memory has failed the past year. There is nothing abnormal in the urine. The dusky, swollen, stiff face, with open mouth and noisy breathing, were very noteworthy. There was nothing abnormal on anterior nasal inspection. The tongue was swollen and thick and tended to protrude. The soft palate, uvula, and posterior pillars of the fauces were very much swollen, tense, thick, and rigid, but were smooth, symmetrical, and the two sides equally affected. The color was a little pale and there was no ulceration. The same condition was on the posterior pharyngeal wall, except in the median line, and extended up behind the soft palate into the postnasal space like two inflated bands. The swelling did not reach much below the tip of the epiglottis. There was nothing abnormal of the larynx and the thyroid gland was not felt. There was a marked systolic murmur heard all over the heart, especially noticeable over the apex. Pulse, 108.

The great swelling of the uvula and soft palate and the bulging forward of the posterior pharynx served to obstruct the passage of the air through the nose and postnasal space, and was a cause of great discomfort. The swollen tongue and rigid palate caused the speech to be slow and indistinct, and the shutting off of the nasal cavities gave a dead character to the tones.

No serum escaped on puncture of the swollen tissues, so that it was evidently not a serous œdema. There were no nodules of infiltrating new growth, and there was no ulceration. A small piece removed from the pharynx showed an unusual amount of mucous tissue, but nothing else abnormal.

The symmetry pointed to a general and not a local cause, and its long continuance (it had changed but little in appearance in two years) excluded nearly every possible cause. The kidneys were not at fault, and, as there

was no œdema elsewhere in the body, it was not likely that the condition in the throat was due to the cardiac trouble.

There was no history of specific disease and specific treatment had no effect.

The only thing that could explain the phenomena was myxœdema, although many of the general symptoms were wanting. The discomfort of which the patient complained was entirely due to the swelling in the throat.

J. D. Gimlette, in his work *Myxœdema and the Thyroid Gland*, London, 1895, page 22, says: "Like the skin, the mucous membranes are altered, as is well seen in the mouth, the soft palate, uvula, pharynx, gums, and tongue, swelling and becoming pale and characteristic. A thick, mucous discharge from the mouth at night has been noticed. The œdema of the mouth may interfere with respiration, and also with swallowing, since slight difficulty in deglutition is not at all uncommon in myxœdema."

Under the use of thyroid extract the patient has, perhaps, made a slight gain, although the appearance of the throat is about what it was two years ago.

Inasmuch as the mucous œdema was principally located about the fauces and in a mechanical way gave rise to most of the patient's symptoms, I have thought the case worthy of being reported, and have called it myxœdema of the throat.

Paper.

A CASE OF GUNSHOT WOUND OF THE PHARYNX.

By D. N. RANKIN, A. M., M. D.

ON October 10, 1894, I saw what I consider a very unusual case of gunshot wound of the pharynx. Two cicatrices were observable—one on each side of the neck about two inches below the lobes of the ears. Becoming interested in the case, I made further examinations, and discovered they were cicatrices from a gunshot wound. Upon looking into the throat, I found there were two round cicatrices corresponding to the external ones, situated behind and a little below the tonsils, and between the inner ones was a cicatricial line connecting them and

running directly across the posterior wall of the pharynx, this line being so superficial that the ball in its course must have merely touched the submucous tissue of the part involved.

At my request, the man wrote me the following history of the case. I will give it in his own words: "It was on the 6th day of May, 1847, when our party, consisting of myself, my servants, my physician, one dragoman, Dr. Tischendorff, my courier, and twenty-five soldiers, left Athens, taking a northwestern course to reach Missolonghi, but when we reached the foot of the Thermopylæ I wanted to see the pass which was so heroically defended, 480 B. C., by Leonidas and his three hundred men against about fifty thousand Persians under Xerxes. But I was not destined to see it. On our right side rose the mountains to a height of from five hundred to two thousand feet, to our left was a great level plain. I was ahead of our cavalcade about a hundred to a hundred and fifty yards when I received a shot which penetrated my neck. The bullet went in on my right side about two inches below the lobe of the ear, and came out on the left side directly opposite the point of entrance. Of course, I dropped off my horse, and was picked up by my companions senseless. What happened during the next two months I don't know, except what I learned by hearsay afterward. The object of the shooting was robbery, and the shot fired at me was done by a very notorious brigand by the name of Kalisphenes. He was a member of a band of highway robbers, but three days after the accident happened to me they were nearly all caught, in number sixteen, leaving only four at large. All sixteen were promptly executed—hung by the neck.

"After two months' suffering (I had been removed back to Athens) I was well again, and started for Palestine. The above described has given some grounds for controversies among physicians as to the kind of a ball that was shot into my neck. Some said it was an exploding ball; others said it was not a bullet at all, but hacked or chopped lead. Since I have gained my full health, I don't care in what way or what kind of a ball was fired, but, dear sir, I assure you if the shot had come only half an inch more to the front of my face you would not be reading this report, but I would have found an early grave, for I was then twenty-one years old, and now I am sixty-one in good health."

I endeavored to learn some further particulars of the case, whether there was much hæmorrhage and difficult

deglutition, or any traumatic fever, as to the means used in feeding him, etc., but was unable to obtain any facts from him further than are given above.

When we consider how vascular the mucous membrane of the pharynx is, and readily inflamed, we shall see that such inflammations, when traumatic, are peculiarly dangerous, in that they spread to the lining membrane of the larynx. In this case there was evidence of a distinct collection of connective tissue stretching across the posterior wall of the pharynx. When the tissue immediately outside the pharyngeal walls is lax, and favors the spread of effusion; when the inflammation of the pharynx is of an acute character, the effusion has been found to extend along the oesophagus, reaching the posterior mediastinum, and advancing then to the diaphragm. In the lax connective tissue between the pharynx and spine abscess is not infrequent.

Taking into consideration the immediate surroundings, the proximity to the large blood-vessels of the neck, the case at the time must have been considered a very grave one, and the man's escape from instant death was simply miraculous.

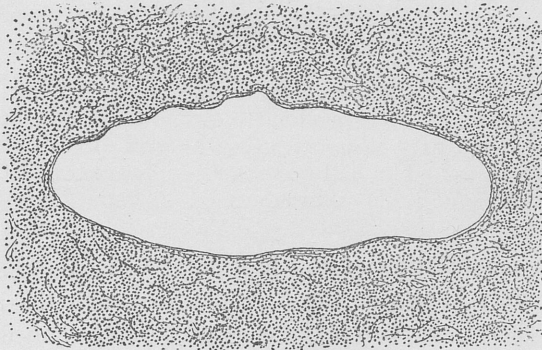
Discussion.

Dr. JOHN O. ROE said: A somewhat similar case came under my observation about eight years ago, that of a man about fifty years of age who had been wounded in the army. The ball entered the left side of the face, passed through the superior maxilla, and came out on the opposite side of the face in relatively the same location. In its passage through the jaw it carried away the palatine arch and the lower portion of the vomer, leaving an opening through the hard palate about half an inch in diameter, which had remained unclosed; and through this opening a distinct view of the turbinated bodies and the interior of the nasal cavity was presented. The lower turbinated bodies were very much hypertrophied and afforded a beautiful illustration of this condition viewed laterally while *in situ*.

*Paper.*THE CONTROL OF HÆMORRHAGE IN SOME OPERATIONS
IN THE NOSE AND THROAT.

BY A. COOLIDGE, JR., M. D.

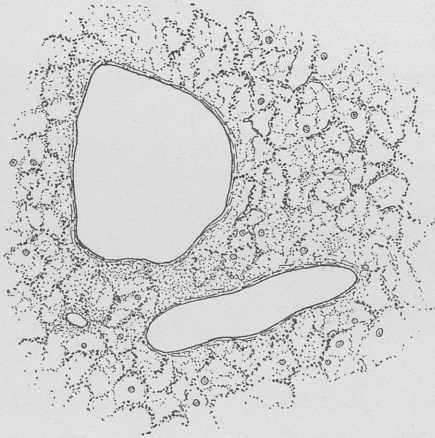
IN many operations under an anæsthetic in the upper respiratory tract an important problem is first to prevent any possible hæmorrhage from threatening respiration, and, secondly, to be prepared to control the hæmorrhage locally. The question of the best position in which to place the patient for operation is an important one and depends largely upon the former. Except for this danger of blood in the pharynx, the most generally convenient position in which to operate is with the patient horizontal on a table. Less assistance is required than with a patient in a sitting posture, the light is generally better, and the patient is more easily handled in an emergency. On the other hand, if blood enters the pharynx, the direction of gravity hinders instead of help-



Fibrosarcoma.

ing us in keeping respiration clear, and this position is consequently impractical if the seat of operation is behind the posterior nares. But I wish to make a plea for its more frequent use when the source of bleeding is confined to the nasal cavities or accessory sinuses. This

is made possible by the simple expedient of plugging the posterior nares from behind, which effectually stops all danger of blood finding its way into the pharynx. For instance, for the removal of a nasal new growth, or the correction of an extensive deviation of the septum, when the patient is anæsthetized he is placed horizontally on the table, the cord for the posterior plug passed through the unobstructed nostril, a piece of gauze or sponge sufficiently large to close both posterior nasal openings attached, passed into the nasopharynx, and pulled firmly forward. This is removed when bleeding has stopped, before the patient recovers consciousness, and produces no disagreeable results.



Myxoma.

A modification of the horizontal position, what is commonly known as the Rose position, with the head bent sharply back over the edge of the table, keeps the blood away from the larynx by gravity. It fills the nasal cavities and comes out of the mouth, or flows over the hard palate and upper lip, and leaves the lower pharynx and larynx clear. I find this position recommended not only for operations in the nose and face, but also for cleft palate, adenoid vegetations, new growths of the pharynx, and for opening retropharyngeal abscess. There is no

doubt that the blood all flows away from the larynx if the head hangs directly downward, but I think that to most operators this position is not entirely satisfactory. It is difficult to control the patient in case he moves or vomits, and the seat of operation at first seems upside down and hard to reach. Familiarity with the position undoubtedly lessens these disadvantages, but it seems to me that for the removal of adenoid vegetations, for instance, the amount of hæmorrhage is materially increased by the dependent position of the head. The nasopharynx fills up with blood and fragments of adenoid tissue, making it difficult to feel satisfactorily with the forefinger. This position is especially to be recommended for operations of the palate. A good light is obtained, and the parts are easily reached.

Another modification of the horizontal position is that of Trendelenburg, where the foot of the table is raised and the patient hung up, as it were, by the knees. Here the direction of gravity protects the trachea and bronchi as well as the pharynx. This is distinctly the position for thyreotomy, or for an operation deep in the pharynx, perhaps even for tracheotomy.

There remains the sitting posture, in which the patient is held in a chair opposite the operator. We are so accustomed to this position with patients who are not under an anæsthetic that it is natural that we should be influenced in its favor. If the head and upper part of the body are inclined well forward, the drainage of the nasopharynx is into the nose and not into the pharynx unless the nose is stopped. Most of the blood from the tonsils will come forward into the mouth. The pharynx is generally kept more or less clear, and the larynx protected by frequent swallowing, especially if the patient is not too profoundly under ether or chloroform; and it can be swabbed out if necessary. But the operator must bear constantly in mind that the only safe direction for the drainage, after blood has passed below the fauces, is into the stomach. In case the heart becomes weak this position is a bad one, and it may be necessary to lay the patient horizontal at any time. It is absolutely

necessary for safety that sufficient assistance should be on hand to easily and quickly control the patient; to tip the head and body well forward in case of bleeding or vomiting; to keep the gag in place; to hand instruments or sponges, and if a special operating chair is not used, to transfer the patient to a table in case of collapse. This position is therefore much easier in the case of children than with adults, but with sufficient assistance it is the most universally applicable one for operations in the nasopharynx and mouth.

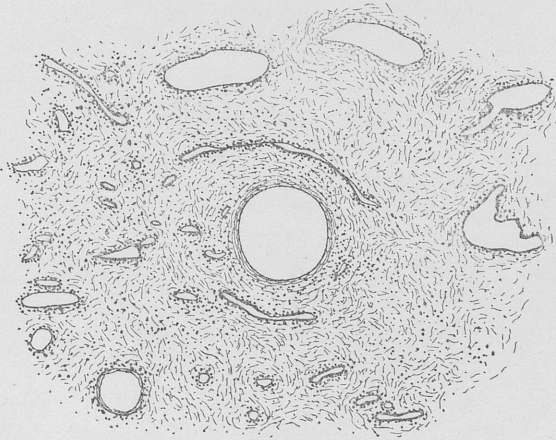


Angelioma.

For the local control of hæmorrhage of any importance, if the bleeding vessel can not be seized, the first thing that we should think of is compression, if possible. Any part of the nasal cavity can generally be reached

anteriorly with suitable instruments, and strips of gauze carried to and packed firmly against the bleeding part. If a new growth, or an extensive deviation of the sæptum prevents this, and the obstruction can not readily be removed, it may be necessary to close the posterior nares from behind. It seems to me that attempts to control bleeding here or in the nasopharynx by styptics or astringents is generally a mistake. A constant outflow of blood washes away whatever is put on, from the only spot where it is needed, and irritates other parts, or fills the cavity with dirty coagula. Clean gauze left in place is more certain at the time and gives a feeling of security against secondary bleeding.

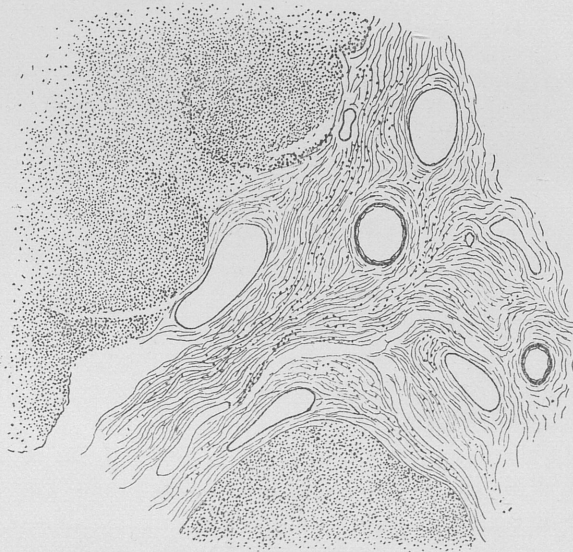
The probability of hæmorrhage as well as of pain must influence an operator in deciding whether an anæsthetic is necessary or not. If the patient is likely to be unruly it is often better to use ether or chloroform when otherwise it would not be done.



Fibroma.

The amount of bleeding which we may expect from the cutting through of an attachment of a new growth depends not so much upon the size and number of the vessels supplying the growth as upon the nature of the tissue surrounding them, and the consequent possibility of retraction of the individual vessels.

In order to show this more clearly, I have here sections of different new growths or hypertrophied glands. Each section is cut parallel to and as close as possible to the surface made by the instrument used for its removal, and, consequently, cuts directly across the blood-vessels entering the tumor. In the tonsil and adenoid vegetations the vessels are numerous, none of them large, and they enter free, parallel to the fibres of the interstitial tissue between the lobes of the parenchyma. They would therefore retract readily. In the pedicle of the myxoma there are a few large vessels, but here the structure of the neoplasm surrounding the vessels is so very soft that nothing hinders their speedy retraction. The fibroma and fibrosarcoma were clinically very similar. Both occurred in boys of seventeen. The tumors were both attached to the basilar process only, and filled one lower meatus and the nasopharynx. They were

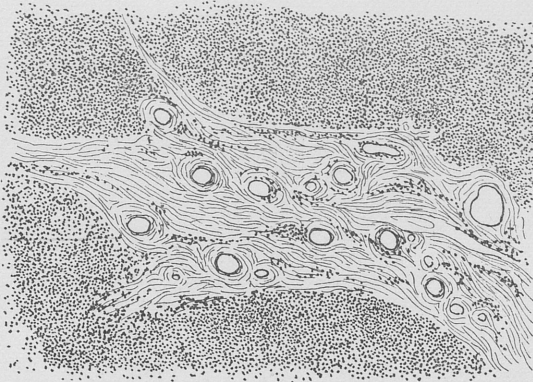


Faucial tonsil.

both removed with the cold wire by the method which I will later describe. The pure fibroma bled freely and persistently; the fibrosarcoma did not. In the section

of the former we see a very large number of vessels, and, although not large, they have thick walls and are surrounded by dense fibrous tissue which might easily prevent their retraction. In the sarcoma, although there are much larger vessels, the softer intervascular tissue allows them to close normally when cut through.

As a rule, pedunculated new growths arising in the nasal cavity, even when they protrude well into the pharynx, can be removed with the help of cocaine only. Myxomata, myxofibromata, and similar tumors, even when cut through rapidly, seldom bleed long, the vessels, even if fairly large, retract easily, and by cutting



Adenoid vegetation.

through slowly with the cold wire, may not bleed at all. If the source of bleeding is confined to the nasal cavity, it can be controlled, if necessary, by proper packing through the nostril.

In the nasopharynx by far the most frequent operation is for the removal of adenoid vegetations, and an anæsthetic is generally given on account of pain. The size of the vessels entering the growth is so small and the tissues so soft that bleeding, although profuse at first, stops in a few seconds. In removing adenoid vegetations from the nasopharynx, I have for some time attempted to estimate the relative loss of blood in the

quick operation with a curette and the slower removal with forceps. In the former the immediate flow is greater; with forceps the total amount lost is generally more. After curetting, the head can be thrown forward so that most of the blood comes out of the nose; with the forceps it is more difficult to keep blood from the pharynx and stomach. Fortunately, serious bleeding either at the time or secondarily is extremely rare. Excessive bleeding at the time may be readily stopped by holding gauze firmly in place against the bleeding surface.

Secondary hæmorrhage is perhaps sufficiently rare to justify a brief report of a case.

L. B., a healthy boy, twelve years old, with no previous history of bleeding, had a moderately hypertrophied pharyngeal tonsil, a large part of which I removed with one sweep of a Gottstein curette, with cocaine, but without a general anæsthetic. The amount of bleeding was not excessive. The next morning, eighteen hours after the operation, there was a slight trickling of blood from the nasopharynx, which lasted half an hour. Three hours later it began again more briskly and persisted for two hours, when I saw him. He showed constitutional signs of loss of blood, although his condition was not serious. The bleeding was stopped by packing the nasopharynx. This was removed in two days without recurrence.

A slight amount of bleeding during the twenty-four hours after removal of the pharyngeal tonsil has been reported to me occasionally by adults; proportionally much less frequently in children.

Fibromata arising from the basilar process should not, in the writer's opinion, be attacked without an anæsthetic. Not only is it often necessary to work for some time with two or more fingers in the nasopharynx to break adhesions and get the wire loop well adjusted, an extremely unpleasant proceeding for the patient, but, from the nature of the growth, the best possible preparations must be made against hæmorrhage. Even a very slow constriction by the cold wire can not be relied upon with certainty, and the seat of attachment is too far back to be sure of effectual packing through the nose.

With either the hot or cold wire bleeding is liable to start before the pedicle is cut through. An effective way of preventing much bleeding in removing this growth I have found as follows: With the patient in the sitting position a string is first passed through the opposite nasal cavity and out through the mouth, and to it is attached a plug large enough to fill the whole nasopharynx. This is left outside until needed. The wire loop is then passed through the obstructed side and around the pedicle, and the tumor seized by clamp forceps, anteriorly, unless it is too large to be delivered through the nose; otherwise posteriorly. The wire is then tightened, at first slowly, but as soon as any bleeding begins the patient's head is thrown well forward, the pedicle cut through as quickly as possible, the growth removed, the posterior packing immediately passed to the vault, and the posterior part of the nasal cavity packed through the nose with strips of gauze.

I think we may justly say that the ability to pack with gauze quickly, accurately, and firmly through the anterior nares will, more than almost anything else, give a surgeon confidence in attacking this part of the body through the natural openings.

Cases of troublesome hæmorrhage, after amygdalotomy, in adults, both at the time of operation and secondary, have been reported frequently enough to be taken out of the class of rarities. Here, again, too much reliance must not be placed on styptics and astringents. Bosworth (*Diseases of the Nose and Throat*) calls attention to the fact that in a series of cases collected by him there is no instance in which hæmorrhage seems to have been arrested by any of the ordinary styptics. Holding a styptic firmly against a bleeding surface adds compression to the styptic effect, of which the former is probably the more important. A moderate hæmorrhage is often stopped or checked by flushing with cold water, or an astringent solution, but if the bleeding looks serious we should not waste time with such uncertain agents. These are the cases which do not respond. If the bleeding point can not be found, pressure offers the best results; al-

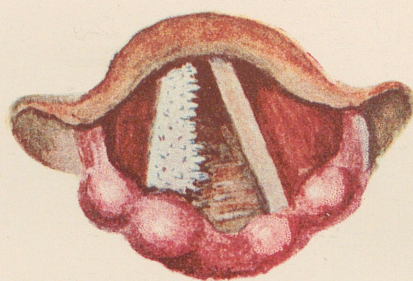
though this is difficult both for the surgeon and the patient. The tonsil itself is rarely if ever the source of hæmorrhage in children, but the wounding of an adherent part of the faucial pillar may give rise to troublesome bleeding. This was probably the source of the hæmorrhage in the following case, which I report, because of the rarity of reported cases of troublesome bleeding in children:

In 1891 I was asked to remove the tonsils of G. C., a strong, healthy girl of nine years of age. The tonsils were equally large, and nearly met in the median line. I cut through the left, and immediately afterward the right with the guillotine. The bleeding, which was quite profuse at first, did not stop satisfactorily, and the blood was seen to come from the right side. A saturated solution of ferric alum produced no effect. The bleeding was stopped by compressing with the finger, wrapped in gauze, with counter pressure under the angle of the jaw, maintained for half an hour. It did not recur. Subsequent examination showed that the anterior faucial pillar had been slightly wounded.

If the hæmorrhage is serious, and can not be locally controlled, the question arises of tying one of the great vessels. In an excellent paper on the surgical pathology of hæmorrhage after amygdalotomy, Delavan * shows conclusively that tying the common carotid is uncertain on account of the collateral circulation through the circle of Willis. The ligation of the external carotid, or of both the common and internal, should effectually shut off the blood supply from this region.

The hæmorrhage in many of the reported cases has stopped when syncope has come on, from which Delavan recommends that fainting be encouraged rather than hindered. On this account, and to get what assistance the patient can give, it is better that no anæsthetic should be given if the amygdalotome is used. The most effectual way of avoiding hæmorrhage after removal of the tonsils is in the use of a burning or slow-cutting instrument. A cold-wire *écraseur* answers this purpose admirably,

* *Transactions of the American Laryngological Association*, 1888.



but in my experience is often attended by considerable pain. Cutting through quickly with the hot wire is less painful, but does not always control hæmorrhage.

In conclusion, I will merely repeat: The surgeon, when operating in the upper respiratory tract, should always be prepared for any possible hæmorrhage by putting his patient in the best position, and by having under his hand instruments with which he can reach any part of his field of operation, perhaps even do tracheotomy or tie large vessels. Although he possibly never, during his professional career, will save the life of a patient by his forethought, he will undoubtedly do better work, and shrink less from completing what his judgment recommends, in a large number of cases.

Paper.

A CASE OF UNUSUAL LARYNGEAL GROWTH.

By J. W. GLEITSMANN, M. D.

ALTHOUGH the history of the patient is incomplete, and unforeseen circumstances prevented the treatment from being carried out to a satisfactory issue, the case is briefly related here on account of the peculiar aspect and nature of the growth which had developed in the larynx.

The patient was shown once this winter in the Laryngological Section of the New York Academy of Medicine, and examined by a large number of its members; but none—at least to my knowledge—ventured to make a positive diagnosis, as the appearance of the growth was so very different from anything which is usually seen in the larynx. Soon afterward, on February 7, 1896, I was agreeably surprised when I saw the patient enter my class room in the German Dispensary—probably because I had previously treated his father-in-law successfully—and I concluded at once to use all possible means to determine the nature of the growth and to relieve the patient.

The patient, a Russian Jew, thirty-three years of age, of small stature but normal build, living in the suburbs of Brooklyn, gave no history of previous disease. Hoarseness set in about a year ago, but otherwise he offered no complaint. He had not lost flesh, had no pain in his throat, no cough, no dyspnoea, and attended regularly to his business—viz., soliciting work on the street in the downtown district as watchmaker. Considering his position in life, he seemed to be of rather bright intellect and quick perception; he was very appreciative of any little attention shown to him, and was a very obedient patient. His hoarseness was permanent, although not of very aggravated character; and the state of his voice remained the same during the whole time of observation and treatment.

The outer inspection gave negative results. The larynx and its surroundings felt normal to the touch; no enlarged cervical glands could be detected. The pharynx appeared healthy, and the larynx presented the following features: The epiglottis standing almost erect, which position greatly facilitated later operative procedures, a large, almost snow-white mass could at once be seen when the mirror was placed in proper position. At the demonstration at the New York Academy it could not be definitely ascertained if what was seen was a tumor or ulcerated tissue with deposit of secretion on its surface, as no probe was introduced. Exploration with the sound, made now, at once proved the mass to be a tumor without any secreting surface, extending horizontally the entire diameter of the larynx from the anterior commissure to the arytaenoid cartilage. It was confined to the right side, and appeared to be located between the false and true cord, although of the latter nothing could be seen at this period. If I may be allowed to use an unscientific expression, the impression I had at the first and at subsequent examinations was that the growth looked very much like a bunch of cotton which had been inserted all along the ventricle of Morgagni. The whiteness of the growth was homogeneous in its entire length, its surface very little corrugated, its free border slightly irregular.

The other parts of the larynx presented no anomalies worth mentioning. The right ventricular band seemed a little narrower and slightly hyperæmic. The right arytaenoid cartilage was not enlarged. The movement of the right side of the larynx, upon which point special attention was bestowed, was very little, if any, impaired, and adduction of the cords seemed to be perfect.

As it was deemed inopportune to treat the patient at the dispensary, he was directed to my office, and about a week later the first attempt of excising a part of the growth was made. It was not intended at the time to remove the whole tumor, but only to obtain a sufficiently large piece for microscopical examination. The operation was done with Landgraf's double curette, devised for excision of the ventricular bands; and, although the tumor was denser than expected, it was not as hard to dissect as we often experience in tuberculous infiltrations. The bleeding was slight, but for an hour the expectoration was tinged with streaks of blood. There was no unpleasant reaction; the after-treatment consisted of paintings with weak solutions of lactic acid, and later of mild astringents and applications of sprays and iodol. Unfortunately, the piece removed proved to be cut not deeply enough to show the real structure of the tumor by the microscope, and on February 27th a second and larger piece was cut out, as deep as the curette would allow me to do. The second operation affected the patient more than the first one, which I attributed partly to the after-effect of cocaine and partly to nervous excitement. The bleeding was not any more than formerly, and, after resting some time, the patient went away alone, promising to return the next day to be demonstrated at a medical meeting.

This visit was the last I saw of the patient at my office, and, when he did not appear within the two following weeks, I concluded to call on him at his house, in which I finally succeeded, after traveling three quarters of an hour in a trolley car and walking twenty minutes more through unpaved streets and on illusive sidewalks.

I found him perfectly rational. He received me very kindly, and stated, as the reason for his absence, that he had felt very weak during the first few days after the operation, and that later one of his children had been taken sick. He seemed slightly debilitated, but his voice was a little stronger; all his other functions were normal. When examining his larynx, I saw for the first time a part of the true cord on the right side. Although an inspection had been made immediately after the second operation, nothing could be seen of the lower part of the larynx, as the blood oozing from the wound obscured the view. Up to that time I was also not sure if the vocal cord had not become violated by the operation, or if the cord was perhaps not involved in the tumor itself—a point which, of course, was later on decided by the microscopical investigation. At the examination

the tumor was seen to have decreased about a quarter its size, which decrease was naturally most visible at its median portion, where excision had taken place. A part of the vocal cord could be seen through the opening, which was slightly hyperæmic, but seemed not to be changed in its contour. The remaining larger portion of the tumor presented the same appearance as before.

The patient promised again to call in a few days, but, after I had waited in vain three weeks, I determined to visit him a second time, as the case was too interesting for me to let it go by default. My reception this time was very different. The patient, surrounded by a large number of friends, received me with a sullen face; told me there was no need of my coming, as he had not sent for me, and when desirous of my services, would call at my office. He spoke in a rambling, incoherent, unintelligible manner, and I learned, after much parleying, from a relative that the loss of his child, followed by the death of his father-in-law, had upset his mind, and that only the day previous he had been forcibly removed from the tracks of the railroad near by, where he was attempting to commit suicide in this manner. He did not allow me to examine his larynx, and without accomplishing anything I was compelled to leave.

As I was convinced after this experience that further attempts would be equally fruitless, I felt obliged, to my great regret, to relinquish the case. Our interest naturally centres in the character of the tumor. Both specimens were examined by Dr. Schwyzer, the pathologist of the German Hospital. Before reading his report concerning the second piece removed, I beg to mention that allusions to whitish-looking tumors of the larynx are very scarce in literature. I have found no statement to this effect in the text-books in my possession. In his treatise on cancer of the larynx, 1889, B. Fraenkel says that it is an erroneous impression that in an early stage cancer of the vocal cords produces hyperæmia or inflammation. On the contrary, the carcinoma often presents a surprisingly white appearance. Further, Semon says, in a lecture on Benign Growths of the Larynx (*Clinical Journal*, February 20, 1895): "Unusual snow-white color or grasslike appearance of tumors points strongly to malignancy."

The report of the microscopist is as follows:

"The tumor may be defined as a papilloma durum laryngis. It is composed of proliferated papillary mucosa, covered by a thickened epithelial layer. The surface layer of epithelial cells presents itself as a horny covering; the underlying epithelial cells show marked proliferation with a splitting up of the nuclei. The submucosa shows a small-celled infiltration in consequence of connective-tissue proliferation. The epithelial layer shows a tendency to invasion of the subepithelial tissues as in carcinoma.

"The glands at the margin of the new growth appear very much changed. The individual tubules or ducts should appear distinctly separate one from another, instead of which, and at certain points, the cylindrical epithelium appears to merge from one duct to another.

"This condition also gives rise to a strong suspicion of malignancy, and justifies the following diagnosis:

"Papilloma durum, probably malignum, and perhaps carcinomatosum."

I have nothing to add to this report, but am inclined to believe that, if either the whole tumor could have been removed, or the excision had been made from a still deeper layer, a malignant character of the tumor would have been more firmly established.

Discussion.

Dr. MAYER, of New York, said: I was much interested in this paper, as I had examined the patient when he was exhibited some time ago. No histological report had then been made and there was much question as to diagnosis. The remarkable point was the snow-white appearance of the mass, resembling the cauliflower excrescence seen on the base of the tongue and on the tonsils in mycosis. In view of the report here presented it would seem that further investigation would show that the patient finally succumbed to the disease.

Dr. C. C. RICE, of New York, said: I should like to know how deep this exudate extended, if it was an exudate at all. I am impressed with the many unusual cases we find that do not follow the ordinary course, the syphilitic and tuberculous growths and other similar affections. Microscopical examination is necessary to determine their true character. Perhaps the inflammatory exudate was the cause of the external appearance.

Dr. J. E. NEWCOMB, of New York, said: At the meeting of the academy to which Dr. Gleitsmann alludes in his paper no one was willing to make a diagnosis, although the majority thought it was syphilitic. With regard to the question of Dr. Rice, I think the iodide of potassium is a good thing. In many cases a malignant growth is surrounded by an inflammatory zone which will disappear under the use of the iodide. I think, therefore, it should be used and persisted in in order to clear up this zone.

Dr. G. V. WOOLEN said: I have never seen this whitish appearance but once, and that was in a case in the London Throat Hospital in 1886. The condition looked as if you were looking down upon snow-covered mountain crags that were standing close together. On removing a piece of the growth it proved to be malignant.

Dr. A. W. MACCOY, of Philadelphia, said: I should like to ask if the doctor has ever found anything resembling mycosis.

Dr. GLEITSMANN said: I have never found any symptoms of actinomycosis. Iodide of potassium had already been given to the patient. Applications with the cotton carrier, rubbing over the tumor, did not change its aspect. It was rather hard, more so than I expected, and required sharp and well-cutting forceps. Its excision proved to be not very difficult, and the hæmorrhage was slight. I am of the opinion that the patient will ultimately succumb to the disease, as the indications point to the tumor being malignant.

Paper.

THE SEQUELÆ OF SYPHILIS AND THEIR TREATMENT. NASAL SEQUELÆ.

By CHARLES H. KNIGHT, M. D.

THE topic for discussion which has been assigned to me is the sequelæ or late manifestations of syphilis as met with in the nasal passages. My paper will therefore not enter upon the question of primary infection in this region or consider the possibility of so-called secondary lesions developing upon the Schneiderian membrane. Medical literature contains the record of many cases of chancre of the nose, and at the present day we be-

lieve that the mucous patch may appear on the nasal mucosa, although its occurrence here is very rare and has been denied. Late syphilis of the nose may simulate almost any other lesion, simple or malignant; its development is extremely insidious, and its ravages may be very extensive. For these reasons the study of specific phenomena, as exhibited in the nasal chambers, is peculiarly interesting, and their early recognition is of the utmost importance. To illustrate, let me briefly recite to you a personal experience, by no means a rare one—and doubtless each of you could furnish a counterpart from his own observation—but to me it was full of instruction and warning:

In the year 1890 a girl of fifteen was brought to the Manhattan Eye, Ear, and Throat Hospital for epiphora from stenosis of the nasal duct. The duct was found to be obstructed at its nasal orifice by an enormous enlargement of the right inferior turbinated body, which completely blocked up the nostril and was adherent to the septum. The mass, supposed to be a simple hyperplasia, was removed with the cold-wire snare. In two weeks it had resumed its original proportions, but was much more sensitive and vascular. Malignancy was suspected, but the microscope discovered nothing except hypertrophy of the lymphoid elements in the mucous membrane, which resembled, in all respects, lymphoid tissue as met with in the nasopharynx. Again it recurred after removal, and in about three weeks the microscopic report became quite different. Now the case was put down as one of small round-celled sarcoma. All the characteristics of sarcomatous tissue were clearly defined. The patient was referred to a general surgeon, who advised excision of the upper jaw. Ten days later the girl came to the clinic complaining of a sensitive swelling on her left shin, and over the crest of the tibia was found a semi-fluctuating tumor of the size of a hen's egg. She was at once put upon mercury and rapidly increasing doses of iodide of potassium. Within two weeks this node, and at the same time the nasal tumor, disappeared, and there has been no sign of either since. She was kept under treatment several months and has been seen at the clinic within a year. There can be no doubt, therefore, that the nasal tumor was a gummatous infiltration, yet the case narrowly escaped going on record as

one of sarcoma cured by excision of the upper jaw. At the outset the patient, as well as her relatives, was closely questioned as to the possibility of specific taint. Her history, her social position, and her appearance were above suspicion. The ultimate result must be considered more fortunate than it is in many similar cases, no damage being done beyond complete absorption of the inferior turbinated body.

The foregoing is a fair example of the course and results of a syphilitic process limited to the soft parts, and of the difficulty in reaching a diagnosis. We meet with a still more serious array of symptoms and much more formidable consequences when the sæptal cartilage is attacked or the bony framework of the nose is involved. In the former case a patient presents himself with a symmetrical swelling of the partition between the nostrils well forward, usually pale in color, and insensitive, as compared with a perichondritis from traumatism. The surface is frequently irregular, eroded, or even ulcerated, and bleeds readily on irritation. The amount of discomfort attending the condition depends almost exclusively upon the degree of nasal stenosis and not upon the acuteness or intensity of the process itself. The result in such a case is almost inevitable—namely, perforation limited only by the extent of the primary infiltration. In some cases such an accident may be prevented by vigorous treatment, but they are rare, and probably include only those seen early and those in which the gummatous perichondritis is rather circumscribed. It by no means follows that all cases of perforation of the cartilaginous sæptum should be regarded as syphilitic. On the contrary, a large percentage of them are traumatic; in other words, they are induced by the habit of picking the nose for the purpose of dislodging a mass of inspissated secretion, which is apt to accumulate at the apex of a sæptal spur or over an area of atrophied mucous membrane. Such perforations are often found in individuals who are entirely ignorant of their existence, and from whom a syphilitic element may be positively excluded. It may be said of syphilitic perforations that they tend to ulcerate at their margins and gradually in-

vade the columna, the tip, and alæ of the nose, or progress backward and involve the bony sæptum. In this way a large part of the skeleton of the nose may be destroyed, but if the ulcerative process be confined to the cartilage and do not creep to the margin of the nostril, little or no external deformity may result. I have in mind a case in which the cartilage and the columna were lost, and yet no disfigurement followed except a slight flattening of the tip of the nose, the loss of the columna being noticeable only when the head was thrown backward. The most effective method of arresting these ulcerations is by daily applications of chromic acid or nitrate of silver, in solution of twenty grains to the ounce and upward, according to the extent and activity of the process. The formation of hard crusts, which are a source of irritation as well as of fœtor, may be prevented by the frequent use of a spray of albolene containing ten drops of eucalyptol to the ounce. Of course, suitable constitutional treatment must not be neglected.

In a certain proportion of cases the disease seems to be primarily located, not in the soft tissues, but in the cartilage or bone itself, and by the time the patient applies for relief the process of destruction has been practically completed. Almost all the bones which compose the walls of the nasal fossæ may be attacked by a necrotic process due to syphilis. A hideous degree of deformity may result from loss of the bony supports of the external nose and from distortion caused by cicatricial contraction. In dealing with cases of this kind we have to decide first when and how to remove necrosed bone, and finally how to remedy the resulting deformity. As to the time of interference, it may be said that it is not always good policy to wait until the sequestra have become completely detached. The process of spontaneous separation is notably slow in syphilitic necrosis, and should be expedited, when feasible, by surgical means, shortly after the active symptoms have been controlled by treatment. It is, of course, very desirable to preserve as much tissue as possible, hence the importance of having the patient fully under the influence of specific reme-

dies for a considerable time before resorting to surgical interference. Otherwise, tissues which should be saved may be injured or destroyed. Not infrequently the diseased bone disintegrates and is expelled in the act of blowing the nose. At times fragments may be found lying free in the nasal fossa, whence they may be extracted through the anterior naris; or if their size or irregular shape prevents their removal by that way they may be pushed back into the pharynx and withdrawn through the mouth. It sometimes happens that a sequestrum is so large that the nasal orifices will not permit its passage, or so hard that it can not be broken up and removed piecemeal. Under such circumstances we may have recourse to the operation described by Rouge in 1873. In this method the soft parts, including the external nose, are detached by an incision along the gingivo-labial furrow and a dissection carried upward close to the bone until the nares are freely exposed. If necessary, additional space may be gained by chipping off with bone forceps the osseous margins of the *introtus nasi*. My first opinion of Rouge's incision * has been confirmed on several recent occasions—namely, that it is especially adapted to cases of syphilitic necrosis, in which the size and shape of the sequestrum preclude its removal by the natural passages without extreme pain to the patient and damage to the soft parts.

The diagnosis of necrosis is seldom difficult. The characteristic odor of syphilitic *ozæna* is conclusive, but if need be may be confirmed by the exploring probe. It is not always easy to determine precisely what and how many bones may be affected, especially in cases of long standing. The landmarks may be so effaced by inflammatory thickening and cicatricial contraction that the parts can hardly be identified. Bone exposed by ulceration can not always be readily differentiated from dead bone. Hence the importance of rapidly getting the patient under the influence of internal medication. The parts should be kept clean by means of detergent sprays or douches. The

* *Medical News*, Philadelphia, January 3, 1891.

factor may be modified, but can not be wholly corrected while the dead bone is retained. Yet attempts at its removal, unless its position and extent can be clearly made out, are unwise so long as the sequestrum is quite immovable, or if it be located high up in the nasal chambers near the os planum or the cribriform plate. The blind use of the drill or the burr, especially in the ethmoid region, can not be too strongly condemned. Exuberant granulations often spring up from the margins or base of an ulcer, and one may be tempted to reduce them with caustics or a curette. At times this may be necessary, but a wise conservatism in the use of destructive agents is to be recommended. I have never seen a genuine polyp in a case of nasal syphilis, except in one giving a clear antecedent history of nasal polypi.

In considering the question of relieving nasal deformity resulting from syphilis it is not my purpose to take up the subject of plastic surgery, or to refer to all the ingenious devices by which nasal defects may be remedied. Quite extensive loss of the external nose may be repaired after a fashion by flaps taken from the forehead, the cheeks, or other parts of the body. Very remarkable success in counterfeiting a natural nose has been attained by the use of celluloid and other materials. I wish only to recall to your attention a method of overcoming the deformity known as "saddle nose," which results from more or less destruction of the cartilaginous and bony supports of the nose. It is not only a source of mortification to its victim, but may debar him from society as well as from employment. The unfortunate is generally glad to try any measure which may make him more presentable and enable him to gain a livelihood. The method referred to was first suggested by Létiévant, and consists of inserting beneath the depressed nose a supporting framework of metal. Aluminum was first used, and subsequently C. Martin,* of Lyons, made an artificial bridge of platinum, with lateral arms, to be imbedded in the superior maxilla on either side (Fig. 1). The latter was introduced into this coun-

* *La prothèse immédiate*, Paris, 1889

try by Dr. R. F. Weir * in 1892. The length and shape of the bridge and of the arms must be adapted to each individual case. The one here shown was worn by a

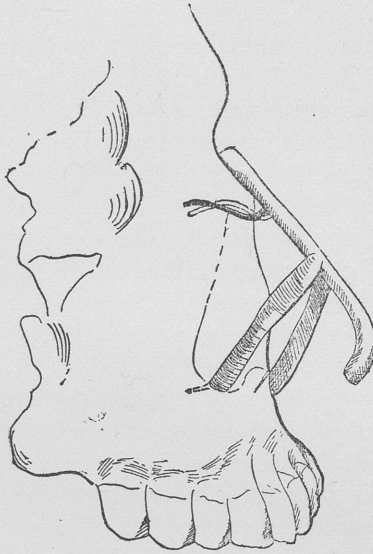


FIG. 1.—The Martin bridge as used by Weir.

patient for seven months and was then replaced by a larger one. The bridge is put in place through a Rouge incision, already referred to. Although the operation is comparatively free from risk, it is oftentimes very tedious, since great care must be employed in determining the dimensions of the apparatus and in properly fixing the ends of the supporting arms in the maxilla. In spite of

the utmost precautions, the bridge sometimes becomes distorted, or its upper end erodes the overlying skin. Both of these accidents happened in the patient whose photograph is shown, and the bridge had to be removed (Fig. 2). At first the result appeared to be perfect, but after a few weeks the bridge seemed to become twisted out of place, the skin over the dorsum of the nose began to grow red and sensitive, and the plate threatened to penetrate. To prevent this disaster the arms were divided with bone-cutting forceps and the plate was withdrawn through the nostril. Notwithstanding this procedure, the skin ulcerated, and in process of repair a puckered cicatrix rather added to the patient's disfigurement. Moreover, the retraction of cicatricial bands within the nose so obstructed the passage that their repeated division with the cautery knife became neces-

* *New York Medical Journal*, October 22, 1892.

sary to give adequate breathing space. A month ago I inserted another bridge in this case, similar to the one here shown, and up to the present time there has been no unfavorable symptom. The first operation on this patient was performed six years after his infection with syphilis, of which the early symptoms were meagre, and for which he never had any treatment until he came to the hospital. His urgent desire for relief from his deformity led me to operate, as I now believe, prematurely. Since the failure of the first attempt he has had thorough and prolonged medication, and, in consequence, is in so much better condition that a good result may be expected. We have had a number of cases at the Manhattan in which this operation was undertaken by Dr. Hopkins, Dr. Nichols, Dr. McKernon, and myself, but except in three or four the permanent results have not been fully satisfactory. Nevertheless, I am inclined to believe that the failures have been due to faults of technics and selection of an improper time for operating, especially as regards the date of infection, and should not detract from the merits of the method. Dr. McKernon has two patients who have been wearing the bridge nearly two years with perfect comfort and complete relief of deformity. Dr. Weir informs me that in his best case the patient has retained the splint four years, but he has had several which were less successful. He considers it a good operation for cases in which the sæptum is entirely destroyed and there is no obstacle to drainage. Dr. C. A. Powers, of Denver, writes me that all of his three cases behaved well so long as they were under his observation. One patient retained the bridge about eighteen months. She was a syphilitic and finally died of tuberculosis. Another was a very complicated case in which an ala had to be formed from the cheek. On about the tenth day the bridge slipped and had to be readjusted. Neither of these cases, therefore, can be considered thoroughly favorable for operation. The third case was lost sight of in four months, meanwhile the bridge having been worn without objection. Dr. John A. Wyeth has

used a platinum bridge in three cases. In two of these an armless bridge, which will be referred to later, was inserted. In one case in which a Martin bridge was introduced "the deformity was very greatly relieved, the patient was much more comfortable, and went home comparatively happy." At the end of eight months it was displaced by a blow and had to be removed. Dr. Wyeth counts this case as only a "partial success,"



FIG. 2, a.—Before operation.

although, until receipt of the injury, the bridge was entirely satisfactory. A case of operation by Dr. Emil Heuel, to whose courtesy I am indebted for the particulars, is an example of remarkably extensive necrosis due to syphilis of twelve years' standing, as well as of primary failure and final success of the platinum bridge. The nasal bones, vomer, lower half of the left, and a portion of the right superior maxillary bones, the ethmoid, the right lacrymal bone, and the superior, middle, and inferior turbinated bones had all been destroyed. The left incisor, canine, and bicuspid teeth were missing,

and both maxillary sinuses were exposed. Three years ago a platinum bridge was put in, but it had to be removed in about six months on account of the irritation it excited. This patient has been wearing a bridge, modified by Dr. Heuel, for the last two years and a half without annoyance, and the case is considered successful.

My experience with the platinum bridge leads me to insist upon three points: 1. In syphilitic cases the pa-



FIG. 2, *b*.—Six weeks after the insertion of the bridge.

tient must have had a thorough course of treatment, and a sufficient period must have elapsed since the disappearance of active symptoms—not less than three years. 2. The dissection of the soft parts must be so extensive as to obviate the possibility of tension at any point, and especially over the bridge of the nose where the upper end of the plate is to rest. 3. The metal bridge must be so molded and smoothed down at its edges as to preclude the danger of friction and pressure upon the soft parts, and the ends of the supporting arms must be deeply buried in the maxilla, as otherwise they are liable

to be dragged out of position. The tendency to retraction and collapse of the nostril, observed in some cases, may be prevented by giving considerable width to the arms at their line of junction with the plate. The cost of the platinum bridge, as originally made, which is an item of some importance in the class of patients usually needing this kind of attention, may be considerably reduced by having it cut from a single piece of metal (Fig. 3). This idea, suggested by Dr. F. E. Hopkins * and first put in practice by him at the Manhattan, was found to be satisfactory. The bridge should be partially shaped beforehand and may be trimmed to suit the case at the time of operation. The after-treatment of operative cases should be very simple, consisting merely of an application to the external nose of a piece of lint soaked

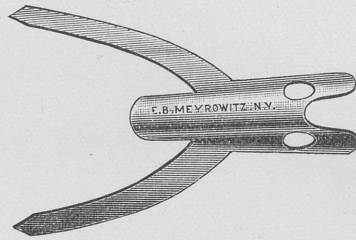


FIG. 3.—Hopkins's bridge.

in boric-acid solution. On the fourth day, and daily thereafter, a warm intranasal douche of a similar solution may be carefully used. No sutures are needed in replacing the lip, and

no bandages or dressing which may exert pressure should be applied. The patient should be cautioned to avoid talking and laughing, and for a week should be restricted to semifluid diet. In other words, the parts should be kept at rest as far as possible until the process of repair is well advanced and the tissues have become accustomed in a degree to the presence of the foreign body.

In conclusion, let me refer briefly to a series of experiments with an "armless" bridge in a class of cases in which only partial destruction of the cartilage has resulted in moderate sinking in of the nose. In two of Dr. Wyeth's cases this form of bridge was inserted through a median incision over the dorsum of the nose.

* *New York Medical Journal*, June 8, 1895.

In one suppuration occurred and the plate had to be removed. In the other the external wound healed without suppuration and without scarring, and the bridge is still in place. It seemed to me it might be possible to put a simple plate of metal under the skin, a bed having been prepared for it by a dissection carried on through the nostril. Such was found to be the case, but the behavior of the plate was rather surprising. The deformity was corrected, the foreign body excited no disturbance, but in a few weeks it became evident that the plate was cutting its way through the columna. It was removed, and one having numerous perforations was introduced, in the hope that the penetration of granulations would furnish a sort of anchorage for the metal. The latter pursued a similar course, although its weight was hardly appreciable. It is possible that better success will attend a further trial of this plan, provided some other material, such as celluloid or vulcanite be used, or the metallic plate be made much thicker, especially at its lower end. Permanent improvement in the contour of the nose ensued even in those cases in which the bridge was retained only a few weeks. The obvious advantages of this method are that it not only dispenses with an external wound, but substitutes for a long and troublesome operation, necessitated by the use of the Martin bridge, one of comparative simplicity, which may be performed in a subject of average fortitude under local anesthesia.

Paper.

THE SEQUELÆ OF SYPHILIS IN THE PHARYNX AND
THEIR TREATMENT.

By J. E. H. NICHOLS, M. D.

WHILE, as a rule, the tertiary manifestations of syphilis in the pharynx heal kindly under treatment by mercury and the iodides, there is a proportion of cases in which the results of the disease are most persistent and annoying. We find changes in the soft palate, the uvula,

the fauces, the posterior pharyngeal wall, the tonsils, and the epiglottis.

The destruction of tonsillar tissue can be very extensive without leaving any results detrimental to the patient, because its situation permits such destruction. The lingual tonsil, of the same tissue as the palatal tonsils, and subject to the same laws, has also been observed by Labit (*Revue de laryngologie*, 1891), Moure, Raulin, and others, to be the seat of syphilitic lesions, but, like its fellows, has yielded readily to treatment without any annoying results. No cases are reported in which distortions or obstructions either to deglutition or articulation have been observed.

The uvula is frequently subject to extensive ulceration, and may even be entirely destroyed without impairing the efficiency of the pharynx.

Perforations of the soft palate and the faucial pillars are not uncommon. These are of a more serious character on account of their interference with proper articulation and the discomfort caused by the regurgitation of liquids into the nasopharyngeal cavity. I have recently seen a man of forty-five, a master mason, whose occupation requires him to call in a loud voice from the upper floors of buildings to the workmen below. His initial lesion took place twelve years ago. Four years ago, following a period of debility, a perforation of large size occurred in the right side of the soft palate, extending down into the posterior faucial pillar. The perforation was oval in shape, with its long diameter parallel with that of the pillar, and about two centimetres in length. His articulation was so indistinct, in consequence of the escape of air into the nasopharynx, that he could not be understood by his men, and he was obliged to give up his place and work as a day laborer. The edges of the opening were pared, under cocaine, and brought together by wire sutures. Perfect closure followed, and the man has been able to obtain his former position.

Ulcerations and malformations of the epiglottis resulting from syphilis are more common, but, unless excessive, are not of great importance. The entire epiglot-

tis may be destroyed without serious inconvenience to the patient, because of the tolerance acquired to its absence. Occasionally the ulceration has been in such a situation that an adhesion between one side of the epiglottis and the interior faucial pillar ensues, causing a partial stenosis of the larynx. Such a case is now under treatment, in which the base of the tongue and the epiglottis are drawn upward and backward, causing considerable difficulty in articulation by limiting the motion of the tongue.

The most annoying sequel to syphilis in the pharynx is the formation of adhesions between the posterior faucial pillars, the posterior edge of the soft palate, and the wall of the pharynx, causing a partial or complete stenosis of the rhinopharynx. Extensive and coincident ulcerations of these parts are common, and when the subject is not placed under thorough iodism contractions are apt to follow on account of the approximation of the two surfaces at an acute angle. Internal medication is of more value in bringing about resolution than strong topical applications. Several cases observed lead to the belief that if the powerful caustic applications used had been withheld, and bland washes employed, no adhesion, or at least less extensive adhesions, would have followed. In one case pure nitric acid was used by the attending physician, with the result of setting up a deep sub-mucous inflammation and a complete stenosis.

The discomforts of such formations are very great. Nasal breathing is entirely abolished and mouth-breathing substituted, with its sequelæ of dryness, laryngeal irritation, and pulmonary complications.

The voice is seriously affected, its resonance abolished, and its unpleasant, stuffy quality rendered most annoying to the patient and those with whom he comes in contact conversationally. Furthermore, the traction exerted by these cicatricial formations on the orifices of the Eustachian tubes and the disturbance of the equilibrium of air pressure in the nasopharynx bring on most unpleasant aural complications, to which must be added the danger of acute catarrhal infection from the dammed-

up secretions of the curtain. Again, the expiratory air current being shut off, the nasal secretions accumulate in the form of tenacious masses of muco-pus, which the patient can not expel except by gravitation and the use of cotton swabs or intranasal douches. There being no inspiratory current of air, the sense of smell is impaired or abolished, and all the proper functions of the nose are rendered useless.

In the treatment of these adhesions great ingenuity has been exercised in trying to find some surgical method which would produce a permanent opening. In the great majority of cases no success was had, the openings made closing by contraction after a period of time varying from a few weeks to two years.

Labit says "it must be frankly acknowledged that no means has been yet found which will afford permanent relief." Mackenzie says "though great relief can be afforded to the patient as long as he remains under treatment, no cure can be predicted, as the stenosis always returns when mechanical measures are suspended." Scheck says that "the results, as regards improvement and restoration of speech, are generally very unsatisfactory." These opinions are shared by Cartaz, Lichtwitz, Hajek, and other recent writers who have reviewed the subject.

A short recapitulation of the means which have been used will be useful. Elsberg separated the parts by means of a blunt-pointed staphylorrhaphy knife, forcibly dilated with the finger, and had the patient use daily a hard-rubber palate retractor to prevent readhesion.

Dieffenbach, after incision, drew the soft palate forward as far as possible by means of a ligature passing out of the mouth and fastened to the ears. Others, after incision, inserted tubes or rings of lead, metal, or rubber of appropriate shape and size, kept in position by being suspended from two strings passed through the nostrils, or by spring clips fastened to the teeth, or by suction in the roof of the mouth, as in case of a dental plate. Others have used sponge tents, hard and soft brushes, air bags, etc., while others yet have striven

to do plastic operations of various kinds. At the present time these measures have largely given way to the repeated use of the galvano-cautery knife and subsequent digital or mechanical dilatation.

Lichtwitz reports a case of the last-mentioned method (*Ann. des mal. d'oreille*, 1894, 815) in which he was able to keep the passages open by constant dilatation with a No. 30 F. bougie.

Conetonx (*Ann. des mal. d'oreille*, 1893) and Kuhn (*ibid.*, 1892) have introduced a method by which a large opening is made through the soft palate just behind the osseous palate and anterior to the uvula. In this opening is introduced what they term a "plaque à cheminée," which holds itself in place by the contraction of the edges of the opening, and allows nasal breathing. This appears to be the best mechanical device yet found for overcoming the closure.

But all these operations and practices have one defect in common, fatal to their success, and which allows the reproduction of the original method of the adhesion. The defect is that no matter how deep the incision has been made, or how much tissue has been excised, or how strong or persistent dilatation has been exercised, the cicatricial tissue steadily advances in the process of healing from the bottom of the cut. If the denuded surface were to heal at once through its entire extent a simple incision would be sufficient to cure the most obstinate case. But this never occurs. Whether the denuded surface be cutaneous or mucous, healing always begins from the apex and progresses toward the edge, by this means gaining support for the new formation from the healthy surface behind it. This is a chief characteristic of cicatricial tissue and the very cause of the adhesions we are considering, so that in our endeavors to cure we are simply subjecting our patients to an alternation of cause and effect. As a means of obtaining a permanent opening, several years ago I devised the operation which I will now describe, and which has accomplished the end sought for. My excuse for making further mention of it is that time and experience have demonstrated

its practicability, that it is not a complicated operation, and that it is not as well known as I would like to have it.

To be brief, the similarity of this condition to that known as web finger presented itself, and it occurred to me to adapt to this class of cases the well-known operation of inserting a ring through the web at the base of the web, leaving it there until cicatrization had taken place around it, and then cutting through the web and leaving the edges to heal, reunion being always prevented by the presence of the narrow strip of cicatricial tissue at the base of the cut. The application of this method proved to be successful, and I have now notes of thirteen cases in which it has been tried with complete success, and one in which it proved a complete failure. Of these thirteen cases, only one was non-syphilitic; but I shall give the history of that one also as showing the result of a single operation on a healthy subject. In the other cases resort was had to the operation several times before relief was afforded. The failure was in the person of a negress, subject to an ultra-severe infection of syphilis, in whom every effort at repair was nullified by destructive ulceration, and whose habits and surroundings were such as to preclude any hope of ultimate success. In order to render the operation intelligible a brief recital of the various steps may be made. The instruments necessary, which were made for me by the Ford Surgical Instrument Company, consist of two right-angled curved staphylorrhaphy needles, right and left, two small cervix hooks, a pair of long angular mouse-toothed dressing forceps, and a pair of angular scissors. In addition to these, two delicate probe-pointed knives, with razor edge and back, the cutting projection bent at right angles three fourths of an inch from the tip, and this portion gradually increasing in width from the tip to the angle. The knife is mounted with a round shank, four inches in length, inserted in a suitable handle of the same length. Carbolized surgeons' silk, Nos. 13 and 14 or 16, is also needed.

The steps are as follows: The parts are thoroughly

cocainized from above and below. There is no case reported in which a slight opening has not been found. Usually it is present posterior or to one side of the uvula. The curved needle, threaded with a long length of the finer silk, is then passed through this opening, care being taken not to wound the membrane. The point is then in the nasopharyngeal chamber above the adhesion. It is then carried as far laterally as the radius of the curve will permit, and brought down through the adhesion as far back as possible and on a plane parallel to the pharyngeal wall. When the point appears through the adhesion the loop of thread is engaged in the hook and pulled out into the mouth and the needle withdrawn. To the end passing through the central opening is then attached a length of the thicker, heavier silk braid (No. 16). Traction is then made on the other end of the thread, and, using the forefinger as a guide, the braid is gradually drawn through the canal made by the needle. The braid should be long enough to allow ease in tying. The two ends are then tied in a square knot (not a "granny" knot, which will soon undo) near the tissue inclosed in the loop, but not close enough to strangulate it. When the double knot is firmly tied, the ends are cut off, and by a process of coaxing with the hook, the loop is pulled around until the knot passes up through the central opening into the nasopharynx, where it is not a source of annoyance to the patient.

This loop is left in position for a period of a week to two weeks, according to the rapidity of healing. The movements of the pharynx prevent its becoming attached at any point. At the end of this period the little canal in which the loop lies will have become cicatrized and firm tissue. The loop is then cut and withdrawn, leaving the canal free. The parts are then douched with an alkaline solution and cocainized. The right-angled knife is then pushed carefully through the cicatricial canal with its edge toward the median line, and the tissue intervening between it and the central opening is cut through, care being taken not to injure the tissue lying at the back of the knife. The parts are then kept clean

for a few days, when healing will have taken place along the cut edges; but they will remain separated because of the narrow band of cicatricial tissue at the apex of the cut, and the nasopharynx will be opened by just so much as the depth of the incision. It may be necessary to repeat the operation several times on each side until the required space is obtained. One must look for a small amount of contraction afterward, but the passage always remains free and functionally adequate. In all the cases which have been operated on the resultant opening has been large enough to admit freely a No. 3 laryngeal mirror. After the first operation, while those in which a second or third operation has been done, secure permanent opening admitting a No. 5 mirror, or approximately the size of a normal passage.

Paper.

THE SEQUELÆ OF SYPHILIS OF THE LARYNX AND THEIR
TREATMENT.

By WILLIAM K. SIMPSON, M. D.

IN presenting the discussion of The Sequelæ of Syphilis and their Treatment which has been assigned me, it is not my intention, nor will time permit, to consider the entire subject in detail, but simply to touch upon some of the more salient features, and to emphasize more particularly the treatment of the resulting chronic laryngeal stenosis by the method of intubation. The whole subject is a vast one and has been fully considered by others, but its importance and interest are such that one can always find profit in its consideration, even at the risk of repetition.

When we come to discuss the sequelæ of syphilis we are at once confronted with the importance of exactly defining the term *sequelæ*, and giving them their true relation in the progressive course of the disease. If we adhere to the older and more commonly accepted clinical division of syphilis into primary, secondary, and ter-

tiary stages, then a consideration of the subject refers to that of the resulting conditions of a tertiary involvement.

The term *sequelæ*, as applied to syphilis, differs somewhat from its application to many other diseases; for example, suppurative otitis and chronic nephritis may become *sequelæ* of scarlet fever. Post-diphtheritic paralysis may be a sequel of diphtheria, and valvular disease of the heart of acute rheumatism, neither necessarily happening in the course of the disease, but as complications or accidents. With syphilis it is different; the late manifestations occur in regular order, and vary only in the length of time of their appearance and in their nature, as they may attack the various organs and regions of the body. Tertiary lesions are to be expected in due course of the disease, unless modified or stopped by efficient treatment in the earlier stages, and even this is denied by some.

I think, with a measure of correctness, that *sequelæ* of syphilis, as they pertain to the larynx, may occur (1) as acute exacerbations of long-standing tertiary conditions, and (2) the resulting permanent changes of tertiary lesions, both in their occurrence affecting the laryngeal functions of voice and breathing. These two conditions are so often intermingled that we can not always make a perfect line of demarcation. Aside from these two extreme manifestations of syphilis, there are undoubtedly changes in the larynx other than of a purely structural nature, sufficient, at least, to interfere with phonation, and often of such a lasting and chronic character that the term *sequelæ* may be used. Under this division may be classed those patients who have syphilitic lesions in other portions of the body, while there have been no manifestations of a structural change in the larynx, the only involvement being a chronic hyperæmia, with attendant change of secretion, possibly some thickening, and the only subjective symptom being more or less hoarseness and loss of control of voice for any exactness of use. This is especially so in those who use their voices professionally, either in teaching, public speaking, or singing, or in the more violent use of the

voice, which demands constant and regular shouting, seen in various occupations.

The overuse and strain of the voice, from whatever cause, unquestionably determines its functional impairment in many syphilitics, even if there is no direct specific lesion in the larynx. This impairment of the vocal function is also very prone to occur in chronic syphilitics whose occupations unduly expose them to inclement weather and climatic changes; this is especially seen among sailors. This passing involvement of the larynx may take place at any time during the course of syphilis, and must be taken into consideration whenever we are called upon to pass judgment on voice impairment. The treatment of this condition necessarily resolves itself into a judicious local treatment of the larynx, changes of environment, attention to hygiene, and regulation of the voice to meet the individual case, in conjunction with iodide of potassium and mercury, either singly or in combination.

Important as the above-enumerated causes may be in determining functional laryngeal impairment, wherein the larynx may not be, *per se*, the seat of syphilitic changes, much the more is their importance emphasized in those cases where the larynx has been, or is at the time actively involved, by a syphilitic lesion.

It is imperative that there should be a thorough appreciation of these sudden determining causes of exacerbation, as they are often the deciding point in diagnosis in cases of severity seen perhaps for the first time.

All serious intralaryngeal conditions in the adult, with a history of sudden onset, should at once arouse a strong suspicion of syphilis, and it may be said almost as a positive fact that all tertiary conditions of the larynx, of whatever nature and at whatever stage, are liable to sudden serious exacerbations. It is these sudden exacerbations, ingrafted on an existing lesion, that often produce the fatal occlusion, and by their acute swelling cover up and mask the underlying lesion. It is for this reason that when a case of laryngeal stenosis in the adult presents itself in the mirror as a smooth, uniform red

swelling, we meet with difficulty, or fail entirely to relieve by intubation or other forms of dilatation; it may cover up a dense gumma, the dense swelling of a perichondritis, an irregular cicatricial contraction or deformity, or a subglottic stenosis.

Among the sequelæ of syphilis of the larynx, resulting from a previous active involvement, may be mentioned chronic thickening or induration, defined or diffuse; loss of tissue from ulceration, or from breaking down of a gumma, or from an abscess of a perichondritis; a deeper necrosis, affecting the cartilage, causing extrusion; ankylosed joints, paralysis, redundant and weblike tissue, and, finally, the resulting cicatrices, adhesions, and deformities.

It is not within the scope of my discussion to elaborate the different points of diagnosis of uncomplicated syphilitic lesions of the larynx, nor upon their differentiation from other lesions, and I will only say, in passing, that the isolation of the syphilitic preponderance is often a matter of great difficulty when there is an association with other dyscrasias, as, for instance, with rheumatism, tuberculosis, and malignancy. In one of my early reported cases of intubation in the adult there was a marked instance of the difficulty of distinction between rheumatism and syphilis of the larynx, the patient giving an ample history of both infections; the severer laryngeal conditions would yield only to the iodide in large doses, finally resulting in an ankylosis of the right crico-arytænoid joint; she subsequently developed a hemiplegia from a syphilitic brain lesion. The greatest difficulty of distinction undoubtedly exists when there is an association of laryngeal tuberculosis and syphilis, which combination, though rare, is, I think, generally admitted. We should be careful in committing ourselves to this coexistence in a given instance, unless tubercular bacilli can be found, either from pulmonary expectoration or from laryngeal secretion. G. C. Wilkin, of London,* reports a case of pulmonary and laryn-

* *Journal of Laryngology*, London, June, 1894; *Lancet*, London, June, 1894.

geal involvement pointing strongly to tuberculosis, both conditions, however, clearing up under the iodide. Several examinations for bacilli were made and they were not found, which fact, taken with the result of treatment, I think invalidates the theory of the combination of the two diseases.

I have at present under my care a patient with a long-standing syphilitic history who has developed a recurring, spindle-shaped sarcoma of the larynx, necessitating laryngectomy. The growth was removed in the first instance by the endolaryngeal method, and the patient placed on large doses of iodide of potassium. There was some reason for belief at first that benefit followed the use of the iodide, but at the expiration of nine months the growth recurred, and, in spite of the continued and increasing dosage, finally grew very rapidly.

The two great indications to meet in the treatment of the more severe laryngeal sequelæ, aside from the arrest of the general progress of the disease, are the restoration of the voice and the resulting laryngeal stenosis. In short, we may say that all the sequelæ, other than permanent stenosis, must be met with the general principles of antisiphilitic treatment—namely, iodide of potassium and mercury, either alone or in combination. The condition of resulting stenosis must, in addition, receive mechanical means. It seems needless to refer to the efficacy of the time-honored use of the iodide in late syphilis, all of us knowing full well the brilliant results obtained; but there are undoubtedly certain instances where the combination of the two drugs is absolutely necessary, and some authorities maintain only the necessity of the mercurial treatment. This latter seems to be emphasized by the efficacy of the treatment of hereditary syphilis (which may be regarded as sequelæ) by the mercurial plan. In the *Revue hebdomadaire de laryngologie, d'otologie et de rhinologie* for February, 1896, M. Irsai gives a detailed account of the use and great benefit derived from the intramuscular injections of corrosive sublimate in severe forms of laryngeal syphilis, and relates a number of cases in substantiation. In the

use of iodide it must be remembered that there occasionally happens in large dosage, and in susceptible patients, an aggravation of laryngeal symptoms. I have seen it determine redness of the larynx, dryness of secretion, and aphonia, where it has been given for syphilitic manifestations in other parts, principally in the pharynx.

The resulting chronic stenosis of the larynx, due to cicatricial contractions, distortions, indurated tissue, or whatever may be their nature, must be met by mechanical means in addition to the constitutional treatment. These two mechanical measures are tracheotomy and some form of dilatation or their combination. It is sometimes necessary to free weblike tissue and connecting bands before the latter measure can be thoroughly effected. Tracheotomy should be performed only where there is found to be an impassable barrier to the passage of the dilating instrument, or where the structure is of such a small calibre as to allow only of a very small breathing tube to be passed.

Before the introduction of the O'Dwyer method of intubation and the demonstration by it of the tolerance of the larynx to continued intralaryngeal pressure the treatment by the older methods of dilatation was extremely tedious and unsatisfactory. *Intubation*, by admitting of constant pressure, and at the same time allowing of free breathing while wearing the tube, overcomes this and gives us a rational method of treatment. The great objection to the Schroeter method, which is representative of the older means, was the necessity of a previous tracheotomy and the very transient and frequent introduction of the dilating instrument. The dense and unyielding nature of one class of stricture and the oftentimes elasticity of cicatricial tissue are almost sure to recur immediately with anything but constant pressure. There is unquestionably an absorptive process produced by constant pressure of the intubation tube in some conditions, while in other instances the constant wearing of the various-sized tubes produces an artificial canal through which the patient may breathe with much greater ease; it wears out in a great measure the recur-

sion, as far as intubation is concerned, I can not express my opinion as to its superiority over other measures better than by quoting the words of Dr. O'Dwyer, as I have done before—namely: "Had intubation of the larynx proved a complete failure in the treatment of croup, I should still feel amply repaid for the time and expense consumed in developing it, for I believe it offers the most rational and practical method yet devised for the dilatation of chronic stricture of the glottis."

Discussion.

In reply to Dr. INGALS's query as to how the plate was inserted Dr. Knight replied:

About five minims of a ten-per-cent. solution of cocaine are first injected into the skin over the dorsum of the nose, and the nostrils are sprayed with a similar solution. A short-bladed bistoury, with its cutting edge extending around its tip, is then introduced into the nostril, and the skin is carefully dissected from the nasal bones and from the anterior margin of the septal cartilage. A plate of platinum, which is said to be less irritating than aluminum, about a third of an inch wide and three quarters of an inch to an inch in length, with its edges and ends smoothed down and bent over, may be tucked into the bed thus prepared.

Dr. ROE said: The most serious cases of syphilis of the nose that I have seen have been in children, and were hereditary. In several of these cases the whole internal structure of the nose, both the osseous and cartilaginous portions, was entirely destroyed, the nose dropping in until it was flat with the face, while the skin was left intact. In one of these patients, a lad about eight years of age, the nasal bones were completely destroyed, and also the soft parts covering them, so as to leave an opening in the place where the nasal bones were, just below and between the eyes. In nearly all these patients the ulceration was still going on when I saw them, and attended with marked fœtor.

In the majority of cases which I have seen in adults in which there was a deformity of the nose as the result of syphilis, it was due to abscess of the nasal septum caused by the syphilitic infection which destroyed the cartilaginous portion of the septum and thereby caused a dropping in of the anterior portion of the nose. It is this class of cases that most often come to us for restora-

tion of the nose to its original condition or the removal of the deformity. Four years ago I presented a paper on the subject of corrections of deformities of the nose resulting from abscess of the nasal septum. In the majority of these cases the abscess was the result of a specific disease. These deformities I correct by subcutaneous flap operations. Notwithstanding the fact that the cartilaginous portion has been removed, all the soft parts are usually there, although in a distorted condition, flattened on top, and swelling out at the sides.

By raising the skin from the top of the nose and cutting these portions on the side which has become flattened out and turning them up over the top of the nose and holding them in place by either a pin or a clamp, a symmetrical nose may be obtained. Sometimes the cartilaginous portion of the end of the nose is unduly prominent. Thus in some cases it is necessary to lower it in the manner which I have formerly described for correcting the deformity termed "pug nose." This, of course, makes the nose smaller; but, as I described in my article on Pug Nose, the size of the nose matters little so long as the nose is symmetrical, for no two noses will be found to be exactly of the same size. A small, symmetrical nose will be handsomer and much more slightly than a large, unsymmetrical nose, and *vice versa*. In some of these cases, if the bridge of the nose is unduly prominent after the end of the nose has been made symmetrical, this angular prominence can be removed after the plan which I have described for the correction of angular deformity of the nose by subcutaneous operation. In many cases it is necessary to combine these different operations in order to bring about the desired result.

In the case of the lad that I mentioned, where the nose had been destroyed and an opening had been left in the top of the nose between and below the eyes, I restored this nose by using a finger after the method of Sabine, and had a very satisfactory result. Before this operation the lad had a very repulsive appearance, so much so that people would shun him; but afterward the deformity was not markedly noticeable.

Dr. A. W. DE ROALDES said: I presume every one of us has come in contact with cases like those referred to. I have seen several where I would have given a good deal to have been able to restore the parts to their normal condition. I should like to see this question brought up at a future meeting. And those who have given

much time to this subject should put their experience into systematic papers. I know of a case now where I could make a very large fee if I could only make a very good nose, but I have never felt sufficiently satisfied that I could do so to attempt or to recommend an operation. I have never seen cases which have convinced me that I should be justified in recommending an operation. As to syphilis of the nose, referred to by Dr. Knight, I must say I am not in favor of Rouge's operation in order to remove sequestra, as I think it is unjustifiable. There is nothing that can be better done by this operation than could be done by intranasal surgery. I have seen cases like those of Dr. Knight's, and in working on them I have had to use ice water in order to reduce the temperature of the burr or saw. By a little perseverance I have got through these exostoses. Very often the bleeding from the doctor's operation is very excessive. In my opinion, where you want to reach the nasal cavities, intranasal surgery should be the way to do it, drilling and holding the parts with strong forceps answering every purpose. Another thing, there will be no cicatrices in case you would want to do any other operation, while in the doctor's operation you will find considerable cicatricial tissue.

Dr. J. E. H. NICHOLS said: I will briefly describe three cases in which I have operated. In one case I attempted to put the nasal plate under the skin and on the nasal bones, the anterior end resting on the columna, and I wired it to the nasal bones. The principle was wrong, however, and an abscess formed on the bridge of the nose with subsequent falling in of the skin. This was due to the leverage pulling on the anterior end. In the second case the cartilaginous septum was destroyed. I attempted to build up the fleshy portion of the nose by putting in a saddle. This worked very well and brought the bridge of the nose into position. The saddle, however, was suddenly dislodged, and it was very hard to retain it in position, so I had to take it out. In the third case I used a method something like Dr. Hopkins's operation. It was a very severe case, as the patient had no nose whatever. The fleshy portion had sunken in and the face was much disfigured. I introduced a bridge through the side of the nose by incising at the nasolabial fold and carrying the ala over to the other side. The patient has worn this bridge for sixteen months without any bad results. The peculiarity

about the case is that the cicatricial tissue had enveloped the arms of the bridge. There is a very slight opening in the centre and no breathing through the nose. The patient desires me to make an opening but I have refused.

Dr. E. FLETCHER INGALS, in discussing Dr. Knight's paper, said: With reference to ulceration of the cartilaginous septum, my experience differs from that of some of the speakers, for I have rarely seen ulceration of the cartilaginous septum that could be ascribed to syphilis, unless the bony septum was also ulcerated. I think it is unfair to assume that such cases are syphilitic, for I believe this disease is not the cause in more than five per cent. of the cases. As a local application I prefer the strongest tincture of iodine. It was some years before I knew how to use iodides internally, and I am satisfied many failures occur in treating syphilis because the physician has not learned this lesson. I once had a case of syphilitic hypoglottic thickening in which I had to do tracheotomy. I had already given iodide of potassium in doses of twenty grains four times daily without avail; but after the operation, on the advice of the late Dr. Jewell, of Chicago, I increased the dose five grains each day until I was giving a hundred and twenty grains, largely diluted, four times a day. The effect was marvelous, and the thickening, of several months' duration, seemed to melt before my eyes and the lumen of the larynx became perfectly free in ten days. In giving large doses of the iodide of potassium, I gradually increase the dose, as in this instance, until the maximum dose is attained; this is continued for three or four days, and then the dose is reduced to twenty grains, which is steadily increased as before. The reason we often fail with the iodides is because we do not give enough.

Dr. W. P. PORCHER said: I recently saw a case in which there were tuberosities large enough to produce complete occlusion of the nose.

It has not been my experience that ulcerations begin in the cartilaginous portions of the larynx. I can not say anything about treating cicatricial contraction. As to general treatment, I know many syphilographers object to the combination of mercury and opium, but I have had very excellent results with it. I merely push to ptyalism and not to salivation.

Dr. F. E. HOPKINS said: Dr. Knight's paper is especially interesting to me in its description of methods

for overcoming the deformity due to loss of the bony framework of the nose. In selected cases, where sufficient time has elapsed since the initial lesion, I think the placing of a platinum framework—introduced after performing Rouge's operation—offers the best method for correcting the deformity.

In those cases which have received thorough constitutional treatment, and in which some years have passed since the appearance of active symptoms of the disease, the foreign body is tolerated with little irritation. Rouge's operation gives the opportunity for separating cicatricial adhesions and for the placing of the bridge so that no undue pressure is brought upon any part, and the careful molding and adjusting of the metallic bridge restores the individual contour of the nose.

I have done this operation twice, and while of neither case could it be said that nothing was left to be desired, the failure was due to the causes pointed out by Dr. Knight rather than to defect in this plan of operating.

In both cases there was satisfactory restoration of contour, but in the first one of the supporting arms of the bridge was placed too near the gingivo-labial fold and it gradually cut its way through this, so that its edge is visible upon raising the lip. It is fourteen months since this case was operated upon and the bridge is still worn comfortably by the patient.

In the second case the operation was done too early and it was necessary to remove the bridge after a few months. Both these errors could have been avoided by following the principles laid down by Dr. Knight.

Dr. HUBBARD said: Dr. Knight requested an opinion as to the special indications against the use of mercury; and, further, gave the opinion that concealed caries, with retention of pus and *débris*, especially such as occurs in syphilis of cancellus bone, was a contraindication against mercury. Unless the necrotic tissue can be removed, and the carious area be cleansed thoroughly, iodides in very large doses is certainly the more rational treatment.

Dr. D. B. DELAVAN said: I have seen a case of total occlusion of the pharynx. In the patient referred to no artifice that was resorted to was able to show the existence of even the smallest sinus. Another thing to which attention should be called is hæmorrhage, which, primarily or secondarily, is likely to occur.

Dr. KNIGHT said: I devoted much of my paper to

Martin's bridge operation to the exclusion of other methods, as in cases in which it has been properly employed the correction of the deformity has been complete and the tolerance of the apparatus has been perfect. When the indications are followed, especially as regards the time of the disappearance of syphilitic symptoms, I believe that it will prove successful. I can not agree with those who regard Rouge's operation as a serious one, and under certain circumstances it is of service. I remember operating in a case of extremely large sequestrum of ivory hardness on which I could make no impression with a drill. Even the lithotrite was employed unsuccessfully. I do not think it has been shown that this operation is likely to induce any secondary or primary hæmorrhage that can not be controlled by pressure. The disastrous cases of this operation have been those in which the sequestrum was high in the nasal chambers and was removed with difficulty, considerable violence being necessary. The space offered by this incision is somewhat disappointing. In the case I have just mentioned it was necessary to chip away a considerable portion of the maxillary bone. As to constitutional treatment, the principle which I have been in the habit of following has been to use mercury in late syphilis when it has not been given early. As Dr. Ingals has suggested, I have given iodide of potassium in large and increasing doses, being guided by its effects. The combination of mercury and iodide will sometimes be beneficial when either drug separately would have no effect.

Dr. NICHOLS said: I should like to ask Dr. Delavan if the case he referred to where there was no opening in the pharynx has ever been reported?

Dr. D. B. DELAVAN said: In response to Dr. Nichols's inquiry, I would say that the case referred to has not been reported. Knowing the rarity of these cases, I tried every means to find an opening, such as endeavoring to force air and colored liquids from the nose into the pharynx. I have seen a number of cases where the opening was very small.

Paper.

EPITHELIOMA OF THE SOFT PALATE REMOVED BY INJECTIONS OF LIQUOR POTASSÆ.

By THOMAS HUBBARD, M.D.

A GENTLEMAN about fifty years of age suffered for several months from painful excoriations, caused apparently by the posterior edge of the upper dental plate. During the fall of 1893 there gradually developed a flat, tabular tumor, nearly as large as a nickel piece and about twice as thick. It was partly in the soft palate and partly in the anterior pillar of the fauces on the right side. It was very painful, and all faucial movements were restricted. There was an exuberant growth of papillomatous excrescences over the buccal surface of the cheek. He became addicted to the cocaine habit, which still further lowered his vitality. For this he tried sanatorium life and succeeded in temporarily breaking the habit. During the winter and spring of 1894 he subsisted on milk, oatmeal, and ice cream. He lost about forty-five pounds during the year. In the early summer of 1894 he relapsed to the former habit through the use of "Birney's catarrh snuff," which I accidentally discovered in his possession when I took charge of the case in August, 1894, and subsequently found to contain about fifteen grains of cocaine to the ounce of powder. It took several weeks to get him into condition for operation.

In October active treatment was begun. Injections of liquor potassæ were administered by means of an asbestos-packed syringe with a curved platinum needle. The pain was not severe, and by the use of cotton swabs and a very dilute acetic-acid solution the mucous membrane around the growth was protected.

At the second operation I injected quite deeply, carrying the point of the needle well beneath the tumor from five points at its circumference, depositing a portion of a drop with each puncture. A small artery was eroded, and the mass suddenly puffed up, but there was no hæmorrhage. Inflammatory reaction was kept down by iced drinks, and only a bromide sedative was required. In three days the whole mass sloughed away, leaving a hole as large as a half cherry. This healed readily, and on two subsequent occasions small masses of proliferating granular or papillomatous tissue around the edges were in-

jected and destroyed. The papillomatous masses in the right cheek were curetted and thoroughly destroyed by stick potash, care being taken to avoid the orifice of Stenson's duct.

The improvement following the subsidence of painful deglutition was remarkable, the patient gaining more than forty pounds in a few months.

In April, 1896, I examined him carefully and found the following condition: There were some papillomatous masses over the right cheek, caused probably by the dental plate and teeth, which he had resumed wearing soon after the tumor had been destroyed. At the former location of the tumor there was a dense, firm cicatricial mass, about as large as a nickel, which drew the uvula well over to the right side. There was no return of the tumor, and the function of the soft palate was not materially interfered with. For more than a year he had been in excellent health and had been at his office regularly.

In March, 1896, he had noticed a condition of progressive dyspnoea. Examination of the thoracic viscera revealed dullness over the base of the left lung and a pronounced cardiac murmur, diagnosticated as mitral insufficiency. Subsequently, albumin, but no casts, was found in the urine by his family physician. From about May 1st he declined rapidly, all heart sounds becoming more faint and the dyspnoea increasing. There was considerable general anasarca. On June 1st he expired suddenly.

We were granted a necropsy. The dyspnoea was in part accounted for by a serous effusion in both pleural sacs, being more extensive on the right, but especially by degeneration and softening of the cardiac structures. The hypertrophied muscle of the left ventricle was so soft and friable that it was easily crushed between the thumb and finger. One segment of the mitral valve was completely tied down by adhesions. No atheromatous deposits were found. The kidneys showed indications of a subacute inflammatory condition, being somewhat larger than normal, with adherent capsules, and areas of fibroid contraction.

It may be interesting to add that in his youth he had had quite severe pulmonary hæmorrhages, and was for several years thought to have pulmonary tuberculosis. We found both apices adherent, and over the right was a depressed cicatrix with a firm fibrous nodule, about an inch and a half by half an inch in size. There were no indications that the tuberculous disease was again

in an active state, or that it had anything to do with the pleural effusion. The condition of the fauces was the same as previously noted. All the other organs were normal.

Prior to the operation a small piece of the growth was removed with scissors. This was sectioned and mounted, and the author is gratified to be able to quote the opinion of Dr. Jonathan Wright, of Brooklyn, as to the definite character of the tumor. "The surface epithelium is thickened, forming many layers with distinct papillæ formation. Here and there are some large cells with cloudy contents and oval nuclei. The connective tissue is scanty, as are the blood-vessels. It is loosely arranged, and here and there in it are nests of epithelial cells, all apparently entirely unconnected with the surface epithelium, and in close proximity to some dilated blood-vessels. In those nests are some of the large cells noted in the surface epithelium. From absence of much inflammatory tissue, from the few 'cancer nests,' and the absence of distinct caryocinetic figures, I should think it of slow growth and not very malignant, but distinctly an epithelioma."

The sequence of pathological conditions was probably as follows: The valvular defect, cause not known, encouraged cardiac hypertrophy. Malnutrition from prolonged throat disease caused degeneration of the hypertrophied heart muscle, and the valvular defect thus became a prominent factor in his decline. The renal disorder was probably a late complication.

The papillomatous growth, which covered an area in the cheek about half an inch in diameter, involving also the mucous membrane over the alveolar process where it was in contact with the cheek, suggests a very decided abnormal tendency toward proliferation of the epithelial cells of the mucous membrane. There were at the same time areas of excoriated membrane over the soft palate. Transplantation of proliferating cells is a possibility. This is speculative, since both conditions may have originated from irritation from the dental plate or from smoking, but we are warranted in calling attention to the use of caustics as the superior method of removing such growths as are here described. There is no doubt but that the surgeon's knife is occasionally a me-

dium of transplantation of cancer cells, and in view of this, and for other reasons, destructive chemical agents may often be used to great advantage.

Paper.

A CASE OF PERICHONDRITIS OF THE LARYNX FROM AN UNUSUAL CAUSE.

By H. S. BIRKETT, M. D.

IN the month of May last I was kindly asked by Dr. Lafleur to see a patient, Mr. H. S., in consultation with him, in reference to a difficulty of swallowing and pain in the throat.

Mr. H. S. had consulted Dr. Lafleur a week previously on account of a specific urethritis, which he had already been suffering from for the past three weeks. During this period he had taken large doses of sandalwood oil, which had been prescribed for him by a chemist.

At the time of consultation he was suffering from urethral discharge, sweating preceded by chill and fever, pain in the left knee, ankle, and right shoulder joints, and a soreness of the left side of the throat, especially when swallowing either liquid or solid food; at the same time the voice was decidedly hoarse.

A few days later the right knee joint became painful, the affected joints being swollen and tender. No redness of the skin covering the joints, and no elevation of bodily temperature during the intervals of the chill. While the joints were affected the urethral discharge ceased. Examination of the urine showed it to be dark and of a muddy color, cloudy, and having a heavy precipitate; strongly acid; specific gravity, 1.028, containing no sugar; urea, nine grammes to the litre and a gramme of albumin to the litre. Microscopic examination showed blood and pus cells and blood casts. The urethral discharge was found upon examination to contain large numbers of gonococci.

Examination of the Larynx.—The mucous membrane over the left crico-arytænoid joint was swollen and œdematous. The aryepiglottic fold on that side was not swollen. The true vocal cords were white in color; the movements of the left one, that of adduction and abduction, were decidedly slower than those of the right;

pressure over the affected joint outside was very painful; no grating felt on passive movement.

The voice was hoarse and more deeply pitched than normal.

The treatment consisted in the constant application of a Leiter's ice coil, which afforded the patient a great deal of relief.

In the course of a week the swelling of the left crico-arytænoid joint coincident with the decrease of the swelling of the other involved joints had entirely disappeared, the voice regained its normal tone, and the vocal cord lost its impaired movement.

The occurrence of an acute perichondritis during an attack of gonorrhœal rheumatism is, I believe, of sufficient rarity to warrant the placing of this case on record.

Discussion.

Dr. LELAND said: In view of the involvement of so many of the joints in the rest of the body by the rheumatic poison, shown by their redness and swelling, I should like to ask Dr. Birkett why it is not reasonable to suppose that the left crico-arytænoid joint was affected in a similar manner. It is not uncommon to find fixation of one side of the larynx (in my experience more often the left) in cases where no other history can be obtained than that of rheumatism. These cases are not very often seen when acute, but then a swelling may be present as well as in acute arthritis elsewhere. If this supposition is correct, Dr. Birkett is to be congratulated on having seen an acute affection of a laryngeal joint caused by gonorrhœal rheumatism.

Dr. BIRKETT said: The reason why I have called this a case of perichondritis rather than that of simple synovitis is because the synovial membrane being so intimately associated with the perichondrium, it is always involved in the same pathological process, and the disease perichondritis is the more generally recognized form of affection.

Paper.

SOME OF THE UNUSUAL MANIFESTATIONS OF SO-CALLED
"CATARRHAL LARYNGITIS."

By CLARENCE C. RICE, M.D.

SUCH a constant relation is nearly always found to exist between congestion of the larynx and catarrhal disturbances of the respiratory tract above, that when we find pathological lesions in the larynx, apparently independent of nasal or pharyngeal disease, we note the exceptional condition at once. Catarrhal laryngitis not dependent upon, or not secondary to, some primary changes in the nose and pharynx is rarely seen. Given a certain amount of nasal obstruction, congestion, and hypertrophy, we always expect to find, as a result, the same kind, but a lesser degree of catarrhal disturbance in the pharynx, and still less in the larynx and trachea. But there are exceptions to this very general rule. We know there are pathological conditions of the pharynx caused by cardiac, gastric, or hepatic diseases, which bear but slight relation to nasal disturbance. Rheumatic and gouty pharyngitis exist, unaccompanied by any nasal disorder. Disease commencing in the faucial tonsils may also produce a general pharyngitis, the nasal passages remaining comparatively healthy. But these conditions are not frequent, and the rule holds good that nasal, pharyngeal, and laryngeal disorders are almost always combined.

There are not many constitutional conditions which select the larynx alone as their point of attack. Laryngeal tuberculosis is nearly always secondary to pulmonary disease. The larynx is but one of the many parts attacked by syphilis. We are not interested here in the various forms of laryngeal paralysis, or of the new growths which are found in the larynx. I wish to call attention to certain local or general congestions of the larynx which are not secondary in any great sense to diseases of the nose or pharynx. While it is possible that we

must look for their causation in the patient's slight predisposition to catarrhal disease of the upper respiratory tract, we shall find, as a much greater cause of the disturbance, some error in the performance of the physiological functions of the muscular apparatus which produces the speaking and singing voice.

These various localized congestions should not be recognized under the name of catarrhal laryngitis, because this term should always be held to mean a general catarrhal disturbance from the nasal passages down.

We are, I say, in the habit of thinking and teaching that a laryngeal catarrh bears the closest sort of relation to nasal disorders. But the exceptions to this rule are found in that class of patients who use their voices in other ways than in ordinary conversation—singers, clergymen, public speakers, and actors. In people of these professions we find laryngeal disorders as indicated by congestion, swelling, and muscular relaxation, but the peculiarity is that the degree of disturbance is out of all proportion to the amount of nasal and pharyngeal trouble.

Before I mention the unusual conditions observed, allow me just a word in regard to the usual forms of laryngeal disturbance. In the most ordinary variety of nasal disorder caused by obstructions arising from the nasal septum, and producing catarrhal congestion and hypersecretion, we rarely find more than congestion of the larynx, confined, for the most part, to the sides and to the epiglottis, the vocal bands not being much affected. This slight congestion affects the speaking voice very little, but the untrained singer would be troubled with hoarseness. But it is a condition which does not prevent those who breathe properly and use their voices correctly from continuing with their work. No surer way of benefiting this simple laryngeal congestion can be found than by putting the nasal passages in good order.

We have a much more difficult task in curing that laryngeal disease which is secondary to atrophic rhinitis and a dry pharynx. We know how common it is to find extreme huskiness or total loss of voice in laryngitis

sicca. The congestion is so extreme and the thickening so great, it requires long treatment to restore the tissues to their normal condition.

The laryngeal congestion, therefore, which follows nasal obstruction, and the dry, parched, congested, thickened, laryngeal mucous surface which is secondary to an atrophic rhinitis, represent the two usual types of catarrhal laryngitis seen at all times in all people. The changes in the larynx may proceed to permanent tissue thickening, or even to ulceration.

In regard to the ætiology of the rarer forms of catarrhal changes in the larynx, I should say that aside from the predisposition to catarrhal trouble of the upper respiratory tract, which everybody is more or less influenced by, in the cases which I have observed the exciting cause has seemed nearly always to be related to an unusual use of the voice.

First, there is a troublesome type of cases, seen usually in men, and the three or four that I especially remember occurred in bass singers. There was no special nasal disturbance, but there was atrophy of the submucous structures of the middle and lower pharynx, without dryness. There was marked enlargement of the diameters of the middle pharynx, because the tonsils had disappeared and the pharyngeal pillars had shrunk wide apart. The same atrophic changes had taken place in the larynx. The epiglottis was exposed and large; the vocal bands were very long, and always inclined to congestion. There seems to be a special lack of muscular power, manifested by the internal muscles of the larynx, by the thyreo-arytænoids, and the transverse arytænoid muscles. In some of these cases there is evidently atrophy of the muscular tissues; and it is exceedingly difficult to keep people suffering from a general atrophy of the pharynx and larynx in good voice, so much is the proper relation of parts disturbed.

Perhaps there is no more troublesome local laryngeal disorder, whether it causes vocal disability in the singer or a tickling cough in the non-professional, than the permanently enlarged epiglottis, an epiglottis which is too high

and too wide, and which is always congested. In many of these cases congestion is confined to the epiglottis alone, and the nose and pharynx are in excellent condition. It is likely that the friction of the epiglottis against the base of the tongue and sides of the pharynx is a source of irritation, and that the increased size of the epiglottis also exposes it to unusual sources of congestion. The disagreeable symptoms attending this condition seem to be entirely due to the abnormal size of the epiglottis, since there are no other laryngeal lesions apparent. The irritability of the epiglottis produces reflex congestion of the entire larynx. Spasmodic closure of the vocal bands is common, and any extraordinary use of the voice causes a tickling and hoarseness which render singing and public speaking impossible unless the voice is very carefully produced. I do not remember to have seen this condition of enlargement of the epiglottis most frequently in singers, so that it does not seem to be produced by an overuse or bad method of singing or talking. Congenital factors may be at fault. Once enlarged and exposed, congestion easily takes place, and constant tissue-thickening goes on. I have seen irritative congestion of the epiglottis remaining in an obstinate way when the nose and pharynx were as nearly normal as possible. Enlargement of the lingual tonsil and disordered relation between it and the epiglottis must, of course, not be forgotten as a cause capable of producing enlargement of the epiglottis.

I only wish to mention, as we pass, the enlargement of the ventricular bands in the condition known as "choked voice." It is difficult to say whether this enlargement of ligamentous structure represents Nature's efforts to supply vibrating tissue in place of disabled true cords, or whether the enlargement of the "false cords" has been entirely produced by faulty muscular action, such as forcing the sides of the thyroid cartilages together by a too forcible adduction of the bands. In the cases observed, the vocal bands always show a great lack of tension and sustaining power. When a sound is produced the bands come together, but imme-

diately fall apart, as if from sheer muscular weakness, and their place is supplied by the approximation of the ventricular bands. I have only seen this condition in second-rate singers. Overforcing the voice may be put down as its cause. The prognosis in these cases is bad, because actual hypertrophy of the ventricular bands has oftentimes taken place, and they may be seen as shelves, standing well into the calibre of the glottis. It will require the most careful voice production, with painstaking attention to breathing, to give the true cords proper exercise, and to discontinue the use of the muscles which force the false bands inward. I have seen another condition which may not be similar in causation, but which appears somewhat like the "choked voice." This was in a soprano, who breathes and sings in a wretched manner, but who has a strong, pleasing voice. The entire sides of the larynx above the vocal bands stood inward so far that they almost obliterated the width of the true cords. In phonation, the width of the cords seen was hardly more than a line. This patient gets out of voice constantly with every attempt at prolonged singing. The tremendous overuse of the laryngeal muscles not only squeezes inward the sides of the larynx, but keeps the bands congested.

I have seen another interesting condition in two patients, both singers, one of whom is a tenor of a good deal of reputation, who sings all the time, and who is always in good voice. This disturbance might be termed a "congenital vascularity" of the vocal bands. I use the word "congenital" because I have known one of these patients for fifteen years, and both of his vocal bands were just as red when I first saw him as they are now. The congestion in his case does not in any way interfere with the production of tone. This patient had at first a moderate amount of nasal obstruction which was long ago attended to, and also pharyngeal catarrh. I do not think I have ever seen any variation in the color of his vocal bands. He himself does not know but that his cords are white, as I have thought it would discourage him if he knew that his vocal apparatus was different

from that of other singers. It is possible, of course, that the enlargement of the blood-vessels of his vocal cords took place before I knew him, as the result of catarrhal changes, but I should rather be inclined to believe that the vascularity, if not congenital, appeared during the first years of his attempting to use his voice in singing. He is a very faithful German, an earnest worker, and he went through a good many mental and muscular struggles in the first years of his professional work. I have seen his larynx recently, and observed that the remaining portions of it were free from congestion. I wonder if any member of this association treated him during this winter. He caught cold on his trip, and somebody treated his larynx, endeavoring, I believe, to remove the congestion of the vocal bands. The second case of this kind was in a soprano, not specially accomplished vocally. I have seen her from time to time for ten years, and the vocal bands have always been congested. She has very little general catarrh, and her voice, what there is of it, always remains the same. In these cases congestion seems to be the only pathological change, as we could not expect good voice if tissue-thickening or muscular weakness were present. We would not suppose it possible that either of these people could sing at all if they did not use their voices in the most perfect physiological manner. In these cases no blood-vessels can be detected, but the bands are uniformly and solidly red.

Of course the ability to produce a good singing voice under these conditions is not so remarkable as to be able to sing in a church choir acceptably with a paralyzed left vocal cord. I have seen such a case in a contralto.

Another interesting but rather slight disturbance in the larynx I have seen, perhaps always in persons using their voices in singing or public speaking, is a localized congestion of some part of the larynx, not catarrhal, reflected downward from above, but congested mucous and underlying muscular tissue, evidently caused by the overuse of some particular group of muscles. I have observed this congestion most frequently involving the

arytænoid cartilages, the remainder of the larynx being normal. This condition of the arytænoids does not resemble the bluish, œdematous appearance seen in tuberculosis, but is a healthy reddish congestion, evidently caused by overaction of the transverse arytænoideus muscles which force together too strongly one cartilage against the other. I have seen catarrhal inflammations involving only the arytænoid cartilages, which was an extension of a similar process from the posterior wall of the lower pharynx, in cases of pharyngitis sicca. But the difference in the two conditions was plainly observable; in one case the mucous surfaces were dry, in the other moist; in one the lower pharynx was affected, in the other normal. It is interesting to note how little benefit can be obtained from astringent sprays in removing the congestion of the arytænoids so long as the patient is singing, and how quickly it disappears when the patient is not using the voice, or has been taught to avoid the production of any impulse in the larynx in making tone.

The condition known as "chorditis tuberosa," or "singer's nodes," is also a local affection of the vocal bands, not necessarily secondary to any general catarrh, always produced by an overuse of the voice. I have seen this condition produced by a three-days' use of the voice. On Monday, for example, the vocal bands and the entire larynx were perfectly normal, and on Thursday the cords were slightly injected, and the pearly nodules had commenced to make their appearance. This was, however, in a patient who had had the same difficulty before. She was so well acquainted with the condition, and knew how to avoid it so well, that, although obliged to sing every evening, she used her voice so carefully that without any special local treatment this epithelial thickening was almost entirely gone in two days. These nodular enlargements, so soon as the voice is produced without muscular contraction about the larynx, show a tendency to be drawn upward from the free edges of the cords to the upper surfaces. So much has been read before this asso-

ciation in regard to this condition that we need not speak of it longer, but I am perfectly convinced that it is a condition peculiar to singers, and that local applications are useless so long as the voice is being badly used; but that it disappears rapidly by proper diaphragmatic breathing, and by placing the expiratory impulse necessary to tone production in the forward part of the face and mouth, or well up behind the nose and away from the larynx.

I need not speak in this paper of the rather indefinite condition of the vocal apparatus known as "voice fatigue," characterized by the disability of some one or more of the intrinsic muscles. These cases are common enough. Occasionally we see a patient whose muscular action has become so disordered that apparently an abnormal compensatory muscular action is attempted by the larynx to supply the loss of the feeble muscles. Such patients have a constant hoarseness in their speaking voice, but are able to produce certain low notes in the scale fairly well. The larynx is examined to ascertain the cause of the hoarseness in speaking, and no lesion is discovered, but, when phonation is attempted in any of the vowels, the epiglottis and larynx, instead of being raised, dip downward, and the whole larynx is pulled backward. The antero-posterior diameter of the glottic cavity is shortened, and consequently vocal tension is impossible and the tone is husky. Whether this is a misapplied attempt toward compensatory action for fatigued muscles it is difficult to say.

There may be other peculiar localized disturbances of the larynx which have not been mentioned. I recall no others at present. In saying that most of these are peculiar to singers and speakers, we define their ætiology—overuse of the voice, and usually an improper use of it.

Some of the pathological conditions described here are in no sense manifestations of "catarrhal laryngitis," for this term should only be used to designate those inflammations of the laryngeal mucous membrane which can be easily seen to be secondary to and dependent upon

similar changes which have taken place in the nose and pharynx.

The facts which I have endeavored to state in this short paper are these:

First, that there are two ordinary types of catarrhal laryngitis, the one following and dependent upon nasal obstruction, or the condition known as "hypertrophic rhinitis," and the other a laryngitis sicca, which is an extension downward of an atrophic rhinitis and a dry pharyngitis; and that in these two processes the same pathological condition exists, from the commencement of the nose to the bronchial tubes.

Second, that we occasionally see laryngeal disturbances which from their appearance might belong to one of these two ordinary types, but the significant point is that they are present when the nose and pharynx are in excellent condition; or, still again, that the laryngeal disorder, although in kind like that of the nose, is in degree much greater, which is the reverse of the usual condition.

Third, that there are several disturbances of the larynx, commonly classified under the general term of "catarrhal laryngitis," which seem to bear little or no relation to a previously existing nasal or pharyngeal disease, and, as they are observed commonly in singers or public speakers, they are undoubtedly caused by an overuse of the voice and an improper method of breathing and tone production, since they are greatly improved by proper instruction in breathing and singing.

I wish to emphasize the fact that these laryngeal disturbances can not be much benefited by local medication to the larynx so long as the vocal apparatus is improperly used.

Fourth, I have mentioned the following varieties of unusual laryngeal disturbance:

(a) A general tissue atrophy of the soft parts of the pharynx and larynx, which produces a disordered relation and a general muscular weakness of the larynx.

(b) The permanently enlarged and usually congested epiglottis, the larynx, as a whole, being nearly normal.

(c) The "choked voice," caused by actual enlargement of the ventricular bands (the "false vocal cords").

(d) A permanent and perhaps congenital vascularity of the vocal bands.

(e) A localized congestion of some portion of the larynx, probably indicating an overuse of some one of the muscular groups—the transverse arytenoids being the most commonly affected.

(f) The condition known as "singer's nodes," produced by an incorrect method of using the voice, and cured by breathing and singing in a true physiological manner. And,

(g) We see in singers the many appearances of muscular fatigue which are associated with hoarseness and loss of voice; and frequently we observe strange and strenuous efforts on the part of the larynx to supply extraordinary compensatory muscular action for the loss of the disabled muscles.

Fifth, these various laryngeal disorders should be recognized by proper names, and their ætiology appreciated, and they should not be confused with the ordinary phenomena of a simple catarrhal laryngitis. And

Sixth, little dependence can be placed upon local medication of the larynx in these difficulties, unless particular attention is being paid to instruction in proper methods of breathing and voice production.

Discussion.

Dr. M. R. BROWN said: The case of the singer being in constant voice with a red condition of the vocal cords interested me, as I had a similar one under observation last winter. The man was suffering from an acute attack of inflammation of the upper air-passages with some hoarseness. The hyperæmia of the vocal cords was unusually pronounced. On calling his attention to this he said the cords were normally red. I applied the usual remedies for the relief of the coryza, pharyngitis, and laryngitis, and ordered rest for the vocal organs. In four or five days the acute symptoms had subsided and the treatment was discontinued, although the vocal cords continued of a red color. I examined the larynx again in two weeks and found it continued in the same condi-

tion of hyperæmia. Four weeks later it had not changed. During this time he was in excellent voice. The gentleman informed me he had been aware of his red cords for some years past.

Dr. H. L. SWAIN said: We must all have seen one or more such cases of chronically inflamed larynx. I remember seeing one where the cords were persistently red while the patient was in perfect voice. The case was in Germany and I could not believe it was possible for him to sing in that condition. I heard him in an oratorio that same evening, however, and I never heard such singing before. It was a most perfect basso voice. The condition was one of intense redness and an appearance of thickening, which was constantly present to my certain knowledge for at least a year, during which time I examined him on several occasions.

Dr. A. W. DE ROALDES said: I should like to corroborate what Dr. Swain has said. We have first to consider the quality of the voice, and it is quite common to see basso and barytone singers with red vocal cords. I recollect one of the most famous barytones, who had sung all over Europe, whom I was called to see in New Orleans some time since. I found the vocal cords very red and was about to advise a leave of absence for several weeks. I spoke to the manager about it, as he relied very much upon this artist, and I spoke to him the following day. I stated that the patient should not attempt to sing with such cords, when he told me that his cords were always red. This patient went through the whole season successfully. Another point we should bear in mind is the constitution of the patient. You may very often cure the coryza but the congestion will remain. Tenors or sopranos can not do so well in these cases as bassos. Rheumatic and gouty affections also are important. Those artists usually rest during the summer, and almost invariably go to some watering place. Upon their return, in the fall, you will find the larynx clearer, but never completely clear.

Dr. W. K. SIMPSON said: I sometimes doubt whether it was ever intended for the human larynx to be used for perpetual singing, as there are so few singers who do not experience decided trouble. I sometimes think that singing is not the natural use of the voice. It is an acquired use. The other organs of the body would suffer in the same way from excessive use, taking the eye for example. I think the exception to this rule would be the remarkable instances. When we think of the num-

ber of thousands of singers and of the few who exceptionally retain their voices, we can not but wonder if it is not an unnatural use. The singing voice that could be retained indefinitely would be almost an abnormal production. The retention of the singing voice requires so much art, study, cultivation, and general condition of good health, that we must force ourselves to look upon the larynx as an organ which can not be overused with impunity.

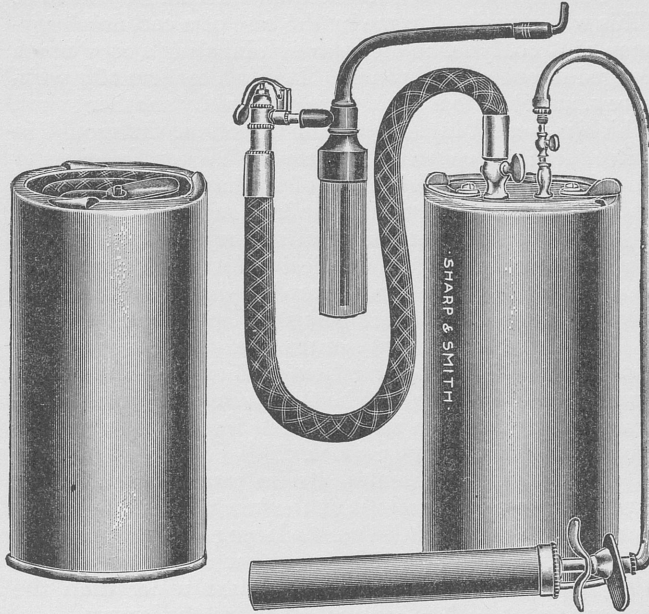
Dr. NICHOLS said: The female voice partakes of this condition, and especially the alto. For six or seven years I have had under observation a variety-hall singer and when I first saw her I thought she had acute laryngitis, but at the end of several weeks the vocal cords were still very red, and after watching her for some time no change took place. I came to the conclusion that this was normal. She would come to see me when the cords were very red and would tell me that she was in perfect voice the previous night. I think the apparent congestion is possibly due to the muscular overexertion which she is compelled to resort to.

Dr. RICE said: There is a great difference between temporary congestions brought on by many causes and the permanent redness I have referred to. The doctor says his patient was a barytone. One of my patients was a high tenor and the other a soprano. I think these affections are sometimes congenital and sometimes are caused by physiological overaction. I have seen cases of congestion of the vocal cords in gouty and rheumatic patients, but I have never noticed any marked difference in the color of the two cords.

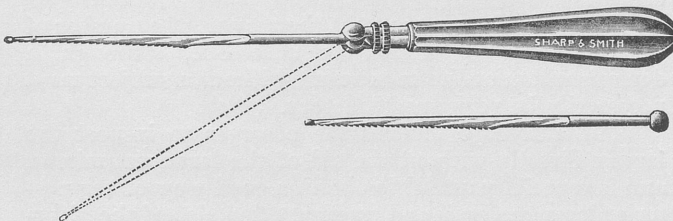
Presentation of Instruments.

Dr. E. FLETCHER INGALS presented a compressed-air apparatus consisting of a cylinder eight inches long by three inches and a half in diameter, strong enough to stand a hundred pounds pressure; one end of this is movable, so that when not in use the air pump and all the tubes and spray apparatus can be placed inside. The whole is inclosed in a leather case, which is made a little larger so as to provide room for a laryngoscope and medicaments. One object of this was to furnish a small apparatus that could be conveniently carried to a patient's house or to the theatre. Another object was to furnish our patients with an in-

strument whereby they could get a high pressure for making applications to the larynx, where it is often impossible to get a spray with an ordinary atomizer. With this apparatus it is easy to get forty to fifty pounds pres-



sure, and it will hold sufficient air to treat three or four cases. This has a valve for the main air-conducting tube to prevent leaking, and where the tank is connected with the pump there is a bicycle valve and also an ordinary stopcock for the same purpose. In closing the movable head, when the clips are fastened by the fingers alone there is a little leakage, but this can be avoided by tapping them with a knife or bit of wood.



Dr. INGALS also presented a saw with an adjustable handle, which could be placed at any angle. The saw

has two blades, one cutting forward the other backward. The instrument is so made that it can be boiled and kept clean. Both instruments are made by Sharp & Smith, of Chicago.

Dr. CARL SEILER presented an instrument and said: This was suggested to me by the case of a certain clergyman of Brooklyn who died through inhaling a cork which lodged in one of his bronchi. It is in the form of a corkscrew, attached to a spiral wire covered by another spiral, which is wound in the opposite direction. It should be introduced by covering the screw. When *in situ*, by rotating, and by a slight twist of the handle, it will imbed itself into the tissue if it is soft enough. I simply devised this instrument for nasal surgery. I have several made longer, which are applicable for nasal work. An instrument like this can be readily introduced without the slightest difficulty, it being perfectly flexible.

Dr. JOHN O. ROE presented the set of instruments used by him for the correction of deviation of the septum. Since the time that he first presented these instruments they had been modified and improved so that he now regarded them as perfect.

Dr. Roe also presented an instrument for dilating contractions and strictures of the trachea, having a long curve similar to that of Grant's laryngeal guard forceps, but having two double joints, so that the lower joint of the instrument will dilate very much wider than the upper joint, which is accommodated to the larynx.

Dr. THOMAS HUBBARD presented a modification of Bosworth's nasal snare. The rider to which the wires are fastened is so made that it divides, and one wire (or both) can be drawn home at a time, thus giving the true *écraseur* or sawlike action. The strain upon the wire is much less than where both wires are pulled home together. The wires are made fast to the rider by eccentric levers so set that the grip tightens as the power is increased.

Dr. J. W. GLEITSMANN, at the request of a number of members, showed Kirstein's autoscope, although a demonstration of the instrument without a subject must necessarily be very unsatisfactory.

The autoscope enables the observer to inspect the larynx directly without the aid of the laryngeal mirror, and is especially useful to obtain a good view of the posterior laryngeal wall and trachea, often also of the bifurcation, which parts are often difficult to see by the ordinary method. The vocal cord and the interior of the

larynx can be plainly and distinctly seen, when sufficient pressure is exerted with the instrument to raise the epiglottis.

Dr. M. J. ASCH said: I should like to say that the work I have seen done with this instrument was marvelous, the view of the larynx was perfect. The patient shown by Dr. Gleitsmann had been trained so that the instrument worked very easily. A special advantage is the excellent view of the posterior walls of the larynx, and the diagnosis and treatment of this region can be made with wonderful effect. Operations can also be done with its aid, which adds to its value.

Dr. ROE said: A short time ago I had the pleasure of seeing Dr. Gleitsmann use this instrument, and the clearness and distinctness with which every portion of the larynx could be seen, and even the trachea as far as the bifurcation, were perfectly marvelous. The larynx could be seen as clearly and distinctly as if it were held up directly before your eyes and brilliantly illuminated. It was the most perfect illumination and the clearest demonstration of the human larynx in the living subject that I had ever seen.

Dr. FRENCH, commenting upon the instrument shown by Dr. Gleitsmann, said: I was present when Dr. Gleitsmann demonstrated this instrument before the Laryngological Section of the New York Academy of Medicine and was much impressed with the remarkable exposition of the interior of the larynx and trachea which the instrument is capable of making. As the pressure on the base of the tongue must be very great I can not believe that it will be possible to use it in many cases. I should be glad if Dr. Gleitsmann would give us the results of his experience in regard to the proportion of patients on whom he has been able to use it.

Dr. A. W. WATSON, commenting on the instrument exhibited by Dr. Gleitsmann, said: I can speak of this instrument from the standpoint of the patient, as I have had it used in my own throat. I think the number of patients on whom it can be used is very small unless they have been previously trained. The pressure at the base of the tongue is very painful and causes an uncontrollable tendency to gag. The point of pressure was felt for an hour afterward.

Dr. S. SOLIS-COHEN said: Like Dr. Watson I can speak of this instrument from the standpoint of the patient, as my brother experimented with it on me. The sensation was not a very pleasant one, and before apply-

ing it to the average patient I should wish to thoroughly cocaine the parts or to be sure that the patient's stomach was empty and that he had considerable self-control. However, the view that one obtains is wonderfully clear; and Dr. J. Solis-Cohen certainly manages to use the instrument readily without cocaine the first time he sees the patient. This I take it is due to his exceptional skill in manipulation. After getting this instrument my brother hunted up an old tongue depressor of his own, and found that by getting into the proper position he could obtain nearly as good a view, so that he need not have waited for this instrument if he had had the wit to look obliquely downward instead of directly forward. This instrument, however, is concave, while Dr. Solis-Cohen's was convex. The concavity is quite important. The principal point, however, is to have the instrument so curved that it pulls the tongue forward. The name is peculiarly inappropriate; one does not view his own larynx. Orthoscope would be better, as our ordinary method of examination might be termed retrolaryngoscopy; and this is the opposite.

Dr. INGALS, continuing the discussion on Dr. Gleitsmann's instrument, said: I can not speak from the same standpoint as the other gentlemen. Would it not be possible that a little more curve in the instrument would enable us to operate under a general anæsthetic?

Dr. J. H. HARTMAN inquired if Dr. Gleitsmann had ever used the instrument for operative purposes. If so, with what result.

Dr. C. C. RICE asked if the instrument might not be of service in difficult cases where a definite diagnosis with the ordinary mirror was not possible. It might be that combined with a general anæsthetic it would be of service.

The PRESIDENT said it was difficult to understand how a man should give such a name to an instrument as that given to the one possessed by Dr. Gleitsmann. The name was in no sense indicative of its character or employment.

Dr. GLEITSMANN, in closing the discussion on Kirstein's autoscope, said that the instrument would never supersede the laryngeal mirror or take its place. Although we could overlook the posterior laryngeal wall and see the trachea better with the autoscope, we saw in the majority of cases the anterior commissure less satisfactorily. Besides, there was a fair proportion of patients who did not bear the insertion of the instrument very well,

some who did not tolerate it at all, also others in whom the introduction and inspection were impossible for anatomical reasons. A subject as good as he had had in New York, when he had demonstrated the instrument in different medical societies, was not found frequently. He admitted it was not easily borne, as he had found by having it used on himself, but it had been of good service to him in some cases where he needed a good view of the larynx. Up to the present time he had not used it in operations. An instrument with a curve would hardly answer the purpose, as the inspection had to be made in a straight line and pressure on the teeth had to be avoided. Dr. Solis-Cohen was correct in saying that the name was a misnomer. He had had the same idea himself and had mentioned it to Dr. Kirstein, who had stated, "It is my child, and a father can name his child what he pleases."

A Manometer.—Dr. WRIGHT demonstrated an instrument for determining the amount of nasal obstruction. He stated that by watching the column in the glass tube, one would see it rise, and by that means could determine the amount of obstruction as registered upon the tube. There were several sources of error. The rapid expiration did not interfere with the fluid. One must be sure that the tubes were clear, and a little experience made this method one of value to the general practitioner who was not able to make a proper diagnosis.

Paper.

ÆTIOLOGY OF DEVIATIONS, SPURS, AND RIDGES OF THE
NASAL SÆPTUM.

By JOHN O. ROE, M. D.

It is with considerable hesitation that I present for your consideration some thoughts upon the ætiology of deviations, spurs, and ridges of the nasal sæptum, especially since the subject has been so ably, clearly, and fully discussed by different members of this association on several different occasions. After considerable study of the subject, however, I have concluded that some points have been overlooked which it is necessary to consider in order to explain why deviations of the

sæptum are so frequent in their occurrence, and often so exceedingly peculiar as regards their form, extent, and location.

Deflections of the nasal sæptum are ascribed to a variety of different causes. These may be divided into predisposing and exciting causes.

I. PREDISPOSING CAUSES.—The two main predisposing causes are diathesis and racial characteristics.

1. *Diathesis*.—That diathesis is an important predisposing cause of deviations of the sæptum may almost be said to be self-evident, since it is a fact of clinical observation, verified by nearly all observers, that deflections of the nasal sæptum are exceedingly common among persons suffering from the strumous, syphilitic, tubercular, or rhachitic diathesis. Loewy * and Loewenberg † have emphasized the influence of rickets as a predisposing cause, perhaps laying more stress upon this factor than any other authors; and Harrison Allen ‡ calls attention to the influence of cretinism in the production of deformities of the nasal chambers.

2. *Racial Characteristics*.—The part that racial characteristics play in the production of deviated sæpta is an exceedingly interesting topic of study. All writers on this subject are unanimous in showing that deviations of the sæptum are vastly more frequent among the civilized than among the savage races. For instance, among the Europeans and Americans the percentage varies from sixty to eighty per cent., while among the Mongolians, the Africans, and the Polynesians the deviation is found in but about twenty per cent. The increase in frequency of deviation of the sæptum among the civilized, and particularly among the Europeans and Americans, is ascribed to two causes: First, to the increase in the cranial development and the enlargement of the facial angle; and, second, to the admixture of the different races.

* *Berliner klinische Wochenschrift*, 1886, No. 47.

† *Zeitschrift für Ohrenheilkunde*, Wiesbaden, 1883, Bd. xiii, S. 11.

‡ *New York Medical Journal*, 1895, vol. lxi, p. 139.

Ecker and Lissauer * have demonstrated that under the influence of an increased development of the cranial mass the schematic line formed by the cranial vertebræ has a tendency to curve in proportion as we advance in the evolutionary transformation. The sæptum, accordingly, describes a movement of rotation, from above downward, from backward forward, around the body of the sphenoid taken as a centre.

Thus it will readily be seen that as this process of rotation takes place, the angle formed between the frontal, the superior maxillary, and the sphenoid bones for the accommodation of the sæptum becomes proportionately greater, and as the posterior portion of this angle widens, the anterior portion becomes correspondingly narrowed, which gives less room for the sæptum, particularly the anterior portion. This would account for the seeming redundancy of the sæptum in many cases, there being apparently insufficient room for its accommodation, requiring it to become more or less incurvated or wrinkled, especially the cartilaginous portion.

These studies have been further pursued by Potiquet,† whose researches were conducted on four hundred skulls in the museum in Paris, from which he shows that the nasal sæptum is more prone to lateral curvature as the angle of the face is more inflected in its antero-posterior direction, and that this angle is more and more inflected in an ascending series as we rise from the anthropoid to the European male.

The cause of the rarity of deflections of the sæptum among the less civilized races is believed to be due to the purity of these races. Among the purer races the features of the people are so much alike that it is with the utmost difficulty that a skilled physiognomist is enabled to distinguish between individuals without a close acquaintance with them. And thus we find that among the Mongolians, the Malays, the Arabs, the Afri-

* *Annales des malades de l'oreille et du larynx*, 1892, tome xviii, p. 782.

† *Étude critique sur l'étiologie des déviations de la cloison nasale. Méd. moderne*, Paris, 1892, tome iii, p. 153.

cans, the Polynesians, and the American Indians the shape of the sæptum and the interior of the nose vary as little as does the external appearance of the nose.

Further studies in this direction show that an increase in the frequency of deviations of the sæptum corresponds very closely with the degree of admixture of the different races. This admixture in the more civilized countries, occurring largely as the result of conquest and of immigration, has been taking place from the earliest times, until modern Europe and America of to-day represent this admixture of the races in the highest degree.

The evolutionary changes that have taken place by this admixture are also readily seen in heterogeneity of the features of our people, as will be observed from the fact that no two persons will be found in whom all the features very closely resemble one another. Therefore, as Potiquet observes, "it would not be extravagant to say that a man has only exceptionally the sæptum which belongs to him."

Martin * observes that these anomalies all seem to be more clearly explained by the blending of different racial types than by evolutionary or devolutionary changes from a prognathous to an orthognathous type.

Delavan † in his most instructive article on the *Ætiology of Deflections of the Nasal Sæptum*, also emphasizes the greater prevalence of deviated sæpta among the civilized than among savage races, and also points out the fact that the aquiline type of nose, as illustrated in the Slav, the Hebrew, and the ancient Roman, ‡ is particularly apt to be associated with deflections. A nota-

* *Journal of the American Medical Association*, 1894, vol. xxiii, p. 491.

† *Transactions of the American Laryngological Association*, 1888 vol. ix, p. 202.

‡ In the anthropological collection of the Peabody Museum, at Cambridge, Mass., is a cabinet containing eighteen well-preserved specimens of skulls taken from ancient Roman tombs. Delavan found that among these there was hardly a single instance in which the sæptum was straight, while in several of them the degree of deflection was excessive, and far beyond that usually seen.—*Loc. cit.*, p. 205.

ble exception to this observation is the fact that the North American Indian, while possessing an aquiline nose, rarely has deflection of the sæptum. This is to be explained by the fact that the Indian belongs to a primitive and pure race, and also by their higher physical development on account of their outdoor life, and, as has been pointed out by Catlin,* by the habit among the Indian mothers of closing the mouths of their children and compelling them to breathe entirely through their noses from their earliest infancy, which conduces to a proper development of the nose.

II. EXCITING CAUSES.—The exciting causes of sæptal deflection may be either internal or external.

1. As internal exciting causes we have (*a*) defective development, (*b*) diseases of the sæptum, and (*c*) diseases of other portions of the nose.

(*a*) *Defective Development*.—In studying deflections of the osseous and cartilaginous sæptum, it is important to call attention to some points in the anatomy of the sæptum. It will be remembered that the nasal sæptum is composed practically of two bones, the perpendicular plate of the ethmoid and the vomer; and one cartilage, the triangular cartilage of the nose. The perpendicular plate of the ethmoid bone is a thin flattened lamella, which descends from the under surface of the cribriform plate, or the horizontal portion of the ethmoid bone, forming part of the anterior fossa of the base of the skull. The lower border of the posterior half articulates with the vomer. The vomer is a single bone situated vertically at the back part of the nasal fossæ. At an early period it consists of two laminæ separated by a very considerable interval, and inclosing between them a plate of cartilage which is prolonged forward to form the remainder or cartilaginous portion of the sæptum. Ossification commences in the vomer at about the same period as in the vertebræ (about the sixth or eighth week of foetal life), but is not complete until after puberty; and the perpen-

* *The Breath of Life*, Reprint, New York, 1872, p. 16.

dicular plate does not begin to ossify until about the first year after birth. The coalescence of the laminae takes place from behind forward, beginning about the third year. The cartilage of the sæptum, extending forward from between the two plates of the vomer, is somewhat triangular in form, thicker at its margins than at its centre, and completes the separation between the nasal fossæ in front. Bearing in mind this fact that the vomer is composed of two parallel laminae which do not fully coalesce until after puberty—and in some instances do not coalesce at all *—we can most readily see the effect that would be occasioned by the slightest imperfect development of either of these plates. Hypernutrition of one lamina would cause the other lamina to be pushed out of its normal line of growth; and, conversely, any lack of full development of one lamina would occasion corresponding deviation. Any such deflection in the vomer would naturally be accentuated in the cartilage of the sæptum. The probability of this view that the deflections result from defective development of the plates of the vomer is increased when we take into account the fact that scarcely if ever do we find two bones with precisely the same degree of development.

Morell Mackenzie † evidently alludes to this fact when he says: "It is not impossible that the deflection may result from the fact that ossification of the sæptum proceeds from centres situated in two different bones, and that these deposits of ossific matter do not subsequently meet in the same plane."

The fact that ossification begins in the posterior

* In the *Philadelphia Medical News* for January, 1882, Lefferts described a case of double sæptum in a man aged twenty-five. The upper half of the posterior edge of the partition was divided in the vertical direction into two distinct portions, which were separated wide enough to admit the end of a lead pencil between them. The space thus inclosed was triangular in shape, the widest part being above, and the mucous membrane covering it had a natural appearance. Baumgarten, of Budapest, describes a case of a double nose with two cartilaginous sæpta and three nares.—*Rev. de lar., d'otol., etc.*, 1894, tome xiv, p. 10.

† *Diseases of the Throat and Nose*, 1884, vol. ii, p. 434.

end of the sæptum and that coalescence takes place from behind forward, explains why that end is rarely observed to be markedly deflected. It is the middle and anterior portions that most commonly become deviated as a result of the abnormal conditions that are so frequently found in children after the third or fourth year. The unequal development of the plates of the vomer and the resulting deflection of the sæptum produced by these abnormal conditions become accentuated as the development of the child takes place. Welcker * has not observed deflections of the sæptum before the fourth year, while Zuckerkandl † states that he has not observed them in children under seven years of age. Anton, however, has shown that these deviations may be congenital by the examination of fifty-six cadavers of newborn infants, in which he found deviations in nine cases (equal to sixteen per cent.).

The peculiar forms which deflections of the sæptum may assume can readily be explained in the light of the fact that the different plates develop unequally. Unequal development of the separate plates may take place in a vertical direction or in a horizontal direction. Thus, if we have a vertical overgrowth of the lamina on one side or a defective growth on the other, we may have simple deflection of the sæptum toward the side of greater development. Again, if we have an overgrowth in one plate in an anterior posterior direction, and of the other plate in a vertical direction, we may have the peculiar conformation of the sæptum called the sigmoid deflection, which naturally suggests the idea of redundancy of sæptal growth, as was first observed by Morgagni, ‡ Chassaignac # has also advocated this view.

Ingals || has emphasized the importance of local mal-

* *Die Asymmetrie der Nase und des Nasen-Skelets*, Stuttgart, 1882.

† *Anatomie der Nasenhöhle*, Bd. i, S. 102, zweite Auflage, 1893.

‡ *De sed. et caus. morb.*, Lugd. Batav., 1767, epist. xiv, art. 16, vol. i, p. 207.

Bulletin de la Société de chirurgie, 1851-'52, tome ii, p. 253.

|| *Transactions of the American Laryngological Association*, 1882, vol. iv, p. 61.

nutrition as an ætiological factor in sæptal deflection, but, reversing the sequence of cause and effect, maintains that the "deflection of the sæptum 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." Others, among whom we may mention Delavan,* J. N. Mackenzie,† Sedziak,‡ and Rosenthal,# have, in a general way, considered defective development as an important factor in the production of sæptal deflection.

(b) *Diseases of the Sæptum.*—Hypernutrition of either side in excess of the other may readily be produced by diseases of the sæptum itself. An abnormal condition of the nasal sæptum, which may act as the exciting cause of deviation, is chronic disease of the tissues covering the sæptum, usually associated with more or less disease of other parts of the nasal passages. A condition of hypernutrition of the sæptum may be caused by the engorgement of the cavernous tissues which cover the lower posterior portion of the sæptum as well as the turbinated bodies. This cavernous tissue, as is well known, is so sensitive to irritation as to become readily engorged by any external or internal irritant. Therefore, when this tissue is subjected to frequent irritation, diseased action sooner or later takes place, resulting in chronic distention of the vessels. This hypernutrition tends to an increased growth of the structures, and, as Greville Macdonald || observes, results in a tendency to a vertical as well as a horizontal overgrowth. As, vertically, the sæptum lies between fixed limits, any increase in that direction must result in its being bent to one side or the other.

Supernutrition and a diseased condition of the sæp-

* *Op. cit.*, p. 207.

† *Transactions of the American Laryngological Association*, 1887, vol. ix, p. 211.

‡ *Journal of Laryngology and Rhinology*, 1891, vol. v, p. 94.

Thèse de Paris, 1888.

|| *Diseases of the Nose*, London, 1892, p. 195.

tum may also result in spurs and ridges along the sæptum. These spurs and ridges are usually found located along the articular surfaces of the sæptum; that is, (1) along the line of junction of the vomer with the superior maxilla, and (2) along the line of junction of the anterior border of the vomer with the triangular cartilage of the sæptum and the lower posterior part of the perpendicular plate of the ethmoid, and (3) along the line of junction of the anterior border of the ethmoid with the triangular cartilage. The exostoses may be unilateral or bilateral. The ridges along the junctions of the vomer with the triangular cartilage and with the superior maxilla are more often bilateral than the ridges elsewhere. When occurring upon one side of the sæptum alone, they are frequently looked upon as constituting a deviation of the sæptum, but they are by no means a condition of deflection. Inflammatory states may not only be excited by a hypernutrition of the part, but may also result from inflammation set up by reason of external influences producing a condition which may be looked upon as an arthritis. These excrescences may indeed be the direct cause of the deflection of the sæptum, by reason of the pressure which the turbinated bodies may exert upon them, forcing them and the sæptum over to the opposite side. This condition, however, is not common; for these outgrowths and ridges are usually found upon the projecting or prominent portion of the angle of deflection, and may therefore be looked upon as the result of the condition that has been the primary cause of the deviation.

(c) *Diseases of Other Portions of the Nose.*—Malformation of the superior maxilla and a very small and highly arched hard palate have so frequently been observed to be associated with deflection of the sæptum as to make it necessary to regard them as an exciting cause. This view was first suggested by Trendelenburg,* but especial attention was directed to it by Jar-

* Cited by Schaus, *Archiv für klin. Chirurgie*, Bd. xxxv, Heft 1, 1887.

vis,* who says that of a number of instances of highly arched palate, in every case deflection of the sæptum was found. He also states that this condition was hereditary in a number of cases in which he had traced it through several generations.

Welcker † has pointed out that a deflected sæptum is frequently associated with more or less disproportionate development of the whole face. The orbits may lie on different planes, resulting, as a matter of course, in various ocular troubles, and the superior maxilla and alveolar processes may be developed unequally, which may possibly have resulted, as Bosworth ‡ suggests, from scoliosis of the whole face.

In nearly all cases of deviation of the sæptum we find the turbinated body on the concave side of the sæptum very greatly hypertrophied, whereas the turbinated body on the convex side of the sæptum may be comparatively small, or at least not in a condition of hypertrophy. An interesting question has arisen in connection with this fact as to which is the cause and which is the effect. Baumgarten # and some others maintain that the hypertrophy of the turbinated body has been the exciting cause of the deviation, forcing the sæptum over to the opposite side, whereas others believe that the hypertrophied turbinated body is the result of the sæptum being deflected from the median line. This latter view is, to my mind, the correct one, for the reason that we usually find the turbinated body on the concave side of the sæptum sufficiently hypertrophied to fill the space, while not hypertrophied enough to press against the sæptum. On the convex side, however, we find the sæptum pressing closely upon the turbinated body. If the deflection of the sæptum had been the result of the pressure, the pressure found upon the convex side would have been sufficient to force the sæptum into the median

* *Medical Record*, vol. xxvii, p. 284.

† *Loc. cit.*

‡ *Diseases of the Nose and Throat*, 1889, vol. i, p. 288.

Ueber die Ursachen der Verbiegungen der Nasenscheidewand. *Deutsche med. Woch.*, 1886, Bd. xiii, S. 373.

line, or to the opposite side. I believe it is false, however, to hold that the deflection has had nothing to do with the hypertrophy of the turbinated body. The hypernutrition has been caused by the irritation consequent upon the excessive amount of air passing through the unobstructed passage, producing vascularity and hypernutrition of the part. Hypertrophy may be a compensation of Nature for this extra work. It is a well-known fact of observation that when the respired air passes through one nostril only, sooner or later irritation of this nostril is set up. In normal respiration the current of air that passes through the nostrils is equally divided, but when the respiratory current passes through one side only it causes dryness of the passage, irritates the nostril, and there is ultimately more or less diseased action. It is a rule that should be invariably observed that no matter how easily respiration may be carried on through one nostril, the other nostril should be opened so that an equal amount of air may pass through it, although it may not be necessary to make the passage as wide or free as the other nostril, which may be abnormally large. It is almost invariably the case that we find the most disease in the nostril through which the greater current of air passes, and very frequently we see an aggravated form of so-called nasal catarrh in the free nostril very rapidly become ameliorated by establishing free respiration through the other side.

The obstruction of the anterior portion of the nasal passage when the other portion of the passage remains free is undoubtedly sometimes the cause of deviations of the sæptum, although not the main cause, as it is believed to be by Collier.* The direct effect of obstruction of the anterior portion of the nasal passage during respiration is to cause more or less rarefaction of the air in that nasal chamber, which, acting upon the normally thin and easily yielding sæptum, particularly in children, will cause a bending of the sæptum toward

* *Journal of Laryngology and Rhinology*, vol. v, 1891, p. 501.

the nasal chamber in which the air becomes rarefied, or, in other words, in which the normal atmospheric pressure is reduced by the inspiratory current. The effect of obstruction of the nostrils in the production of deformities of the face is very clearly shown by Ziem* in his experiments of artificially blocking one nostril in young animals. In every case there was defective development of the side of the face and skull on the side of the obstructed nostril.

Obstruction of the anterior portion of the nasal chamber may be caused by temporary excessive vascularity and turgescence of the turbinated tissue of the anterior portion of the turbinated body, or by a chronic condition of turgescence and hypertrophy of this tissue. Or the obstruction may be the result of foreign growths, or from synechia, the result of previous ulceration. It may also be due to dislocation of the triangular cartilage, occluding the nostril. A flattened condition of the ala of the nose may also occlude the nostril. Such flattened condition may be due either to the destruction of the shield cartilage of the ala, or to a condition of paralysis of the dilator muscles of the nostril. This latter point has been emphasized by Collier.†

2. *External Exciting Causes.*—The main external exciting cause of deviation of the sæptum, particularly of the anterior portion, is traumatism. The vast number of cases of deflection in which a distinct history of trauma can be obtained leaves but little to be desired in the way of proof on this point. Traumatism is considered the main cause of deviation of the nasal sæptum by Bosworth, ‡ Geuzmer, § Ziem, || Bresgen, ^ Schaeffer, ◇

* *Monatsschrift für Ohrenheilkunde*, 1883, Nos. 2, 3, 4, and 5.

† *Op. cit.*, p. 506.

‡ *New York Medical Record*, 1887, vol. xxxi, p. 115.

§ *Revue de chirurgie*, 1887, No. 12.

|| *Allgemeine med. Centralzeitung*, Nos. 20, 23, 1886.

^ *Wiener medicinische Presse*, 1887, Bd. xxviii, S. 237.

◇ *Chir. Erfahrungen in der Rhin. und Lar.*, 1885, Wiesbaden.

Woakes,* Walsham,† Voltolini,‡ Stoker,§ Moure,|| Rosenthal,^ and Lennox Browne.◇

Traumatism may produce deviation of the sæptum in a variety of ways. It may result either in direct dislocation of the triangular cartilage at its point of attachment with the perpendicular plate of the ethmoid and the vomer, and at the attachment of the perpendicular plate of the ethmoid with the vomer, or the attachment of the triangular cartilage and the vomer with the superior maxilla. The dislocation may take place singly, or there may be more or less disturbance or dislocation of all these attachments at the same time, should the external forces be sufficient. These dislocations are more apt to take place in children than in adults, owing to the incompleteness of the attachments during childhood. The dislocation, however, may be slight in the child at first, but as the growth of the sæptum proceeds, the deflection becomes correspondingly accentuated.

Dislocation of the triangular cartilage is, however, one of the most frequent deformities of the sæptum as a result of traumatism, owing to the frequency of slight blows upon the nose that are not of sufficient force to cause disturbance of the attachment of the perpendicular plate of the ethmoid with the vomer, and also owing to the fact that the triangular cartilage is much the thinnest portion of the sæptum, and is most easily disturbed by external causes. In many cases there may be no history of traumatism, since the deflection may have resulted from an accident that has long since been entirely forgotten, but which was, nevertheless, the primary cause, as can be readily seen from the overlapping of the parts, which could not easily have resulted from any other cause. The probability that these devia-

* *Journal of Laryngology and Rhinology*, 1890, vol. iv, p. 437.

† *Ibid.*, p. 439.

‡ *Die Krankheiten der Nase*, 1888, S. 108.

§ *Deviations of the Nasal Sæptum*, 1888, London.

|| *Journal of Laryngology and Rhinology*, 1890, vol. iv, p. 495.

^ *Sur les déformations de la cloison du nez et leurs traitements chirurgicaux*, 1888, Paris.

◇ *The Throat and Nose and their Diseases*, p. 587, 1890, London.

tions result from traumatism, though there may be no history of such accident, is heightened by the fact that these cases are found three or four times more frequently in boys than in girls, and in men than in women, the masculine sex being more exposed to injuries of the nose than the feminine. In such cases of deviation, one of the best proofs that the deflection is the result of traumatism is the fact that we almost invariably find a great amount of callus thrown out on the convex side of the angle of the two articulated surfaces, whereas if the ridge had been thrown out as the result of disease of the articulated surfaces, it would be unilateral.

Among other external influences which are believed to be the cause of deviation, habitually blowing the nose with the same hand has been mentioned by Morell Mackenzie.* A diseased condition of the interior of one nostril, producing a hypersecretion from that nostril, and a person habitually closing the opposite nostril by pressure with the thumb or finger in order to clear the passage of the discharge, and the habit of inserting the finger into one nostril to remove scabs, crusts, etc., would also have a like effect. This does not of itself seem a sufficient cause for the production of a deformity, although it is quite probable that deflection of the end of the nose quite frequently results from this cause, since misshaped noses in the young may be molded into symmetrical form, as was the custom of the ancient Persians with babes of the royal blood, for no man was allowed to sit upon the throne who had a crooked or deformed nose.†

On considering the constant and extreme variations which take place in the composite races in the development of the osseous structures, and particularly those of the face and skull, it is not surprising that these variations should occur quite as frequently in the nasal septum as in other parts. One can not be more forcibly impressed by the frequency of these variations than by

* *Diseases of the Throat and Nose*, vol. ii, p. 434.

† Mackenzie, *Transactions of the American Laryngological Association*, 1885, vol. vi, p. 107.

examining the various cavities contained within the skull, and particularly the accessory sinuses of the nose. In the examination of any number of skulls no two cavities in the same or in different skulls will be found to be of exactly the same shape, size, and dimensions. Therefore, the great variations that take place in the size and shape of the nasal cavities and the sæptum can not be wondered at.

From the present status of our knowledge regarding the ætiology of deflections of the nasal sæptum we may draw the following conclusions:

1. That deviations of the sæptum are produced by a variety of causes operating upon different persons; and that upon the same person several different influences may be operating at the same time.

2. That heredity plays a very important part as a predisposing cause, not only by the dyscrasias which may be transmitted, but by the blending of different races in the composite type, which brings about an infinite variation in the conformation of the osseous and cartilaginous structures.

3. That the three local causes most frequently producing deviation, spurs, and ridges of the sæptum are trauma, nasal obstruction, and unequal growth of the different component parts of the vomer. The last-mentioned cause is itself produced mainly by local malnutrition or diseased conditions of the structures of the nasal passages, inducing an unequal development of the two sides of the sæptum, which causes a bulging or bending to the side of greatest development. The fact that the vomer is composed of two laminæ, separated by a plate of fibro-cartilage which is continued forward to form the triangular cartilage of the nose, readily explains how this unequal development takes place.

Paper.

THE OPERATION FOR DEVIATION OF THE NASAL SÆPTUM.

BY ARTHUR W. WATSON, M. D.

It is said that the non-success of the treatment of a disease may be judged by the number and variety of the drugs recommended. If the same applies to surgery, surely, the number of methods that have been devised for correcting deviation of the nasal sæptum may be taken as an indication of the unsatisfactory nature of the results.

That the opinion of many writers agrees with this proposition is evident if we consult the latest works on the subject. Thus McBride says: "My experience has been that deviations of the sæptum are not a very satisfactory class of cases to treat"; Bosworth, after enumerating the various operations for straightening the sæptum, advises sawing off the projecting spurs and angles; Jarvis recommends removal of pieces of the deflected sæptum by the *écraseur*; Lennox Browne contents himself with producing perforations by the galvano-cautery, and several writers recommend electrolysis (only another method of destroying tissue) in the treatment of deviations of the sæptum. Such methods do not correct the deviations and, it seems to me, are only an acknowledgment of failure.

The symptoms caused by a deviation of the sæptum are not confined to those arising from obstructed respiration. They include interference with drainage, obstruction of the outlets of the accessory sinuses, symptoms due to the abnormal size of the opposite nasal chamber, and that large class of affections caused by contact or pressure known as reflex. The relief of respiration, therefore, is not all that is called for in these cases.

Of those operations that attempt the straightening of the sæptum, the most important are: Adams's, forcible breaking of the sæptum, followed by metal

plugs or splints; Steele's, incisions by the stellate punch, followed by plugs; Roberts's multiple incisions by the knife, the fragments retained by pins; Ingals's, excision of a wedge-shaped piece and suture; and Roe's, crushing by special forceps, followed by anti-septic plugs. Allen's operation, in which the base of the sæptum is detached beneath the mucous membrane and the sæptum moved toward the open side and retained by a plug, does not aim at reducing the deviation, but simply equalizing its encroachment on the nasal chambers. By all these methods, with the exception of Ingals's and Allen's, the curved sæptum is forced into a straight line, for which it is obviously too large, and for that reason the results must be but temporary in the majority of cases where the deviation is at all marked.

What, then, are the requirements of an operation for the correction of a deviated sæptum in order that the result may be permanent? This may be considered in two parts: The operation proper, or the method of reducing the deviation, and the means for holding the parts in position until healing has taken place.

Many of the operations devised have been unsuccessful because they lose sight of the fact that a deviated sæptum is larger than a straight one, and make no provision for reducing the amount of tissue. The first step, therefore, is to reduce the sæptum to a size that will fit into a straight line between the points of attachment. This can be accomplished by excising a portion of tissue in the general line of deviation. If the deviation is horizontal, an elliptical piece is removed, the incisions gradually converging at either end. If the line of deviation is vertical, a triangular or wedge-shaped piece is cut out, the apex being upward and extending as high as possible, and the base reaching to near the base of the sæptum, where it may be joined by a horizontal incision. Both forms of deviation are frequently met in the same case and then both incisions are to be made. The excised portion should include the protruding angle. The amount of tissue to be removed can be estimated by the eye. A very important point in this part of the opera-

tion, in my estimation, is to avoid cutting the mucous membrane on the side opposite to the incision, a point first noted, I think, by Dr. Ricardo Botey, as the membrane helps to hold the edges in line and thus facilitates union and prevents perforations. The incisions should be made on the convex side of the sæptum.

To bring the bony portion into line the crushing forceps can be used to advantage, and as the fragments slide somewhat on each other it is unnecessary to remove any of this tissue. For this purpose Adams's crushing forceps is generally used, but I should think, although I have not tried it, that Dr. Roe's forceps would do better.

The second part of the operation, the method of retaining the sæptum, is, I think, very important. I believe one reason for failure in this operation to be that the retaining force is not kept up long enough.

In dealing with the cartilage it is well to remember that it unites by fibrous tissue, and that if the resilient cartilage is allowed too soon to exert its force this tissue will stretch and the deformity be renewed. I have found by experience that from three to four weeks should be allowed for the healing of the cartilage. I have known the supports to be removed within a week and even sooner, sometimes plugs being introduced afterward at night, sometimes frequent finger pressure being resorted to to keep the sæptum in place, which only stretched the parts and increased the tendency to relapse.

With this point in view it will be seen that hard substances such as ivory, wooden, or metal plugs, and tubes are inappropriate, as by their constant pressure they will produce pain and ulceration. All plugs accumulate secretions which become irritating and offensive, and if removed for cleaning give pain in reintroduction. Splints and clamps have some of the same objections, besides being inefficient. They are also conspicuous, which, as they should be worn for weeks, is important. A pin (first suggested by Dr. J. B. Roberts, but not of the same shape or used in the same way) with a flat ring-head, the ring covered by a piece of rubber tubing, I

have found to be the best support for the cartilaginous sæptum. The pin is inserted from the concave side of the sæptum, just back of its anterior edge, and passed



diagonally through to the other side, then across the vertical incision, if there is one, and then back into the sæptum until the head lies on the sæptum within the nostril. Care should be taken not to produce a deflection in the opposite direction. This method leaves both nostrils free for respiration and cleansing. I have found that if the head of the pin is padded as described, no ulceration takes place, and the pin can be worn for three or four weeks without discomfort.

As the pin supports the cartilaginous part only, the bony sæptum, when deviated, may require some other support. A piece of iodoform gauze, folded to as many thicknesses as is necessary and not more than a third of an inch wide and three quarters long, placed between the sæptum and outer wall at the point of deviation, will support the sæptum and give no inconvenience. The pad can be changed as often as necessary for cleanliness. As the bony portion unites more quickly than the cartilaginous, the pad can be dispensed with in a week or ten days, leaving the pin to do the rest.

In order to do this operation properly the parts must be well illuminated and as free from blood as possible. For this reason cocaine anæsthesia should be used in preference to ether.

In many cases, especially where the deviation is marked and low down, it is impossible to bring the lower fragment into line. The result is that there is nothing to meet the upper fragment and non-union results. To overcome this difficulty I have devised the following modification of the operation:

Instead of cutting out an elliptical piece along the horizontal line, I make an incision, which may be called a beveled incision. The edge of the knife is directed upward and toward the opposite side, and carried through

the cartilage, but not the mucous membrane of the opposite side. The incision is made just on the crest of the deviation. Any vertical deviation is cut out as before described. The upper portion is then pressed over toward the other side, where it hooks itself on to the lower, and is thus held in place. This also uses up the redundant tissue. The projecting base can then (or after healing) be removed by the saw. This diagram will

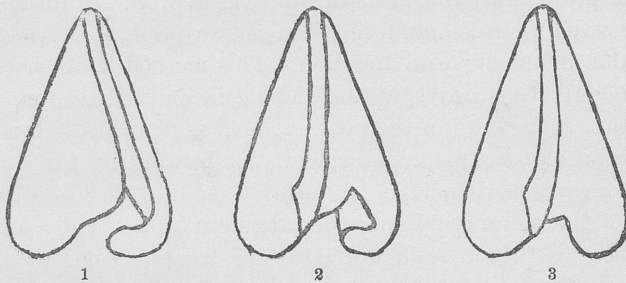


Diagram showing. 1. Deviated septum with line of incision. 2. Septum repositioned, with spur standing. 3. Projecting spur removed.

perhaps convey a clearer idea of the method than my description.

I have used this method in a number of cases, and on subsequent examination, months after, have found the parts in good position, the only proof of success in these cases.

Discussion.

Dr. E. F. INGALS, of Chicago, said: I have been much interested in these papers, and I fully agree with the first paper in what was said about the predisposing causes of the deflection being due to nutritive changes. I believe nutritive changes are the cause of nearly all deflections of the septum; but I think the exciting causes mentioned have very little influence. We all know that now and then everybody gets a blow on the nose, whether he has a deflected septum or not, but the assumption that these accidents cause many of the deviations has been very properly criticised. A few years ago, a priest who had a bent septum and who had been under the care of one of our fellows, told me that he had inquired as to the cause. The physician asked him if he ever when he was a boy received a blow on the nose.

He answered that he supposed he had, as he never knew a boy of any spirit who had not. I doubt if there is a man in this room who has not at some time received a severe blow on the nose, yet probably not more than fifty per cent. at most have deflection. To attribute the ordinary deflected septum to a blow is very much like the reasoning I once saw in a homœopathic journal on the wonderful effects of a thousandth potency of arsenic in relieving nervousness. After several doses relief was obtained, which was attributed entirely to the arsenic, but it subsequently appeared that thirty grains of bromide of potassium had been given with each dose. I believe blows upon the nose have very little influence in causing deflection, unless they are followed by protracted congestion. The paper states that Indians seldom have deflection of the septum, but I have no doubt that blows upon the nose are much more frequent among them than among civilized people. Deflections affect osseous as well as cartilaginous portions. The probable reason that the Indians do not often have deflections is that they are constantly out of doors, and therefore suffer less from nasal catarrh, with attendant hyperæmia and supernutrition of the nasal mucous membranes and underlying tissues.

Dr. ASCH, of New York, said: I agree with Dr. Ingals's criticism in regard to the cause of deflection. I do not believe that one case in fifty is due to traumatism. If you consider the character of the deviations that we are called upon to treat, you will see that it would not be possible to have such deviations without some external deformity. The majority of the cases are those in which you have an acute angle looking something like the figure I draw on the board. Traumatism would not produce that. It seems to me that it is rather due to a deformity of the osseous framework pushing the cartilaginous septum down. With regard to the enlargement of the turbinated body, I think Dr. Roe is correct, that it is caused by irritation due to the increased passage of air. Concerning Dr. Watson's paper, I regret to hear him say that there has been no method suggested for curing deflections of the septum. He evidently has not read the paper I read before this association in Baltimore in 1889, in which I described an operation which has been performed by me in New York over a hundred times, and in nearly every case with success. There are, doubtless, men here who have done this operation, and I should like to put

myself on record to the effect that operations have been devised before now by means of which the deformity can be successfully treated. I have brought the instrument with me that I showed at the previous meeting, and which I show you here, and I read a paper in the fall of last year, since which time many successful operations of the kind have been done. I should like permission to describe the operation once more, it being founded on the fact that the only way you can cure is by destroying the resiliency of the sæptum. (The speaker here demonstrated his instrument.) Two sections are made as nearly at right angles as possible, and the segments which are made are broken up with the finger. I then insert a hard-rubber tube of the kind I have here and the operation is finished. I formerly plugged the nostrils, but the inconvenience arising from it was so great that I substituted the tubes. The operation is done very quickly, and the scissors are employed by me instead of a knife. You can operate without seeing. Push your finger through after the incision is made and break down the segments before introducing the tube. You may not get a cure in every case, for no operation can do this; but ninety-five out of every hundred cases will show good results. You will restore the respiratory function, and that is what you want. Your patient will be able to breathe perfectly well. I simply desire to go on record as having followed out the operation that I reported in 1889.

In response to Dr. Ingals's query as to how a case like that drawn on the blackboard would be treated, Dr. Asch said: Perfectly easy; make one section as I show on the board and another at right angles; push the segments through so that they break up at their base; take a strong forceps and break up the attachments, and then put in the tube. In nine out of ten cases there will be no perforation.

Dr. S. O. VANDER POEL, of New York, said: I was much interested in Dr. Watson's paper, as I have had some experience in the same operative procedure—that is, the reduction of the sæptum by means of the pin. I have met with the same difficulty that Dr. Asch has referred to—*i. e.*, the resiliency of the sæptum. In some twenty cases in which I employed the pin the pressure caused by it was so great that it produced great pain and discomfort in wearing, and was also sufficient, in several instances, to produce ulceration, the result being that a fenestra frequently formed, and instead of adhesive

inflammation taking place, necrosis and consequent perforation followed. Of course I did attempt to obviate the natural resiliency of the cartilaginous sæptum. I broke up thoroughly the attachments of the cartilage, but the patient was unable to wear the pin sufficiently long on account of the pressure, and it was almost invariably followed by necrosis. With regard to Dr. Asch's operation, I have used it twice with good results. If the resiliency of the sæptum is sufficiently broken up under ether, as it should be, an appropriately fitting splint can be worn for a sufficient length of time without inconvenience to the patient. In addition to my own two cases, I have seen a number at the Manhattan Hospital.

Dr. CARL SEILER, of Philadelphia, said: Although I did not hear the papers, the discussion by Dr. Asch and Dr. Vander Poel has given me sufficient insight. It seems to me that Dr. Asch has simply revived an old operation, which was originally introduced before the American Laryngological Association by Dr. Glasgow, of St. Louis, and was afterward claimed by Dr. Sajous. Instead of using scissors Dr. Glasgow used a punch, so as to make a stellate incision into the sæptum. Evidently Dr. Vander Poel has had bad success with the pin splint, simply because he has not taken into account the fact that if you want to straighten up a fence you must put your posts down low. The fulcrum does not come in the middle of the fence, but at the bottom, and you must put your posts in the ground in order to hold it up. The incision Dr. Asch has described you will find given in the first edition of my book. In 1880 I also described Dr. Glasgow's operation, and mentioned that in order to make the pin a proper splint it should be introduced as near the nasal bone as possible, where the cartilaginous sæptum is inserted. It should run down from the other side, through the sæptum, and into the cleft of the two superior maxillary bones. Then hammer them fast. This may sound barbarous and unscientific, but it is really the most successful and satisfactory method of producing a splint for fractured sæptum, without producing necrosis of either the cartilage of the sæptum or the superior maxillary bone. The only precaution that has to be observed is that the pin should be cut off short, or level with the skin. I generally allow from forty-eight hours to three days to elapse before I cut it short. I allow it to project beyond the level of the skin in order to compensate for swelling. There are three patients who have the pins in their noses now, because

the skin healed over the end, and the pins sunk so that I could not get them out without making a disfiguring scar. The very fact of these patients still having these pins in their noses shows that if they are properly introduced there is no possibility of necrosis.

In response to Dr. Asch's query as to where the principle of this method, outside of his own book, could be found described, Dr. SEILER said: The principle is the same as in the other operation—that is, make two cuts one longitudinal and one crosswise.

Dr. J. E. H. NICHOLS, of New York, said: The whole matter seems to rest on whether the resiliency of the septum is broken up or not, and it certainly should be broken on all sides. The operation of Dr. Asch is a most excellent one, where the cartilaginous septum alone is involved. In some cases it is necessary to make a compound fracture of the septum, breaking up the cartilaginous septum and the anterior portion of the bony septum into a pulpy mass, so that it can be molded in the fingers. I have seen about two hundred cases of deviation cured by this method, and have personally done over eighty operations. I have used the splint devised by Dr. Berens, of New York, which is made of cork and covered with iodoform collodion. It is non-absorbent, and is worn from eight to ten weeks without any swelling following, during which time there is perfect nasal respiration. I have yet to see a case that can not be cured, and I think the success is due to the fact that the whole septum is broken up. I do not see how good results can be secured unless the resiliency and the surrounding attachments of cartilage are broken up.

Dr. D. B. DELAVAN, of New York, said: I gave the pin operation an extended trial, then abandoned it, as being much less satisfactory in its results than others, and far more irritating. With regard to the Asch operation, while somewhat similar processes have been proposed before, it remained for Dr. Asch to elaborate a practical method for the relief of these cases. This he has done, first, in describing in practical detail the principles of his method and the various steps by which the work is accomplished; secondly, in devising the instruments necessary for the operation. The patients who have been exhibited by Dr. Asch from time to time amply prove the success of his work. As to ætiology, traumatism doubtless plays an important part in a certain number of these cases, but by no means in all of them, or, probably, even in the majority. Very many

of the worst of them are the results of mouth-breathing. If this is not recognized, the most important opportunity for preventing the trouble—namely, by overcoming the mouth-breathing while the children are yet young—will be lost.

Dr. W. E. CASSELBERRY, of Chicago, said: No one now maintains that traumatism is the most common cause of deflection of the septum, yet all regard it as an occasional cause. Adenoid vegetations, in association with a high-arched palate, is another occasional cause; but heredity, I believe, deserves more consideration in this connection.

Dr. ROE mentioned the manner in which ossification took place, sometimes more rapidly on one side than on the other. Why is this so? he asked. When we speak of heredity we are still in the dark, but it goes one step farther back. I recently had three cases under observation: A mother with pronounced deflection to the left and her two sons with identically the same in the same location. It is reasonable to suppose that if heredity is influential in transmitting peculiarities in facial conformation it can also be influential in producing a peculiarly formed septum, which, after all, is simply an intranasal fracture, as subject to the laws of heredity as the external nose.

As to the operation for deflection, as no one cause can be assigned in explanation of all cases, so no one operation is applicable in treatment, as cases differ very much. The deflection is sometimes horizontal, sometimes vertical, and again both combined. Some patients require anæsthetics, while others do not. As to Dr. Watson's operation, those who have not seen his drawing may have failed to appreciate the points. For certain horizontal deflections the point that he has made of bracing the deflection by overlapping the cut edges would be applicable. I have used a modified Asch operation, which is designed only for cartilaginous deflections, and I have found it very useful. I have done practically the same thing with a bistoury, making a crucial incision, that one could do with special scissors. I employ cocaine anæsthesia. In young patients it is difficult to insert a cutting forceps or the Asch scissors into the nose, and I have found a bistoury to answer very well. Some pressure is needed to break up the resiliency. I first use iodoform gauze packing to guard against hæmorrhage and as a splint for the first two or three days, and this is followed by the insertion of the Asch tube, which is worn for from four to six weeks.

Dr. MACKENZIE said that he arose to do a dead man historical justice. The principle involved in the operation of Dr. Asch originated with Dr. James Bolton, of Richmond, who years ago described his method of procedure in the *Virginia Medical Monthly*. Dr. Bolton first employed a pair of buttonhole scissors with which he made the stellate incisions. Subsequently an instrument was made for him by an instrument maker in New York, and from this has developed the apparatus used at the present day.

After the operation it is not always necessary to pack both nostrils. I generally content myself with packing only one. Sterilized gauze answers every purpose. If there is a disposition for the sæptum to return to its malposition, I have a very thin hollow shell made to fit the narrowed nostril, and through this the patient can breathe with perfect freedom. This can be worn, if necessary, for weeks or months. The operation selected will depend upon the *nature* of the deflection. No one operation is applicable to every case. Often a case will require two or more different operations before success can be attained.

I do not think the statement of Dr. Ingals in regard to the relative frequency of deflection of the bony sæptum should go unchallenged by this society.

Dr. W. K. SIMPSON, of New York, said: I am very glad that Dr. Asch did not allow his operation to go unmentioned. I wish to emphasize the success of his operation. Its success depends not only on the operation itself, but the way in which the details are carried out. It has been emphasized before that the first thing is to break up the resiliency of the sæptum and then to keep it broken up. The splint devised by Dr. Asch and modified by Dr. Mayer, of New York, is almost a straight one. I wish to mention the fact that in stopping a hæmorrhage it is bad surgery to plug the nares with gauze for any length of time, and by using this splint plugging will not be necessary. Two splints are used, one being put on the convex side to retain the parts, and the other on the concave side. Both exercise pressure, and hæmorrhage is very rare. It may be very severe at the time of the operation, but stops immediately after the insertion of the splints. The one on the concave side may be taken out at the end of a day or two. A point that is often lost sight of is that the nose is not plugged at any time and can be freely washed out.

Dr. A. W. DE ROALDES, of New Orleans, said: I

agree with the gentlemen who have commended the Asch operation. I was not so much impressed with it at first, but I made a point of calling on Dr. Asch and witnessing the operation. I was also present at a meeting of the Academy of Medicine when three or four cases were presented, and the results satisfied me. I subsequently procured an instrument which I have had occasion to use, and it has pleased me more than any others. In regard to the ætiology, I should like to say that my experience with the negro race is that they are less subject to deviations, and probably their larger nasal space is the cause. I have also thought it might be a question of nutrition and open-air life.

Dr. J. W. GLEITSMANN, of New York, said: Concerning Dr. Asch's instrument, I can verify the statements made, and in cases of marked deviation of the cartilaginous sæptum I have found his manner of operating more satisfactory and followed by better results than other methods with which I am acquainted. In my opinion, it should be more universally employed.

Dr. CHARLES M. SHIELDS, of Richmond, said: Attention has not been sufficiently drawn to the fact of the combination of deflection of the sæptum with thickening in many cases. All of the operations get at the same results by different means. I operate with a bistoury, because the incisions can be made where they will give the best results. I think it is most difficult to operate in those cases in which there is thickening as well as deviation, and I do not believe that any operation under such circumstances, consisting only of going through the sæptum, will be successful. If you get sufficient space there the thickening will ultimately cause recurrence. I always saw off the thickened part, having previously determined its existence, then make the incisions through the sæptum with the bistoury, and the parts are kept in position with splints.

Dr. GEORGE A. LELAND, of Boston, said: The first operation for deflection of the sæptum done by me according to the principles of Dr. Asch's operation, in 1888, but with simply the smooth forceps of Adams and the stellate cutting forceps of Steele, was a good success so far as the sæptum was concerned. The soft splints sometimes used have not had firmness enough to keep the sæptum where it ought to be, and the hard splints are objected to because of the danger of sloughing of the mucous membrane where there is pressure. Hence, I have used a hard-rubber, flat, tubular splint, wound with cor-

rosive cotton, and saturated with a two-per-cent. solution of creolin before introduction. These splints, if accurately adjusted, cause no pain and no swelling, and may be allowed to remain for from seven to ten days without odor if the interiors are kept absolutely clean by the use of peroxide of hydrogen or other solvent and antiseptic solutions. I do not mean that the odor can not be perceived by the attendants, but the patient is not discommoded by it. Dr. Watson has given the indications for treatment very clearly.

The factor in the ætiology of scoliosis sæpti mentioned by Mr. Mayo Collier, F. R. C. S. Eng., in a monograph which he kindly sent me in 1892—viz., an anterior obstruction in a nostril, causing a negative pressure behind it, and so a deflection of the septum to that side—is a very important one, and has given me indications for treatment of suitable cases since that time; and it has been my good fortune, by removal of a tumefaction of the hard or soft parts in the narrow nostril, in quite a number of cases, to see the septum return to the median line by the simple restoration of normal breathing.

In some cases of a moderate degree of deflection the use of a plug in the vestibule of the other nostril to create an artificial negative pressure on the wide side has a number of times been successful in my hands in doing what formerly seemed to require operative interference. The patient assists in the process by pressure of the little finger against the projecting part in the narrow nostril.

It is very common indeed to find an exostosis projecting into the narrower nostril from the intermaxillary ridge. These cases require operative interference, since this must be crushed back into the median line before permanent results can be hoped for. When this point has been attended to, and when respiration has been restored to an equal volume in both sides, I do not think it has been my experience to see a single recurrence in upward of sixty cases.

Dr. Asch said: When I proposed this operation at the Baltimore meeting of the association, in the discussion that followed, Dr. Mackenzie, then president, stated that the same principle had been suggested by Bolton, of Richmond, though it had been attributed to others, but no operation had been presented with the technics of this one. The operations previously described were nearly all declared to be unsatisfactory, and

the president found the same fault with Steele's forceps as I do, one which led me to give it up after repeated trials—viz., that it did not cut through the septum.

Dr. A. A. BLISS, of Philadelphia, said: I should like to refer to an operation employed by Dr. Harrison Allen, which has not been referred to and which applies to cases where there is some thickening and deflection of the anterior end of the vomer, some hyperostosis at that point, which are difficult to overcome. The remarks made to-day apply very little to the bony portion of the septum. Dr. Allen makes an incision through the frenum of the upper lip at its junction with the alveolar process. The lip is then raised, and a chisel is passed upward through the incision and turned backward over the anterior nasal spine. He chisels directly back, through the anterior nasal spine, thus separating the anterior part of the septum from the floor of the nose, and only makes a very slight external wound. If there is much resiliency, he employs, in addition, cross incisions through the cartilaginous septum. The septum is pushed over to the median line by introducing the little finger into the nostril, and is retained in place by a rubber tube which is worn for several weeks. Excellent results have been obtained from this method. It will always give good results in the very difficult class of cases where the deflections are largely anterior, and where the triangular cartilage and vomer are both involved.

Dr. ROE said: No single operation is equally serviceable in the correction of all forms of deviation of the nasal septum. I think the modification proposed by Dr. Watson is a good one and will be found of service in many cases. Dr. Asch's operation is one that can be used for the cartilaginous portion of the septum only, but where the osseous portion also is deflected it is not applicable. In my experience, in the greater portion of cases of deviation of the septum the anterior portion of the vomer and the anterior portion of the vertical plate of the ethmoid are also found deflected and carried over to one side along with the cartilaginous portion. It is mainly in those cases in which there is a dislocation of the triangular cartilage where we find deviation of the cartilaginous portion only, and which is almost invariably the result of traumatism. No one believes that traumatism is the cause in all cases of deviation of the septum; but that it is frequently the cause when the occurrence of the injury may have been forgotten there can be no doubt. In these cases we gen-

erally find an enlargement on both sides of the articulation whereas if the deviation is due to defective development it will be found on one side only.

Three years ago I had the honor of bringing before this association a method of correcting deflections of the septum which I have found to serve the purpose in all cases where there is a combined deflection of the osseous and cartilaginous portions, and which, I think, is better than any other method that I am acquainted with. You are doubtless all of you familiar with my method, and many of you have told me of the excellent results you have obtained from its employment. If time permitted, I should, however, be pleased to describe it to you again, as Dr. Asch has had the pleasure of doing with his operation.

Dr. WATSON said: I am glad that there has been such a thorough discussion. In reply to Dr. Asch I would say that I have not seen his original paper on this subject, but from the general idea that I had of his operation I considered that it came under the head of those consisting of multiple incisions with the use of splints, and therefore did not mention it. I have never employed his method, but have seen one case where his operation was done, about a week after the operation, and to my thinking it was a complete failure. In my opinion it is impossible to so break up the cartilaginous septum that it will not return, more or less, to its original form. It seems to me that the only way to obtain a permanent result is to reduce the size of the septum. I admit that it is difficult to accurately excise a piece in the horizontal line, but it can be done. In the modification which I have described the overlapping of the parts obviates the necessity for removing a piece in the horizontal line, as it reduces the vertical measurement of the septum.

*Paper.*SOME NEW TOPICAL AGENTS IN THE TREATMENT OF
TUBERCULOSIS OF THE LARYNX: BROMOFORM, FORMALDEHYDE, GUAIACOL, AND PROTONUCLEIN.

BY SOLOMON SOLIS-COHEN, M.D.

I HAVE ventured to bring before the association accounts of recent observations and cases yet incomplete, in the hope that some of the fellows might be induced to test in their practice certain agents and methods which have seemed to me to be of use in the treatment of tuberculosis of the larynx, and that thus a more extended experience, and one, moreover, without personal bias, might be available for deciding upon the value of the treatment proposed. That many cases of tuberculosis of the larynx go steadily from bad to worse, in spite of our best efforts, is an experience unfortunately too common. On the other hand, some of us, at least, have seen cases in which there was no doubt of the correctness of the diagnosis of tuberculosis of the larynx, and in which healing has taken place surprisingly and unexpectedly. Of instances of the first class I have, I am sorry to say, seen my share, and will not now make further reference to them. Of instances of the second class I may cite two for the illustration of special points.

The first case, illustrating recovery under simple measures, is that of a patient treated by me under the direction of Dr. J. Solis-Cohen at the Philadelphia Polyclinic some twelve or more years ago.

The laryngoscopic appearances were those typical of the infiltration stage—thickened epiglottis, pyriform arytenoid eminences, etc. The pulmonary disease was ordinary, slow, chronic tuberculosis of some four or five years' standing. This patient recovered from both the laryngeal and pulmonary disease, the treatment directed toward the former having been simply cleansing with hydrogen-dioxide solution and the insufflation of iodoform. The man, who was a commercial traveler,

learned to make insufflation himself and kept this up twice a day for some two years. He was seen in good health about five years after the cessation of treatment, so that the good result may be considered certain.

The other case is still more remarkable. It illustrates the superiority of Nature over misdirected art. The patient first came under observation in 1889 for pulmonary hæmorrhage. Physical exploration yielded signs of softening at the left apex and tubercle bacilli were found in the sputum. After recovery from the hæmorrhage the larynx was examined, and the vocal bands were found to be thickened and characteristically discolored, while the persistent hoarseness of which the patient complained, and which he stated had been getting worse for about a year, was found to be largely due to interarytænoid vegetations of the character so common in pulmonary tuberculosis. Under constitutional treatment, the patient gained rapidly in general health and strength, and all signs of active disease in the lungs subsided. Under local treatment, the vocal bands became smaller and regained their natural color; but, in spite of repeated, thorough curetting and lactic-acid frictions, the interarytænoid growth, which extended some distance both above and below the level of the vocal bands, was persistently reproduced, with, indeed, a tendency to increase in projection. In addition to the curetting and lactic-acid friction, the local treatment consisted of spraying with solution of hydrogen dioxide and the insufflation of iodoform. The patient's wife learned to carry out the latter manipulations. Becoming discouraged by the lack of success in restoring his voice, which to him was the principal matter, the patient ceased attendance at my office for about a year. One day he reappeared, speaking, to my surprise, in a clear, strong voice. The larynx was found to be almost normal, what remained of the growth being a slight horizontal, rounded ridge on the posterior wall of the larynx above the level of the vocal processes. The pulmonary lesions, however, had resumed activity and had made considerable progress, there being now a cavity in the left lung and softening in the right. The patient informed me that his wife had continued the daily use of the spray of hydrogen-dioxide solution and the insufflation of iodoform. He had also continued to take creosote internally and to inhale ethyl iodide. The recent return of pulmonary symptoms (cough, dyspnœa) he, of course, attributed to a "cold."

If in the first instance narrated the subsidence of the infiltration was due to treatment, in the last the disappearance of the vegetations was clearly due to cessation of active treatment. The curetting and lactic-acid applications interfered with healing. The possibilities, then, of the natural recuperative powers to bring about healing of tuberculous lesions in the larynx under favorable conditions, and even under unfavorable conditions, when these latter are simply due to unwise interference, must be admitted.

Before adopting the treatment which I am now about to describe, the best results which I have seen, and which I could attribute to treatment, have followed the use of the curette and lactic acid in ulcerative or vegetative cases, conjoined with the use of hydrogen dioxide and iodoform, the latter agents alone being used in infiltrative cases. During the past year I have, however, seen such good results, alike in infiltrative, ulcerative, and vegetative cases, from the use of solutions of formic aldehyde, that I am tempted to believe that we have in this agent a means of treatment superior to any that I have thus far made use of. Formic aldehyde is found in the market in forty-per-cent. solutions, termed formalin, formol, and formaldehyde, the two former being proprietary names. I usually purchase the forty-per-cent. solution and dilute it with water to the strength desired, which ranges from one half to four per cent. of formic aldehyde—that is to say, from one to ten per cent. of the commercial preparations. As the extemporaneous solution of the somewhat oily liquid is difficult, it is well to have at hand phials containing the different strengths. These lose, however, by evaporation of the very volatile active constituent, and must therefore be of comparatively recent preparation. The percentages which I employ are one, two, four, six, eight, and ten respectively of formalin, formol, or the commercial formaldehyde. Before making the application the parts should be thoroughly cocaineized. When the weaker solutions of formic aldehyde are to be used, four per cent. of cocaine makes a sufficient

preparation. For the stronger solutions of formic-aldehyde I have usually prepared the patient by using a ten-per-cent., or in some instances even a twenty-per-cent., solution of cocaine. Formaldehyde solutions, even the most diluted, cause an intense burning, stinging, even strangling sensation, when applied to the uncocainized mucous membrane; and even when the weaker solutions of cocaine have been used there is some painful tingling, which, however, soon passes off. I advise any one who intends to use this agent to make preliminary trial of it upon his own tongue and lips, cocainized and uncocainized, so that he may be aware of the nature and duration of the unpleasant sensation caused. As is well known, formaldehyde is one of our most potent antiseptics and germicides, and culture media treated with very dilute solutions of it remain sterile after inoculation with anthrax or tubercle bacilli. It also possesses the property of destroying degenerate tissues, such as superficial epitheliomata, and when applied in sufficient strength to healthy tissues, such as the tip of a rabbit's ear, causes what may be termed aseptic gangrene. The part becomes hard, dies, and is cast off, but at no time does bacterial infection take place. The effect is due to penetration, probably by vapor given off by the solution, and to the formation of certain chemical compounds between the formalin and the tissue cells, similar, doubtless, to the combination with gelatin by which it causes the latter to harden. This action of the drug in hardening tissue and in preventing putrefaction, as is well known, makes it one of the most useful of reagents in the histologic laboratory. These considerations, and favorable experience with formaldehyde in the treatment of chancroids and chancres, together with the reports of some enthusiastic friends as to its usefulness in diphtheria, induced me to make trial of its properties in laryngeal tuberculosis, and while I have no case of complete recovery to record, I have seen sufficient favorable alteration in pathologic conditions to convince me of the extreme utility of the agent. The method of application has been similar to

that employed with lactic acid. To convey the solution to the parts, I use sponge, held in the locked carrier of J. Solis-Cohen, or cotton wrapped upon this carrier or upon a roughened aluminum probe. With this, the parts treated are thoroughly rubbed after preliminary cleansing and cocainization. Beginning with the weakest solution of formaldehyde, the strength of the application is increased as rapidly as possible by successive increments up to ten per cent. of the commercial preparation, which equals four per cent. of pure formaldehyde. This is the strongest solution I have found it necessary to employ. The indications for increasing the percentage of active drug are the ability of the patient to bear the applications and the absence of inflammatory reaction.

After applications of formaldehyde, protonuclein has been insufflated; in some cases, I think, with advantage. The applications are made twice weekly. In the intervals the larynx is cleansed with a spray of hydrogen-dioxide solution, followed by insufflation of iodoform or protonuclein, once or twice daily. I purpose making trial of the insufflation of formaldehyde-gelatin, commercially known as Schleich's glutol.

In reporting the effects thus far observed I shall not weary the association with detailed accounts of cases, but confine myself to the essential points of general history and to the description of the laryngoscopic appearances.

CASE I.—September 13, 1895, I was consulted by Mr. G., a merchant, aged twenty-seven years. His voice was evidently produced with great difficulty, was frequently lost altogether during attempted conversation, and was of a peculiarly hollow quality. He stated that hoarseness and difficulty of speech had been constantly increasing since January 1st. Previous to that there had been no trouble. Cough, however, had persisted for five or six years, and in January, 1890, he had been sent to the West Indies, where he remained for four months, and returned, as he thought, well. On his outward trip he had had a hæmorrhage aboard the steamer, and had had hæmorrhages at intervals since, which he had attributed to "heart disease," and, indeed, physical examination

of the chest showed his heart to be greatly hypertrophied, there being regurgitation both at the aortic and mitral orifices. There was no history of lues. Laryngoscopic examination showed both vocal bands swollen and reddened. An irregularly lobated mass, probably as large as a large bean, projected from the meso-arytænoid fold, preventing closure of the vocal bands. The epiglottis and aryteno-epiglottidean folds were intensely red in color but normal in contour. Physical examination of the thorax revealed the signs of a large active cavity in the middle of the right lung, and in the left lung considerable consolidation of both upper and lower lobes, with a small active cavity in the former. The expectoration was profuse, and the sputum contained tubercle bacilli in great numbers. The local treatment consisted, first, of interdiction of attempts at the production of voice, conversation to be carried on in a labial whisper. Sprays of a weak solution of hydrogen dioxide followed by insufflations of protonuclein daily, and applications of formaldehyde, gradually increased from two to ten per cent. of the commercial (forty-per-cent.) solution, were made to the arytenoid mass twice a week. By the 9th of November the vocal bands had become normal in appearance and the mass had been reduced in size fully two thirds, when injudicious and unusual exertion on the part of the patient precipitated a hæmorrhage, followed by a pneumonic attack, in consequence of which he was confined to the house, and intermission of active local treatment necessitated until about the 15th of December. The spray and insufflations were, however, resumed soon after the acute fever had subsided, and applications of guaiacol were made once or twice to ulcerations which made their appearance at the base of the left arytenoid cartilage. After December 15th and until February 3d full treatment was resumed and continued as previously, with the effect of securing almost entire disappearance of the vegetation by the time above noted, when the patient sailed for the West Indies. He remained in Barbadoes during March and April, the spray and insufflations being continued by his wife, but no applications of formaldehyde being made. On his return, a few weeks ago (May 2d), no trace of the original growth could be seen, but a new growth about the size of a large split pea had developed above the right vocal band at the base of the right arytenoid cartilage. The vocal bands, which had been of normal color at the time of his leaving Philadelphia, were quite red. Treatment was resumed and has been

continued as at first. The redness of the vocal bands soon disappeared and the new growth is becoming much reduced in size. The general health of the patient, which had been steadily running down after his hæmorrhage, has been much improved by his trip. Whether or not the new lesion will prove as amenable to local treatment as the former one I can not say.* The patient is still compelled to whisper, as the production of voice is difficult, owing to mechanical interference by the new growth with the action of the vocal bands, in addition to which there seems to be thyreo-arytænoid paresis.

CASE II.—A man, aged about twenty-six years, seen at the Philadelphia Hospital, had been attacked with tuberculosis of the larynx during an ordinary slow tuberculosis of the lungs. The epiglottis was characteristically thickened, and had begun to ulcerate, two deep fissures being present on the laryngeal face. The vocal bands were thickened and red, and ulcerations were present at the base of the left arytænoid cartilage. Under treatment similar to that described above the ulcerations healed, the vocal bands became normal in appearance, the voice improved greatly, and the epiglottis had been much reduced in size at the time the patient removed himself from treatment.

CASE III.—A man of about thirty-five years of age, in the terminal stages of pulmonary tuberculosis, suffered excruciating agony in deglutition, and had entirely lost his voice. The epiglottis was very much thickened, and the arytænoid eminences were characteristically tumefied. The interior of the larynx was completely hidden, and the laryngeal face of the epiglottis was in shadow, so that its condition could not be clearly made out. After a few applications of formaldehyde solution, the epiglottis and arytænoids had become so much reduced in size that it was possible to discern several irregular ulcerations upon the face of the epiglottis. Further applications caused the interior of the larynx to become visible. The vocal bands were seen to be reddened, thickened, and ulcerated, and masses of vegetations sprang from the posterior wall of the larynx and below the level of the vocal bands. Under continuance of treatment the local conditions ameliorated, the patient being able to swallow food and to whisper with comfort. The general condition, however, became steadily

* The patient, desiring to pass his summer in Atlantic City against my advice, ceased attendance shortly after my return to Philadelphia, and I am unable to give the subsequent history.

worse, and death took place in due course. The improvement in the larynx continued, however, until active treatment was discontinued on account of the patient's general weakness, about two weeks before his death.

CASE IV.—A patient at the Philadelphia Hospital with chronic pulmonary tuberculosis of some years' standing, but without cavities in the lungs, presented a very much ulcerated epiglottis with pyriform thickenings of the aryæno-epiglottic folds. About one half of the epiglottis had been destroyed by the ulcerative process. The anterior of the larynx was not well seen until under treatment the ulceration of the epiglottis healed and the aryænaid thickenings were reduced, when a web stretching between the vocal bands and attached laterally to the anterior two thirds of the right band and the anterior one third of the left band was distinctly seen. Although the patient denied syphilis, the question as to the nature of the web, whether syphilitic or tuberculous, was immediately raised. J. Solis-Cohen, however, has reported and figured cases of tuberculous web, and there is no *a priori* reason why the lesion should not be of this nature. The patient was referred to the laryngologist of the hospital (I am general physician) for operation, but declined to permit the cutting procedure proposed, and insisted upon being discharged from the hospital.

As before stated, the cases which I have submitted to you are not conclusive but merely suggestive, and to multiply their number would be simply to duplicate in many respects the suggestions contained. While my experience would not justify the statement that this method of treatment is curative in tuberculosis of the larynx, it does, I think, permit me to say that its persistent and intelligent application will often bring about the healing of ulcerations and the subsidence of infiltration, and at least the partial disappearance of vegetations. In how far these results will be permanent, or in how large a proportion of cases they can be obtained, my experience does not permit me to say, nor do I believe that any individual experience can determine. The effects which I have witnessed, however, are sufficiently striking to make me wish to lay the matter before the fellows of this association and to request them to test it further.

A few words concerning the other agents mentioned in the title of this communication will suffice. My experience with guaiacol is limited to a very few cases. I have seen ulcerations of the larynx, which, however, I could not assert to be tuberculous, heal under its influence; and in one case, that of a patient who has died from pulmonary tuberculosis, the laryngeal symptoms which occurred during the last weeks of his life, and which were apparently due to tumefaction of the epiglottis confined to one of the lateral halves thereof, disappeared with subsidence of the swelling after two applications of guaiacol. I do not think it was simply acute oedema; it had not that appearance.

In Case I, as already referred to, application of guaiacol to ulcerations of the vocal bands was followed by healing. In applying guaiacol, cocainization is first effected, and the twenty-five-per-cent. solution of the drug, in olive oil, with perhaps the addition of ten per cent. of menthol, is used. Had my attention not been so strongly directed toward the advantages of formaldehyde, I should have pursued the study of guaiacol, as to which the results, as will be perceived, are entirely indeterminate.

Bromoform has been used by me with considerable satisfaction as a local analgetic in cases of painful ulceration of the larynx, especially in tuberculosis; and in several cases of early lesions the application of this agent, followed by the insufflation of iodoform, has been followed by healing. I make no further contention than this, as I have not considered it worth while to experiment with these drugs in cases of long-standing lesions. I desire, however, to call the attention of the fellows to the fact that formic compounds, as in the case of iodoform, chloroform, bromoform, and now formaldehyde, do seem to have, in greater or less degree, a specific antituberculous influence. Whether this be through action upon the bacilli or through restraining influence upon the histologic lesion, I am not prepared to affirm. My impression is that the latter guess is nearer to the truth.

Discussion.

Dr. J. W. GLEITSMANN said: I have had no experience with the remedies mentioned. As to laryngeal tuberculosis, this subject was discussed very fully last year. At a meeting in New York early this year I mentioned some drugs which had satisfied me up to that time, and I have since had no reason to change my opinion. I referred to parachlorphenol and monochlorphenol. These drugs are not quite so effective as has been alleged, but they have some favorable influence in tuberculosis of the larynx that lactic acid has not—viz., to cause partial absorption of infiltrations. Applications of lactic acid are mainly recommended for ulcerations, but monochlorphenol is useful in ulcerations as well as infiltrations. I do not use it in very strong solutions, usually beginning with a five per cent., and often add a little water to the glycerin solution to facilitate its application.

Dr. W. B. PORCHER said: I should like to ask what influence the application has in controlling cough.

Dr. J. E. NEWCOMB said: I have used protonuclein in different cases, and it seems to do some good in acute coryza. In other affections it has not been of any service at all, and particularly in acute inflammations of the pharynx and tonsils.

Dr. MAYER asked: How does Dr. Solis-Cohen apply the drug?

Dr. W. E. CASSELBERRY said: Will Dr. Solis-Cohen please be more explicit about the percentages that he uses? The menthol treatment has previously been much discussed, but I should like to mention a case of absolute recovery so far as the laryngeal lesion was concerned while this treatment was being used. The patient was a man sixty years of age who had suffered with pulmonary tuberculosis for many years. A former student of mine, practising in a neighboring town, applied a ten- to twenty-per-cent. solution of menthol in olive oil persistently and repeatedly, and the cicatrices were plainly seen afterward by myself. The patient seems perfectly well regarding the laryngeal lesions and there is no infiltration or ulceration. I have been using the curette followed by lactic acid and have been conscious of considerable benefit, although I have not been fortunate enough to produce a cure. I certainly have added to the comfort of the individual. I have been very much interested in Dr. Solis-Cohen's remarks.

Dr. SOLIS-COHEN said: With regard to bromo-

form, it seems to relieve the pain of ulceration when applied locally, both in cases of tuberculosis and in cases of a doubtful nature. I apply it on cotton or sponge. The instrument I prefer to use for laryngeal applications is the locked forceps devised by Dr. J. Solis-Cohen. When the contact of the metallic blades is to be entirely avoided I use a small instrument wrapped with cotton. I do not, however, like to put cotton into the larynx, and a bit of soft sponge will usually answer well. The applications are made somewhat forcibly, the formic aldehyde being rubbed thoroughly upon the parts after they have been cocainized. The strength of the cocaine solution varies with that of the active drug. I start with a four-per-cent. solution of cocaine, and sometimes run up to a twenty-per-cent. solution; the corresponding strengths of formalin (or commercial formaldehyde) being one and ten per cent. The commercial preparations of formaldehyde are forty per cent. solutions in water; it is of these that I prepare solutions of from one per cent. to ten per cent. A ten-per-cent. solution of formalin or commercial formaldehyde represents one of four per cent. of the pure formaldehyde. As to relieving the cough, the applications do seem to effect this, but I am very chary about saying positively that anything does anything. It is to the tissue alterations which take place under our eyes that I wish to direct attention principally. These may be due to the effect of this agent in restraining abnormal cell growth. We know the action of formalin in hardening histological specimens and causing aseptic necrosis of certain normal tissues. This is a chemical effect. Like the other speakers I have used protonuclein without seeing good result in the treatment of amygdalitis and in pharyngeal inflammations; but it has seemed to have a good effect, both topically and internally, in laryngeal tuberculosis.

Paper.

NOTES ON THE TREATMENT OF DIPHTHERIA.

By S. HARTWELL CHAPMAN, A. M., M. D.,

THE question of the value of the antitoxine treatment is still undecided. While statistics seem to show that as a remedial agent it is worthy of further trial,

yet the number of cases of death from its use as a prophylactic agent would cause us to withhold complete confidence.

It possibly may be therefore of interest to the members of the society present to listen for a few minutes to the report of another and older method of treatment which has seemed to be serviceable in my hands, and of which the statistics show almost if not quite as favorably as those of the more modern treatment.

My note-books give me the histories of thirty-three cases during the past twelve years—a small proportion of cases in comparison with those in the practice of many of the members of the Laryngological Society, but sufficient to enable us to formulate a fair statistical record. The cases are divided as follows: Postnasal, 2; tonsillar, 9; tonsillar-pharyngeal, 11; tonsillar-pharyngeal laryngeal, 6; laryngeal, 5. Seven cases terminated fatally—namely, 2 postnasal, 1 tonsillar, 1 tonsillar-laryngeal, 3 laryngeal.

Of the laryngeal cases, one death was due to the accident of the premature withdrawal of the entire tracheotomy tube by my assistant.

The tube needed cleaning, and while extracting the inner tube the assistant slipped the external out, and before it could be replaced death occurred by asphyxia. Six deaths then in thirty-three cases, or a little more than eighteen per cent. Of these six cases, five were seen in consultation at a stage when the disease had already become general.

In four of the eleven laryngeal cases tracheotomy was performed, with three deaths from general infection. In all of the cases seen and treated during the early stage of the disease, with the exception of one tonsillar, the patients recovered.

The method of treatment adopted was the following, the remedy used being the protiodide of mercury.

The theory of treatment by this drug was supported by experiments upon the behavior of the diphtheritic germ in the presence of numerous antiseptics, made in my own laboratory in the years 1873 and 1874.

The devitalizing power of forms of mercury was found to be the greatest; and of all forms of mercury the protiodide was the most efficient. A solution of one grain to six ounces of sterilized water was the preparation used in these cases, applied in three different ways—first, by hypodermic injection into the submucous tissues surrounding the exudation; second, by deep injection into the tonsillar tissue; and third, by spray upon the pharynx and larynx.

The spray and injections were used simultaneously, a drachm of the fluid being injected two and sometimes three times a day, and the spray used in the intervals between the injections.

Not to take too much of your time, let me, in closing, give the history of three cases in the same family:

In February, 1884, Mrs. W., New Haven, aged forty-three years; well-developed membrane on both tonsils.

Son, aged fourteen years; membrane extending over the left tonsil and one quarter of the left half of the pharynx.

Son, aged six years; no development of membrane for three days; then uniform membrane showing over the entire pharynx and arch, at first appearing like a thin film of milk, but growing in twenty-four hours to a well-formed distinct membrane.

No treatment was given this latter case until the membrane became well defined—simply for the purpose of observation and experiment.

These cases were treated in the manner described, with the result that, first, no spreading of the membrane took place; second, that in twenty-four hours the membrane began to shrivel and dry, and by the end of the third day had in each case been exfoliated and expelled.

As a prophylactic, the mercury seems of some use.

I am not in the habit of isolating cases of diphtheria, but of causing other members of the family to use the spray freely during the continuance of the disease.

This is a case in point:

Child, Clara J., aged five years, March, 1886, New Haven; membrane of the pharynx and brim of the larynx.

The mother begged to be allowed to care for the invalid, although at the time she was nursing a child eight months old. This I allowed, taking the precaution to use the mercury as spray in both cases.

There was no spread of the disease.

In conclusion, let me say that I still use the remedy as described—having gained confidence in it for all cases where constitutional infection has not yet taken place.

Paper.

A STUDY OF IRRUPTION OF THE TEETH INTO THE NASAL CHAMBERS. A *RÉSUMÉ* OF REPORTED CASES AND A REPORT OF ADDITIONAL CASES.

BY ALEXANDER W. MACCOY, M. D.

IN the study of the irruption of teeth in the nasal chambers undertaken in this paper, the writer had not proceeded far into the subject before he found that valuable contributions to the literature were already on record by several members of this society. In the attempt to make a complete *résumé* of the subject, some difficulties have presented themselves by reason of lack of completeness in histories and absence of definite details in some of the papers; also by reason of inaccessibility of some of the journals in which the original papers appeared. Two supplementary histories have been added in this paper—one, that of Dr. Arthur W. Watson, of Philadelphia; the other, my own. In some of these cases marvelous energy in the attempt of the tissues to get rid of the foreign body was shown, and years elapsed in the accomplishment of it. In one instance this irruption was dependent upon violence directly applied, and might be considered as fully expressing the root meaning of the word "irruption." All cases in which both the irruption of the tooth and its removal have not occurred *in* the nasal chambers have been excluded from this paper. Very many interesting cases of irruption of teeth into the antral cavi-

ties, and formation of dentigerous cysts in the orbital cavities, etc., are found in literature, but are excluded by this limitation. I shall hope to take up the antral cases in a later paper.

I submit condensed histories of the following cases:

Zuckerkanndl (E.), vol. i, chapter xv, page 551.—It has been observed that incisor teeth sometimes develop in the floor of the nose, their crowns pushing into the anterior part of the nasal fossa. This anomaly is only possible by supposing a rotation of 180° of the dental germ. The enamel, instead of growing downward, directs itself toward the nasal fossa. Under these circumstances the tooth is inverted and the crown penetrates the nasal fossa. Salter, quoted by Sternberg, has seen a dental germ completely inverted in such a manner that the crown was in the place of the root. (*Handbuch der Zahnheilkunde*, edited by J. Scheff). He gave to this anomaly the name "inversion." These inverted teeth were always superior incisors, according to Salter, and one could see the crowns in the nostrils, through which one is obliged to extract the teeth. A very interesting case of this kind (anomaly of median incisor) is represented in Plate LIII, Figs. 3 and 4. In this is seen a peg tooth, fourteen millimetres long, completely inverted obliquely between the suture of the two maxillary bones, the crown protruding in the left nasal fossa. This is not a supernumerary tooth, but a rudimentary median incisor transposed from the right side. The right alveolar apophysis is contracted to the size of the average incisive alveolus. The lateral incisor is advanced toward the median line. The maxillary framework was remarkable for anomalous development; also, the nasal bones were absent. In the same paper Zuckerkanndl quotes a canine tooth as occurring in the nasal fossa, reported in the *Correspondenzblatt für Zahnärzte*, vol. xii, Berlin, 1883.

It was the case of a man who had suffered for a long time from obstruction of the nasal fossa. At the distance of two centimetres and a half behind the orifice of the nostril a movable canine was found and was

easily extracted. Zuckerkandl also relates another case coming under his own observation of a premolar in the nasal fossa, of which the following is the description: At an autopsy, examining the nasal fossa, he struck something hard in the inferior meatus; the surface of it was covered with a mass of pus; it crossed the lower border of the turbinated and approached the wall. All around it the mucous membrane was swollen and injected, and in places showed purulent infiltration; he believed it a case of rhinolith about a foreign body. After cleansing, he saw the crown of a tooth which had irraptured obliquely across the maxillary wall. This is the description: Left nasal fossa, mucous membrane relatively normal except for tumefaction in the neighborhood of the tooth; the mucous membrane was thinned by the pressure of the mass. The tooth was found in the inferior meatus two centimetres behind the pyriform opening. It was twenty-five millimetres long, eleven millimetres of it situated in the nasal fossa. The crown was seven millimetres long. There was a space of about three millimetres between the base of the tooth and the nasal floor. The mucous membrane of the lateral wall of the inferior meatus presents a depression for the tooth, the border of it pressing against the root of the tooth. The neighboring bone to the tooth is carious on account of the molar roots. He reports the teeth of the superior maxilla to be irregular in development, there being only two incisors, a canine, and the first premolar. The others are missing. In their place the alveolar process is atrophied, and forms a large, thick lump. The left superior maxilla shows great irregularity in the position of the teeth; the left canine is not irraptured; of the premolars, one is missing. The crown of the first premolar is found in the nasal fossa with a part of the root, about twelve millimetres in length, projecting into the facial wall of the maxillary. The abnormal tooth occupies such a position that it is turned 90° toward the median line.

Roy (Gopard Chunder).—Roy, of the Sooree Charitable Hospital, reports a case of a Hindu boy, aged fourteen years, who presented himself for treatment for what he considered a tumor growing in his nose. For four months he had had a foetid catarrh with occasional epistaxis. For the previous two months the growth had been observed occupying the left nasal cavity, where it seemed to be attached to its wall at its upper part, its free end looking downward in the shape of a truncated cone. The tumor

was seized with dressing forceps and extracted. It proved to be a canine tooth. The free extremity was covered with enamel, which stopped short at its junction with the root. The root was deeply imbedded in the side and upper part of the antrum. The boy had got his set of permanent teeth with the canines and incisors on both sides. There was no deformity of the jaw, and no swelling or cystic formation. It was clearly a case of extrafollicular development and irruption of a tooth in the wrong place, the peculiarity being that while in reported cases of a like nature the crown of the tooth shows itself at the floor of the nasal cavity from below upward, in the present instance the dental follicle was transposed, and the irruption was from above downward. The tooth is in the English Royal College of Surgeons Museum.

Hall, De Haviland.—Hall reports a case of a girl, aged fifteen years, in whom there existed in the right nostril a misplaced tooth, which proved to be the right permanent canine. There were marked signs of hereditary syphilis, and a foetid discharge issued from the nostrils; the nasal septum was also perforated. The tooth was extracted from its abnormal position three months after it was first seen.

Schaeffer, Max, of Bremen.—A case is reported by Schaeffer of a man, aged thirty-six years, who for a long time had suffered from obstruction of his left nostril. Since the age of fourteen he could feel a hard body in the left nostril with his finger. All his teeth were present in their normal position. The foreign body was extracted with a snare and forceps and found to be an incisor, measuring in length a centimetre and a half; in its greatest breadth, half a centimetre. It had for its crown enamel. On its small root it had a little cap of cartilage.

Ingals, E. F., Chicago.—In examining a patient who had for some time suffered from nasal catarrh, Ingals found on the floor of the left naris, four centimetres back from the nostril, a hard substance, feeling, when touched with the probe, like bone. On seizing it with forceps, the patient suffered severe pain like that caused by striking a decayed tooth. The pain was so intense that it was necessary to anæsthetize the patient before a thorough examination could be made. After the patient was etherized, the body was engaged in a snare and drawn out, when it was found to be a supernumerary tooth, resembling closely a canine, and two centimetres in length. About

five millimetres of the tip of the root had been exposed in the nasal cavity, and below this the tooth was covered with soft tissue which was adherent to it down to the crown. The dentine of the crown was perfect, excepting a small perforation at its apex, but within the tooth was decayed. The tooth must have been projecting within the nasal cavity for some time, for the portion of the apex of the root which was uncovered had lost by erosion about a millimetre in thickness from its entire circumference. He says: "It is comparatively rare for teeth to grow in the roof of the mouth or nasal cavities, yet several such cases have been met with. In nearly all instances the 'wild tooth,' as it is called by the laity, is found to be a supernumerary tooth or a misplaced canine." Professor E. S. Talbot examined the tooth and the patient's mouth, and stated that from the appearance of the tartar and green stain upon the apex of the crown it must have occupied a diagonal position in the hard palate, the crown being in the roof of the mouth pointing toward the central incisors and the apex of the root in the naris pointing posteriorly. A ring of tartar encircled the crown from about three millimetres below the upper surface to nine millimetres above the lower surface, and that part of the crown below the ring was covered with a fungous growth, which proved that that part only was exposed in the mouth. The tooth had decayed because of the imperfectly formed apex of the crown until the pulp had become exposed, and death had resulted, causing alveolar abscess, the sac of which came away with the tooth. He concludes: "While it is not uncommon to find supernumerary teeth in the roof and anterior part of the mouth, it is very rare to find the apex penetrating the nares."

Marshall, J. S., of Chicago, reports a case of a superior wisdom tooth discharged from the nasal passages. A woman, aged sixty-two years, had suffered from facial neuralgia on the right side accompanied by severe otalgia for ten years. In October, 1884, she suffered intensely from what she supposed to be a "severe cold in the head." The right nostril became slightly swollen and completely obstructed. Breathing was almost impossible when the lips were closed. After an unusually great effort in coughing and blowing her nose, a few days after the onset of the cold, she suddenly felt something fall upon her tongue which proved, upon examination, to be a large, right superior wisdom tooth, covered with foetid pus. There was immediate relief of

facial pain. Thirty years previous she had all her upper teeth removed. About four years after the removal of her teeth a tumefaction appeared upon the right superior maxilla, near the tuberosity. She consulted a dentist, but he could offer no explanation of the swelling, which disappeared in a few days. In May, 1884, she suffered from an abscess of the right ear. For several years previous to the discharge of the tooth she had had a slight foetid discharge from the nose. Dr. Marshall offers the following explanation of the symptoms: That all the pain and discomfort in the right facial region were due to this erratic tooth. The pain and swelling twenty-five years previous to the discharge of the tooth were due to the irruption of this tooth in an inverted position, which, taking a direction upward and forward, finally pierced the floor of the antrum of Highmore. The abscess in the ear must have been the result of an abscess at the roots of this tooth, which discharged its contents into the meatus and at the same time freed the tooth from its crypt and left it loose in the antrum. The tooth finally worked its way to the anterior portion of the antrum, and, by contact with the nasal wall, produced ulceration of this and of the inferior turbinated bone, and thus found its way into the nasal passages. The catarrhal discharge was due to the presence of the tooth in the antrum. Dr. Marshall regards the case as interesting in that it explains an obstinate case of trifacial neuralgia and indicates the probable cause of a severe aural abscess.

Griffin, E. Harrison, of New York.—Dr. Griffin reports a case observed at the Bellevue Throat Clinic. A male, aged thirty-two years, complained of sore throat of two days' duration. An examination of his throat showed a cleft of both the hard and soft palates. In examining the upper gum Dr. Griffin noticed the root of the second incisor tooth in the tissue, and an examination of the nose showed the tooth in a perfect state of development projecting from the floor of the nostril up into the nasal cavity. He said the tooth had been there for years and gave him no trouble. He never suffered any pain when it was growing, and did not know it was there until one day when, inserting his finger into his nose, he noticed something hard, and looking into a mirror found it to be the tooth. As it gave him no trouble he did not go to a doctor. He did not think the tooth had grown any of late years. The patient was opposed to any operation for the removal of the tooth.

Wright, Jonathan, of Brooklyn.—Dr. Wright mentions six cases, all of which are reported in this paper. In all the cases reported the teeth were anterior ones, canines or incisors. He adds: "The reasons are obvious, since the posterior ones, if inverted, as in Griffin's case, would grow into the antrum." He says the first of his cases is interesting as illustrating the migration of an object through bony structure, while the second case was evidently originally one of extra-alveolar development.

CASE I.—A woman, aged thirty-five years. Four years previously she had had all her remaining teeth, nine in number, extracted from the upper jaw. The dentist told her he thought he had left a piece of a lateral canine or incisor on the left side. For some time before Dr. Wright saw her she had suffered from nasal obstruction on the left side. An intranasal examination showed marked hypertrophy of the nasal mucous membrane on the left side. A probe detected a rough, hard surface about half an inch from the left anterior meatus, on the floor of the nose and close to the septum. Small pieces of calcareous matter or bone could be crumbled off with the probe. Two weeks later the patient brought to the dispensary a small sequestrum which she had washed out herself. By means of a probe and forceps, he then extracted the single root of a tooth, about three quarters of an inch long, from the left nostril.

CASE II.—A girl, aged eight years, had suffered from nasal obstruction since she was a year old. There had been considerable offensive discharge. The bridge of the nose was sunken, the nostrils were flattened and contracted. The superior alveolar process on the left side corresponding to the situation of the canine and incisor teeth was absent, leaving a slight cleft. There was no history of accident. The left nostril was obstructed by a foreign body which grated under the probe. Considerable force was required to extract it. It was found to be the crown of an incisor tooth. It was notched, as in young children, and larger than in a child a year old. There was considerable calcareous matter around it and in the nostril, but no root was found.

Thompson, J. A., Cincinnati.—At a meeting of the Cincinnati Medical Society, Dr. Thompson presented a specimen of a "tooth and portion of socket taken from the middle meatus of the nose."

A girl, aged eighteen years, came to the Nose and

Throat Clinic in 1890. She had been in good health until vaccinated at the age of five years. Vaccination made her very ill; an eruption appeared on all parts of her body; her eyes became affected and she was completely blind for a time. At the age of eleven she began to complain that her right nostril was obstructed. An eruption again appeared, and the glands in her neck became swollen. She was under treatment for about two years at that time, without much improvement. Mercurials must have been freely given her, for she was badly salivated. Since the right nostril was occluded—seven years ago—she has had neuralgia on the affected side. The breath has been extremely offensive for three years. Four years ago, at a clinic in Pittsburgh, dead bone was discovered in the nostril. An attempt to remove it at that time failed. Examination revealed that both corneæ were clouded by linear opacities and maculæ. In both eyes the iris was fixed by posterior synechiæ. The uvula and part of the soft palate had been destroyed. The tonsils and pillars of the fauces showed numerous cicatrices of old ulcers. In the nose, the sæptum was much deflected to the left. In the right nostril a white substance was seen in the middle meatus. It looked like a tooth lying horizontally in the nostril with the crown forward. Its attachment was concealed by exuberant granulations, such as always spring up around dead bone in the nose. It could be easily rotated up and down by grasping it with dressing forceps, but could not be dislodged even with strong polypus forceps. With a pair of strong sequestrum forceps he dislodged it and brought it forward to the nostril. It was seen to be the right lateral incisor tooth, with its root in a socket, and surrounded by a mass of necrosed bone. The mass was so large it could not be extracted through the nostril. He pulled the tooth from its socket, then broke the bone in small pieces with the forceps, and removed the whole thing. In the discussion following the report of this case, Dr. M. H. Fletcher expressed the opinion that the case was probably one of displacement of the intermaxillary (or incisive) bone during development. This seemed very plausible, since persistence, either partial or complete, of the premaxillary suture is not rare, even in our own race, and is frequently seen in some of the lower races, such as the North American Indian. Dr. Joseph Eichberg thought that if a portion of the maxilla had become necrosed from mercurial stomatitis, the

tooth could have been lifted into the middle meatus of the nose by the subsequent process of granulation.

Kayser, R.—Dr. Kayser reports a case of a tooth removed from the left nostril of a girl, aged fifteen years, who for more than a year had had profuse discharge from the nose, and the nose was also much obstructed. Examination revealed swelling of the mucous membrane with exuberant granulations in the left nostril and the probe touched roughened bone. Behind, this was a whitish body which, on being removed, proved to be a much incrustated infantile incisor tooth. It is probable that the tooth had acted as a foreign body for nearly a year.

Knapp, H.—Dr. Knapp reports that a healthy-looking boy, aged seven years, came to his clinic with necrotic rhinitis and acute purulent otitis on the left side, and an hypertrophied tonsil on the right side. The lower passage of his left nostril was filled with mucus and decaying soft and hard masses of tissue. On removing all the dead material from the nostril, he remarks that among the sequestra two were conspicuous—the one, flat and hard, was removed from the lateral side of the floor of the nostril bordering the malar antrum; the other, from the anterior part, was cancellous, and inclosed a tooth, the crown of which appeared to be turned up and back. The sequestrum was fifteen millimetres long and represented a piece of the upper jaw, the rounded alveolar surfaces separated by a layer of cancellous bone three fifths of a millimetre thick. The tooth was the lateral incisor, its crown healthy and well formed, twelve millimetres long and eight millimetres broad. Its root was decayed. Between the first incisor and the canine a probe could be passed through a rough-walled canal from the mouth into the nose, its direction being toward the nasal septum. Dr. Knapp mentions the fact that Zuckerkandl and Salter have both noticed such inversions at the upper incisors, the crowns of which appeared in the nostrils, out of which they had to be extracted. It might be supposed that the tooth was in its proper position, and was carried up into the nostril with the sequestrum from the alveolar process of the maxillary bone. He concludes: "Be this as it may, the above communication records an example of necrosis of the floor of the nose, and the removal of a loose sequestrum with the corresponding incisor tooth through the anterior naris. That an inverted tooth projecting over the floor of the nose should produce caries or necrosis of its alveolar

walls seems very natural if we think how easily the nasal secretion retained by the tooth may decay and infect the bed and the crown of the tooth.

Schötz.—At a meeting of the Berlin Laryngological Society, Dr. Schötz showed a case of a tooth in the right nostril of a man, aged nineteen years. It was in the floor, two centimetres from the entrance to the nose. The point stuck up through swollen mucous membrane. It was removed with ease by means of an ear spoon, and proved to be an incisor tooth. The man's dentition was normal, except that a back tooth on the right side was missing, so that this was not an inverted but a supernumerary tooth.

Harrell, R. F., Ruston, La.—A man, aged thirty-four years, came to Dr. Harrell for treatment for nasal catarrh. For six years he had suffered from this catarrh and from the most severe pain throughout the right side of his face. Breath very offensive. Upon examination a large white substance was discovered springing from the floor of the right nostril, about an inch from the meatus, and almost filling the nostril. It was hard and firmly fixed. He broke it from its attachment with strong forceps. It proved to be a perfect tooth, similar in shape to a canine, but somewhat smaller. The mucous membrane was adherent to the tooth in a similar manner to that in the alveolar process. The catarrhal symptoms all ceased.

Joachim, O., of New Orleans.—Dr. Joachim's case was under treatment for specific ulceration of the nasal septum a year previous to the visits reported here. The removal of some sequestra and a course of specific treatment brought about a cessation of symptoms at that time, and the patient returned for observation because of a continuous profuse discharge from his right nostril. The discharge was not purulent. There was a prominent elevation from the floor of the nose. On examination with a probe from behind forward a very rough surface could be felt. He pried it from its bed with a strong dental hook. It proved to be an incisor tooth. There was no tooth missing, and no irregularity in the growth of the teeth of the patient; therefore he looked upon it as a superfluous, not an inverted tooth. Its location was an inch and a third from the bony margin of the nose, and two inches and a half from the tip of the nose.

Seifert (Privat-docent at Wurzburg).—After a review of the literature he is able to find on the subject, Dr. Seifert reports the following case: A man, aged twenty-

five years, was sent from the Polyclinic for Diseases of the Ear with the note that the right nostril was completely occluded. Examination showed on the floor of the right nostril, about two centimetres from the entrance of the nose, a foreign body, hard and white, lodged in a mass of granulation tissue which extended a little over it. Having lifted the granulation tissue by means of an *écraseur*, the foreign body could be pushed backward and extracted through the posterior nares. It could not be determined with certainty in what manner it had become fixed in the nose. Exploration with the sound revealed no roughened bone or fissure. It was recognized as a tap-rooted or pivoted tooth, which was partly incrustated with calcareous salt. The dentition was complete, the teeth well formed and without other anomaly. The upper jaw was also normal in conformation. Patient had not had any suspicion of the presence of a foreign body in his nose. In this case, as in that of Daae, there had occurred an invagination of the dental germ into the nasal mucous membrane.

Brindel, A.—Dr. Brindel, under the heading *A Tooth Implanted at the Entrance of the Right Nasal Fossa, with Reflex Troubles (Accession of Cough and Laryngeal Spasms)*, reports the following case: Mrs. B., a servant, aged sixty-two years, consulted Mr. Moure at the clinic for diseases of the nose, larynx, and ears. She complained, not of the presence of a foreign body in the nose, for of that she was unconscious, but of accessions of cough and spasms of the larynx coming on at irregular intervals. She had at times three or four accessions in the same day, on other days none. Twice the spasms had been sufficiently severe to produce syncope. This had gone on for five years. For a long time she had had a tooth abscess on the right upper jaw, opening into the buccal cavity, but of which she could give us only very vague accounts. On account of the cough and laryngeal spasm, Mr. Moure thought there must be a question of reflex trouble from the nasal pharyngeal or laryngeal point of departure. The pharynx and larynx showed nothing abnormal, but at the entrance of the right nasal fossa could be seen a white, round body covered with mucus, having the form of a tooth and imparting to the probe the feeling of bone. It was, in fact, a tooth implanted in the floor of the nasal fossa, which emerged for about half a centimetre from the mucous membrane. It was covered with enamel which was notched. The upper part, concave and rugose, gave exactly the appearance of a carious

tooth. One could impart slight lateral movement to the tooth. The upper jaw, very well formed, had not had since the age of twenty-eight years either incisors, canines, or little molars on the right side, but she said she had had a normal dentition and the teeth had been well placed, decaying very early. The tooth was extracted with an ordinary forceps. Extraction was easy and not attended by the loss of much blood. It had the root implanted in the superior maxilla, pointing from above downward—in the opposite way, consequently, from normal teeth. An interesting fact is that the patient has not had the least accession of suffocation since the day when the supernumerary tooth was removed.

Watson, A. W., Philadelphia.—Written communication of an unpublished case from Dr. Arthur W. Watson, of Philadelphia.

“The case was of a man, thirty-three years of age, who had a sarcoma of the right nasal chamber, involving primarily the inferior turbinated bone—subsequently the whole superior maxilla. During an attempt, under ether, to remove the diseased tissue, the instrument struck a hard substance imbedded in the tissues under the inferior turbinated bone. On removal, this proved to be the root, or part of the root, of a tooth.”

Graham, George W., Charlotte, North Carolina.—A child, female, aged ten years, was brought to Dr. Graham for treatment for nasal catarrh. Eighteen months previously the child had run against the iron hinge of a gate and knocked out one of her front teeth—the right central incisor—and otherwise injured her mouth, which bled profusely. An examination of the nose showed the left nostril normal, the right nostril filled with a polypoid growth from beneath which there oozed constantly a watery fluid. After removing the excrescence, the tooth which had disappeared was discovered firmly imbedded in the inferior turbinated bone; the crown presented to the front. The girl had struck the hinge with such force as to drive the tooth entirely through the superior maxilla and bury it in the nasal bone, and so thoroughly had it united with the parts that it was impossible to remove it with forceps without doing further injury to the nose. With the assistance of Charles L. Alexander, dentist, the tooth was soon severed from its connections. The patient had a perfectly normal condition of the remaining teeth.

MacCoy, Alexander W., Philadelphia.—Anna S., of

New Jersey, white, aged forty-five years, came under my care having the following history. Family history shows phthisis and eczema. Personal history: Has always been delicate. Shortly after birth she had a gathering just beneath the right orbit, which opened and remained a suppurating sore for several years. There was extensive necrosis of the bones of the face on that side. This finally healed after the condition had lasted for several years. The depression resulting from the loss of bone can be seen and felt. She was born at full term. At time of birth she had two teeth on the right side of the upper jaw just behind where the eyetooth normally is. These were pulled by the doctor in charge a short time after birth. Her primary dentition was normal, all the teeth coming through except the one just back of the right eyetooth. These teeth, which she got when a child, remained permanently, and she never had a second dentition. Her teeth were always bad, and she suffered so much from them that in 1884 she had them extracted, and has since worn artificial teeth. Ever since she can remember she had catarrh of the right nostril. Very offensive discharge. Occasionally small pieces of bone came away in the discharge, the size of finger nails, black and ragged and felt gritty. In 1884 she sought relief at a dispensary. At that time she could feel a gritty substance beneath her right orbit, as though there was a piece of loose bone there. She could also feel a hard substance in her nose by inserting her finger. She continued going at more or less frequent intervals to the dispensary. In September and October, 1895, she suffered so intensely from occipital and temporal headache that in the first week of October she went to the Out-patient Department of the Pennsylvania Hospital, where she first came under my care.

Inspection of the right nasal chamber showed a pinkish-white glistening object on the floor of the nasal fossa, which appeared to project from it, and resembled a polypus in color. Examination by probe revealed hardness, fixation, and sensation of bone, and the object was diagnosed a tooth—root presenting. The distance from the vestibular opening was four centimetres; the visible projecting root one centimetre in length, directed at a slightly oblique angle toward the median line and free from contact with the nasal chamber. The right nasal cavity was markedly irregular, the anterior portion of the lower turbinated bone being rudimentary. The surface of the floor of

the nose was very irregular, with marked deflection of the nasal septum to the left. Great hyperæmia of the mucous membrane existed.

The removal of the tooth was accomplished without much difficulty by the use of long, narrow sequestrum forceps. Upon its removal the hæmorrhage was free, followed some hours later by secondary hæmorrhage. No necrosis of the surrounding bony tissue was observed. After rapid healing, a depression remained in the floor of the nose where the tooth had been. The occipital and temporal pain was markedly relieved, and the local and general condition greatly improved. Examination showed the tooth to be a permanent bicuspids.*

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* At the last meeting of the American Laryngological Association my attention was directed to a translation of an extract from a letter by Goethe, dated Stuttgart, September 6, 1797, in which he describes a tooth in the nasal cavity. To Dr. Jonathan Wright, of Brooklyn, we are indebted for bringing to light this unique case. The article appeared in the *Medical Record* of May 19, 1894. This report of Goethe's is in all probability the earliest mention of a tooth found in the nasal cavity.

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NOTE.—I take pleasure in acknowledging my indebtedness to Dr. Francis R. Packard for the reference work in this paper.

Discussion.

Dr. A. A. BLISS said: I think we are under great obligations to Dr. MacCoy for collecting these cases, and I do not know of any similar work that has been done. I think the trouble must be more common than we realize. Only two weeks ago I received a report of the case of an adult who had not suffered any inconvenience from the irruption of a tooth into the nasal chamber until within three weeks before its removal. The fact that he had carried it so long shows the possibility that such cases may go unrecognized for many years, and unreported.

Dr. A. W. WATSON, in continuing the discussion on Dr. MacCoy's paper, said: Dr. MacCoy mentions a case of mine which was one of sarcomatous growth of the nose involving primarily the inferior turbinated bone. It was in removing the growth that I discovered the root of a tooth in the nasal chamber. It was apparently crowded

up under the growth. There was no indication as to where it came from. I am unable to say whether the irritation from the foreign body had anything to do with causing the malignant disease in the nose.

Dr. MACCOY, in closing the discussion on his paper, said: I am indebted to Dr. Watson for the history of his case. It may be that the tooth was the cause of the production of the sarcomatous mass.

Paper.

A CONTRIBUTION TO THE PATHOLOGICAL ANATOMY OF
ETHMOID DISEASE.

By JOHN NOLAND MACKENZIE, M. D.

THE poverty of our exact knowledge concerning the finer histological changes that take place in the ethmoid region during disease of that structure induces me to bring before you the microscopic appearances observed in several cases (which I select from a number of similar ones) which may be considered as representative of a certain type or class of inflammation of the ethmoid cells sufficiently commonly met with in practice.

Out of the series I take the following case, the narrative of which may be briefly told:

It is the simple story of a unilateral purulent or muco-purulent nasal discharge, sometimes scanty in amount, sometimes very profuse, extending over a period of nearly eighteen years, in a young unmarried woman of twenty-nine, in other respects in apparently good health. The origin of the disease is obscure; but in all probability it is the legacy of a neglected intranasal inflammation, possibly an acute or subacute endorhinitis.* The discharge, which has always been free from odor and which under the microscope is destitute of organisms other than the ordinary pus-producers, varies greatly in amount at different times. Sometimes

* The term "rhinitis," employed as descriptive of inflammation of the lining membrane of the nasal passages, is a misnomer and its use illogical. The term "endorhinitis" is much more logical, more exactly descriptive of existing conditions, is not too abrupt a change from the old nomenclature, and is sufficiently short to warrant the transition from the old to the new.

absent, it is at others very great in amount and accumulates with marked rapidity, and is associated with extensive crust formation. A notable feature is its very pronounced increase during menstrual excitement (menses), at which time the other symptoms are notably intensified.†

The discharge is associated with supraorbital neuralgia of the corresponding (right) side of the head and other pains variously referred to the back of the head, neck, and even as low down as the shoulder blade. There was no tenderness externally on pressure.

These symptoms had begun to affect her general health and had produced a condition of nervous excitability which had interfered greatly with her social duties as a leader of fashionable society.

She came to Baltimore in the latter part of November, 1895. Just prior to that time she had undergone an operation (curettement) on the uterus for the relief of endometrial inflammation, the result of careless exposure at the menstrual epoch. At her first visit an ocular examination of the interior of the nose revealed nothing worthy of special notice except a moderate thickening of the anterior end of the middle turbinated body.

Between it and the external wall was a very thin line of purulent discharge. A delicate silver probe passed with some difficulty between the turbinated body and the external wall, impinged high up upon a rough, uneven surface, and its passage was followed by some bleeding and increase in the discharge. The whole turbinated ethmoid region was exquisitely sensitive to the touch. As it was impossible, both from the narrowness of the passage and the great hyperæsthesia (even under cocaine), to introduce even the smallest curette, I removed (with the cold-wire snare) the anterior end of the middle turbinated body as a preliminary step to opening the ethmoid cells. The operation was followed by considerable hæmorrhage and profuse purulent discharge. On the following and subsequent days I removed the diseased structures with Grünwald's cutting forceps and curettes.

In order to illustrate the pathological changes that take place in this particular grade of inflammation of

* See on this subject the paper by the author on Irritation of the Sexual Apparatus as an *Ætiological Factor in the Production of Nasal Disease*. *American Journal of the Medical Sciences*, April, 1884.



J. D. Z. Chase.

FIG. 1.—SECTION THROUGH MUCOUS MEMBRANE OF ETHMOID.

the ethmoid region I have had the accompanying drawings made. They were taken from sections of portions of the turbinated and ethmoid cells removed with the forceps and snare. The sections were carefully prepared by Professor Simon Flexner, of the Johns Hopkins University, and it is from his report of the microscopical examinations that I shall quote.

Fig. 1. Section through the mucous membrane of the ethmoid. The whole represents an hypertrophied mucous membrane in which a few glands only are preserved. The new tissue is highly vascularized, resembles young granulation tissue, contains small accumulations of leucocytes, and is covered by a layer of laminated epithelium, the superficial cells of which are columnar, ciliated in character. The new tissue can be traced inward as far as the bone, a small section of which is included in the drawing. The preserved glands are atrophied, separated by an intervening new growth of tissue, and are rapidly undergoing obliteration. The resemblance of the new tissue to sarcoma is at first suggestive. The differences are (1) the collections of small inflammatory cells in the mass of young tissue; (2) the slight tendency to invade the deeper structures; (3) the presence in other parts of the specimen of definite adult connective tissue of which this granulation tissue is probably an early stage; (4) the clinical history, which is not at all suggestive of malignant tumor.

Fig. 2. Hypertrophied mucous membrane of the ethmoid (?). The tissue constituting the hypertrophy is composed of small round and spindle cells, and apparently is a granulation tissue. Among these cells a considerable number of polymorpho-nuclear leucocytes are scattered. Between the cells a basement substance, for the most part granular, but in part fibrillated, is present. Definite adult fibrous tissue does not occur in this part of the section. The surface epithelium shows the most interesting changes. It is of a laminated character, the superficial cells being high (columnar) and ciliated. The normal epithelial layer is found to become thick-

ened and thrown into folds resembling the normal inter-papillary processes, and to grow downward into the new tissue in an atypical manner. Normal glandlike structures are entirely wanting in this new tissue.

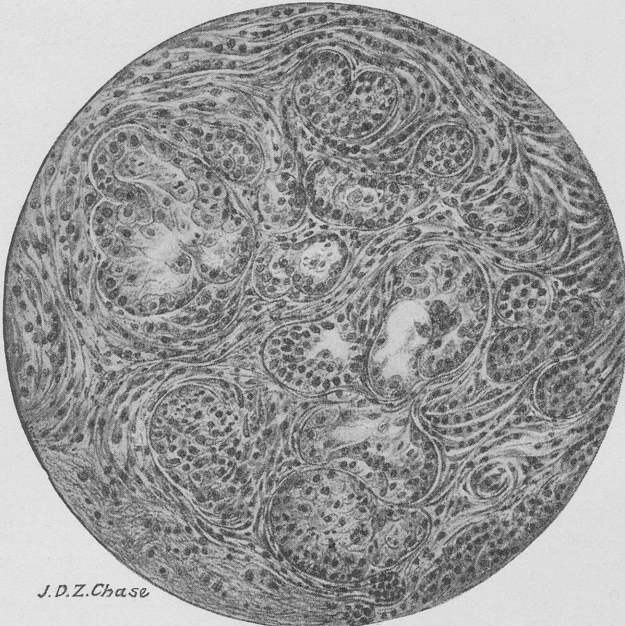


FIG. 2.

This growth of epithelium is atypical in character, not malignant, and distinct from epithelioma. Similar atypical growths are found in the base of old leg ulcers, healing chronic ulcerations of the intestines, etc.

Fig. 3 shows the glands of the ethmoidal mucous membrane being separated by a new growth of tissue which also is invading the gland lumina. The glands to the right are quite normal, while those to the left are more or less altered, especially the one in the lower left-hand corner of the drawing. The last shows an ingrowth of spindle-shaped elements and small round cells, and among these a few polymorpho-nuclear leucocytes. In the extreme lower left-hand corner the finely

fibrillated tissue is a false membrane composed of hyaline fibrin with a few pus cells, and dates from an operation some days previous to the removal of the tissue from which this was taken. The pseudo-membrane mentioned apparently was produced by a direct transformation of the cells of the tissue into this fibrinous



J.D.Z.Chase

FIG. 3.

material. Very few emigrated cells seem to have participated in the process.

The chief lessons to be learned from the foregoing study are:

1. That the so-called "myxomatous degeneration" described by writers on ethmoid disease is not due to mucous change at all, but is the result of simple inflammatory action.

2. That authors have fallen into this error because they have approached the subject solely on its clinical side and without the aid of the microscope.

3. That purulent ethmoiditis may in many cases endure for years without producing any bone lesion whatever, and that therefore the proposition that all ethmoiditis tends toward and usually develops into necrosis has no foundation in actual pathological fact.

4. That the changes found represent successive stages of the same affection, and that therefore divisions and subdivisions of "ethmoiditis" tend to introduce an element of confusion into our pathological conception of the disease.

5. That the ethmoid region affords probably the most excellent place for the study of the origin of so-called nasal polypi.

6. Finally, of great importance is the striking similarity between the young granulation tissue found in the ethmoid region and the structure of round-cell sarcoma, and hence the possibility of error in microscopic diagnosis in early and even in more or less advanced cases.

Let us consider these propositions in detail:

I. It is high time to clarify our ideas in regard to the frequent existence of myxomatous tissue within the nasal passages. The term "myxoma," as applied to neoplasms in these cavities, has long been used in a loose and misleading manner. Myxoma is the embryonal tissue from which fat is originally formed, and is therefore homologous with lipomatous tissue. Hence we should naturally expect to find it in situations where adipose tissue most abounds, and this is, as is well known, clinically the case. If, then, we understand by "myxoma" a structure histologically similar to that of the vitreous humor and foetal cord, then the nasal passages would be among the last places in the body in which we would look for mucous tissue. The growth commonly found in the nasal passages is not a true mucous structure, but an cedematous fibroma which is usually inflammatory in origin. We may find areas of tissue resembling myxoma in growths removed from the nose; but in regard to the frequency with which true mucous tumors are found in this region, I am at

one with Jonathan Wright,* when he declares that such is not "the usual character of the growth we know clinically as gelatinous nasal polypus."

The same is true of the diseased tissue removed from the ethmoid region. Here the closest scrutiny fails to detect the presence of myxomatous tissue (see plates). Our nomenclature would, therefore, be more exact if we discarded entirely the terms "myxomatous" and "gelatinous" in our classification of intranasal neoplasms.

II. The macroscopic appearance of the tissue removed from the ethmoid and middle turbinated cells resembles quite often the structure which we have heretofore looked upon as myxoma; but I have yet failed to find on microscopic examination any trace of true mucous tissue.

III. The most radical view of this subject that I have met with is the assertion of Bosworth,† who, speaking of the "early occurrence of necrosis and exfoliation of bone," makes the statement that "the tendency in all cases, and the result in the large majority of instances of a suppurative inflammation of the ethmoid cells, is necrosis of bone," and that "all ethmoiditis tends toward, and usually develops sooner or later into, necrosis." In the light of my own experience, it is extravagance of statement to aver that there is an inherent tendency in all cases of ethmoiditis toward necrosis or even caries. Leaving out cases due to specific (syphilis, tuberculosis, etc.), chemical (mercury, phosphorus, etc.), or traumatic causes, it is not the rule to find necrosis or even caries of bone. I have never met with them except as accidental or incidental phenomena. Suppuration may go on for years without involvement of the denser structures. That bone lesions should be found in cases in which the pus can find no exit, or in which the blood-vessels have been so changed by the infective process that loss of substance in the soft and bony parts has

* *Transactions of the American Laryngological Association*, 1893, p. 80.

† *Diseases of the Nose and Throat*, vol. i, New York, 1889, p. 482.

occurred, is not in the least degree to be wondered at. But that there is any inherent power in simple or even suppurative inflammation of the lining membrane of the ethmoid cells to produce caries or necrosis of bone is highly improbable and not in accordance with clinical fact. Such tendency is not found elsewhere in this portion of the respiratory tract, and the ethmoid region should therefore furnish no exception to the rule. The simple truth is that when the inflammatory process reaches the bone, changes may take place in that structure similar to those found in the stage of atrophic endorhinitis, viz., absorption and disappearance.

In a large number of turbinated bones removed by Grünwald * only a few showed signs of secondary caries, and in these the bone lesion was not primary, but secondary, and due to long-continued irritation of pus, not from the situation of the ulcer, but from elsewhere—more in the nature of a decubital ulcer.

IV. We unnecessarily complicate matters by describing as different varieties the different stages of one and the same disease. In the case before us, as can readily be seen from the above, we are dealing with a chronic inflammatory process which in many respects follows the fortunes of inflammation in the lower nasal passages and shares a similar fate.

V. An examination of the diseased tissues from the ethmoid and middle turbinated regions in the cases submitted to the microscope would seem to indicate that in this particular situation, at least, the ordinary nasal polypus is developed as follows: The *first stage* consists in the formation of young granulation tissue, the result of inflammatory action. In the *second stage* this tissue becomes gradually converted into definite adult connective tissue, which in the *third stage* gradually separates and causes more or less complete obliteration of the normal structures, and in the *fourth stage* converts them into a fibrous mass. In this condition the growth is extended from, let us say, the ethmoid cells, by the

* *Die Lehre von den Naseneiterungen*, München, 1896, p. 31.

vis a tergo of the hyperplastic changes within its interior, into situations where, acted upon by the force of gravity, it becomes cedematous and assumes the form and position characteristic of these growths in obedience to the operations of that natural law.

The conditions under which the conversion of young granulation into adult connective tissue takes place are as yet imperfectly understood. That such conversion does not always occur is evident from the presence of masses of granulation tissue in the form of definite tumors, notably in the region of the *hiatus semilunaris*, in cases of sinus inflammation. Possibly, therefore, the granulomata found in this situation may represent the original granulation tissue which has not undergone fibrous change.

I can not go as far as Grünwald* in ascribing the genesis of nasal polypi to suppuration. They are undoubtedly in the vast majority of cases (to say the least) the product of inflammation. The presence of suppuration, frequent though it may be, is simply an accidental or, to speak more accurately, an incidental phenomenon, and is therefore of secondary importance.

Discussion.

Dr. W. E. CASSELBERRY, in discussing Dr. Mackenzie's paper, said: We are under obligations to Dr. Mackenzie for having elucidated the subject of ethmoid disease and the so-called myxomatous degeneration. His line of argument, based upon microscopical examination, only confirms what has been suspected from a close study of the clinical aspects of these cases. At the same time, like an iconoclast, he has overthrown our idol, but failed to set up another in its place. He criticises the term myxomatous degeneration, but substitutes nothing which is definite and explicit. It is difficult, every time one wishes to speak of a polypus or of that degeneration of the tissue of the middle turbinated body and the ethmoid region which clinically is polypoid in nature, to go through a course of reasoning as to its inflammatory origin. Writers use the term myxoma as applied to nasal polypus in a qualified sense.

* *Loc. cit.*, p. 80.

It is not claimed to be a typical myxoma like the vitreous humor, but it does contain certain elements which have seemed to justify the name. They always contain fibrous tissues, and hence have been termed by some myxo-fibromata. Polyps are known to be of inflammatory origin, and so likewise now with "myxomatous degeneration," thanks to Dr. Mackenzie, we know it to be of an inflammatory nature, but I do not see that it is practicable to abandon the old term, which means simply something like a nasal polypus or "nasal myxoma," unless, indeed, one should use the name "polypoid degeneration." I am glad that the author of the paper, judging by the case which he cites in which he removed the anterior end of the middle turbinated body, sanctions this treatment which I advocated in 1891, before this association, in a paper entitled *The Radical Treatment of Nasal Polypus*.

Dr. S. SOLIS-COHEN said: I should like to ask whether the speaker means to imply that the ordinary nasal polyp contains none of the peculiar substance which we call mucoid tissue. He has demonstrated the presence of this tissue in enlargements removed from the posterior portion of the turbinated body.

Dr. MACKENZIE replied to Dr. Casselberry that he would substitute for the term myxomatous polypus that of *œdematous fibroma*, which was sufficiently descriptive of the condition present in these growths. He regarded also the tumors specially referred to by Dr. Cohen, and which have their origin in the posterior turbinated region, as susceptible of a similar pathological explanation.

As to the use of the term "endorhinitis," he thought it a more strictly scientific and logical term than the one usually employed. He had not forgotten Dr. Casselberry's excellent paper on removal of the middle turbinated bone in cases of nasal polypi. The suggestion to remove this structure in whole or in part in sinus disease came to us, he thought, from Germany. He replied to Dr. Cohen, that the tissue found in the common nasal polyp, which was formerly called myxomatous, had been shown by recent research to be fibrous tissue which had undergone *œdematous* infiltration. The discovery of large quantities of mucin in this tissue was no proof of its true mucous character, as mucin in abundance is found in many normal and abnormal products.

*Paper.*LARYNGEAL AND POSTNASAL PHOTOGRAPHY WITH THE
AID OF THE ARC LIGHT.

By THOMAS R. FRENCH, M. D.

THE application of the sensitive photographic plate in place of the human eye to physiological and pathological studies of the throat and nose opens vast possibilities. We are thus enabled to ascertain with accuracy what before had to be intrusted to the power of perception of the eye. The existence of conditions or matter in this way revealed can not be so clearly reached by any other visual process, and every impression recorded in minutest detail on the sensitive plate is preserved for our study. Again, the results thus obtained can be verified at every step and any statement or scientific truth becomes valuable only as it admits of verification. This fact makes me feel that the art of laryngeal or post-nasal photography is worthy of our closest study.

How far-reaching the practical results or how great the benefits to be derived from this work we can not know, but having recognized in it the possibilities of a great power for knowledge, which needs must increase in proportion to the opportunities given it, the writer believed that its usefulness ought to be extended, and this, it was apparent, could only be done by simplifying the method of work. With this end in view, an effort was made to overcome some of the disadvantages of the method which I described at the International Medical Congress, held in Copenhagen, in 1884. The principal difficulty with that method was that the source of illumination was sunlight. The necessity of limiting the use of the method to a few hours on days on which the sun shone brightly, added to the varying power of the sun's rays and consequent uncertainty of the success of the exposures, reduced its usefulness to a very considerable extent. During the past few months I have, however, succeeded in adapting the electric arc light

to the method. With sunlight as a power of illumination it was necessary to bring the subject to the light. With the new method we can bring the light to the subject, and at any time, day or night, good photographs can be taken. This will undoubtedly enhance the value of laryngeal and postnasal photography, for with it greater opportunities will be presented for the

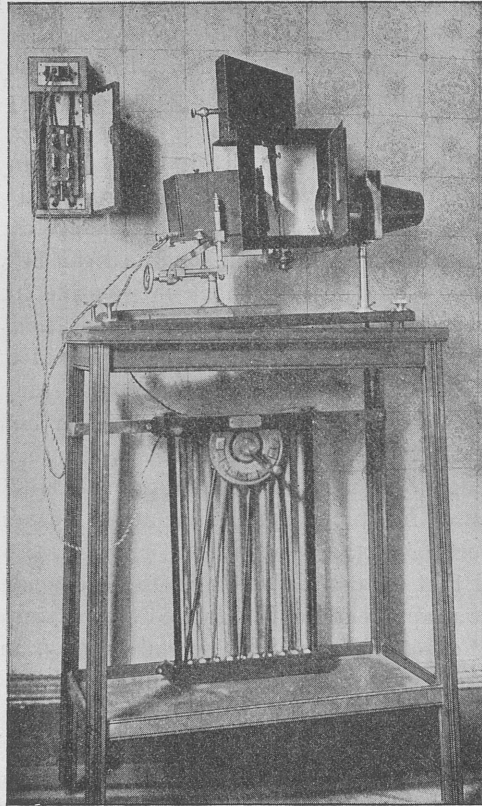


FIG. 1.

study of the interior of the larynx, the posterior nares, and the vault of the pharynx in normal and pathological states.

As the distance between the camera and object to be photographed is necessarily very short, one of the

greatest difficulties was to adjust the light to the sensitive plate so that a depth of focus would be obtained. To do this a small diaphragm, a rapid shutter, a very sensitive plate and a powerful light must be used.

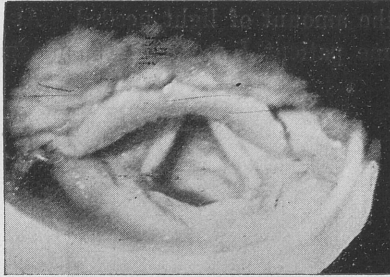


FIG. 2.

The necessary outfit for producing a sufficiently powerful light is represented in Fig. 1. It consists of an automatic two-thousand-candle-power lamp partly inclosed in a metal box. The front face of the box carries a condensing lens which, when placed nine inches from the arc, gives a focal distance of twenty inches. This relation of light and lens was found to give the most satisfactory illumination. The lamp and accessories are fitted to a narrow board which is placed upon a table of sufficient height. The light can be raised or lowered by means of a device designed for that purpose. The rheostat is placed upon a shelf beneath the table top. The whole light outfit is but a modification of the electric stereopticon. This one is so arranged that by adding a second condensing lens and an objective lens to the end of the cone-shaped tube in front it can be used as a projecting lantern.*

The manner of using the light in photographing the larynx or posterior nares is the same as I described it in connection with the sunlight condenser.† The beam

* Though I have not yet had an opportunity to test it, I am inclined to the belief that the new self-feeding and self-focusing arc lamp recently placed on the market will answer the purpose even better. The apparatus used in these experiments was made for me by Charles Beseler, of New York.

† *New York Medical Journal*, December 13, 1884.

of light should be caught upon the forehead mirror several inches inside of the point of focus. Good photographs can usually be obtained at the first sitting, though sometimes two sittings are required, for it is not always possible immediately to find the focus or determine the amount of light needed. At the second sitting of one patient I made eighteen exposures and

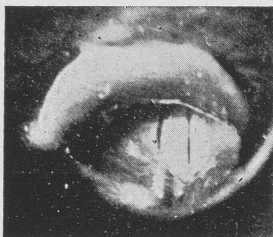


FIG. 3.

obtained fourteen good impressions. If the apparatus is in order the time needed to secure a photograph of any larynx does not exceed that necessary for making a careful laryngoscopic examination.

As the apparatus was not perfected till last month I have not been able to make a large collection of photographs, but with your permission I will exhibit a few pictures on the screen which fairly illustrate the perfection which the art has reached. While these photographs are, perhaps, quite as good as those taken by the aid of sunlight, I feel convinced that a few changes and additions which I have in mind will give even better results.*

Fig. 2 represents a normal larynx in quiet respiration and is a fair illustration of the kind of photograph it is possible to take with the new method.†

* Twenty-one photographs were shown in a lantern-slide exhibit, eight of which have been reproduced for publication in this article.

† The photographs shown in this article have not received any kind of artistic assistance. They have lost considerably by the process of reproduction, and a slight amount of retouching, such as is usually done with reproductions by the half-tone process, would make them as strong as the original negatives. While retouching might be legitimate and

Only those parts will be impressed upon the plate which receive the light directly from the mirror. When the epiglottis is greatly curled upon itself it is very difficult to get a picture of the whole length of the vocal bands, because the axis of the lens and the line of illumination are not the same. If the interior of the larynx, in such cases, is completely exposed to the lens, the illumination must be made obliquely, which, of

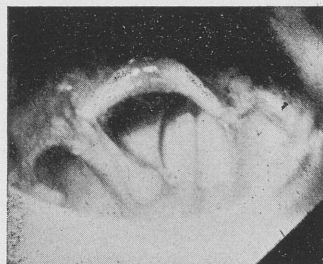


FIG. 4.

course, gives deep shadows. If, on the contrary, the larynx is fully illuminated through a horseshoe epiglottis, the exposure must be made somewhat obliquely, which necessarily precludes an impression of the whole of the interior of the cavity.

The angle of the mirror employed is an important matter. The more acute the angle the greater the liability of exposing only the anterior portion of the larynx and the base of the tongue, and also of the tongue intercepting the exposure to the lens. When a mirror with too obtuse an angle is employed, in order to expose the parts satisfactorily to the eye, the camera must be lifted so high that the line of exposure will be above the line of illumination. This again will result

even advantageous in some instances, it would be a dangerous practice in most cases, for if the retouching was not skillfully done, or the lines and shadows were not accurately copied, the results would be disastrous to physiological and pathological studies made with this method. It may be appropriate for me to say here that I have never permitted retouching to be done to any of the negatives of the larynx or posterior nares which I have made.

in exposing only the anterior parts of the larynx. I use two mirrors for each sex; one with an angle of a hundred and thirty-five degrees, the other of a hundred and forty degrees to the axis of the lens. One or

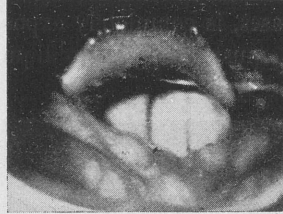


FIG. 5.

the other of these is capable of being adapted to any throat, so that the lines of illumination and exposure will be the same.

Another interesting feature in laryngeal photography is shown in Fig. 3. I refer to the difference in the width of the vocal bands. Though this, no doubt,

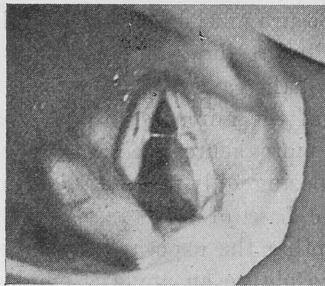


FIG. 6.

is due to the mirror being held somewhat obliquely in this photograph, the same effect is not produced in the photographs of every larynx, even when the mirror is held more obliquely than it was in this instance. The only explanation I can give of the cause of this effect is that the ventricular bands lie at a greater distance from the vocal bands than is usual, and naturally the higher their position, if the mirror is not held

exactly in the median line, the more one ventricular band will cut off a view of the vocal band on the mirror side.

In the next photograph (Fig. 4) it can be seen that the mirror must have been held more to the side than in the one we have just criticised, and yet the vocal bands seem to be of equal width. The openings of the ventricles of the larynx are presumably quite narrow in this case. This photograph also represents mild ca-

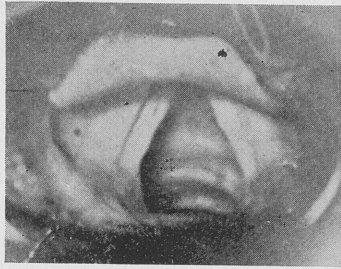


FIG. 7.

tarrhal laryngitis. The outer edges of the vocal bands are moderately congested, and a considerable amount of mucus can be seen in the glottic chink.

The photograph represented in Fig. 5 shows the larynx of one of the sopranos of the German Opera Company who sang in this country during the past

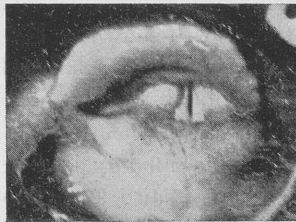


FIG. 8.

season. For reasons of her own the lady prefers that I should not make public use of her name. She suffered from a cold during the latter part of her engagement, but was forced by her contract to sing while the larynx

was the seat of active congestion. The condition of her larynx which was present just before she sailed for Europe can be seen in the picture. The edges of the vocal bands have lost their sharp definition because of the presence of catarrhal secretion.

The next photograph (Fig. 6) is exhibited to show a small growth on the left vocal band in the larynx

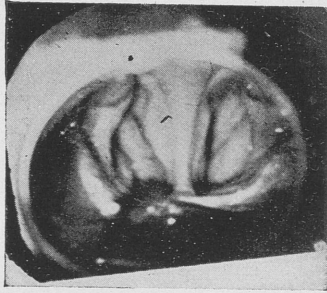


FIG. 9.

of a Sister of Charity who had strained her voice in singing. She was moderately hoarse, and was unable to use any of the tones above the middle of her compass in singing. I removed the growth with tube forceps two weeks ago and sent it to Dr. Jonathan Wright for microscopic examination. He reported later that it was a simple inflammatory neoplasm, as I had supposed.

Fig. 7 represents the appearance of the larynx after the removal of the growth shown in Fig. 6.

Fig. 8 shows the larynx of a lady whose pulmonary apices are both consolidated and who has tubercle bacilli in her sputum. The voice is weak, and the cause of it can be seen to be an impaired action of the internal tensors. There is also a spasmodic contraction of the ventricular bands, the effect of which is well shown in the picture.

Fig. 9 is a photographic representation of the rhinoscopic image in a subject with postnasal catarrh, showing evidence of both the hypertrophic and atrophic varieties of the disease.

However complicated the art of photographing the larynx and posterior nares seems, it is nevertheless a simple procedure when once understood, and, though it may be somewhat difficult to acquire, the possibilities of its power of adding to our knowledge of the normal and diseased conditions of the throat and nose must be a sufficient reward for the labor required.

Paper.

A REMARKABLE CASE OF FIBRO-CHONDROMA OF BRANCHIAL ORIGIN (PHARYNGEAL TERATOMA) REMOVED FROM THE THROAT OF AN INFANT SIX WEEKS OLD.

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

THE specimen which I exhibit to you, in connection with the accompanying photographs and cuts, was removed a few days ago from the throat of an infant child six weeks old. The history of the case is as follows:

H. J. H., male, aged six weeks, born in New Orleans, was presented by his mother at the outdoor clinic of the Eye, Ear, Nose, and Throat Hospital of this city, recommended by the family physician, Dr. Lovell. The examining surgeon, Dr. A. McShane, recognizing at once an unusual pharyngeal growth, called my attention to the case. The mother relates that almost immediately after birth the child was heard to produce "a queer noise" while breathing. When put to the breast, it could not nurse and seemed to strangle, this condition continuing until now. The bad suffocating spells did not, however, recur more than once or twice a week. They were at first ascribed to great accumulation of phlegm in the throat and bronchial tubes, then to a bad attack of spasmodic croup. A few days ago another very violent attack led Dr. Lovell to examine closely into the case, when he diagnosticated the presence of a growth, and advised the parents to bring the child to our clinic. The parents are almost pure German, of ordinary mentality and good apparent habits. The father is aged twenty-eight years and the mother twenty-six. There is no history of any family or hereditary deformity as far back as they can go, and no reason to allege any maternal impression during pregnancy. The child is of

ordinary weight; the closest investigation fails to reveal any congenital defect beyond the growth just referred to. Its ears are perfect in every respect.

Upon opening the mouth widely and depressing the tongue nothing very striking is observed at first; but, when the infant begins to cry, a movable growth, hidden in the postnasal space, is seen to emerge imperfectly from behind the soft palate and place itself in what I would call first position. With a continuation of the excitement the growth is apt to fall lower down into the pharynx, as far down as the vestibule of the larynx, in its second position. Gradually, after spells of coughing and successive efforts of violent expiration, the tumor is apt to recede back into the nasopharynx or to place itself on the base of the tongue, which finally propels it forward on its dorsum in its third position (as represented in Fig. 1), with its lobule pointing forward

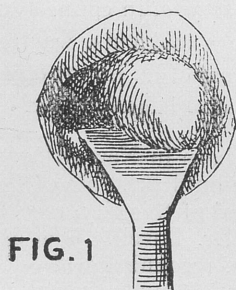


FIG. 1

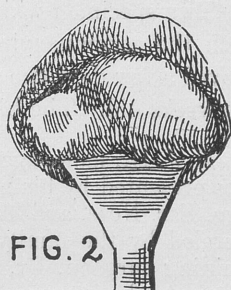


FIG. 2



FIG. 3

Kohnke
ad nat. dpl



FIG. 4

on the middle line, giving the appearance at first sight of a supernumerary tongue, with the exception of its integument, which is decidedly cutaneous instead of mucous. From its third position, the tumor soon

rotates around a marked point of attachment and places itself in the fourth position (as represented in Fig. 2), with an apparent size comparable to the last joint of the thumb of an adult hand. In this final position the growth reached fully the alveolar border of the superior maxilla. Upon introducing my little finger between the tongue and the tumor, I could feel that its lower surface presented distinctly a hardened, cartilaginous nucleus, and that the mass seemed to be attached to the left side of the bucco-pharyngeal cavity, but, owing to the lack of room, I could not reach farther than the fauces. The postnasal space, as ascertained with a probe through the nostrils, was found to be comparatively free, as compared with its fullness when the growth was in its first position. After the examination the case was referred back to the next day in order to present it to my polyclinic class. On that occasion, during an attempt to show exactly the point of implantation of the growth,

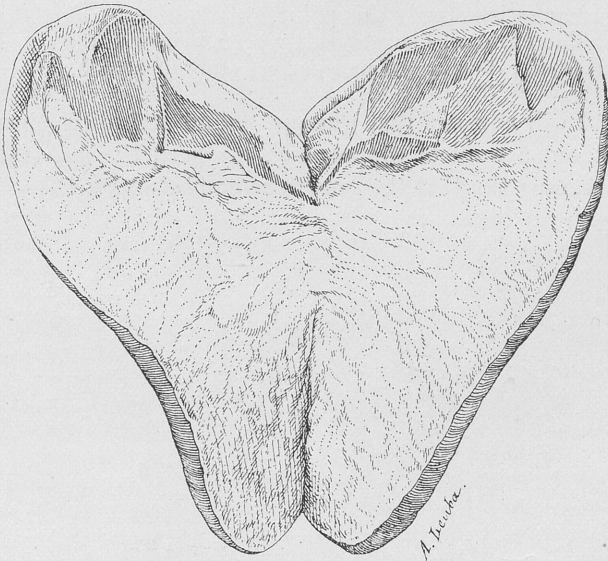


FIG. 5.—Longitudinal section of tumor, enlarged to double natural size.

the little patient was seized with such a violent attack of suffocation, cyanosis of the face, suffusion of the eyes, etc., that it was deemed prudent to at once extirpate the mass. For that purpose a Wright's snare was quickly wired, and the tumor, then down to the vestibule of the larynx, was teased to place itself in its fourth position

(Fig. 2), when it was grasped firmly with a forceps, the catch of which shows its imprint in Figs. 3 and 4.

The wire loop was thrown over the growth, but, unfortunately, it gave way at the eyelet, and partly constricted the growth, which had to be jerked away from its attachment, with scarcely any loss of blood. The respiration at once became natural. The point of implantation was then distinctly found in the left side at the middle part of the posterior pillar of the soft palate, covering a surface of the size of a split pea. The avulsion of the pedicle was almost flush with the surrounding parts. In order to satisfy some of my assistants, whose contention was that this raw surface might have been the result of some trauma caused by the loosened wire of the loop and my forcible evulsion of the growth, I took special pains the next day to examine under the mirror with the help of a good sunlight and of Jarvis rubber bands, passed through the nostrils and mouth and tied over the upper lip and gum. I was finally enabled to clear satisfactorily this point.

The child was subsequently seen two or three times, and finally discharged in a perfect state of health.

I will now add that when passed around to the class, without a word of comment on my part, the universal consensus was that the growth resembled an auricle.

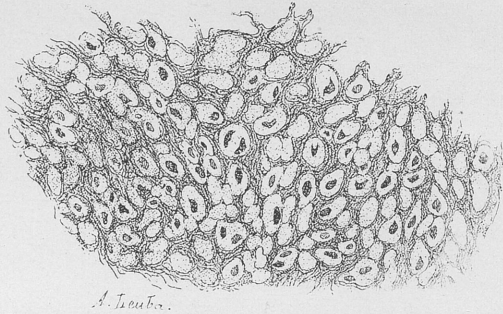


FIG. 6.—Microscopical appearance of tumor. Ocular, 1; objective, 7.

The appearances presented by this tumor are indeed very remarkable, and if my researches are complete, certainly quite unique in shape from any endobuccal or pharyngeal teratoid growth so far reported in the annals of science. As you will see by the accom-

panying photographs and cuts, the morphology of the tumor plainly recalls the normal auricle even to its size, which is very nearly the same as the normal ears of the patient (an inch and a half by an inch). The integument is composed of ordinary cutaneous tissue, with its epidermis, corium, hairy growth, and typical follicles, sebaceous glands, cartilage, etc. All these structures present but slight changes from the normal development. The meatus only is missing.

I deplore very much my inability to show you, as I had expected to do, the specimen itself, which, having been sent to my former distinguished teacher, Professor Lannelongue, of Paris, is now, unfortunately, detained in the New York Custom House.

I will, however, read the following note, which has just reached me, from the pen of Dr. Achard, who has collaborated with Professor Lannelongue in one of the most exhaustive works on congenital affections:

"I have examined in the laboratory of Professor Lannelongue the pharyngeal tumor which you kindly sent him. In order not to spoil the specimen, I have limited myself to a few 'offhanded' sections on the cut surface of the growth. The greater mass is made up of tolerably loose connective tissue and of some adipose tissue. The fibro-cartilaginous nucleus is constituted of reticulated cartilage or elastic fibro-cartilage. The tumor approaches in character the branchial fibro-chondroma observed by Mr. Lannelongue in the buccal cavity, but with this distinction that its integument is cutaneous and not mucous.

"There exists in the annals of science a small number of analogous cases. In the treatise on congenital cysts which Mr. Lannelongue and myself published in 1886 we devoted a chapter to these productions, basing our description on a few observations disseminated through the whole medical literature. Since then, Messrs. Lannelongue and Menard, in their work on *Congenital Diseases*, 1891, page 588, have found a few more cases. Finally, since that date I have heard of two or three more observations. All the tumors are covered by skin, and constituted specially by connective tissue and fat. The cartilaginous nucleus is found only in Barton H. White, Arnold, Otto, and Conitzer's cases.

"These tumors represent the simplest expression of the congenital productions known as '*epignath monsters*.'"

P. S.—Since writing the foregoing I have had occasion to show this interesting specimen to Dr. J. Bland Sutton, of London, the well-known authority on this subject, who was kind enough to furnish me, in a letter, with the following note:

"... It is an example of dermoid tumor of the pharynx, and, though its shape corresponds to a badly formed pinna, the tumor can not in a true sense be described as a supernumerary auricle.

"Strictly, an auricle has a framework of yellow elastic cartilage, to which striped muscle fibre is attached, and the whole covered with skin. So that from an anatomical point of view the identity of this mass with an auricle fails. Dermoids of the pharynx and soft palate, like those of the rectum, appear as pedunculated skin-covered tumors, and in adults the skin is furnished with long hair. The tumor, then, does not differ from the usual kind of pharyngeal dermoid (or teratoma of many writers) except in the accidental resemblance it bears to a pinna."

Discussion.

Dr. DELAVAN said: A case exactly corresponding to the one described by Dr. de Roaldes was removed by Dr. Clinton Wagner, of New York, about fifteen years ago, and was presented at a meeting of the New York Pathological Society by myself. In this case the plate of cartilage was double. Similar cases have been reported by Barton (*Med. Press and Circular*, 1881, n. s., xxxi, 10) and by White (*Lancet*, April 9, 1881), who refers to two others, one of which was removed by Mr. Bickersteth, and another, reported by Dr. Kidd, in 1856.

Paper.

REPORT OF A CASE OF INCOMPLETE FRACTURE OF THE
LEFT CORNU OF THE THYREOID CARTILAGE, RESULT-
ING FROM SELF-INFLICTED VIOLENCE.

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

ON the evening of April 7, 1891, R. H. B., aged thirty-seven years, born in New Orleans, an employ  e of the American Sugar Refining Company, while eating olives, accidentally swallowed one of the seeds, which seemed to him to have lodged itself in the larynx. Alarmed at the serious spell of suffocation which followed, the patient ran immediately from his working place to the street and incited vomiting by putting his finger in his throat, but he does not know whether he expelled the seed or not; at any rate, the sensation of a foreign body in the larynx did not disappear, and therefore the patient began to manipulate his larynx externally, in a rather forcible and even violent manner. Patient remarks that his whole throat "cracked" under the violent pressure of his fingers, but can not localize this cracking to any given spot on the left side of his larynx.

Failing to obtain relief from the sensation, he applied next morning to the Eye, Ear, Nose, and Throat

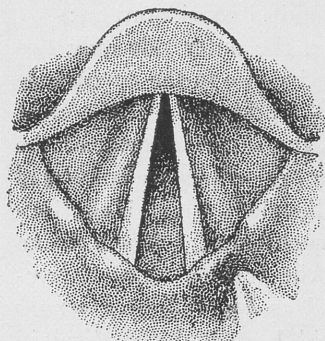


FIG. 1.

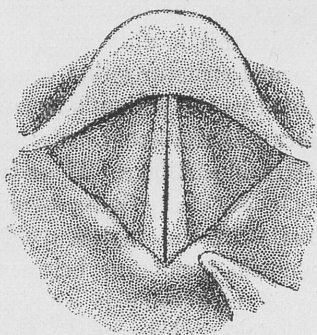


FIG. 2.

Hospital of the city, when his larynx was carefully examined, but no foreign body could be found. Indeed, an angular, V-shaped projection was observed (as shown in Fig. 1) springing from the left lateral wall in the di-

rection of the arytaeno-epiglottidean fold, at a somewhat right angle. No mark of external violence could be observed. Under thorough cocainization the upper arm of the projection was found with the probe to be less consistent than the other one. The mucous membrane was intact, but could be seen as distinctly lifted up by some underlying resisting obstacle. By digital examination, the parts were carefully surveyed, and the angular projection could almost be smoothed down by continued pressure from within. Upon removal of the finger, however, the projecting mass would reappear. This failure to restore and retain in place the deviated parts was not followed by an attempt to overcome the resiliency by breaking through the bend of the lower arm. During the act of phonation (as seen in Fig. 2), which was not otherwise interfered with, the angular projection was seen to advance toward the left arytaenoid eminence, almost reaching the free border of the arytaeno-epiglottidean fold. After a few days, the disagreeable sensation of a foreign body in the throat gradually diminished, but the patient, seen a few weeks ago, and presenting yet the same objective appearances, stated that months elapsed before he was entirely rid of his unpleasant subjective sensations.

In making in this case the diagnosis of an incomplete fracture of the left superior cornu of the thyroid cartilage, my assistant, Dr. A. McShane, and myself were guided by the following anatomical considerations:

In this locality we find on the outer side only two normal structures that could give rise to the appearance noted in the patient's larynx. These are: 1st, the great cornu of the hyoid bone; 2d, the superior cornu of the thyroid cartilage. These two projections are connected by means of the thyreo-hyoid ligament, which is continuous with the thyreo-hyoid membrane. There is no synovial membrane between the cornua. The thyreo-hyoid membrane is so placed as to produce a strong attachment between the hyoid bone and the thyroid cartilage while allowing great freedom of movement.

The angular protrusion in the upper part of the larynx might have been due to a displacement of the cornu of either the hyoid bone or the thyroid cartilage. It could not have been caused by displacement of the

hyoid bone, for the whole of the bone would have been correspondingly displaced unless there had been a fracture severing the greater cornu from the rest of the bone. In this case there was no such fracture, neither was the body nor the right half of the hyoid bone out of place.

The only other explanation left to us is that the superior cornu of the thyreoid cartilage was pushed inward. This will account for one arm, the lower and more resisting one of the projecting angle. It will be borne in mind that the tip of the cornu gives attachment to an elastic ligament capable of some extension. When the cornu of the thyreoid cartilage is pushed inward, it draws the thyreo-hyoid ligament after it, causing the mucous membrane to bulge, and in this particular case forming the upper and softer arm of the V-shaped prominence. We therefore had to deal with a displacement of the left superior cornu of the thyreoid cartilage (corresponding in character to a green-stick fracture), the cause of which may be sought in the rather violent pressure made upon the sides of the larynx when the patient swallowed the olive seed. The increased prominence of the angular mass, caused by the emission of a high note, was brought about in this manner: In the ascending scales, the thyreoid cartilage is drawn upward toward the hyoid bone; and when the larynx is in repose again the thyreoid cartilage drops down again. When the cartilage is raised, the normal cornua rise in a vertical plane, but when there is any deviation, as in this case, the displacement becomes more accentuated when the cartilage is pulled upward; and when it drops down again it draws the cornu with it, and somewhat smoothes down the irregularity by dragging the cornu into line.

BUSINESS MEETINGS.

THE Eighteenth Annual Congress of the American Laryngological Association was called to order by the President, Dr. Daly, at the Monongahela House, Pittsburgh, Pa., on Thursday, May 14, 1896, at 10.15 A. M. There were present during the session the following Fellows:

WILLIAM H. DALY, Pittsburgh, President.
JONATHAN WRIGHT, Brooklyn, First Vice-president.
A. W. DE ROALDES, New Orleans, Second Vice-president.
H. L. SWAIN, New Haven, Secretary.
J. H. BRYAN, Washington, Librarian.
M. J. ASCH, New York, Member of Council.
D. B. DELAVAN, New York, Member of Council.
JOHN O. ROE, Rochester, Member of Council.
H. S. BIRKETT, Montreal.
A. A. BLISS, Philadelphia.
M. R. BROWN, Chicago.
W. E. CASSELBERRY, Chicago.
S. SOLIS-COHEN, Philadelphia.
T. R. FRENCH, Brooklyn.
WILLIAM C. GLASGOW, St. Louis.
J. W. GLEITSMANN, New York.
J. H. HARTMAN, Baltimore.
F. E. HOPKINS, Springfield.
THOMAS HUBBARD, Toledo.
E. FLETCHER INGALS, Chicago.
CHARLES H. KNIGHT, New York.
G. A. LELAND, Boston.
J. H. LOWMAN, Cleveland.
A. W. MACCOY, Philadelphia.
J. N. MACKENZIE, Baltimore.
T. M. MURRAY, Washington.
J. E. NEWCOMB, New York.
J. E. H. NICHOLS, New York.
W. P. PORCHER, Charleston.
D. N. RANKIN, Allegheny.
C. C. RICE, New York.
CARL SEILER, Philadelphia.
C. M. SHIELDS, Richmond.
W. K. SIMPSON, New York.
S. O. VAN DER POEL, New York.
A. W. WATSON, Philadelphia.

T. M. HARDIE, Chicago.
EMIL MAYER, New York.
M. R. WARD, Pittsburgh.
G. V. WOOLEN, Indianapolis.

After calling the roll, the President opened the congress by reading his address.

Following the regular scientific proceedings the Association went into executive session. The following candidates, whose names had been proposed in due form by the Council, were then elected by written ballot to active fellowship in the Association: G. V. Woolen, M. D., Indianapolis, Indiana, proposed by Dr. Delavan and Dr. Wright. Thesis—Some Phases of Intranasal Surgery. W. F. Chappell, M. D., New York, proposed by Dr. Wright and Dr. Bryan. Thesis—Observations on the Creosote Treatment of Tuberculosis of the Upper Air-passages. T. Melville Hardie, M. D., Chicago, Illinois, proposed by Dr. Ingals and Dr. Brown. Thesis—A Discussion of the Various Methods of removing Adenoid Vegetations, with a Plea for the Use of the Bromide of Ethyl as an Anæsthetic in Suitable Cases. M. R. Ward, M. D., Pittsburgh, Pennsylvania, proposed by Dr. Daly and Dr. Asch. Thesis—Papilloma of the Larynx, recurring as an Epithelioma. Emil Mayer, M. D., New York, proposed by Dr. Asch and Dr. Swain. Thesis—The Nasal Mucous Membrane; a Plea for the Greater Care of it in Intranasal Operations. For corresponding fellowship: Ottokar Chiari, M. D., Vienna, Austria, proposed by Dr. Delavan and Dr. Swain. Greville Macdonald, M. D., London, England, proposed by Dr. Delavan and Dr. Bryan. Ernst Schmiegelow, M. D., Copenhagen, Denmark, proposed by Dr. Wright and Dr. Daly. Holger Mygind, M. D., Copenhagen, Denmark, proposed by Dr. Daly and Dr. Delavan.

Dr. Charles H. Knight and Dr. J. W. Gleitsmann were appointed by the President to serve as Auditing Committee.

The Nominating Committee was then elected—viz., Dr. W. K. Simpson, Dr. C. C. Rice, Dr. J. O. Roe, Dr. W. C. Glasgow, Dr. J. N. Mackenzie.

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

Secretary's Report, 1896.

In accordance with your custom, your Secretary takes pleasure in presenting to the Association a copy of the seventeenth volume of the *Transactions*.

The gentlemen elected to active fellowship in the Association at the last meeting have all accepted and duly qualified. During the year the Association has lost by death one active and one honorary Fellow: Dr. William C. Jarvis, of New York, who was elected to fellowship in 1880, and Dr. Wilhelm Meyer, of Copenhagen. Dr. G. W. Major, of Montreal, has resigned. Our active membership is now, with the newly elected members, sixty-seven. Two meetings of the Council have been held, the minutes of which will now be read.

Following the reading of the minutes came the report of the Treasurer.

Treasurer's Report, 1895-'96.

Receipts.

Balance from 1895 account . . .	\$154 71
Dinners (Rochester)	95 00
Dues, 1895	10 00
Extra assessment, 1895	310 00
Dues, 1896	265 00
<i>Transactions</i> , 1893	5 00
<i>Transactions</i> , 1894	17 50
<i>Transactions</i> , 1895	25 00
<i>Transactions</i> , Miscellaneous . . .	17 50
	<hr/> \$899 71

Disbursements.

Printing. Notices annual meeting,	
1895	\$3 00
Dinners (Rochester)	95 00
Stenographer, 1895	90 18
D. Appleton & Co., <i>Transactions</i> ,	
1894	304 56
Printing. Stamped envelopes and	
postals	20 40
Expressage on <i>Transactions</i>	3 20
Printing programmes, circulars, en-	
velopes, etc.	53 08
Postage on programmes	7 80
	<hr/> \$577 22
	\$899 71
	577 22

Balance to credit \$322 49

CHARLES H. KNIGHT, }
J. W. GLEITSMANN, } *Auditing Committee.*

Librarian's Report.

The Librarian has to report that no additions have been made to the library since the last report, the total number of volumes being 1,022. Dr. J. W. Farlow presented a photograph of a painting of Ferdinand I, Emperor of Germany, painted in 1524, showing the typical adenoid facial expression. This photograph will be mounted, framed, and placed in the Surgeon-General's Library. Respectfully submitted.

J. H. BRYAN, *Librarian.*

The Committee on Nominations reported the following names for officers for 1896-'97:

President.—CHARLES H. KNIGHT, New York.

First Vice-President.—T. MORRIS MURRAY, Washington.

Second Vice-President.—D. N. RANKIN, Allegheny.

Secretary and Treasurer.—H. L. SWAIN, New Haven.

Librarian.—J. H. BRYAN, Washington.

Member of Council.—WILLIAM H. DALY, Pittsburgh.

The Committee recommended that the next place of meeting should be Washington, D. C., in connection with the Congress of Physicians and Surgeons.

Report of Committee on Obituary Resolutions.

As a Committee appointed by the Council, I beg leave to submit the following report:

WILHELM MEYER.

Whereas, Since the last annual meeting of the American Laryngological Association death has removed our distinguished fellow-member, Professor Wilhelm Meyer, of Copenhagen, Denmark; therefore be it

Resolved, That in the death of Dr. Meyer the profession of medicine has lost a brilliant, useful, and greatly appreciated member, and the world at large one of the leading and most practical philanthropists of the time.

Resolved, That this Association, as representing the unanimous sentiment of the medical profession in America bears grateful tribute to the inestimable service rendered by Dr. Meyer to humanity through his scientific discoveries and through the broad-minded liberality with which he gave them to the world. No man of

his time has conferred upon this and coming generations in our country, as well as elsewhere, a greater obligation.

Resolved, That while fully recognizing the high order of Dr. Meyer's intellectual attainments and of his professional worth, it was, nevertheless, his personal character which endeared him to us. Combined with his other attributes, his inimitable gentleness, simplicity, geniality, and candor made him not only the most sincerely honored physician, but the most cordially beloved friend.

WILLIAM CHAPMAN JARVIS.

Whereas, Since the last annual meeting our Association has suffered the loss by death of our esteemed colleague, Dr. William Chapman Jarvis, of New York.

Resolved, That there has been removed from the ranks of the medical profession of our country, by the death of Dr. Jarvis, a brilliant, scholarly, forceful physician, who, by his efforts in a special line of work, won for himself, both at home and abroad, an excellent renown in just recognition of his skill, ability, and personal character.

Resolved, That we of the Association are called upon to mourn the loss of one who was from the earliest days of this Association an active member, and who by his untiring efforts and unabated zeal, coupled with a most brilliant and incisive intellect, became eminent in laryngology for having contributed much in the way of thoughtful suggestion and ingenious device to assist in alleviating that branch of human suffering to which he had devoted himself. And that, by his undoubted success in this direction, he not only contributed largely to recent advances in laryngological and rhinological science, but was an able factor in adding to the reputation and respect which our Association has justly won itself.

Resolved, That while we thus deeply regret the loss which our profession sustains, we most keenly feel the home-thrust to each and all of us which comes when one who is respected and beloved is removed from the circle of our Fellowship. D. BRYSON DELAVAN.

It was voted to adopt the report and incorporate the same in the *Transactions* of the Association.

Report of Committee on Resolutions concerning the Memorial of the Medical Association of the District of Columbia.

In view of the fact that there is now pending in both Houses of Congress of the United States a bill entitled "A bill for the further prevention of cruelties to animals," which if enacted into a law will prohibit vivisection or animal experimentation in the District of Columbia, and seriously cripple the scientific work in all the biological laboratories of the District, your Committee would recommend the adoption of the following memorial to be sent immediately to both the Houses of Congress:

MEMORIAL OF THE AMERICAN LARYNGOLOGICAL
ASSOCIATION.

The American Laryngological Association, in annual session at Pittsburgh, Pennsylvania, May 15, 1896, by unanimous vote, and by appended signatures of its officers and members of committee, hereby records its most earnest and emphatic protest against such legislation as that proposed by the bill entitled "A bill for the further prevention of cruelty to animals in the District of Columbia," Senate bill 1552. in so far as this legislation embodies measures intended to control and restrict experimentation upon animals conducted in the Government laboratories, the medical schools, and other institutions of higher learning in the District of Columbia. In making this protest the Association begs to present to the members of Congress the following considerations:

Animal experimentation has proved itself by years of usage the most important and indispensable method of arriving at conclusions concerning the functions of, and the influences which modify or develop, all living organisms. All the greater advances which have been made in the science and art of medicine in recent years have been based, to a great extent, upon such experiments upon the lower animals, especially as conducted in the laboratories of the Government, and in other scientific institutions. These advances would, in fact, have been impossible without such aid.

The untold benefit which mankind has derived, and will continue to receive, from these advances, need not be further detailed than to mention the inestimable

boon conferred by the discovery and development of the antitoxine treatment of diphtheria, the inoculation for rabies, the detection of tuberculosis in animals, and the consequent lessening of its spread among human beings. The revolutionizing of surgical practice and the success attending the major operations by the introduction of antiseptic measures have been brought about chiefly through animal experimentation.

The benefits derived from these experiments largely go to improve public health and prevent infectious diseases. This fact is often overlooked by the laity.

J. H. BRYAN, *Chairman of Committee.*

WILLIAM H. DALY, *President.*

H. L. SWAIN, *Secretary.*

May 15, 1896.

It was voted to adopt the report of the Committee, that the memorial be printed and copies sent to each member of the Association, and that the members present would personally solicit, by letter, the Members of Congress from their respective districts to use their influence against the passage of such a bill.

In accordance with the recommendation of the Council, it was voted to levy an extra assessment of five dollars to defray the expense incurred in publishing the last volume of the *Transactions*.

Dr. J. W. Gleitsmann, of New York, brought up the matter of the International Medical Congress to be held in Moscow, August 19 to 25, 1897. After having expressed his satisfaction with the recently received news that the English language had been accepted as one of the official languages of the Congress and that "Laryngology and Rhinology" had been created an independent section, he proposed an excursion to be made in connection with the trip to Moscow.

His plan was to combine a trip to Norway and St. Petersburg with the visit to Moscow, starting from Hull, in England, about the middle of July and arriving in Moscow about the middle of August. The trip would include the regular tourists' excursions along the Norwegian coast with its beautiful fjords to the North Cape, thence back to Trondhjem, and from there by rail to Christiania. A short trip could be made to the famous Trollhoettan Falls on the way to Stockholm, from which place steamers sail to Abo, in Russia; thence by rail to St. Petersburg. If a sufficient number of ladies and gentlemen—from sixty to seventy—join the

excursion, they would probably be able to have a steamer to themselves.

This trip could be comfortably made within a month, and he gave the assurance that the expense would not exceed a hundred and fifty dollars. This includes steamboat berth and meals from Hull to the North Cape and back to Trondhjem, also a first-class railroad ticket from Trondhjem to St. Petersburg, but not hotel or other expenses.

Dr. Gleitsmann stated that he mentioned this trip to French and English physicians, and they were very favorably impressed with the plan and promised to get a number of physicians to join the party. He hoped that as much interest would be shown here in the proposed pleasure trip, as it affords a rare chance to see some of the most beautiful European scenery. Definite arrangements would be made during the latter part of the year, and all those who desired to join the excursion could correspond with him.

It was voted that Dr. Gleitsmann be appointed by the President to act as a committee in this matter.

Dr. Delavan made a report concerning the Meyer Memorial Fund, and said: The Committee has endeavored to secure contributions from every section in the country, and returns are coming in slowly. Our share of this fund is fifteen hundred dollars; and if each member of the Committee will exert himself a little in the matter there is no question that the fifteen hundred dollars will be raised. I would ask the active co-operation of the Association, and urgently request that every member should make it a personal matter to help us in this work. The cost of the monument in Copenhagen will be very small, as five thousand dollars there would represent nearly four times as much as it would in this country. We could well give something as an Association, but it would be better to get the money from those who have profited by Dr. Meyer's teachings as well as from his personal friends. The hearty co-operation of the Association will be very welcome.

It is expected that considerable will be subscribed outside of the Association. There is now about two hundred and fifty dollars in bank and much more is promised, although collection has hardly been begun. The Committee will be glad to supply the members with circulars.

Dr. W. H. Daly, in commenting on the Meyer Memorial Fund, said: I wish to say that I am familiar

with the work of Dr. Delavan in this matter, and, although he has done an enormous amount, he is very modest in speaking about his personal efforts. The foundation is laid and everything done except the contribution of the money, which ought now to follow promptly, and if every member will now bring the matter attractively before his friends I am sure we will have no trouble in obtaining the amount that the United States ought to contribute to the object so near the sympathies and hearts of every one who knew or knew of Wilhelm Meyer and his work.

At the beginning of the session on the third day the Secretary reported that he had received notice of two papers in addition to those printed on the programme—viz., *Some Observations in Laryngeal Tuberculosis*, Dr. S. O. Van der Poel; *Reflex Epilepsy from Lymphoid Disease of the Pharyngeal Vault*, Dr. U. G. Hitchcock.

It was voted that these be added to the programme and published.

A paper entitled *The Treatment of Disease of the Nose and Ear by Oxygen Gas*, which had been sent to the Association by Dr. George Stoker, London, England, was referred to the Council for publication.

In executive session on the same day, after some fitting remarks on the delightful reception accorded the members of the Association on the occasion of their visit to the British Laryngological Association, it was voted to extend to the British Association a most cordial invitation to meet with our Association at the next session in Washington.

To facilitate the collection of the Meyer Memorial Fund it was voted to name the 15th of July as the final date when the subscriptions must be paid in to the chairman, Dr. Delavan.

An amendment to Article IX of the By-laws, which added the words, "but this rule shall not apply to Fellows of twenty years' standing," was laid on the table.

Proceeding to the election of officers for the ensuing year, the Association instructed the Secretary to cast a ballot for the officers proposed by the Nominating Committee.

The place for the next meeting was selected by voting to meet in Washington in connection with the Congress of Physicians and Surgeons.

Following the installation of the newly elected officers, the Association voted to thank the individual officers for their arduous labors in behalf of the meeting,

and that the Secretary acknowledge with sincerest thanks the courtesies shown the Association by Mrs. Daly, Mrs. Rankin, Dr. Turnbull, the Duquesne Club, and the University Club.

After short speeches by the incoming and outgoing Presidents, the Congress was declared adjourned.

1897.

ACTIVE FELLOWS.

ELECTED.

1880. ALLEN, HARRISON, 1933 Chestnut Street, Philadelphia, Pa.
1879. ASCH, MORRIS J., 5 West Thirtieth Street, New York.
1880. BEAN, C. E., Germania Life Building, St. Paul, Minn.
1893. BIRKETT, HERBERT S., 123 Stanley Street, Montreal.
1893. BLISS, ARTHUR AMES, 1832 Race Street, Philadelphia, Pa.
1878. BOSWORTH, FRANCKE H., 26 West Forty-sixth Street, New York.
1895. BOYLAN, J. E., 319 Broadway, Cincinnati, O.
1892. BROWN, M. R., 34 Washington Street, Chicago, Ill.
1891. BRYAN, J. H., 818 Seventeenth Street, Washington, D. C.
1889. CASSELBERRY, WILLIAM E., 34 Washington Street, Chicago, Ill.
1882. CHAPMAN, S. H., 193 Church Street, New Haven, Conn.
1896. CHAPPELL, W. F., 15 East Thirty-eighth Street, New York.
1878. COHEN, J. SOLIS-, 1431 Walnut Street, Philadelphia, Pa.
1884. COHEN, S. SOLIS-, 219 South Seventeenth Street, Philadelphia, Pa.
1893. COOLIDGE, A., JR., 1 Exeter Street, Boston, Mass.
1880. DALY, WILLIAM H., 135 Fifth Avenue, Pittsburgh, Pa.
1882. DEBLOIS, T. AMORY, 372 Marlborough Street, Boston, Mass.
1881. DELAVAN, D. BRYSON, 1 East Thirty-third Street, New York.
1892. FARLOW, J. W., 234 Clarendon Street, Boston, Mass.
1879. FRENCH, THOMAS R., 150 Joralemon Street, Brooklyn, N. Y.
1878. GLASGOW, WILLIAM C., 2847 Washington Avenue, St. Louis, Mo.
1880. GLEITSMANN, J. W., 46 East Twenty-fifth Street, New York.
1896. T. MELVILLE HARDIE, 34 Washington Street, Chicago, Ill.
1878. HARTMAN, J. H., 5 West Franklin Street, Baltimore, Md.

1888. HINKEL, F. WHITEHILL, 274 Delaware Avenue,
Buffalo, N. Y.
1881. HITCHCOCK, URBAN G., 51 West Twenty-ninth Street,
New York.
1893. HOPE, GEORGE B., 34 West Fifty-first Street, New
York.
1895. HOPKINS, F. E., 43 Northampton Street, Springfield,
Mass.
1895. HUBBARD, THOMAS, 205 Ontario Street, Toledo, O.
1878. INGALS, E. FLETCHER, 36 Washington Street, Chi-
cago, Ill.
1882. IVES, FRANK L., 117 East Thirtieth Street, New
York.
1878. JOHNSTON, SAMUEL, 204 West Monument Street, Bal-
timore, Md.
1885. KNIGHT, CHARLES H., 147 West Fifty-seventh Street,
New York.
1878. KNIGHT, FREDERICK I., 195 Beacon Street, Boston,
Mass.
1880. LANGMAID, SAMUEL W., 373 Boylston Street, Boston,
Mass.
1878. LEFFERTS, GEORGE MOREWOOD, 6 West Thirty-third
Street, New York.
1894. LELAND, GEORGE A., 669 Boylston Street, Boston,
Mass.
1878. LINCOLN, RUFUS P., 22 West Thirty-first Street, New
York.
1888. LOWMAN, JOHN H., 441 Prospect Street, Cleveland, O.
1886. MACCOY, ALEXANDER W., 1417 Walnut Street, Phil-
adelphia, Pa.
1883. MACKENZIE, JOHN N., 605 North Charles Street, Bal-
timore, Md.
1896. MAYER, EMIL, 25 East Seventy-seventh Street, New
York.
1886. MULHALL, J. C., 3609 Lindell Avenue, St. Louis, Mo.
1892. MURRAY, T. MORRIS, Seventeenth and H Streets,
Washington, D. C.
1893. NEWCOMB, JAMES E., 118 West Sixty-ninth Street,
New York.
1895. NICHOLS, J. E. H., 4 East Forty-third Street, New
York.
1894. PARK, W. H., 128 West Eleventh Street, New York.
1892. PORCHER, W. PEYRE, 4 George Street, Charleston,
S. C.
1878. PORTER, WILLIAM, 3886 Washington Avenue, St.
Louis, Mo.
1882. RANKIN, D. N., 273 Western Avenue, Allegheny, Pa.
1884. RICE, CLARENCE C., 123 East Nineteenth Street,
New York.

1893. ROALDES, A. W. DE, 136 Gravier Street, New Orleans, La.
 1878. ROBINSON, BEVERLEY, 37 West Thirty-fifth Street, New York.
 1879. ROE, JOHN O., 28 North Clinton Street, Rochester, N. Y.
 1879. SEILER, CARL, 1204 Walnut Street, Philadelphia, Pa.
 1893. SHIELDS, CHARLES M., Fifth and Franklin Streets, Richmond, Va.
 1878. SHURLY, E. L., 32 Adams Avenue, W., Detroit, Mich.
 1892. SIMPSON, W. K., 952 Lexington Avenue, New York.
 1889. SWAIN, H. L., 232 York Street, New Haven, Conn.
 1892. THRASHER, A. B., 296 Walnut Street, Cincinnati, O.
 1888. VAN DER POEL, S. OAKLEY, 47 East Twenty-fifth Street, New York.
 1878. WAGNER, CLINTON, 19 East Thirty-eighth Street, New York.
 1892. WAGNER, HENRY L., 506 Sutter Street, San Francisco, Cal.
 1892. WATSON, A. W., 126 South Eighteenth Street, Philadelphia, Pa.
 1896. WARD, M. R., 303 Collins Avenue, Pittsburgh, Pa.
 1896. WOOLEN, G. V., 20 West Ohio Street, Indianapolis, Ind.
 1890. WRIGHT, JONATHAN, 73 Remsen Street, Brooklyn N. Y.

HONORARY FELLOW.

1880. GARCIA, MANUEL, 1 Bentinck Street, Manchester Square, London, England.

CORRESPONDING FELLOWS.

1892. BROWNE, LENNOX, 36 Weymouth Street, London, England.
 1880. BRUNS, PAUL, Tübingen, Wurtemberg, Germany.
 1896. CHIARI, OTTOKAR, Ballariastrasse 12, Vienna, Austria.
 1890. DE LA SOTA Y LASTRA, R., 7 Calle de Torqueros, Seville, Spain.
 1893. DESVERNINE, C. M., Cuba 52, Havana, Cuba.
 1887. GOUGUENHEIM, A., 73 Boul. Hausmann, Paris, France.
 1894. HOLDEN, E., 13 Central Avenue, Newark, N. J.
 1892. KRAUSE, H., Neustädt. Kirch-Strasse 13, Berlin, Germany.
 1881. LABUS, CARLO, Via St. Andrea 8, Milan, Italy.
 1896. MACDONALD, GREVILLE, 85 Harley Street, London, W., England.

1894. MACINTYRE, JOHN, 179 Bath Street, Glasgow, Scotland.
1892. MASSEI, F., 4 Piazza Municipio, Naples, Italy.
1887. MOURE, E. J., 25 Cour du Jardin-Public, Bordeaux, France.
1896. MYGIND, HOLGER, 60 Kjobmagergade, Copenhagen, Denmark.
1894. SAJOUS, C. E., 28 rue de Madrid, Paris, France.
1896. SCHMIEGELOW, ERNST, 18 Nørregade, Copenhagen, Denmark.
1881. SCHROETTER, LEOPOLD v., Schwartzenberg-Strasse 8, Vienna, Austria.
1881. SEMON, FELIX, 39 Wimpole Street, Cavendish Square, London, England.
1881. STOERK, CARL, Wallfischgasse 13, Vienna, Austria.
1880. WHISTLER, W. McNEIL, 28 Wimpole Street, Cavendish Square, London, England.
1894. WOLFENDEN, R. NORRIS, 35 Harley Street, W., London, England.

PAST MEMBERS.

Honorary Fellow.

- *1881. Sir Morell Mackenzie, London, England.

Corresponding Fellows.

- *1880. Willhelm Meyer, Copenhagen, Denmark.
*1881. Pugin Thorton, London, England.
*1881. R. Voltolini, Breslau, Germany.

Active Fellows.

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

* Deceased.

† Corresponding Fellow.

LIST OF OFFICERS.

Presidents.

1879. Louis Elsberg.	1888. E. C. Morgan.
1880. J. Solis-Cohen.	1889. J. N. Mackenzie.
1881. F. I. Knight.	1890. W. C. Glasgow.
1882. G. M. Lefferts.	1891. S. W. Langmaid.
1883. F. H. Bosworth.	1892. M. J. Asch.
1884. E. L. Shurly.	1893. D. B. Delavan.
1885. Harrison Allen.	1894. John O. Roe.
1886. E. Fletcher Ingals.	1895. W. H. Daly.
1887. R. P. Lincoln.	1896. C. H. Knight.

Vice-Presidents.

1879. F. H. Davis.
1880. W. C. Glasgow, J. O. Roe.
1881. E. L. Shurly, W. Porter.
1882. C. Seiler, E. F. Ingals.
1883. S. W. Langmaid, S. Johnston.
1884. J. H. Hartman, W. H. Daly.
1885. H. A. Johnson, G. W. Major.
1886. E. C. Morgan, J. N. Mackenzie.
1887. J. N. Mackenzie, S. W. Langmaid.
1888. W. C. Glasgow, C. E. Sajous.
1889. I. E. Holden, C. E. Bean.
1890. J. O. Roe, J. H. Hartman.
1891. M. J. Asch, S. Johnston.
1892. S. Johnston, J. C. Mulhall.
1893. J. C. Mulhall, W. E. Casselberry.
1894. C. C. Rice, S. H. Chapman.
1895. J. Wright, A. W. de Roaldes.
1896. T. M. Murray, D. N. Rankin.

Secretaries and Treasurers.

1879. G. M. Lefferts.	1889. C. H. Knight.
1882. D. B. Delavan.	1895. H. L. Swain.

Librarians.

1879. F. H. Bosworth.	1883. T. R. French.
	1893. J. H. Bryan.

