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DISEASES

OF THE

NOSE AND THROAT.

A TEXT-BOOK FOR STUDENTS AND PRACTITIONERS.

BY

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MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA, ETC.

WITH ONE HUNDRED AND TWENTY-NINE ILLUSTRATIONS,
INCLUDING EIGHTEEN COLORED FIGURES.



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TO

CHARLES MONROE THOMAS, M.D.,

THE AUTHOR'S TEACHER, PRECEPTOR, FRIEND,

THIS WORK IS

GRATEFULLY AND AFFECTIONATELY
DEDICATED.

Iodine Preparations

Dr. J. H. Mallonee

No 1.	Iodine	gr. 8	Pot. Iod	24.	Glycerin	℥	ss
" 2	"	" 12	"	" 36	"	"	"
" 3	"	" 16	"	" 48	"	"	"

PREFACE.

ALTHOUGH the following pages are especially intended for practical aids to the advanced medical student and general practitioner, it is hoped that they will also prove of value to the specialist in affections of the nose and throat. It was intended, at first, to treat each division exhaustively; but, when the material was collected, it was seen that the book would be too unwieldy for the student and not sufficiently concise for the general practitioner. Only sufficient anatomy and physiology of the nose and throat have been given to render clear the remaining text.

In preparing the therapeutic indications it has been my endeavor to present a few of the remedies which are characteristic and reliable; it is, however, not always easy to separate the true from the spurious. Where possible, I have tested the various symptoms recorded, and, finding most of them reliable, have allowed them to stand upon their own merits. Those remedies which have disappointed, where I have been taught to expect much, have been divided into two classes: First, those which have failed in a few instances, but have not been expunged, as failure may have been due to the fact that the remedy was not applied carefully enough. Second, those which, although long recommended, I have never found to act well, even after many trials of the various potencies and preparations; the latter have been mentioned with the natural comment. Another class of symptoms deserves especial reference, namely, those that have repeatedly proved curative from a clinical standpoint; where, if the symptom stand out boldly from all of its

class, I have usually noted it as *clinical;* but if interwoven with others, the clinical aspect has not been separately stated.

Even with this intended care in the selection of the therapeutic feature, it will be found far from accurate. In order to hasten its revision, I would invite criticism and suggestions, for it is only in this way that we can hope to establish the true merits of the curative sphere of drugs where it is impossible to produce, upon the healthy, such symptoms as are often found in the diseased. It is unfortunate that the instruments of precision—the ophthalmoscope, the rhinoscope, the laryngoscope, etc.—were not in existence when Hahnemann and his early followers made most of our best provings.

No attempt has been made to give all of the symptoms of any one internal remedy as indicating it in a given case, but the chief points have been mentioned as referable to the local symptoms mainly, or those bearing directly upon the condition present. Occasionally some reference is made to general characteristic drug symptoms where the prescription is to be based chiefly upon these. In prescribing for any given case there are many conditions to be borne in mind besides the special pathological change which most attracts attention, namely, the various reflexes are to be noted; the collateral symptoms of the patient are to be investigated; the special temperament is to be considered; but, above all, the previous pathological changes, the ancestry, and the mental peculiarities are to be carefully reviewed. Thus, while remedies and symptoms are given, it will be seen that they form but the sign-posts to direct attention. Each prescription must be worked out on the broad lines of the nearest similar, if possible; if not, the resort to alternation and the empirical prescription are not to be neglected at the expense of the patient.

The arrangement and treatment of some of the subjects do not correspond with those of other text-books. These differences are the result of various tests, practically applied, during my twelve years' lectures. For more ready reference a special heading, "Remedies for the Vocal Defects of Singers," has been introduced.

With few exceptions (cuts of instruments excluded), the illustrations are from my original photographs, drawings, or oil-sketches, and any short-comings in this direction must be attributed to a desire for original work. In order to preserve the accuracy of the anatomical photographs, I have prepared explanatory keys to accompany the engravings, so that the latter need not be marred. After repeated trials it was found that the best results were obtained by photographing most of the dissections about four-fifths natural size.

At the beginning of Part III (page 320) will be found the reproduction of a photograph kindly sent me by Signor Manuel Garcia, the inventor of the laryngoscope.

In concluding, I wish to express my hearty thanks to Dr. Charles Monroe Thomas for many valuable suggestions in the manuscript; to Dr. R. B. Weaver for his kindness in making the beautiful dissections from which the anatomical photographs were taken; to my wife for much aid in preparing for the press, as well as for the oil-paintings reproduced on pages 350 and 459; and to those who have aided by direct information, and to whom credit has been given in the body of the work.

HORACE F. IVINS.

1319 ARCH STREET, PHILADELPHIA,
February, 1893.

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PART I.

The Nose and its Diseases.

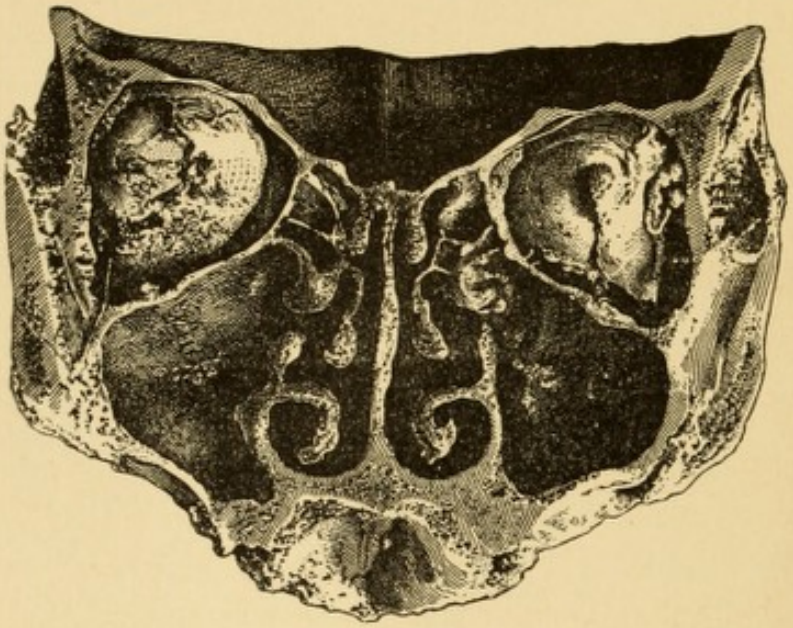
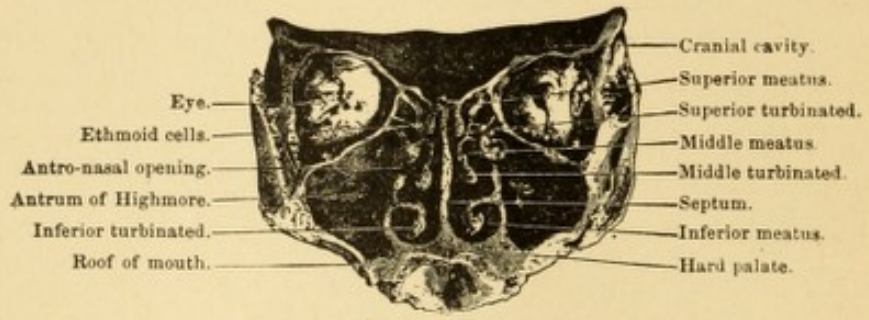


FIG. 1.—TRANSVERSE-VERTICAL SECTION THROUGH POSTERIOR PORTIONS OF ORBITS, LOOKING FORWARD. (From a photograph.)



KEY TO FIG. 1.

CHAPTER I.

Anatomy of the Nose.

The nasal passages may be designated double air-tunnels. They begin at the anterior nares (nostrils), pass through a highly vascular, nervous, and tortuous region, and terminate in the posterior nares (choanæ). These tunnels are separated, antero-posteriorly and vertically, by the nasal septum, which is partially cartilaginous, but chiefly bony. The nasal passages are narrow above and quite broad below. The septal walls are smooth, but, owing to the presence of the turbinated bodies, the external walls are very irregular. Connected with these canals are several accessory cavities, which often participate in pathological changes similar to those which occur in the nasal fossæ.

The septum narium is about one-tenth of an inch thick anteriorly and one-eighth posteriorly. It is formed above by the perpendicular plate of the ethmoid bone, posteriorly by the vomer, and anteriorly by the triangular (septal) cartilage. These various portions are united at their edges, forming a continuous, smooth, inner wall to each canal. There is generally a prominence (tubercle of the septum) a little anterior and inferior to the anterior end of the middle spongy bone.

The roof of each fossa is about one-fourth of an inch wide, and formed by the cribriform plate of the ethmoid, the nasal spine of the frontal, the under surface of the body of the sphenoid, and by the nasal bones; the external walls, composed of the palate and superior maxillary bones, slant outward and downward; the floor is formed by the horizontal processes of the same bones.

Two scroll-like bones (the turbinated, concha, or spongy bones) project from each lateral surface toward the septum; the

third, superior, is quite small and descends almost perpendicularly from the roof (see Fig. 1). The middle is larger than the superior, has a decidedly curled edge, and projects well toward the middle line. Between these two bones lies the superior meatus, into which the posterior ethmoidal cells and sphenoidal

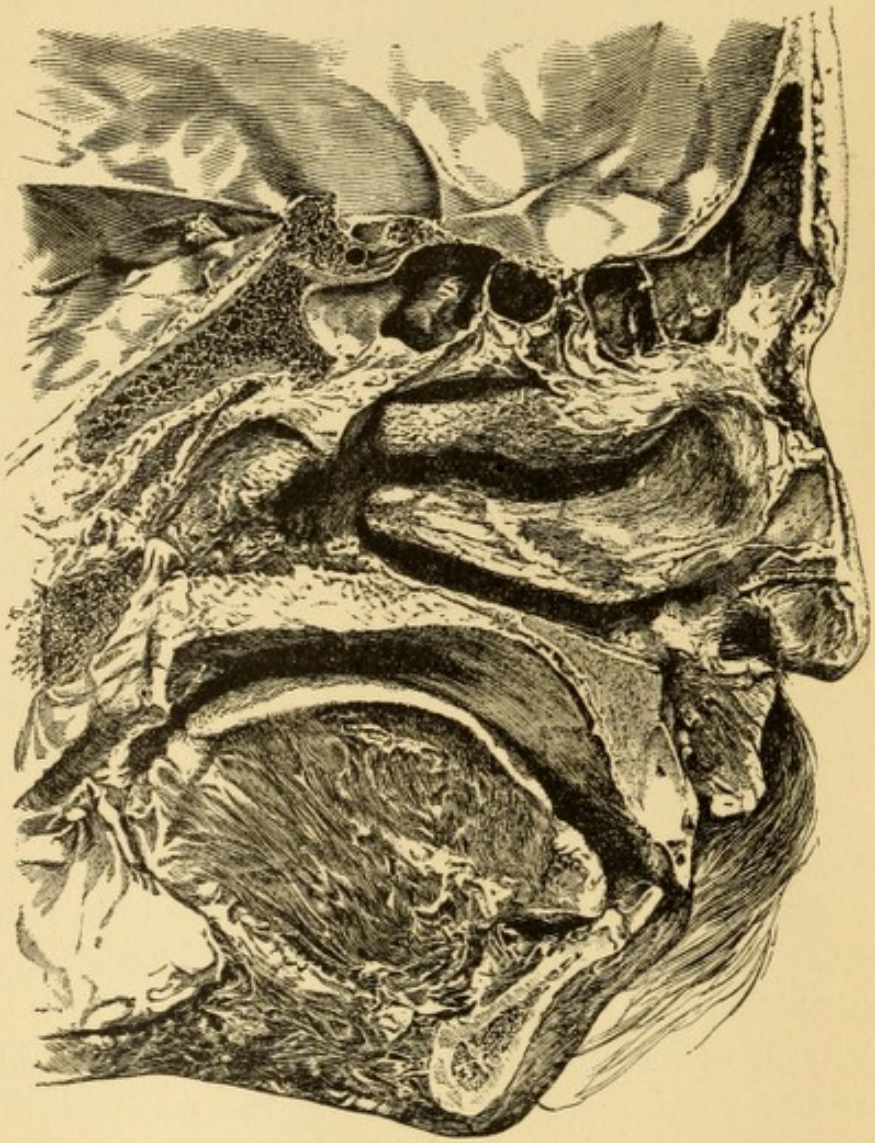
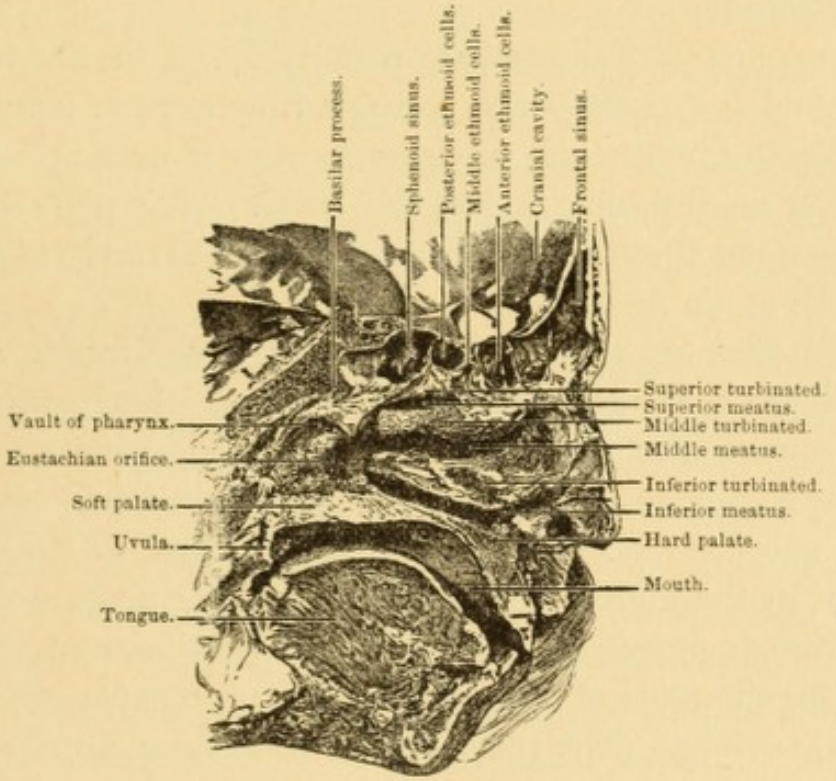


FIG. 2.—VERTICO-ANTERO-POSTERIOR SECTION. SEPTUM REMOVED, DURING SECTION, REVEALING LEFT NASAL REGION. (From a photograph.)

sinus open through a small aperature situated posteriorly. According to Zuckerkandl ("Anatomie der Nasenhöle"), the ethmoid cells are occasionally continued into the middle, or ethmoidal, turbinated bone. The inferior is the largest of these bones, and assumes more nearly a horizontal position. Its

lower edge is occasionally deeply notched or cleft. The space between the inferior and middle turbinateds is known as the middle meatus, into which enter the canals from the frontal sinus (the infundibulum), the anterior ethmoidal and the sphenoidal cells, and the antrum of Highmore (the latter occasionally by two passages). Within the middle meatus is a crescentic opening, the hiatus semilunaris, the upward and downward continuations of which pass into the frontal cells and antrum of Highmore, respectively. Below the inferior turbinated is the



KEY TO FIG. 2.

inferior meatus, into which the nasal duct opens by a somewhat expanded mouth, provided with a partial valve formed of mucous membrane. A fourth bone frequently exists in close relation to the upper turbinated; this, according to Zuckerkandl, is the rule at birth, and Voltolini considered it characteristic of the negro race.

As the accessory cavities are in such close relationship to the nasal cavities, it is customary to describe these sinuses, or pneumatic chambers, in this connection. They lighten the

bones in which they are situated, and are supposed to afford increased resonance to the voice.

The frontal cells, usually wanting in early childhood, are two triangular spaces situated just above the nose and inner portions of the orbits, between the two tables of the frontal bone (see Fig. 2). They are sometimes separated, but more frequently a passage exists between them. Their floors are formed by the roofs of the orbits; occasionally, openings are found between the frontal cells and the orbit or ethmoid cells. They are drained by the infundibuli.

Two sphenoidal sinuses are usually found in the body of the sphenoid bone; they are separated by a thin, bony plate. Communication with each superior meatus is accomplished by means of a small perforation in the bone. The plate of bone which separates these sinuses from the brain is rarely more than one-twelfth of an inch thick.

The antra of Highmore, or maxillary sinuses, are the largest of the accessory cavities (see Fig. 1). Each sinus communicates with the upper part of the corresponding middle meatus by a duct (occasionally two) large enough to admit an ordinary silver probe. This opening is hidden, in the normal condition, by the middle turbinated body. The floors are formed by the alveolar processes of the superior maxilla, and it is not unusual for the roots of the first and second molar teeth to pass into these cavities. The roofs of the antra form a part of the orbital floors.

The ethmoid sinuses are composed of a number of small cells, thus differing from the other accessory nasal cavities; in this characteristic they resemble the mastoid cells. They are divided into two (occasionally three) groups, the anterior and posterior ethmoids,—the former opening into the nasal cavity proper, the latter into the superior meatus. One of the ethmoid cells is, occasionally, so markedly developed as to project prominently into the middle meatus. This condition is called by Zuckerkandl the *bulla ethmoidalis*. Rarely, there is a direct communication

between the anterior and posterior ethmoidal cells and the summit of the antrum.

The nasal channels, with their prominences, convolutions, and accessory cavities, are lined with mucous membrane, continuous with that of the pharynx, including the Eustachian tubes and middle ears. From the inferior meati, it extends along the lachrymal canals to form the conjunctivæ. The upper portions of the nasal cavities—as low as the middle turbinated bodies and upper third of the septum—are lined with tessellated epithelium, but it is especially important to note that the remainder of these spaces is lined with ciliated columnar epithelium. In health the wave-like motion of these cilia helps to move the mucus toward the natural outlets, the posterior nares, where some suppose it is partly absorbed by Luschka's tonsil, while others believe it is directed, by the uvula, to the base of the tongue and the lingual tonsil.

The characteristics of the nasal (pituitary or Schneiderian) mucous membrane vary greatly in different localities. It is thickest over the turbinated bones and thinnest over the greater part of the septum. The thickness of the turbinateds goes far toward reducing the size of the nasal chambers, and is partially due to the abundant supply of glands found in this region. The deepest layer of the membrane, that which lies in contact with the covering of the inferior turbinated bone, is chiefly an erectile, cavernous tissue, a small amount of which is found on the crest of the middle turbinated, and another small mass on the septum nearly opposite the anterior third of the middle spongy bone. This layer is composed of large venous sinuses capable of rapid sanguineous distension and sudden erection, under vasomotor influence. It is this erection, during acute rhinal disorders, which occasions difficult nasal respiration. It has been noted that this tissue is frequently erected during menstruation and sexual excitement, thus showing a reflex or correlated sympathy between the nose and the sexual sphere. Some forms of nasal disorder, especially hypertrophy and ozæna,

are aggravated, in certain persons, during the menstrual period, and nasal (vicarious) menstruation is a familiar example of this correlation. Irritation of these areas may give rise to reflex symptoms. The mucous lining of the upper, or olfactory, area is not very vascular, and contains but a small number of serous glands. It is provided with an almost continuous layer of branched mucous glands, with ducts opening upon the surface of the membrane. Between the tessellated, columnar epithelial cells of this region are the delicate, spindle, olfactory cells of Schultze, which ramify on the free surface. They are joined to a deeper, delicate nerve-plexus, and to the olfactory nerves.

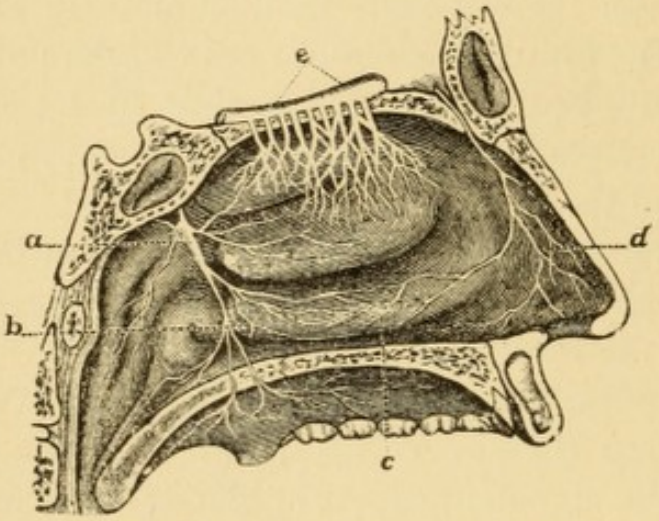


FIG. 3.—SPHENO-PALATINE GANGLION. (From Sajous.)
a, Spheno-palatine ganglion; *b*, posterior area; *c*, middle area; *d*, anterior area; *e*, olfactory bulb.

Destruction of these cells causes loss of smell, just as does section of the olfactory bulbs or nerves.

The olfactory nerve (special sense of smell) passes through from fifteen to twenty perforations in the cribriform plate of the ethmoid bone, and is then distributed to the superior turbinated body, to the upper part of the middle spongy bone, and to the upper third of the septum. The nasal branches of the spheno-palatine ganglion (sympathetic) are distributed to the lower edge of the superior, the under surface of the middle, the entire inferior turbinateds, and to the middle and posterior parts of the septum. The vidian passes to the superior spongy bone and to

the superior and posterior portions of the septum. The nasal branch of the fifth nerve is distributed to the anterior surface of the lower turbinateds, to the floor of the nasal fossæ, to the upper and anterior portions of the septum, and to the external walls of the nasal passages.

The arteries which supply blood to the nasal cavities are the ophthalmic, passing to the vault, upper part of septum, and external walls; the spheno-palatine branches of the internal maxillary, to the turbinated bodies, remainder of septum posteriorly, and the greater portion of the external walls; and the artery of the septum, a branch of the superior coronary, to the anterior portion of the septum. The entire arterial supply forms a dense net-work in the mucous membrane. The veins empty chiefly into the internal jugular, although a few of them flow into the veins in the interior of the skull, through the cribriform plate of the ethmoid.

The nasal lymphatics, according to Simon (Schmidt's *Jahrbuch*, Bd. cvii, p. 161), form a wonderfully close intercommunicating net-work; they are especially abundant (1) at the upper portion of the superior turbinated body, (2) on the external face of the middle turbinated, and (3) in the space directly anterior.

Physiology of the Nose.

The special nasal function is that of olfaction; its most important, respiration. Around these are grouped a number of lesser, though important, duties in the human complex.

The upper portion of the nasal cavities to which the olfactory nerve is distributed is known as the olfactory tract or area; the lower part, the respiratory. Each of these has its appropriate function. Recent investigations, however, prove that the olfactory tract participates in respiration to a slight degree.

The function of the sense of smell is usually described as follows: Odorous bodies cast off minute particles which, floating in the air, are drawn into the nasal passages during inspiration, where they come in contact with the terminal olfactory

fibres. As the mucous membrane in which these nerve-filaments terminate is always moist, the odorous particles adhere to it, and are speedily dissolved by the mucous secretions, when the peculiar functions of olfaction are at once established. With most substances this process of solution is almost instantaneous, the excess of odorous material immediately yielding to the flow of mucus excited by the presence of the particles. In this way one odor may follow another at a very short interval without, in any way, conflicting with the olfactory sense.

In just what manner the nerve-terminals are affected is an unsolved problem. Graham advanced the chemical theory, the essential process of which was the oxygenation, within the nasal passage, of the odorous particles, thus stimulating the sentient olfactory terminals. Ogle promulgated the theory which connects olfaction with pigmentation, the secretion of pigment by Bowman's glands having, according to him, much to do with the olfactory sense. Liegeois claims that the odorous particles irritate the olfactory terminals mechanically. Ramsey advances the theory that olfaction is the result of molecular vibration. Tyndal has found that odorous particles act in proportion to their heat-absorbing quality.

It is evident that to have the sense of smell acute the olfactory mucous membrane must be in a moist condition, its surface must be free from dried or thick secretions, nothing should prevent the entrance of odorous particles to this tract, the nerve-terminals must not be concerned in an hypertrophic process of the mucous membrane, and, finally, the nerve itself, as well as its terminals, should be in a healthy condition. In this connection Greville MacDonald ("The Forms of Nasal Obstruction") speaks thus of the functions of the turbinated bodies: "Indeed, it would not be incorrect to style the superior spongy bone the organ of taste, the middle turbinated and plain surface of the ethmoid that of smell." In explanation, he says that "the expired air, which during mastication is laden with odoriferous particles, is driven by the thorax directly upwards to the vault

of the naso-pharynx, and readily comes in contact with the projecting superior turbinated bone, over which is distributed the posterior division of the olfactory nerve."

The proper respiratory channel is the nose, not the mouth. Nature so constructed the nasal fossæ that cold air is elevated in temperature during its passage over this area, which is constantly warmed by the free circulation of blood. Aschenbrandt, Kayser, and MacDonald have shown that if the inspired air enter one nostril at from 46.4° to 53.6° F. (8° to 12° C.) it will pass out through the opposite nostril, without having reached the lungs, at the uniform temperature of 86° F. (30° C.); or, the same as the usual expiratory current. According to the experiments of MacDonald ("Respiratory Functions of the Nose"), air at 19.4° F. (7° C.), "breathed in and out of the lungs only, without the intervention of the nose, was raised to 92.3° F. (33.5° C.); whereas, when breathing was conducted in at the nose and out at the mouth, the thermometer indicated 95° F. (35° C.), the duration of the respiratory acts occupying the same number of seconds in each case." When air passed in through one nostril and out through the other without entering the deeper respiratory passages, the temperature arose to 86° F. (30° C.). "A noteworthy fact, moreover, is, that cocaine, by anæmizing and inducing collapse of this [intra-nasal] tissue, lessens the acquired temperature by two or three degrees." Hot air absorbs moisture from the tissues, thus lowering its temperature; for it is generally stated that a pint or more of serum, composed of 92 to 93 per cent of water, the remainder of solid matter, is poured out by the venous sinuses of the nose each twenty-four hours. Very dry air is moistened and rendered more suitable for contact with the throat and deeper respiratory tract, which would otherwise be dried and irritated. Very moist air gives up some of its humidity on coming in contact with the mucous lining. Dust-laden and smoky air is much purified and sifted by the little hairy processes (the vibrissæ), contact with the moist mucous tissue arrests other par-

ticles, and the ciliæ of the membrane aid greatly in this process of filtration. The vibrissæ also guard against the entrance of insects. Finally, the olfactory nerve warns of the presence of many deleterious substances.

Air thus inhaled passes through a narrow, tortuous tract, perhaps in rotary motion; so that, doubtless, all of it comes in contact with some portion of the nasal canal, thus rendering it capable of safe respiration. Any affection or condition which interferes with these various functions not only leads to nasal disorders, but goes far to establish disease of other organs directly allied, especially the pharynx, larynx, trachea, and lungs; and it may induce reflex cough, asthma, nasal vertigo, and similar phenomena.

The resonant function of the nasal fossæ is a very important one. This duty on the part of the nose is not confined to its canals, for the bones participate in the vibratory process, and it is believed that much of the resonance of the voice depends upon the collateral sinuses. If these be obstructed by tumors, abscesses, etc., the vocal tones are impure. When the nasal fossæ are obstructed in any manner, defective speech is marked.

The greater number of both vowel and consonant sounds depend for their purity upon the nose and its surrounding structures; hence, it may be said that upon the nose (aided by the epiglottis) chiefly depends the vocal timbre,—that peculiar feature which constitutes the especial quality by which we can distinguish one voice from another. The immediate destruction of the timbre can be brought about by the closure of the nostrils between the thumb and finger,—a simple experiment which proves the part assumed by the nose in the production of pure tone. Even should the nasal canals be normal and the pneumatic spaces in good condition, much depends upon the prompt action of the soft palate and epiglottis in controlling the column of sound-waves set in sonorous vibration at the vocal bands. This action is a constant one, both in speech and song. When certain sounds are articulated,—for example, *m* and *n*,—

the palate is relaxed and a large column of air is set into vibration within the nasal chambers; when *u* is uttered, the highest degree of palatal tension is assumed, little vibration occurring in the nasal air-column. Between these extremes are the various grades of tension and relaxation required for the production of other sounds.

CHAPTER II.

Rhinoscopy—Examination of the Nasal Passages.

A limited inspection of the anterior portion of the nasal fossæ (the vestibules) may be made by elevating the tip of the nose while the patient faces a window, sunlight, or an artificial light in such a way as to have the rays pass through the nostrils.

In order, however, to make a more extended examination, some accessory appliances are necessary. For this purpose any smooth, small instrument, similar to a narrow spatula, may be inserted within the vestibule and made to push the ala directly outward; but as this procedure permits a limited view only,

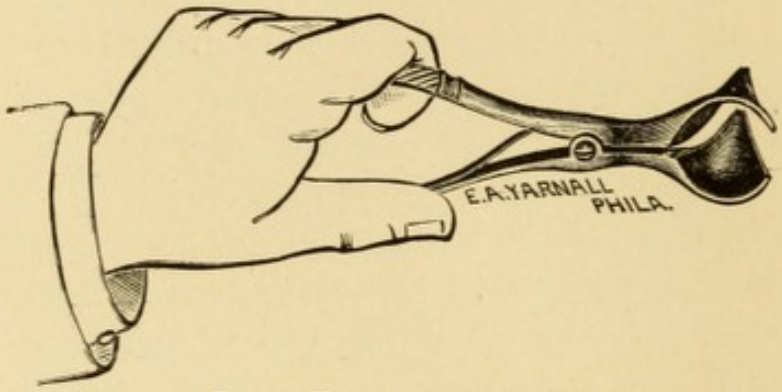


Fig. 4.—Kramer's Speculum.

numerous specula have been devised for dilating the nostrils and revealing the deeper parts. These nostril-dilators are occasionally made with three blades, but are preferably bivalved. The blades may be fenestrated or solid; the latter are the better, as the vibrissæ often protrude through the former and greatly obstruct the view. Nasal specula are either self-retaining or so constructed as to render it necessary to hold them in position; the former are to be preferred, unless the patient be refractory or the canal obstructed near the nostril. Nasal specula are also made of plates of solid metal or are composed chiefly of wire. Of the former, I usually use Kramer's; of the latter, the one

pictured below (Fig. 5), which is self-retaining, simple in construction, and thoroughly aseptic. A double coil of wire at the spring end renders the speculum so elastic as to rarely cause pain while in position; as a further result of this double coil, the instrument has a slight antero-posterior motion, thus allowing the septal blade to be drawn forward in front of the sensitive, bony septum, while the alar blade is well introduced for more complete dilatation of this portion. Oval, hard-rubber specula

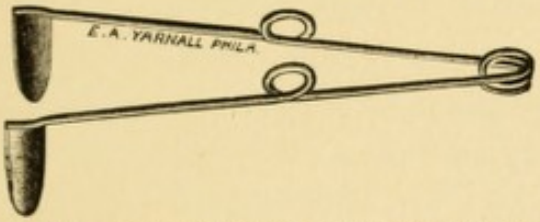


FIG. 5.—AUTHOR'S SELF-RETAINING WIRE SPECULUM.



FIG. 6.—OVAL, HARD-RUBBER SPECULUM.

are preferable when applying acids to the nasal passages. Zaufal employs a long, slender, hard-rubber tube for exploring the parts about the posterior nares.

For purposes of illumination ordinary daylight can be utilized as suggested, but, as this is usually too diffused, it is better to make use of the sun's rays or some form of artificial light. Gas-light furnished by an Argand burner is mostly

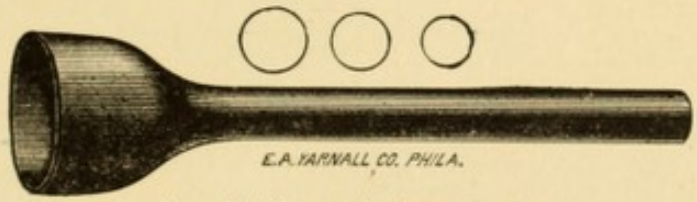


FIG. 7.—ZAUFAL'S SPECULUM.

employed, because more easily controlled; but it is not always sufficiently powerful for examining the trachea, when it may be necessary to employ electricity, magnesium wire, oxyhydrogen, lime, or some equally powerful illuminant. A very good light, as suggested by Sajous ("Diseases of the Nose and Throat"), is obtainable by dropping a small piece of gum-camphor into the tank of an oil-lamp. Transillumination, by placing an illuminated glass rod against the skin surface, is sometimes of value.

When ready for the examination the room should be darkened. If sunlight be the illuminant, it is best to have a small hole in the shutter or blind, through which the pencil of rays may pass; but a good examination may be made without darkening the room. Where direct artificial illumination is used, the light is placed ten or twelve inches in front of the patient's face. The examiner either stands or seats himself before the patient, with the light passing into the nostril. In this position he

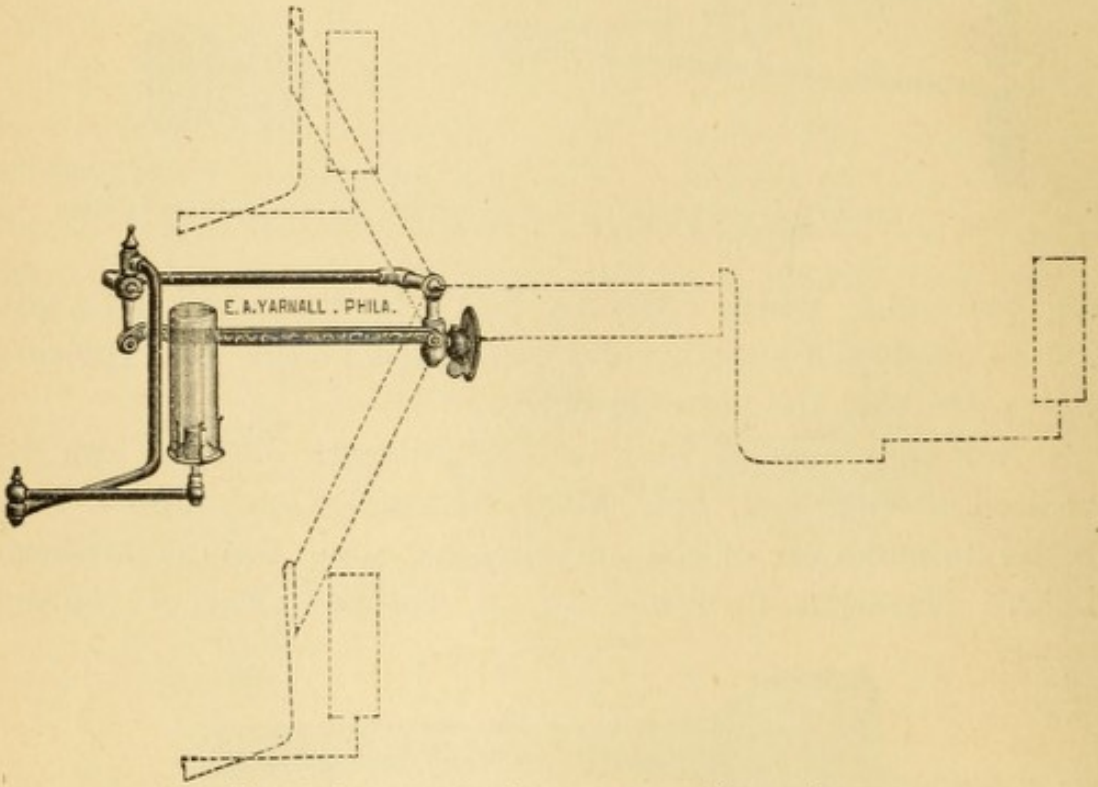


FIG. 8.—ARGAND GAS-BRACKET WITH THREE ARMS.

places one hand and arm on each side of the light,—an awkward position, and one which hinders the free movements so essential to easy examination and operation. The presence of the bright light is a further hindrance, but this may be kept from the patient's eyes by a shade, and from the examiner's by a screen or reflector placed between him and the luminous point. It is much better, therefore, to use reflected artificial light, when the luminous point should be nearly on a level with the patient's ear and a little behind it. If the light be a strong one, such as

the lime-light, it may be conducted through a tube passing over the operator's shoulder and opening near the patient's nose (Fauvel and Mackenzie). A small incandescent lamp may be attached to the front of a head-band (photophore), by which the light is thrown directly to the point desired. This is more or less cumbersome (although now made of aluminium) and necessitates wire attachments to the battery or dynamo.

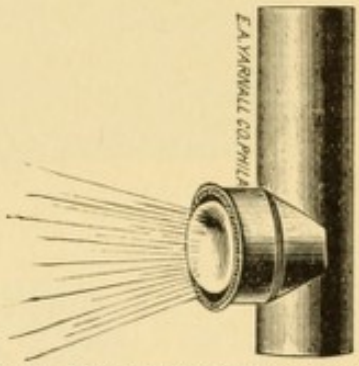


Fig. 9.—Mackenzie's Condenser for Argand Burner.

When reflected light is used, it is necessary to resort to an extra mirror known as the reflector, or head-mirror. This should be concave if artificial light be used, and plain if sunlight be the source of illumination.

Some prefer to wear the mirror above, others below, the

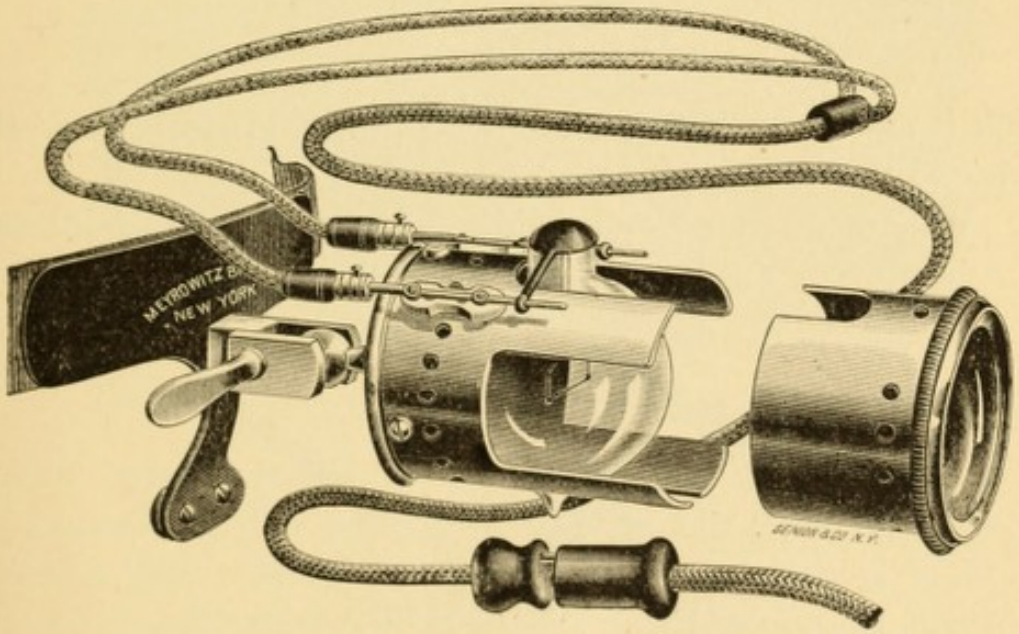


Fig. 10.—Photophore.

eyes; but in order to obtain the most direct return of the rays of light the perforation in the mirror should be placed directly in front of one eye.

In order to complete the reflecting apparatus, it is necessary

to have some form of handle or attachment. In this country, a head-band is usually employed (see Fig. 11), but some prefer to attach the mirror to a heavy spectacle-frame, while others

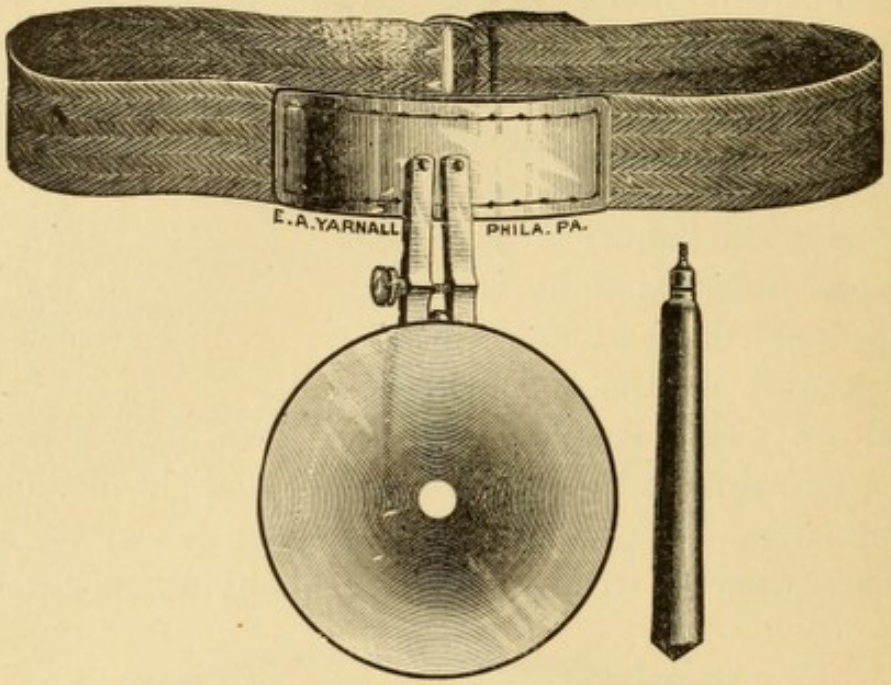


FIG. 11.—HEAD-MIRROR WITH BAND AND HANDLE.

think it more convenient to use a steel spring passing over the vertex to the occiput.

When ready for examination the physician seats himself

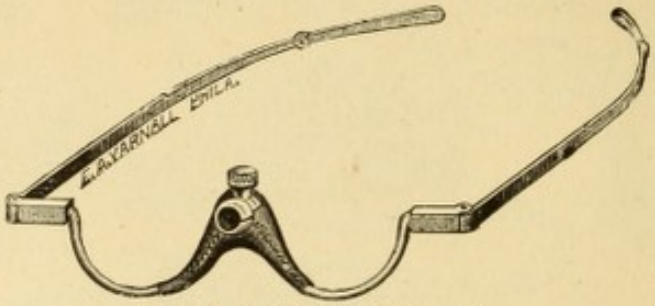


FIG. 12.—SPECTACLE-FRAME.

or stands in front of the patient, who inclines his head slightly backward.

The tip and external surface of the nose having been inspected, a closed nasal speculum is to be introduced. The instrument is held in the right hand for examination of the

left nasal fossa, and in the left hand for the right fossa. When well within the vestibule, the blades are separated or allowed to separate according to the construction of the instrument. Care must be taken neither to introduce the speculum sufficiently far to press against the sensitive bony septum nor to dilate the nostril so forcibly as to cause pain.

With the speculum in position, the anterior rhinoscopic appearances may be distinguished. In order to view all the

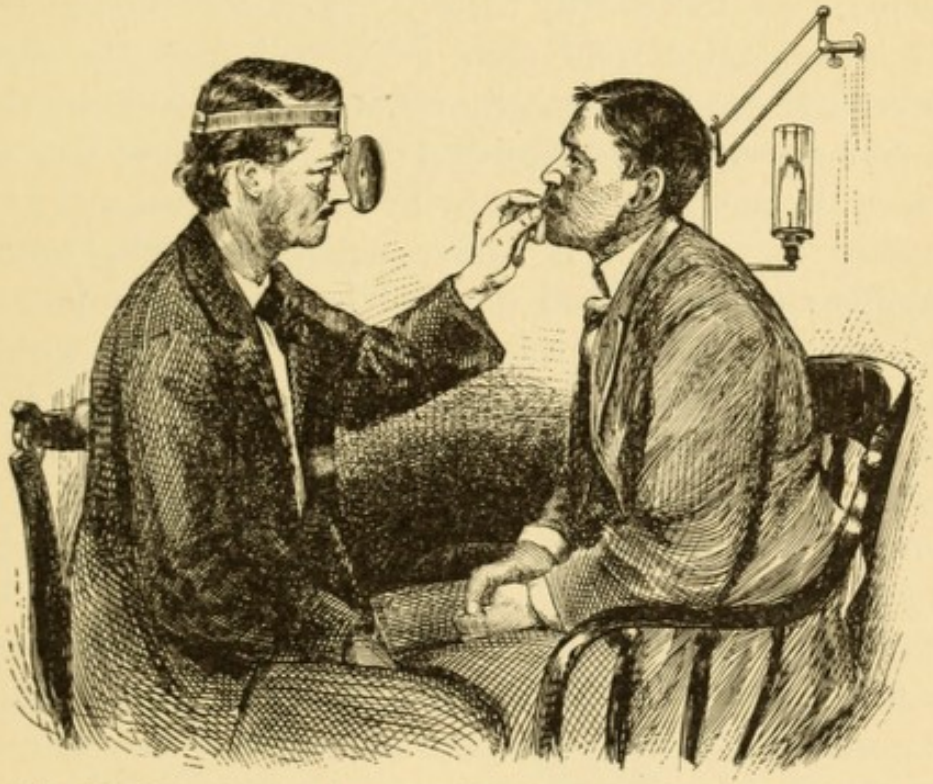


FIG. 13.—POSITION FOR ANTERIOR RHINOSCOPY. (From a photograph.)

parts, it is necessary to slightly change the direction of the speculum and the position of the head from time to time. It must be remembered that there are great variations within anatomical and physiological limits; for instance, the septum is nearly always slightly deflected, one passage may be somewhat larger than the other, both may be larger or smaller than the average, the turbinated bodies may have unusual or irregular forms, etc.

The septum should claim our attention first. It should be

comparatively vertical and smooth, with the exception of the tubercle. Along the inferior meatus we should see almost to the posterior pharyngeal wall. Opposite the septum (see Frontispiece and Figs. 1 and 2), but separated from it, should appear the inferior turbinated body, below which is the inferior meatus; above the inferior body and posterior to its anterior extremity appear the middle meatus and turbinated; above, and still more posteriorly, a light-pink ridge, the so-called superior turbinated, may occasionally be seen. These scroll-like bodies should be separated from each other and from the septum, otherwise the condition constitutes a pathological alteration. The inferior body is distinguished from the rest of the structures seen by anterior rhinoscopy by its bright hue and greater roundness; the septum is rather paler (especially over the cartilaginous portion); and the middle body is similar to it, while the paleness of the superior turbinated (when visible) is pronounced. The late Professor Voltolini, with the idea of obtaining a better view of the deeper parts, recommended that an assistant illuminate the naso-pharynx while the nose is examined anteriorly; but the practical utility of the suggestion is not apparent.

For posterior rhinoscopy a different instrument is necessary and different methods are to be employed. The illumination and the relative positions of patient and examiner are the same, except that the head of the former is thrown slightly forward with the mouth open. The examiner so places himself that he can see well into the patient's open mouth. The speculum is supplanted by the rhinoscopic mirror, which, in its usual form, consists of a small-sized, usually No. 3, laryngeal mirror; but, in order to obtain the most satisfactory image, it is advisable to have a mirror so constructed that its angle can be varied at will; thus, when it is necessary to see directly upward the angle formed by the mirror and handle may be 170 degrees, and when nearly forward an angle of 100 degrees may be needed. Fränkel's rhinoscopic mirror accomplishes this object, as its

angle can be altered by slight pressure of the thumb. It may be stated, in general, that the larger the mirror, within easy limits of use, the better and more satisfactory the image. The picture is never complete in posterior rhinoscopy, unless there be a cleft in the soft palate; it is necessary, therefore, to frequently alter the position of the mirror for the better inspection of the various portions.

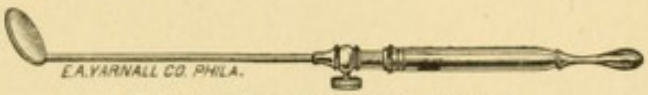


Fig. 14.—Rhinoscopic Mirror.

For the consolation of those who fail in their earlier attempts, it may be noted that posterior rhinoscopy is far more difficult of accomplishment than anterior rhinoscopy, otoscopy, ophthalmoscopy, or laryngoscopy.

With patient and physician in readiness, the rhinoscopic mirror, with the glass surface downward, is to be warmed over a gas-lamp or candle-flame, or by dipping it into hot water and

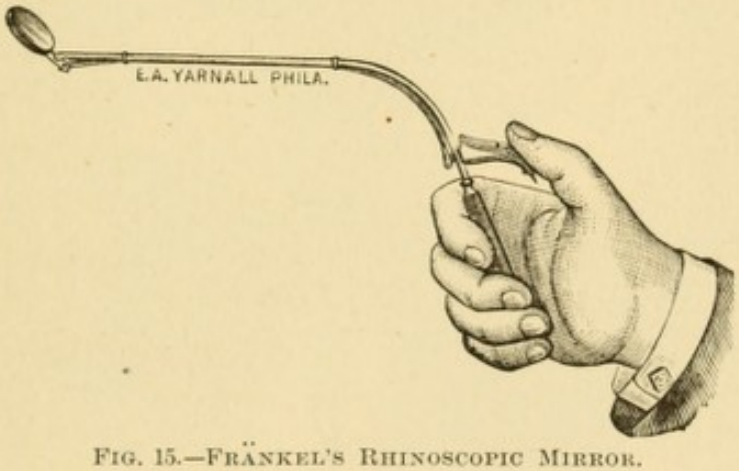


Fig. 15.—Fränkel's Rhinoscopic Mirror.

drying. Its temperature should be tested by placing its back against the palm of the hand. The mirror must not be warm enough to injure the delicate mucous lining, though sufficiently heated to prevent its surface from becoming dimmed by the condensation of moisture from the exhaled air. With the patient's mouth well opened, the light is directed to the back of the pharynx, where the warmed mirror is introduced with its reflect-

ing surface upward, the stem of the mirror usually fulfilling the requirements of a tongue-depressor. The mirror is gradually slipped backward, until the reflecting surface is back of the soft palate and uvula and a little to one side of the latter; but care



FIG. 16.—RHINOSCOPIC MIRROR IN POSITION. (From a photograph.)

must be exercised not to touch the pharyngeal wall, lest reaction follow. Much care and patience will sometimes be demanded to get the mirror in its proper position. The patient should be directed to breathe through the nose as quietly and

naturally as possible, in order that the soft palate may fall forward away from the pharynx, thus permitting a reflection of the parts back and above the curtain. If the soft palate do not fall forward, the patient should sound the syllable "ang" or "ung," or be directed to "sniff the air" as in smelling. In difficult examinations the patient's face should be inclined downward, the examiner looking from below upward. Failing in the preceding measures, the patient should rest a few minutes before the attempt is repeated, or he may be given iced water or pieces of ice to hold in his mouth for the purpose of reducing the reflex irritability. A spray of a 2-per-cent solution of hydrochlorate of cocaine is occasionally necessary.

Failure seldom follows the exercise of care, patience, and dexterity, although at times the tonsils may be so large, the uvula so elongated, and the palato-pharyngeal space so shallow, antero-posteriorly, as to prevent a successful examination. Again, adhesions may exist to such an extent as to absolutely preclude a view of the naso-pharynx. In some cases a large, highly-arched tongue is difficult to control, when a depressor may be needed. For this purpose the back of a second mirror, the index finger of the free hand, or an ordinary tongue-depressor may be used. Palate-hooks have been devised for holding the soft palate and uvula forward, but they are rarely needed except during operations; even then it is usually more satisfactory to pass a piece of fine drainage tubing through the inferior nasal passages (one end through each side) into the pharynx, and when drawn out of the mouth the ends are tied to the loop which passes over the columella. This serves to hold the soft palate and uvula forward, and seldom causes more than slight annoyance to the patient.

The posterior rhinoscopic image, as stated, is necessarily quite limited, and the completed picture more or less diagrammatic. The septum can be seen as a straight vertical line, sometimes pale in color; on either side will be noticed dark spaces or caverns,—the openings into the posterior nares or

choanæ. At the sides of these openings, opposite the septum, may be seen either whitish or pale rose-colored, smooth, rounding projections,—the turbinateds. While the inferior appears the largest by anterior rhinoscopy, the middle occupies that distinction posteriorly, and is often very prominent. The upper turbinated is small and pale, while the inferior is deeper in color and not always visible, on account of the projection backward and upward of the soft palate and its cushion; a fourth spongy body is occasionally visible, on one or both sides. Between the turbinateds are the meati, as in front, but the lower is rarely visible in the rhinoscopic mirror unless there be cleft palate.



FIG. 17.—POSTERIOR RHINOSCOPIC IMAGE. (Modified from Sajous.)

The other spaces appear as dark, shadowy cavities. The posterior surface of the veil of the palate and uvula appears below the posterior nares; above them, in the vault of the pharynx, is seen the pharyngeal, or Luschka's, tonsil. On each side of the naso-pharynx, just below the level of the middle meatus, is a pale crater or cup-shaped depression,—the entrance to the Eustachian tube,—formed by the projecting salpingo-palatine fold in front and the salpingo-pharyngeal fold behind. (See Figs. 2 and 17.) Directly back of the latter is a deep groove, the fossa of Rosenmüller, the two being separated by the Eustachian cushion,—the posterior cartilaginous wall of the Eustachian tube.

Although the mirror furnishes a satisfactory view in most cases, there are others, as stated, in which it is not sufficient; and if there be reason to suspect hidden mischief in this region, the parts should be further explored by passing the index finger back of the soft palate; this causes little pain, although quite annoying to most persons. When using the finger the right side of the patient's head should be held against the examiner's chest or abdomen with the left hand, the middle finger pressing the cheek between the teeth to prevent biting. The right index finger (thoroughly guarded when examining children) is to be introduced and carefully moved about, to ascertain the condition of the naso-pharynx. This, of course, presupposes accurate anatomical knowledge, which it is well for the examiner to gain from normal subjects. Spasm will at once follow the introduction of the finger, but is seldom so persistent as to prevent the completion of the examination. It is best to insert the tip of the finger well to the side of the pharynx, back of the posterior faucial pillar, as there is less muscular resistance at that point. When once in the naso-pharynx, it can easily be moved to any portion of this cavity. Care should be exercised that respiration be not suspended by the presence of the finger.



FIG. 18.—FINGER-GUARD.

CHAPTER III.

Catarrhal Diseases of the Nasal Cavities.

CORYZA—ACUTE NASAL CATARRH—ACUTE RHINITIS.

In temperate climates this is the commonest of all diseases; there are few persons who do not suffer occasionally. The affection and most of its causes are well known, but whether it be infectious in its uncomplicated form has not been determined. When a part of the exanthemata, it is probable that the discharges from the nose augment the contagious character of these affections. The nasal flow is irritating, saline, and strongly alkaline,—due either to hydrochlorate of ammonia in excess (Donders) or to micro-organisms.

Etiology.—The sudden changes of temperature and the chilling of the overheated or sensitive body by draughts of air are the most frequent causes. Other excitants are: damp or wet feet or clothing; exposure to dry heat, irritating dust, chemicals, various fumes, high winds; sleeping in draughts; indigestion; insufficient sleep; etc. Children are attacked more frequently than adults. Those accustomed to fresh air suffer less than those who are housed.

Pathology.—It is generally taught that "rhinal inflammation invariably commences on the superior and middle turbinate process and extends in all directions." In the beginning, the vessels of the nasal mucous membrane are contracted, the circulation is increased, and there is little or no secretion; later, vascular dilatation occurs owing to vasomotor paresis, the blood-current is retarded, blood-stasis is established, accompanied by the escape of liquor sanguinis, with increased flow of mucus and a watery secretion. This soon becomes thick and puriform owing to the great number of young cells and epithelial scales, upon which the color of the discharge depends. As resolution

takes place the vessels regain their tone and the parts return to the normal state. When resolution is slow, the vessels and surrounding tissues do not promptly recover their vitality; as a result, chronic catarrh is established.

Symptoms.—The onset of acute coryza is generally sudden. The first symptom is often a tingling or tickling in the nose, frequently accompanied by sneezing; a dry, burning, or full feeling in the nose or head; a cold sensation in the region of the frontal cells; frontal or occipital headache; coldness and stiffness of the back of the neck; malaise; burning eyes, and sometimes fever. With the progress of the attack the sneezing increases, the headache grows more intense, the nose becomes more obstructed, nasal respiration is difficult, and the voice distinctly "nasal" and dull. At first there is rarely much discharge from the nose, but after a few hours, possibly days, a thin, excoriating, or bland watery flow is established. From one to four days from the onset, the discharge becomes copious, thick, occasionally brown or bloody, but usually yellow or green, owing to the escape of numbers of unripe leucocytes and epithelial scales. In some cases there are well-defined hæmorrhages. Occasionally, at this stage, the pain in the frontal region becomes very severe, often almost unendurable, owing to congestion, inflammation, or abscess of the frontal sinuses. When the discharge from the nose becomes thick and profuse, the pain in the head decreases, the feeling of malaise, feverishness, dry lips, etc., abate, and nasal respiration becomes easier. This affection is liable to be confused with neurotic swelling of the erectile tissue, in which, however, there is neither malaise nor fever. Inspection reveals the existence of a red or purple color of the turbinated bodies, which are swelled, dry, and glazed in the early stage; later, there is less tension, the glazing gives place to a serous coating, and the color of the membrane is more rosy. Before the close of the attack the characteristic discharge is seen, the membrane gradually resumes its normal color, and the swelling subsides.

Course.—The course of the disease varies from one to ten days or longer. If the patient be seen early, the attack can usually be aborted; but if nothing be done until the coryza is well established, the time of treatment varies from one to seven days, perhaps longer, or chronic catarrh may follow. Many members of the dominant school claim that coryza must run its course, and that little or nothing can be done after its thorough establishment. This does not accord with our experience.

Prognosis.—The prognosis is generally good. In infants and in the aged and debilitated, acute nasal catarrh may terminate fatally.

Treatment.—The treatment is both abortive and curative. In the first stage, during sneezing, tingling, burning, and dry-

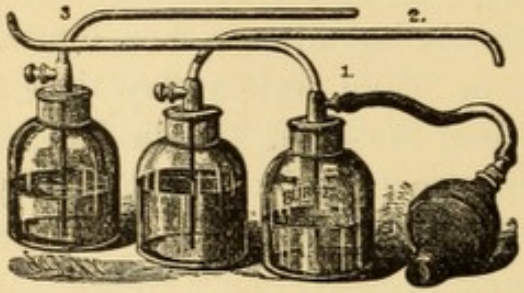


FIG. 19.—BURGESS' ATOMIZERS.
(To be used either by hand or by attaching to an air-compressor, which see.)

ness in the nose, pain and tired feeling in the muscles of the neck, a compressible pulse, general lassitude, especially if the weather be warm, moist, and relaxing, nothing seems so effectual in checking the progress of the "cold" as gelsemium; although it has a rival in quillaia, especially for cold contracted during warm, damp weather. When there are sneezing, malaise, thirst, dry lips, congested conjunctivæ, aching in the back and limbs, and full pulse, aconite proves abortive, in a large number of cases. With sudden fullness of the nasal passages and little sneezing, and an intense burning in the nasal canals, camphor acts promptly. This drug may be used internally, or inhaled from the hands. Menthol may be inhaled from crystals heated in boiling water, but a more efficient method is to employ

a fluid cosmolin, vaselin, or albolene spray of a 1- to 2-per-cent menthol solution. The spray may be repeated two or three times during the first hour or two; less frequently later. When the forehead, in the region of the frontal sinuses, feels cold, the attack may often be broken by placing a piece of flannel or some other warm article over the cold area, including the upper portion of the nose. A hot-water bag is the most pleasant manner of accomplishing this result, in the majority of

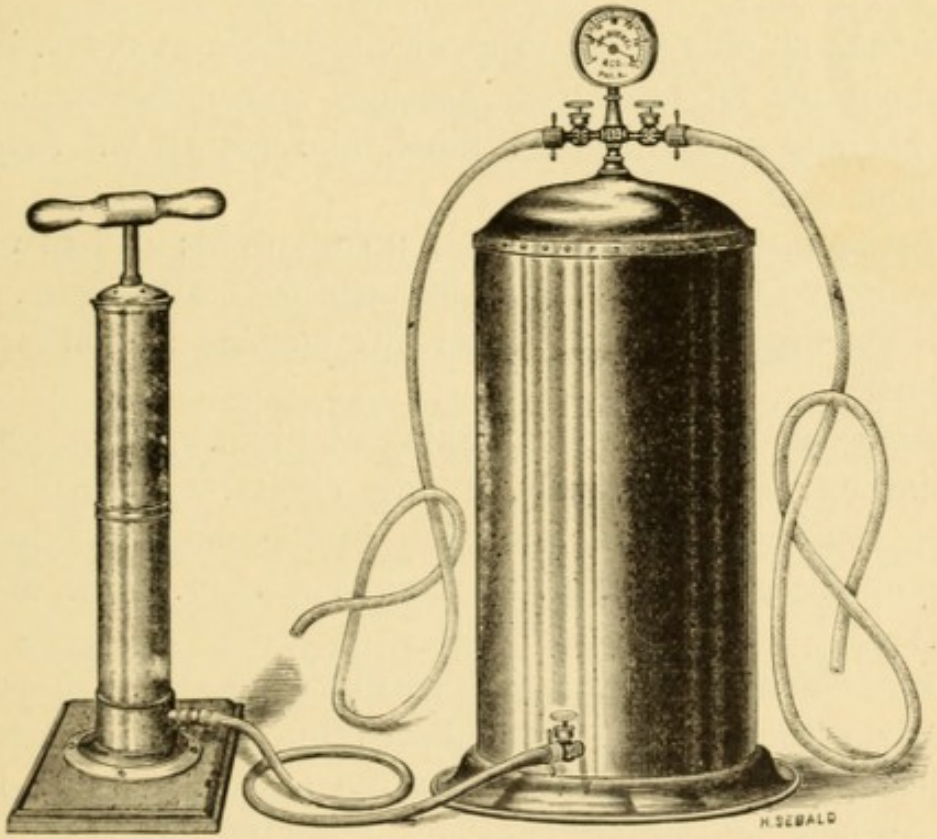


FIG. 20.—AIR-COMPRESSOR, WITH TWO OUTLETS.

cases. Rubbing the sides of the nose and forehead with the hand or a piece of silk, brisk exercise, deep nasal respiration, and hot drinks, followed by sweating in bed, often so restore the balance of circulation as to avert the attack.

When nasal respiration is greatly impaired, especially in children, a cosmolin, albolene, Russian voschano-oil, or menthol spray often acts admirably; but it may be advisable to make semi-daily use of a 1- to 2-per-cent cocaine application, either in glycerin and water (equal parts) or in cosmolin.

The great prophylactics are hygienic and dietetic. The outside wraps should be removed immediately after entering a warm room, and the neck and chest should be sponged daily with cold water, immediately followed by brisk friction. Turkish baths are sometimes useful, but do not agree with all.

The diet need not be changed during the attack, but large draughts of water seem to favor elimination.

Therapeutics.

Acon. not only serves to abort the attack, as stated, but is later indicated for headache, sneezing, watery discharge from the eyes and nose, malaise, thirst, and scanty but frequent urination.

Ammon. carb.—Nose stopped up at night; patient wakes about three or four A.M. gasping for breath. Nostrils sore, raw; coryza scalding, excoriating upper lip; burning and fullness in the throat.

Antipyrin 1 c.—"When waking at night, sudden, profuse perspiration; simultaneously, profuse coryza, accompanied by almost constant sneezing, burning in the nose, and profuse watery discharge." (W. M. Decker, *N. A. Jour. Hom.*, March, 1889.)

Ars.—Persons who are rarely without "a cold." Repeated sneezing without relief, but followed by copious, watery discharge, which burns and excoriates the nostrils and lip; later, thick, yellow, muco-purulent flow. Frontal headache, with nasal asthma. Burning in the nasal fossæ and throat; hoarseness, especially when the symptoms are relieved by warmth. "When painful pimples form within the orifice of the nostril, causing external tenderness, redness, and swelling." (George Moore, "Nose and Throat Diseases.")

Bell.—Acrid, watery nasal flow; frequent sneezing, which causes headache; erysipelatous redness of the nose, with chilliness. Throat dry, painful, and bright red; tonsils inflamed; difficult or painful deglutition.

Camph.—Involvement of the frontal sinuses; dull, pressive headache; free watery discharge from the nose and eyes; paroxysms of sneezing, especially in the morning; malaise.

Cepa.—Upper lip excoriated; nasal secretion watery and acrid, with a bland flow of tears (euphrasia the reverse); itching, burning, and stinging in the eyes. Worse in a warm room; better in the open air (puls.). Laryngeal cough and tingling pain.

Dulcam. "is the principal remedy in coryza neonatorum. This is an absolutely clinical indication." (P. Jousset.) When the coryza is worse or suppressed by every cold change in the weather; aggravated by dampness; nose obstructed; hoarseness.

Euph. is said to abort coryza. It is later indicated for very profuse, non-corroding nasal discharge, with excoriating lachrymation; ulcerated lid-margins; upper lip feels stiff.

Fer. phos.—First stage of cold in the head, with circulatory disturbances, catarrhal fever, congestion of nasal mucous membrane; and for a cold-catching predisposition (calc. phos.).

Gels. differs from acon. in that the attacks often recur in summer; the back feels chilly; fullness in the head; redness and soreness of the nostrils; heat of the face; beating of the carotids, and a feeling of languor or drowsiness.

Hydrast.—Thin, watery discharge, attended with much burning and rawness, and a sensation of a hair in the nose; frontal headache; mucous obstruction of the naso-pharynx; constipation.

Kali bi.—"An invaluable remedy when the discharge from the nose is tough and stringy; sometimes it seems to extend to the throat and to cause choking." (Guernsey's "Obstetrics.") Pressure at the root of the nose, with dull, heavy, frontal headache, relieved by pressing the bridge of the nose.

Kali iod.—Profuse, watery coryza and lachrymation; later, offensive dark-green or yellowish discharge; epistaxis; tight, full feeling and throbbing in nasal bones; involvement of the antra of Highmore and frontal cells; conjunctivitis; lachry-

mation; sticking pains in the ears; syphilitic and scrofulous subjects.

Magnes. mur. has proved curative for loss of taste and smell following colds.

Merc. sol.—Nose swelled, red, and sore; the alæ and columella excoriated; sneezing and watery discharge; inflammation of the conjunctiva and linings of the pharynx, larynx, and trachea; yellowish-green, thick, muco-purulent (puls.), irritating discharge.

Natr. mur.—"Fluent coryza in chilly subjects; chills along the back; great thirst; vesicles on the lips or tendency to them; constipation; weight in forehead on rising in the morning; sadness, depression, tendency to weep. *Aggravation of symptoms in the morning and periodically.*" (J. H. Clarke, "Cold-catching, Cold-preventing, Cold-curing.")

Nux vom.—Alternately free and obstructed nasal passages, and in the initial stage if caused by dry, cold weather, or by sitting on cold steps, etc.; sneezing and nasal obstruction; lachrymation and scraping roughness in the throat, but no nasal discharge. The nose is very dry at night, especially toward morning. Dry cough due to tickling in the larynx; constipation.

Osmium, according to the late Dr. E. A. Farrington, "rivals the more commonly employed phosphorus. It is highly irritating to mucous surfaces, provoking coryza, sneezing as from snuff; nose and larynx sensitive to the air. Small lumps of phlegm are easily loosened from the posterior nares and larynx. Like phosphorus, it attacks larynx and lungs. Characteristic is *severe pain in the larynx, worse when coughing or talking;* hoarseness." (*Trans. Hom. Med. Soc., State of Pennsylvania*, 1883.)

Puls.—Yellowish-green, thick, and often fetid discharge; of use especially in the later stages (kali mur.); always better in the open air. This remedy is chiefly curative in low dilutions and in frequently repeated doses.

Quil.—"For dry or fluent coryza and frequent sneezing; dull pain in head at root of nose; dull, heavy pain in both

temples, with scraping sensation in pharynx; throat very sore, especially on swallowing; tonsils swollen; weary feeling in limbs; lassitude." (*The California Hom.*, September, 1889.)

Sang. can.—Much soreness of the palate and pharynx, right side worse. The throat feels dry, raw, burning, as if scalded or denuded; loss of taste and smell; much sneezing; acrid, fluent coryza; nostrils sore, and pain through the nasal bones; catarrhal headache; Eustachian deafness; vertigo; susceptibility to odors, which sometimes cause faintness, especially in hay fever.

Verbasc.—"Acute or chronic rhinitis, with a periodically (often twice daily) returning neuralgia of the face; voice deep, hard, and very hollow." (Farrington.)

RHINORRHŒA—NASAL HYDRORRHŒA.

Etiology.—Although rare, cases are not wanting in which, with apparently slight nasal irritation, there is a free watery flow from the nose, usually lasting some weeks, and with a disposition to become chronic. The daily discharge is often very profuse,—sometimes two or three quarts,—but seemingly not debilitating. As a rule, there is only a subacute nasal catarrh, but hypertrophy and even polypi may exist. The external nose is generally irritated, even sore, and the upper lip may be inflamed and scaly. The watery flow seems to be the result of vasomotor paralysis, and is, apparently, often due to some atmospheric influence or irritant, or to a lesion of the trifacial nerve.

Symptoms.—The symptoms are suggestive of hay fever, but rhinorrhœa is not confined to pollen-forming periods, being more or less constant. The sneezing is often exceedingly annoying and the discharge very distressing and constant in most cases, but in others it has certain fixed daily aggravations. It may be painless or accompanied by neuralgia and intense irritation of the nasal mucous membrane. Difficult nasal respiration is often present, owing to engorged turbinated covering or other defects. Optic-nerve atrophy is, apparently, an occasional result.

Prognosis.—The prognosis is usually favorable, although a speedy cure should not be expected, as the condition sometimes lasts a number of years.

Treatment.—Mechanical treatment may be used to advantage, directions for which will be given under the disease causing or complicating this affection. Cocaine or menthol, 1 to 3 per cent, often gives temporary relief. A 30-per-cent glycerin and water spray is often of decided utility, while, internally, ars., arum tri., cepa, cham., gels., kali iod., and naphthalin are frequently indicated.

CHRONIC NASAL CATARRH—CHRONIC RHINITIS.

Etiology.—Ordinary chronic nasal catarrh is a frequent result of the acute form of the disease. It may follow traumatism and various irritants, but cases arise in which it is impossible to assign any cause, the condition seeming to be chronic from its inception. The ordinary form of this affection is not usually described, as it is generally classed with the hypertrophic variety; but there seems no good reason for denying the existence of a chronic catarrh of the nasal mucous membrane, independent of a pure hypertrophy. It is true that with this affection there is some thickening (swelling, engorgement, turgescence) of the Schneiderian membrane, but it is not hypertrophic, as cocaine reduces it at once and pressure with a probe leaves a decided indentation, which slowly passes away. With true hypertrophy, the tumefaction will not entirely disappear under the action of cocaine, nor can the tissues be decidedly pitted without considerable force; even then they promptly resume their form. This swelling of chronic rhinitis is chiefly confined to the turbinated bodies, but it is not infrequently found on one or both sides of the septum, constituting a well-marked submucous infiltration.

There is, no doubt, some increase in the cell-elements, but it is slight; the chief cause of the enlargement, in simple chronic coryza, is the overfilling of the vascular anastomoses and the erection of the nasal corpora cavernosa, or erectile tissue.

Symptoms.—The symptoms are usually distinct. Starting in repeated attacks of the acute condition, or resolution not following the first seizure, the patient is troubled with an irritation of the nose, a sensation of fullness, difficult nasal breathing, and a slightly "nasal" voice; but the most important and characteristic indication is the presence of an annoying discharge. This may be thin or thick, scant or copious, bland or excoriating; or white, discolored, or bloody. It often dries on the septum and other portions of the nasal fossæ, causing tickling, fullness, or pain. This form of the affection constitutes simple dry rhinitis, and is entirely distinct from muco-purulent dry rhinitis, due to atrophy. Although much of the discharge is expelled through the anterior nares, a large portion passes into the throat, and is removed as screatus, by hawking. Sneezing is rather frequent, and where the infundibulum is involved the frontal cells usually participate and occasion headache. In the same manner the antra of Highmore, the sphenoid and ethmoid sinuses, and the lachrymal apparatus may be invaded, causing symptoms to be considered later. As complications, there may be granulation tissue or polypoid growths; as sequelæ, hypertrophic or atrophic catarrh or ozæna. The affection is worse in spring, autumn, and winter; in the mild weather of summer there may be little or no annoyance.

Prognosis.—The prognosis is generally good, but as the disease is apt to be aggravated by acute exacerbations, due to frequent atmospheric changes, too favorable a prognosis should not be given; and, even after recovery, there is always the possibility that, unless carefully watched, the affection will return with the first attack of acute nasal catarrh.

Treatment.—The treatment should be constitutional and often local. Under the former are included diet, hygiene, and internal remedies. Even though denied by most writers, it is well to remember that the state of the general system has much to do with the affection; on this account, constitutional remedies do more good than is usually attributed to them.

Among local measures, cleanliness is of importance when a profuse, glutinous discharge prevents nasal respiration or interferes with medicinal applications directly to the lining membrane. For cleansing purposes a solution of half a teaspoonful of salt, a quarter teaspoonful of baking soda, and half a glassful of warm water is practically the most efficient. It is to be either drawn up into the nose from the palm of the hand or from a U- or cup- shaped nasal tube, or introduced through the mouth and back of the soft palate to the nose by means of a hard-rubber post-nasal syringe. Evacuation occurs through the anterior nares, where a bowl or basin is held to receive the fluid. The clothing should be protected by a towel or rubber apron thrown over the chest and lap. In most cases this application is to be, later, replaced by a spray composed of glycerin (1 ounce) and water (4 ounces), or pure fluid cosmolin, vaselin, or albolene.

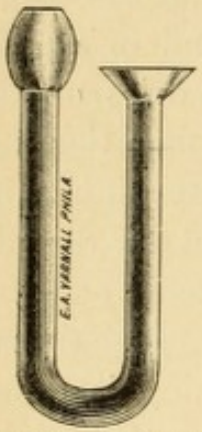


FIG. 21.—U-SHAPED NASAL TUBE.

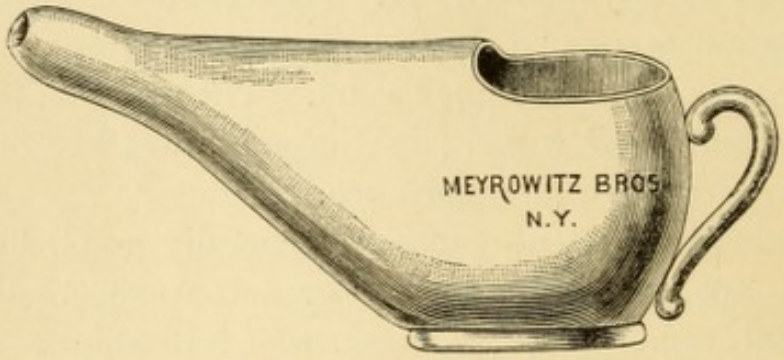


FIG. 22.—DESSAR'S NASAL CUP.

F. B. Kellogg recommends the following as a naso-pharyngeal cleanser (*Jour. Oph., Otol., and Lar.*, Jan., 1891): "A tube of soft rubber of the size of a No. 4 sound (French scale) is so perforated at the extremity as to throw five or six jets back upon itself at an angle of 45 degrees. This is attached to an Alpha or a fountain syringe, anointed with vaselin, and passed into the nose" and naso-pharynx.

After the use of any watery solution, the patient should

not blow the nose for at least fifteen minutes, lest some of the fluid be forced into the middle ear and give rise to otitis and its train of consequences. It is better, also, that he avoid going directly into the cold air. In the use of oil and glycerin, more is achieved than simple cleanliness, as the tissues are thereby medicated. If much temporary swelling exist, a 4-per-cent solution of cocaine may be used, or, better, a 1-per-cent menthol-albolene spray. If the obstruction be more constant, it is usually well to make a groove through the most prominent point with a hot galvano-cautery knife-blade. (See "Hypertrophic Rhinitis.")



FIG. 23.—POST-NASAL SYRINGE.

Internal remedies are to be prescribed for the constitutional changes, when discovered; otherwise, they should cover, as nearly as possible, the local symptoms and pathological alterations.

Therapeutics.

Alumina.—Catarrh of aged persons; leucorrhœa alternating with nasal catarrh. Thick post-nasal mucus.

Ammon. carb.—"The cavernous erectile tissue . . . . is the locality where this drug has its affinity of action. It will cure stoppage of the nostrils, acute or chronic; in children this obstruction will prevent them from sleeping, causing nervous starting as soon as falling asleep." (J. A. Terry, *Jour. of Oph., Otol., and Lar.*, April, 1890.)

Calc. carb.—"An excessive redness of the mucous membrane of both nose and throat (not a congestion nor a chronic venous hyperæmia, but rather an evenly diffused, heightened color), and accompanied by excessive sensitiveness to local application, especially to stimulants, absorbents, and astringents." (The late Dr. C. L. Cleveland, *ibid.*, January, 1890.)

Calc. phos.—In chronic catarrhs in anæmic patients; usually mouth-breathers. Associated adenoid vegetations at the vault of the pharynx; nasal tumors, especially mucous polypi. Frontal headache; pressure on the bridge of the nose; nasal lining pale and relaxed; pharynx glazed. Imperfect digestion and nutrition.

Cepa.—Nasal passages obstructed in a warm room; can scarcely breathe; must go into a cold room. Post-nasal dropping of clear, watery fluid (merc. cor., spigelia).

Fer. iod.—Marked anæmia, malnutrition; membrane relaxed, and discharge of thin mucus; also for hypertrophic and strumous rhinitis.

Hepar.—Purulent, stringy, even bloody discharge. Catarrh from suppression of skin eruptions. Tonsils and anterior cervical glands hard and swelled. One of the best remedies where persons sneeze or have a tingling in the nose as soon as uncovered in the morning, or from drafts at any time.

Hydrast. can.—Constant desire to blow the nose, which feels raw and excoriated. Discharge thick, tenacious, white, or yellow, both anteriorly and posteriorly. Scrofulous persons. Catarrhal frontal headache. Constipation. This remedy acts well in controlling the "cold-catching" tendency.

Ignatia.—"A drug not generally recognized in chronic catarrh of the frontal sinuses and ethmoid cells, but I have seen most remarkable effects from it when the distress centres just across the nose, between the eyes. It relieves the present distress of the patient and contributes largely to the cure of the chronic catarrh." (T. F. Allen, *Chironian*, November, 1889.)

Natr. carb.—An excellent remedy for nasal catarrh, both hypertrophic and non-hypertrophic, when the external nose shows evidences of eruptions, erythema, acne, etc. The secretions from the nasal passages are hard and offensive or thick, yellow, or green. Anterior cervical glands enlarged.

Natr. mur.—Hypersecretion of mucus with sneezing. Worse from exposure to fresh air. Occasional loss of smell. In the

absence of clear indications for other drugs, this is one of the best remedies where persons draw mucus from the naso-pharynx in the morning.

Paris quad.—The late Dr. H. N. Martin recommended this remedy when there was a stuffed condition and fullness at the root of the nose; constant hawking of tenacious, white, tasteless mucus, with dryness of the tongue and fauces on waking.

Penthorum.—Continual feeling as if the nose were wet, but without discharge; naso-pharynx feels raw, denuded; nose and ears feel full.

Puls.—Nasal discharge thick, muco-purulent, yellow or yellowish green, and bland, with loss of taste and smell. This remedy must be given at frequent intervals. The result is often disappointing unless there be mental or general symptoms to indicate the drug. It usually acts best in the very low or very high potencies, tincture or 200.

Sepia.—Perhaps the most satisfactory remedy when there is a discharge of greenish lumps (asafœt., puls., psorin.) and pressure or gnawing in nasal bones; uterine or menstrual disorders.

Sticta.—Violent sneezing; intense headache. Constant desire to blow the nose, although no discharge follows. Nasal lining so dry as to be painful; dry scabs difficult to dislodge. "Stuffed feeling at root of nose."

Therid.—Tough plugs; strumous patients; dull, heavy feeling in glabella; and fetid discharge from the nose, especially if complicated with bronchial and pulmonary catarrh.

HYPERTROPHIC RHINITIS—HYPERTROPHIC NASAL CATARRH.

Etiology.—In consequence of the long continuance of chronic rhinitis, with persistent engorgement of the erectile tissue, the hypertrophic form may result. Although this is the usual origin of the affection, foreign substances and irritants, if brought constantly in contact with the Schneiderian membrane, may induce it.

Pathology.—The pathological changes are totally different from the swelling in the chronic, non-hypertrophic form. In the disease under consideration, there is actual increase in the tissue-elements of the nasal passages, a deposit of connective tissue in the intra-vascular stratum. The epithelium is thickened, the mucosa proper increased in extent, and the deep layer of the mucous membrane (the submucosa) and the glandular elements are hypertrophied. Even the perichondrium and periosteum undergo the changes incident to such cell-proliferation, and it seems fair to presume that the cartilaginous and bony thickenings are sometimes a part of this process.

Symptoms.—The chief symptom dependent upon hypertrophic rhinitis is difficult nasal respiration. This varies from slight inconvenience to total abolition of the function. As a result of the consequent mouth-breathing, the air is not properly prepared for throat and pulmonary respiration, as it may be impure, cold, hot, dry, or overhumid, according to circumstances; and pharyngitis (particularly follicular), laryngitis, tracheitis, and bronchitis may follow. Mouth-breathers are often dyspeptic and poorly nourished. Dental caries is a possible sequel. Continuing the symptoms, we may find thick, thin, scant, or profuse discharge; the catarrhal process frequently extending to the pharynx and larynx, either as the result of continuity of tissue or the trickling of discharges from the posterior nasal region into the parts below. Obstruction of the nasal channels may so interfere with the entrance of odorous particles to the olfactory region that the sense of smell is obtunded or obliterated; or, owing to the same obstruction, the accessory cavities may participate, giving rise to headache, dizziness, etc. In this connection, it is well to note the tendency of this disease to produce mental defects, especially loss of memory and inability to fix the attention upon any one subject (aprosexia). Chronic hypertrophy may superinduce polypi and other forms of nasal and post-nasal tumors. Defective hearing may follow extension of the catarrhal process to the Eustachian tubes, pressure of the

hypertrophied tissue or new growths upon the mouths of the tubes, or interference with the proper action of the palato-tubal muscles in opening these channels to admit air for aëration of the tympani. Though a minor symptom, sneezing is sometimes a very annoying one. The voice is usually unnatural, "nasal," or even hoarse, and often practically destroyed for singing or public speaking. The so-called nasal quality is caused by hindrance to the normal vibration of the column of air within the nose. The hoarseness generally results from catarrhal implication of the larynx, although it may occur as one of the nasal reflexes.

Scotoma, hyperæmia of the fundus, conjunctivitis, contraction of the field of vision, orbital neuralgia, and even glaucoma have been relieved by a reduction of the hypertrophic tissue.

When looking into the nasal cavities, one or both may be found encroached upon by thickened tissue. This is very unevenly distributed, giving an irregular appearance. In color, the hypertrophic tissue is a little darker than the normal mucous membrane. Although quite firm, it may be indented; but the parts at once recover, whereas in simple chronic rhinitis recovery is sluggish.

S. Spicer (*Ann. Univ. Med. Sci.*, 1888) calls "attention to the black, distended vein at the root of the nose as a striking physiognomical peculiarity of a large number of children, especially the feebler offspring of the poorer classes in large towns. This vein—the nasal arch—forms a transverse communication between the angular veins on either side. Associated with this condition is a neglected or intractable chronic catarrh of the nose and pharynx, often with swollen middle turbinated bodies and rhinorrhœa; chronic congestion or hypertrophy of post-nasal mucosa or post-nasal vegetations are also present."

Not infrequently external changes will be noted, in consequence of the intra-nasal alterations. These surface defects consist of acne, erythema, and, according to some writers, even erysipelas. Seiler ("Diseases of the Throat," third edition)

says: "This irritation of the skin of the face is due, no doubt, to two causes, viz., first, reflex irritation of the vasomotor nerves of the skin, and, second, to the inability of the erectile tissue of the nose to act as a safety-valve in relieving the surplus blood-pressure in the capillaries of the skin of the face and nose."

Examination of the naso-pharynx often discloses the presence of extensive rough, mulberry hypertrophy of the posterior ends of the lower turbinateds. This is sometimes so considerable as to greatly hinder or obstruct nasal breathing. Adenoid vegetations are frequent.

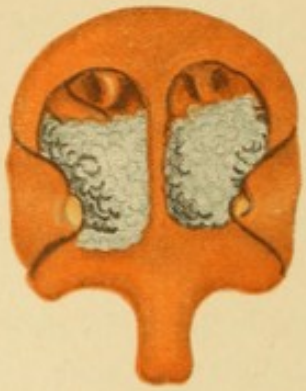


FIG. 24.—POSTERIOR HYPERTROPHY OF MIDDLE AND INFERIOR TURBINATED BODIES, BOTH SIDES. (Sajous.)

Prognosis.—The prognosis is much more favorable now than it was a few years ago, owing to the great advancement in the surgical treatment of this affection. It is, even now, not usually good, as regards the final cure of the disease, but the relief is so considerable that it is frequently almost as satisfactory as a cure. So far as life is concerned, the prognosis is good, unless the process extend to the larynx, when, in addition to catarrh, there may be a veritable hypertrophy of this organ, so severe as to give rise to fatal dyspnœa, unless mechanically relieved. Habitual mouth-breathing may follow, or bronchitis or pneumonia result. The course of the disease is chronic, usually requiring years for its development.

Treatment.—The treatment should generally be vigorous. The remedies are to be selected, first, according to the constitutional predisposition; second, with reference to the symptoms; third, in accordance with the pathological condition. Local measures are chiefly mechanical. In most instances, the primary result of treatment should be alleviation of the difficulty in nasal respiration. While temporary relief may be afforded by the use of local remedies acting as cleansers and as stimulators of the relaxed tissues, their secondary effect may be to relax the tissues still further, and possibly to increase the hypertrophic process, thus augmenting the symptoms. This does not apply to either menthol (2 per cent) or naphthalin (3 per cent). If the soft parts alone be hypertrophied, some good may follow the use of pure soft-rubber tubes or gelatin bougies. The former are kept in the obstructed passage for one or two hours, morning and evening; the latter, until they dissolve. It is to be remembered that this is a true increase, a connective-tissue deposit in the structures beneath the submucosa, an intra-vascular change, for which, when annoying symptoms arise, the only sure hope of radical improvement seems to lie in its partial destruction. This may be accomplished by means of caustic acids, or, better still, by the galvano-cautery, saw, or drill. It is always better to treat the nasal fossæ for a short time before using any form of cautery, as relief may follow mild measures. After any cauterant, the surface attacked should be sprayed with pyoktanin (1 to 200) or vaselin, albolene, or other soothing substance. As yet, internal medicines play but a secondary part, but recent achievements give hope for the future of internal medication in hypertrophic nasal catarrh.

The chief acids at the operator's disposal are nitric, glacial acetic, trichloracetic, monochloracetic, and chromic. Nitric acid should be used in the most experienced hands only, as its action cannot be easily limited, although it may be somewhat modified by strong solutions of bicarbonate of soda. When applied, it must be in very small quantities, and to only one

small spot. A fine probe should have its tip covered with closely-wound absorbent cotton, which, after dipping in the acid, should have any excess of moisture pressed out of it before being used. A very fine glass rod or a probe dipped

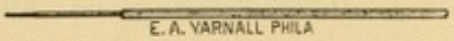


FIG. 25.—AUTHOR'S NASAL PROBE.

into melted glass is preferred by some. The action of the acid is very prompt and quite painful. A pledget of absorbent cotton, wet with a 4- to 10- per-cent solution of cocaine hydrochlorate should be kept in contact with the part for five or ten



FIG. 26.—SAJOUS' GUARDED ACID APPLICATOR.

minutes prior to the acid application. For a few hours the nose will swell considerably and be very sore, but this will decrease on the second or third day. On account of the intense reaction, the application should not be repeated for two weeks,

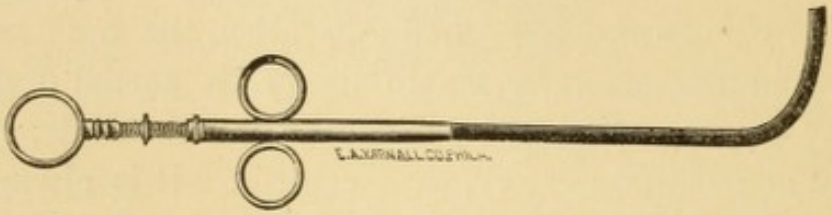


FIG. 27.—AUTHOR'S GUARDED POST-NASAL ACID APPLICATOR.

and then on the spot first attacked, lest too much of the mucosa be destroyed, superinducing loss of function or even atrophy. The acid application results in the formation of a groove or depression, contraction of which causes a decrease in the sur-

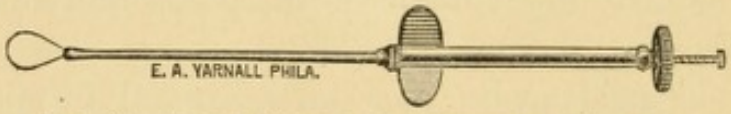


FIG. 28.—JARVIS' SNARE, AS MODIFIED BY SAJOUS.

rounding hypertrophy. In the use of glacial acetic acid there is much more safety, although its action is slower, requiring several weeks to accomplish as much as would one application of the nitric acid. Its effect is not very severe, and may be

modified, when desired, by the use of oil or strong bicarbonate of soda. If necessary, the glacial acetic acid may be repeated every week. The monochloracetic and the trichloracetic acids are preferable to either of the foregoing. While they have much of the brilliant action of the nitric acid, their force may be regulated by the prompt use of oil. The best application, however, is chromic acid; its action is slow, and it is necessary to repeat it every five or six days for from two to many weeks, depending upon the amount of hypertrophy. It should be applied to one part until the end in view has been attained. The crystals may be dissolved in a little water and

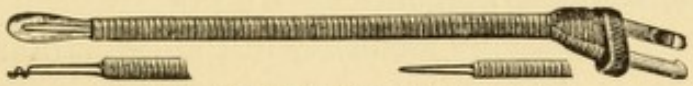


Fig. 29.—Cautery-Knife and Points.

applied by means of a cottoned probe, or the pure crystals may be fused on the end of a heated probe and placed upon the desired area. In some cases I have seen marked clonic spasms of the tissue covering the lower posterior portion of the triangular cartilage follow the use of the acid. These spasms begin

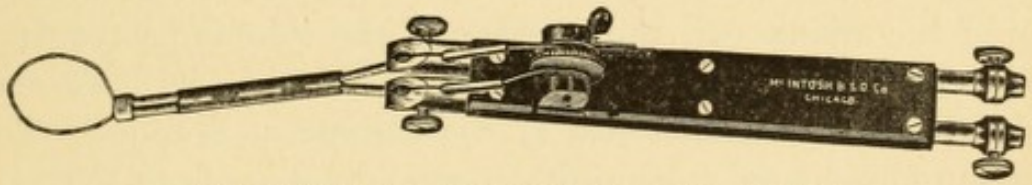


Fig. 30.—Galvano-Cautery Handle and Snare.

about one minute after the contact of the chromic acid, and continue for five or six minutes. Caution: Never use glycerin before making an application of chromic acid.

The galvano-cautery is usually the most satisfactory method of reducing nasal hypertrophy. With it there is no difficulty in limiting the amount of destruction; almost no reaction follows; the application can be repeated every three or four days, or as soon as the eschar has separated; and, if the point be heated to a bright-cherry color, there is scarcely any pain. In using the galvano-cautery, a thin, flat knife, about two millimetres broad, is the most satisfactory.

When it becomes advisable to reduce an hypertrophy of the middle turbinated, the snare or the electric trephine (Whiting) is to be preferred to the galvano-cautery or caustic, which should not be used freely, lest meningitis occur or amblyopia follow. In either operation care should be exercised not to injure the septal (olfactory) surface of the turbinated membrane.

Septal hypertrophies are often best treated with the saw, drill, snare, knife, or chisel. (See "Exostoses.")

In all efforts at the destruction of hypertrophic tissue, care should be exercised not to attack more than is essential to the accomplishment of the object desired; otherwise, healthy tissue will be sacrificed, possibly resulting in the formation of atrophic catarrh, ozæna, perichondritis, or caries.

Local applications, such as suggested under "Chronic Rhinitis," are not to be neglected, as they serve to keep the membrane in a cleaner, healthier condition than where they are withheld. If the hearing be defective, it may be necessary to place the patient under a strict course of aural treatment, including medicines, care of the nasal and post-nasal region, inflation of the middle ear, and massage of the membrana tympani. As the nasal defect is often the original affection, its cure may result in the complete relief of the secondary disorder. The palatine muscles may require electrical treatment, as they are often palsied from lack of use or from the pressure of tumors or hypertrophies. If tumors be present, they are to be treated as described under the appropriate heading, and when the larynx is involved it is to be cared for according to the indications found under "Catarrhal Laryngitis" or "Chronic Hypertrophic Laryngitis."

As scrofula is a frequent condition in persons suffering from hypertrophic rhinitis, ars. iod., calc. carb., hepar, iodine, silica, and similar remedies are often indicated. When syphilis acts as a predisponent or an excitant, kali iod., merc., merc. iod. rub., merc. iod. cum kali iod., phytol., etc., will aid.

Therapeutics.

Alumen usta.—Hypertrophic catarrh; frequent bleeding; discharge of thick, tenacious mucus. Polypoid granulations, which bleed easily.

Ammon. chlor.—This is often called for in the absence of well-defined indications. Hypertrophy, chiefly of the septum.

Ars. iod.—Irregular hypertrophy and granulation of the soft parts. Thick yellow discharge; enlarged tonsils and other glands.

Carbo veg.—Spongy hypertrophy, especially if associated with epistaxis, particularly in elderly persons.

Fer. iod.—Associated with follicular pharyngitis and adenoid vegetations (fer. phos. and sang. nit.).

Merc. sol.—Hypertrophy, with the characteristic symptoms given under acute and chronic catarrhal rhinitis.

Silica.—With purulent or corrosive and thin secretions. Ulceration. Symptoms worse in the morning, when the voice is husky.

ATROPHIC NASAL CATARRH—MUCO-PURULENT DRY RHINITIS—OZÆNA.

Etiology.—Atrophic catarrh has an existence independent of ozæna, but, as the latter (fetid odor of special character) is such a frequent accompaniment to atrophic cases of long standing, I think it best to consider them together. As muco-purulent dry rhinitis is a result of atrophy, it must be distinguished from simple dry rhinitis as found in chronic nasal catarrh.

It is generally stated that the most frequent cause of atrophic nasal catarrh is hypertrophic rhinitis, which undergoes atrophy as the result of pressure of the hypertrophic tissue upon the underlying structures; some, however, deny such origin. The glandular organs usually suffer first, but finally the submucous structures, including the venous sinuses, yield, the blood-supply and nerve-stimulus are diminished, the sense of smell becomes blunted, and the nutrition of the part im-

paired. The mucous membrane is thinned so that, in many instances, the turbinated bones seem atrophied and stand out in bold relief, a mere skeleton of their normal condition. As another cause should be mentioned chronic purulent rhinitis of children (which see). Several instances have come under my notice in which no atrophic symptoms existed previous to a severe "grip" seizure; some cases seem to be atrophic from their inception, and some take on atrophy as a result of various irritants, including dust, filings, snuff, tobacco-smoke, etc. The various exanthemata are doubtful etiological factors. Arrest in the development or growth of the structures going to form the normal nasal fossæ may produce atrophy. Finally, traumatism, the long retention of a foreign body in the nose, or the continuous contact of two mucous surfaces may induce it. Syphilis, scrofula, and tuberculosis should be excluded as etiological factors.

It must not be understood that all or even the majority of cases of hypertrophy undergo the atrophic process; neither should it be thought that even a majority of atrophic rhinites are ozænous, although many are.

Those most frequently affected are in rather poor health, overworked, and illy nourished. Persons after middle life are rarely attacked, puberty seeming to be the most prolific period for its development.

Pathology.—The pathological changes in atrophic rhinitis are numerous. There is a decrease in the epithelial covering, and Volkmann has found that the cylindrical epithelium is transformed into that of the pavement variety, and of the intermediate, or transitional, stage. The mucosa is devoid of glands and transformed into either a granulation or a cicatricial tissue, ten or twelve layers thick of pavement epithelium, the upper layer analogous to the epidermis. As this layer increases, a mass of dead epithelial cells accumulates and becomes a putrefactive centre of infection. The cause of the ozænous odor, when present, has been variously attributed to the retention of discharges in the accessory cavities and to the presence of micro-

organisms, especially the diplococcus of Löwenberg, who considers it the cause of special fermentation, upon which the odor depends. The ozænous crusts are composed of mucus, pus, epithelium, often fibrin and serum, and mucin; when expelled there remains a moist, creamy discharge. If the accessory cavities be implicated the degree of offensiveness is greater than otherwise, and is often almost unendurable. Upon the removal of the accumulations, it may be seen that there exists a degree of erosion, but true ulceration does not occur in uncomplicated cases. The secretions are not stopped, as the name "dry" would imply, but are of such a nature as to dry rapidly and form scabs or crusts on the mucosa. These may be green, yellow, brown, or bloody.

Symptoms.—The symptoms are almost the reverse of those found in the hypertrophic form. Nasal respiration is free; the discharge, either anteriorly or posteriorly, is slight, except as the crusts are dislodged; there is little sneezing; the accessory cavities may be implicated; pharyngitis sicca (atrophic nasopharyngeal catarrh) usually follows, and may lead to catarrh, even ozæna, of the larynx and trachea. During the early stage, the patient is usually aware of an annoying, faint, stale odor from his nose; but later the sense of smell becomes so blunted that, even after a truly offensive ozæna is present, he is not conscious of his obnoxiousness. The accumulation of dry discharge gives rise to a full, disagreeable, often painful, sensation, which induces the patient to bore at the nose; at other times the upper lip is drawn down or the nostrils are dilated by muscular action, each for the purpose of relieving the drawn, dry, and tense feeling. The scabs are generally difficult to dislodge by blowing, as the nasal passages are so spacious that the air-current has no especial effect upon them. They vary in color, as stated, and may be small flakes or so large as to form complete casts of the portion covered. Epistaxis may occur from the erosions, and from the habit of picking the nose the cartilaginous septum may be perforated. The general health may

suffer and indigestion result from the passage of the purulent discharges into the stomach; menstrual disorders are frequent. In many instances the nose is small, the alæ and bridge broad, and the nose apparently sunken into the face,—the so-callad saddle-back.

Inspection of the anterior nasal canals reveals a characteristic picture: the greater portion of the membrane may be seen covered with the greenish-gray crusts referred to, which, when removed, reveal a pale and thin membrane, with occasional erosions. The turbinated bones usually lose their scroll-like form and atrophy, making one or both of the nasal fossæ very spacious. The shrunken appearance of the lower turbinateds is due either to atrophy or to collapse (MacDonald) of the erectile tissue. Occasionally, the turbinated bones have entirely disappeared from anterior view, but posterior rhinoscopy gives less evidence of change.

In looking back into the deeper portion of the nasal cavities, it is not usually difficult to see the dry, glistening pharyngeal wall, the motion of the muscles, the prominences, or even the mouths, of the Eustachian tubes. The pharynx and naso-pharynx are generally dry, glazed, glistening from the extension of the process (pharyngitis sicca).

Prognosis.—The prognosis is comparatively good, as a rule; the absolutely hopeless outlook of a few years ago is a thing of the past. Some cases recover, so far as practical comfort is concerned; collapsed tissue will usually refill, but the atrophic loss can never be completely repaired, hence an absolute cure is impossible. Usually, little can be accomplished under three months, although decided comfort may follow the second week's treatment. Entire comfort may not be secured for a year or longer. Life is rarely curtailed by the existence of atrophic catarrh, but it is to be constantly borne in mind that at any time an atrophic rhinitis may become an ozæna of the worst form.

Treatment.—The treatment is to be based upon the consti-

tutional changes and symptoms, when present. Among the local measures, the first to note is cleanliness, as already expressed. Much force should not be used in removing the crusts. This precaution is too often neglected, thereby causing unnecessary injury. It may be added that a little irritation is often beneficial, as it serves to institute a better reaction, and may give new life to the glandular and muscular structures. The best solution for cleansing the membrane is salt, gr. x; bicarbonate of soda, gr. x; warm water, ʒiv. It is best employed by means of the post-nasal syringe. It is well not to use more than three or four syringefuls at one sitting, two or three times a day. The same is true if the patient snuff the solution out of the hand or from a U-shaped tube. The nasal douche is to be discouraged, on account of its liability to cause disease of the frontal and ethmoidal cells, antra of Highmore, and middle ears. The precaution neither to blow the nose nor to go into the cold air for fifteen minutes after the use of aqueous solutions in the nose should be enjoined here, as elsewhere.

In a large number of cases the cleansing can best be accomplished with a spray of fluid cosmolin, vaselin, or albolene. After the membrane is once freed, this spray should be repeated, by the patient, five or six times daily, for the purpose of keeping the parts thoroughly lubricated. It is sometimes well to medicate the oil with the remedy internally indicated. Dr. William R. King, of Washington, told me that he had obtained much satisfaction from a spray of a weak solution of the extract of green plantain in fluid albolene.

If, after a few days, these means fail to dislodge the scabs, they should be carefully loosened at their edges with a fine, cotton-covered probe, and removed with angular forceps or post-nasal syringe, or by blowing. When thoroughly cleansed, the underlying abrasions will heal more promptly if boric acid, iodol, or aristol be insufflated upon them. In very offensive cases, a few crystals of permanganate of potassium, or a drop of menthol, creolin, or carbolic acid, should be added to the

cleansing fluid. A 20-per-cent aqueous solution of calendula is at times effective as a spray or application.

" Menthol in oily solution (benzoinol), 10 per cent, I find to be an excellent application in dry conditions of the mucosa. Atrophic rhinitis, pharyngitis, laryngitis, and ozæna are all benefited to a great degree." (Dr. Malcolm Leal.)

Ichthyol (5 per cent), in keroline, daily applied to the cleansed nasal lining, and a 10-per-cent vaselin solution of the above sprayed into the nose four or five times a day, have proved highly gratifying. Permanganate of potassium, thoroughly triturated with starch or sugar (1 to 10), is an excellent insufflation for the cleansed surface; and camphorated naphthol in albolene has strong advocates.

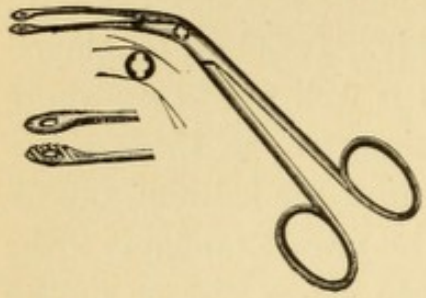


FIG. 31.—ANGULAR FORCEPS.

No one application should be continued very long, as the diseased structures become non-responsive after a time.

When the reaction is sluggish and the secretions remain tenacious, in defiance of treatment, I have for some years been using loosely-rolled pledgets of absorbent cotton, saturated with

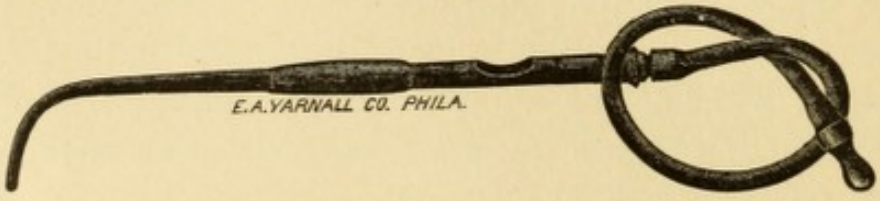


FIG. 32.—INSUFFLATOR.

pure glycerin (*Trans. Hom. Med. Soc. State of Pa.*, 1891, and *Jour. of Oph., Otol., and Lar.*, January, 1892), and find that they act very promptly in establishing a mucous flow, in loosening the crusts, in modifying the odor, and in giving relief to the annoying subjective symptoms. One side is treated at a time; the pledget need be kept in position but a few minutes, or until a profuse watery flow is established, when all can be readily

blown into the handkerchief. The patient may repeat the procedure two or three times daily. This, together with the keroline-ichthyol or the menthol spray, proves very grateful to most patients. Aristol (iodide of thymol) often acts promptly in destroying the odor as well as in healing erosions. It may be insufflated pure, or applied (Löwenstein) as a collodion,—1 part of the iodide to 10 of flexible collodion. A spray of peroxide of hydrogen (15-volume) is a favorite with many. Light searing with the almost white galvano-cautery point sometimes aids the stimulating process, but much harm may result from the free use of this instrument.

Galvanism often acts beneficially in restoring activity to the vasomotor nerves and mucous membrane. The negative pole, covered with wet absorbent cotton or sponge and conducting a very weak current (four to six milliampères), is applied to the nasal mucous membrane, the positive pole resting on the forehead. Ten- to fifteen- minute applications may be repeated every two or three days.

As a rule, co-existing disease of the accessory cavities will gradually heal, as the result of the treatment already mapped out; but, should it not, direct treatment may become necessary. (See "Diseases of the Accessory Cavities.") This, however, is an extreme view of the case, and one that will rarely require fulfillment if the outlets of these spaces be kept free and the remedies given according to indications or well-attested experience. Delayed, irregular, or absent menstruation should receive a due amount of medicinal, hygienic, and dietetic care.

Therapeutics.

Alumina.—Snapping in the ears when eating or swallowing; aggravation of nasal symptoms from the slightest exposure; naso-pharyngeal symptoms alternate with leucorrhœa. Nasal discharge thick, greenish yellow, and bloody. Anosmia; mind sluggish; inability to do mental work; aprosexia.

Argent. nit.—"Bloody and purulent nasal discharge; ulcers, covered with yellow crusts." (Morse, "Nasal Catarrh.")

Ars. iod.—Nose swelled; profuse, thick, yellow discharge; burning in the larynx; ozæna in strumous subjects; enlarged tonsils; hypertrophied naso-pharyngeal membrane.

Aurum met.—Caries of nasal bones; nasal bones sore to touch; fetid discharge; nostrils ulcerated. Mercurial, scrofulous, and syphilitic complications; nasal obstruction. Chargé ("Trait. Homœo. des Maladies des Organes de la Respiration") says that, from personal observation, he considers kali bi. a great aid in completing the cure begun by aurum met.

Aurum mur.—When the nasal passages are filled with offensive, greenish-yellow, or bloody plugs; scrofulous, mercurial, and syphilitic ozæna. Small, painful ulcers in the nasal passages; bloody discharge; headache; loss of smell. Pains relieved by keeping the head warm.

Calc. carb.—Thick, dirty-looking, fetid, purulent discharge, which corrodes the lip; soreness or ulceration of the septum. Swelling externally and internally; frequent and profuse epistaxis and hoarseness, especially in the morning. Scrofulous subjects.

Cuprum.—Frontal pain, worse over the left eye and at the root of the nose, aggravated by motion; involvement of the frontal cells. Loss of smell and impaired taste.

Elaps.—"Partial stoppage and stuffiness high up in the nostrils, with dull aching to forehead; worse in wet weather. Occasionally, bad smell from the nose; offensive discharge; posterior wall of throat covered with a dry, greenish-yellow scab, wrinkled and fissured, extending up to nose; occasional nose-bleed; pain from root of nose to ears on swallowing; sneezing at night; sense of smell gone; profuse and dark catamenia." (Raue, "Special Pathol. and Therap. Hints.")

Graph.—Takes cold easily; ozæna much more fetid during menses. Tough, lumpy, bloody, or yellow, fetid discharge; smell as from a purulent coryza; nostrils ulcerated; eczema behind ears.

Kali bi.—Thick, offensive, lumpy or ropy, dark-green, often blood-stained discharge from nose and throat. Involvement of

the frontal sinuses. Nasal passages painfully dry. Naso-pharyngeal catarrh, with discharge of a similar character. Sycotic constitution. (See aurum met.)

Kali iod.—After the abuse of mercury. Greenish-yellow, excoriating discharge; throbbing and burning in nose and forehead. Enlarged submaxillary glands; associated otorrhœa.

Merc. cor.—Ozæna; discharge glue-like, often drying in naso-pharynx; nasal fossæ raw and smarting.

Petrol.—Scabs and muco-pus; nose sore and nostrils cracked (graph.); muco-pus in the naso-pharynx. Internally and locally.

Phytol.—Marked and persistent excoriation of nostrils and lip; puriform discharge. This is one of the most potent remedies where there is a syphilitic history.

Psorin. 200 x.—Intractable cases of scrofulous origin. The ichorous discharge and great fœtor are the key-notes of this remedy.

Puls.—Thick, yellow, or green and fetid discharge, changing color and consistence frequently; loss of taste and smell. Mild, timid, yielding persons, especially if associated with menstrual difficulties,—flow scanty, late, and pale.

Sepia.—To me, this is one of the most useful remedies in atrophic catarrh, and when the following symptoms are present I have no doubt of the improvement: yellow or greenish crusts or plugs discharged through the anterior nares, and a gnawing pain or pressure at the bridge of the nose.

Silica.—"Ozæna when the affection is seated in the submucous connective tissue or periosteum. Painful, chronic dryness of nose, or inveterate ulceration, producing acrid corroding discharge; herpetic eruption around nostrils and lips. Itching of tip of nose." (Boericke & Dewey.) Secretion purulent, thick or thin, and excoriating to the nose. Throat dry and painful; thick, green, fetid, post-nasal discharge.

Sulphur.—Chiefly as an intercurrent, but sometimes, also, if the nose be very dry, with a stiff, parchment-like sensation or a discharge of thick, bloody mucus.

Therid. — Discharge yellow or greenish yellow, crusty or thick, and offensive; but particularly if the crusts be drawn into the throat and expectorated. Dr. A. Korndoerfer's chief symptoms for the use of this remedy are: offensive discharge, either thick or thin; headache; and a feeling of fullness or pressure at the bridge of the nose.

Thuja.—Copious, thick, green, purulent, or bloody discharge; swelling and hardness of the alæ nasi. Thick, tenacious, hard crusts form in the olfactory tract especially.

CHAPTER IV.

Various Diseases of the Nasal Passages.

RHINO-SCLEROMA—SCLEROMA RESPIRATORIUM.

Although never reported as occurring in the United States of America, yet it seems advisable to refer briefly to this European and South American affection, whose home appears to be Poland. From recent research, there exists but little doubt that rhino-scleroma has a place in nosology independent of syphilis, scrofula, lupus, tuberculosis, or traumatism, upon which many believe it depends.

Etiology.—It is exceedingly rare, and its cause or causes are obscure; although Frisch has discovered a bacterium similar to Friedländer's pneumococcus, which is considered by some to be its progenitor. Stepanow (*Monatsch. für Ohrenheilk.*, No. 1, 1889) has proved (by inoculation) that it is infectious, and that Frisch's microbes are its cause.

Pathology.—Its pathological changes are in the direction of chronic inflammation, cicatricial changes, and small-celled hypertrophies of the entire thickness of the invaded skin and mucous membrane. This soon results in shriveling of the underlying connective-tissue elements. Kaposi (*Internat. klin. Rundschau*, 1891) says that it seems to be a tumor placed under the corium, like a piece of ivory. It never ulcerates, and does not bleed when cut. Microscopically, it resembles a small-celled sarcoma.

The alæ nasi and septum are the favorite starting-points for rhino-scleroma, although it may first appear on the pharynx, soft palate, naso-pharynx, or larynx. The hypertrophy usually spreads very slowly to surrounding parts; it may involve the lips, cheeks, gums, and all of the upper respiratory tract.

The diseased tissue is somewhat elevated, flat, and sharply defined. The nodes or patches are very hard, and are quite painful upon pressure. They may be pale, resemble a glistening cicatrix, or be similar in color to the surrounding structures True ulceration never occurs, although there may be superficial erosion. Removal is speedily followed by return.

Symptoms.—The symptoms are local and consist of disfigurement; diminution of the nasal, pharyngeal, and oral cavities; difficult respiration; and difficult and painful deglutition. When the larynx participates, hoarseness and dyspnœa may follow.

The disease is frequently mistaken for some of the constitutional disorders named, but the continued hardness of the non-ulcerating nodes will serve to differentiate the affection after a lapse of some months. It is always chronic, and may last from fifteen to twenty-five years.

Prognosis.—The prognosis is unfavorable, so far as present-known measures are concerned, and laryngeal dyspnœa may prove fatal unless relieved by intubation or bronchotomy.

Treatment by remedies has proved futile, but local caustics, including the galvano-cautery, have been successful in temporarily reducing the hypertrophy. Dilatation seems to have proved beneficial; for this purpose catgut, laminaria, tubes, etc., have been used. Pathologically, it would seem that the local and internal use of thuja, graphites, or calendula should prove beneficial.

CHRONIC BLENNORRHŒA OF THE UPPER AIR-PASSAGES. (STOERK.)

This is an exceedingly rare condition, even in Europe; although the Polish Jews have furnished numerous cases. In this country it is almost unknown. It consists of a chronic, profuse, muco-purulent or purulent, and often offensive discharge from the nose, pharynx, larynx, and trachea, unattended by ulceration of the mucous membrane. The nose and pharynx

do not seem to undergo any special structural alteration, but the larynx is sometimes stenosed,—the result of plastic adhesions between the vocal bands, or of lateral, infra-glottic, hypertrophied tissue.

Prognosis.—The prognosis is unfavorable; the voice may be permanently destroyed, or stenosis prove fatal.

Treatment.—The treatment should be internal, local, and sometimes surgical. Local cleanliness and antisepsis are necessary, and tracheotomy and dilatation are frequently demanded. Internally, the remedies noted under "Atrophic Rhinitis" should prove beneficial.

ACUTE PURULENT CORYZA OF CHILDREN—MALIGNANT RHINITIS.

This unusual condition consists of a purulent secretion from the nasal passages of very young children, and a thickening and softening of the mucous lining, into which there is a considerable extravasation of blood. Frequently associated with it are ulceration and sloughing. The bones and cartilages sometimes participate in the destructive process, resulting in perforation of the nasal septum and partial or complete loss of the turbinated bones. Pseudomembranes may form, in appearance not unlike those of diphtheria, but are thinner and not so intimately connected with the underlying structures; the condition may finally undergo a true diphtheritic transformation.

Etiology.—The causes of malignant rhinitis are those of infection. As with ophthalmia neonatorum, the source of infection is nearly always the vagina during parturition. The nasal disorder manifests itself in from two days to two weeks after inoculation. This disease should not be confused with congenital syphilis, with which it is sometimes associated. Diphtheria is its closest ally.

Symptoms.—Symptomatically, the disease is usually well outlined. Sneezing is one of the first indications, but a discolored, even bloody discharge soon follows, which, in a few hours, or at most a couple of days, becomes purulent. Later,

pseudomembrane may develop. Almost from the onset there is some defect in nasal respiration; this usually soon amounts to complete stenosis. Malaise is an early symptom, and fever soon reaches 101° to 104° F. Prostration is great, and the struggle for breath is often agonizing.

Prognosis.—The prognosis should be guarded; some authorities place the mortality at two-thirds, others at one-half, while Nichol ("The Larynx and Trachea in Childhood") gives a more favorable estimate, and from his experience it would seem that a large percentage of the otherwise doomed half should be saved. In favorable cases the symptoms gradually subside, leaving the nasal passages more or less clear. Inanition due to inability to nurse is frequently followed by coma and

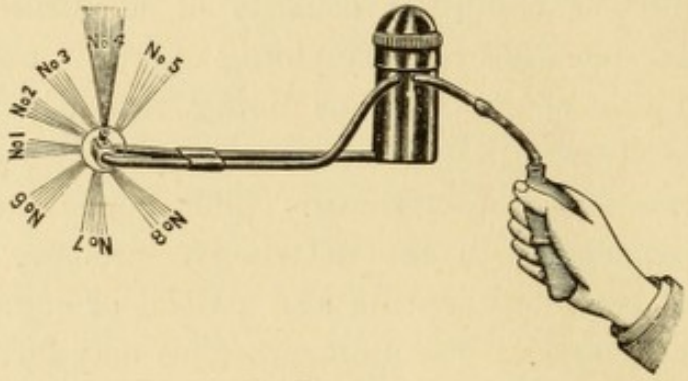


FIG. 33.—DE VILLBIS' ATOMIZER.

death. Other things equal, the younger the child, the graver the prognosis.

Treatment.—The treatment is chiefly medicinal, but its important aid is cleanliness. For the latter purpose, it may be advisable to use a spray of an aqueous solution of permanganate of potassium, 1 grain to 1 ounce; or peroxide of hydrogen, 4 drachms to 1 ounce. This is to be repeated as soon as nasal respiration becomes labored. In the absence of a spray, the nose may be gently syringed with the same solutions. During these manipulations the child should be held upright, in order to prevent the entrance of the liquid into the larynx. For the purpose of removing tenacious discharge, coiled blotting-paper or absorbent cotton should be passed into the nose. If the

child be unable to breathe while nursing, a small rubber tube should be carefully passed through one inferior nasal meatus, well into the pharynx, thus rendering respiration and nursing less difficult.

The internal remedies which acted best in the cases recorded by Nichol were apis, argent. nit., and nitr. ac. Ars., chin. ars., fer. iod., iodine, and sang. can. are equally valuable.

CHRONIC PURULENT RHINITIS OF CHILDREN.

Etiology.—This affection has been looked upon, by some, as a sequel of syphilis, scrofula, and tuberculosis, but these complications are found under their appropriate headings; that which is here referred to is an independent disease. It is not the result of acute purulent rhinitis of children, as that disease is of short duration and speedily terminates either in resolution or death. Its causes are obscure, but are, no doubt, the result of repeated "colds" and catarrhs, which finally occasion some epithelial destruction, resulting in a purulent catarrh.

Pathology.—Chronic purulent rhinitis of children consists of a muco-purulent, followed by a purulent, yellow discharge from both nasal passages. There is no involvement of the deeper structures of the Schneiderian membrane, the epithelium alone being affected; the ciliæ are early lost, and the greater part of the epithelium is destroyed. The pathological process does not cause ulceration, and never attacks the bones or cartilages.

Symptoms.—There is rarely pain or soreness, and no constitutional symptoms occur unless the stomach be disordered from entrance of the purulent material. Nasal respiration is rarely obstructed, except by dry discharge during sleep. There is no decided fœtor during the fluent period. The patient is subject to acute exacerbations, but is not usually so susceptible as are other children; the loss of the ciliæ or epithelium appearing to render the mucosa less sensitive to the influences which induce acute coryza. If the nasal passages be examined, they will be found covered with a yellowish secretion, which, when wiped away,

leaves the membrane in an apparently healthy condition. The pharynx and choanæ are generally coated with a thick, stringy, or gluey discharge. The patient is usually in robust health, and shows no evidence of a blood taint.

Prognosis.—The prognosis is good; with care, all cases will improve and many be cured. If the disease continue to the age of puberty, it usually subsides; although atrophy may follow and occasion a most intense ozæna.

Treatment.—The treatment, though chiefly medicinal, is to be accompanied by local cleansings, as suggested under "Atrophic Rhinitis." Hygiene and diet are of importance. The internal remedies will be found under "Chronic Nasal Catarrh" and "Atrophic Rhinitis."

PHLEGMONOUS RHINITIS.

Etiology.—This affection is to be classed among the very rare diseases of the nose. It is usually due to infection during the course of a rhinitis, but may result from one of the continued fevers, from erysipelas, or be a manifestation of general blood-poison. Its course is short, frequently only four or five days, although the acute symptoms may last ten or twelve, and result in abscess, caries, necrosis, etc. The principal changes are those characteristic of phlegmonous affections elsewhere.

Symptoms.—Symptomatically, there are obstructed nasal breathing and pain in the nose, head, or malar region; the latter two are due to involvement of the accessory cavities. There is, usually, free discharge from the nose, some elevation of temperature, acceleration of the pulse frequence, malaise, and prostration. The septum is, as a rule, much thickened, and may even press against the turbinateds, but the latter are rarely phlegmonous. The mucosa is dull, relaxed, flabby, and as soon as pus is formed a boggy sensation is imparted to the examining finger or probe.

Prognosis.—The prognosis is usually good, although the septum may be perforated, leading to deformity; or chronic abscess may give rise to caries or necrosis.

Treatment.—The treatment consists of the early application of cold compresses to the nasal region and evacuation of the abscess, should one form; but especially of the administration of the appropriate internal remedy. In the early stage, ars., china, hepar, kali iod., or mercury may be indicated; when the disease is fully established, hepar or iodine; when the presence of pus is becoming evident, hepar or merc.; and for the sequelæ, hepar, kali mur., puls., or silica.

GLANDERS—FARCY.

Etiology.—Glanders is a very unusual disease in man. It is directly the result of inoculation either from horses or from man; its only source of origin is contagion through a specific virus. It is introduced by contact with a mucous surface or a cutaneous abrasion. The disease usually occurs in males, owing to their greater association with animals. It may be either acute or chronic; but it has the peculiarity that, although the acute form may result from the chronic, the latter, it is said, is never the result of the former.

Although glanders and farcy are essentially the same disease, since one may contract glanders from a farcy patient, or *vice versâ*, their manifestations are not strictly the same; the former attacks chiefly the mucous membrane and its glandular structure; the latter shows itself mainly in the lymphatics.

Progress.—The progress of the chronic form of the affection is slow, and may last for many months, or its ravages may show themselves in the form of marasmus, which may prove fatal after many years of suffering. In the acute affection, the disease runs a very rapid course,—that is, from seven to twenty-one days. When the acute form follows the chronic, it is more rapid in its course than when the result of direct inoculation.

Pathology.—Pathologically, it is a tuberculous affection. The glands are greatly involved, the mucosa undergoes ulceration, and the bones and cartilages may be destroyed.

Symptoms.—The symptoms of the chronic variety are chiefly those of great prostration, with some involvement of the throat and nose, in which there are superficial ulcers, with decided hypertrophy of the glandular elements. The mucous membrane appears dry and of a dull-red color.

The acute form is usually ushered in with chilliness and high fever, aching in the back and in the muscles and tendons about the larger joints. When the lymphatics are extensively involved they are, at an early period, very large and tender; later, suppuration may occur. If the mucous structures be the first to suffer, there will be discharge from the nose, sneezing, impaired respiration, and epistaxis. The pharynx may feel obstructed and well-marked infiltration appear; this may extend to the larynx and result in œdema. Although the epiglottis usually bears the force of the poison, the glottis may be encroached upon from extension of the process to the tissues about it. The discharge through the nostrils soon gives rise to an erysipelatous eruption of the lips, face, and surrounding parts; this soon forms bullæ, which rupture and dry. When the crusts fall off, the underlying structure is found ulcerated,—superficially at first, but soon the deeper parts, even the bones, are involved. Symptoms of blood-poison now develop, and closely resemble pyæmia; the condition assumes a typhoid state, with rapid decline of strength, coma, and, usually, early death.

Diagnosis.—The diagnosis is often difficult, sometimes impossible. The disease is rare, and unless some history of exposure be suggested it is usually impossible to recognize it in an early stage. It resembles the local manifestations of syphilis, scrofula, severe tuberculosis, pyæmia, articular rheumatism, and typhoid fever. From syphilis and scrofula it can be differentiated by the chilliness and severe fever at the outset; from tuberculosis, by the absence of the premonitory stage if from direct infection, and from the absence of other evidences of tuberculosis if slow in its onset; from pyæmia, by the greater shivering in the latter; from articular rheuma-

tism, by the absence of pain and tenderness in the joint proper and their presence in the neighboring muscles and tendons; from typhoid fever, by the absence of the abdominal eruption and tenderness and the peculiar rise and fall of the mercury.

Prognosis.—The prognosis of acute glanders is very grave. The chances of a cure are greater when the nose is but slightly affected. Of those who apparently recover, some die at a later date, as the result of exhaustion. In the chronic variety about 60 per cent seem to recover after months of suffering, but of this number some die from marasmus at the expiration of years.

Treatment.—The treatment of acute farcy must be prompt. While local cleansing is not to be neglected, remedies are of chief importance. Caustics, although recommended by some, seem too severe. Disinfection is of the greatest importance; a neglect of this may occasion a most virulent attack. The pustules and ulcers should be frequently washed with 10- to 20-per-cent carbolic-acid solution, red permanganate-of-potassium solution, or 15-volume peroxide of hydrogen. The remedies best indicated are: ars., ars. iod., chin. ars., iodine, kali bi., lach., merc. s., rhus tox., and sulphur. Recently three cases have been reported as cured by inunctions of mercury and massive doses of iodide of potassium internally.

NASAL CROUP—CROUPOUS OR PSEUDOMEMBRANOUS RHINITIS.

Judging by the very infrequent reports of croupous rhinitis, it might be concluded that it is a very rare affection, but doubtless many cases are overlooked owing to the slight constitutional and local symptoms which often accompany it. According to Potter (*Jour. Lar. and Rhinol.*, March, 1889), it occurs in about 2 per cent of all cases of acute rhinitis, but I have seen only two undoubted non-traumatic cases.

Etiology.—Its causes are similar to those of the same disease when attacking the tonsils, pharynx, larynx, etc. Just what that etiological factor is it is still difficult to determine; but, in the light of present developments, it seems imperative to class it with the

microbic diseases, even though the special form of micro-organism has not been discovered. Such a membranous deposit sometimes follows intra-nasal operations, powerful local irritants, perchloride of mercury, etc.

Pathology.—Pathologically, it does not differ from other forms of croup, and consists of a fibrinous, dead-white, opaque deposit upon or within the mucous membrane, sometimes easily detached in large pieces; at others removed with difficulty, when it leaves a denuded, bleeding surface. Plastic adhesions between the septum and turbinateds sometimes follow. It seems to be non-contagious, but there are reported evidences of its infectious nature.

Symptoms.—Symptomatically, the disease is similar in persons of all ages, but is more frequent in childhood, when the malady may be ushered in with chilliness or a well-marked rigor; but more frequently no complaint is made. According to personal experience, which agrees with most observers, there are few premonitory symptoms of note. There is rarely rise of temperature, although it sometimes amounts to 101° to 102° F. Symptoms of an on-coming acute rhinitis soon develop; but, unlike that affection, croupous rhinitis rarely has a stage of presecretion, and the mucous process at once shows itself in the discharge of muco-fibrinous material, which soon becomes profuse and purulent, though non-offensive. In some cases obstruction to nasal respiration, loss of smell, and, occasionally, neuralgia and headache are among the early symptoms. Examination usually reveals a pseudomembranous lining of the nasal cavity, covering either large areas or only small portions. The membrane may be well within the nasal passages and almost out of sight, or it may reach to the cutaneous junction. If there be but a slight amount of false membrane and a considerable swelling of the mucous lining, the diagnosis will be rendered very difficult. Cocaine should be applied if there be much engorgement of the tissues, in order to gain a better view. If the suspected region be wiped with a covered probe, portions

of pseudomembrane may be dislodged. This membrane does not extend to the pharynx, except at its vault, and it is doubtful if the accessory cavities are ever invaded by it. Nasal stenosis is nearly always complete. As a rule, the patient is not confined to his room, and may even go out-of-doors.

In adults the symptoms and conditions are similar, but less in degree; and, as it is generally easy to examine the interior of the nasal passages, the diagnosis is often much easier than in children. A counter-difficulty arises, however, from the fact that the pseudomembrane is usually thinner than in children.

Prognosis.—The prognosis is favorable, but there is a possibility that infants may die of inanition, owing to lack of nursing ability, the result of nasal obstruction. The duration of the disease is from five days to two or three weeks.

Treatment.—The treatment is chiefly medicinal, although, when there is difficult nasal respiration, it is well to dissolve or dislodge the membrane, if either can be done without harm to the underlying tissues. Lactic acid (40 per cent), menthol (10 per cent), or peroxide of hydrogen (15 vol.), used as a spray or applied with a camel's-hair brush or cotton-covered probe, seems to be the most suitable application. Trypsin and papoid are used by some for the same purpose. The membrane may be loosened at the edges with a probe, and then extracted with the aid of a pair of angular forceps. A nasal tube may likewise be introduced, primarily to relieve respiration, and secondarily to induce pressure-thinning of the membrane.

The most suitable internal remedies are: iodine, kali bi., kali per., and merc. dulcis (see "Croup").

PRIMARY DIPHTHERIA OF THE NOSE—NASAL DIPHTHERIA.

Etiology.—Nasal diphtheria is uncommon as a primary disease, but the nose is frequently involved secondarily, the result of the pharyngeal affection. It is most frequent in earliest childhood, and this naturally leads to the thought that the disease may be transmitted from some condition occurring *in utero*.

It is very similar to acute purulent rhinitis in children, and can often be distinguished from it by the after-effects only, especially diphtheritic paralysis of the soft palate; but there is no purulent discharge early in the course of diphtheria, while this is often the first symptom in the purulent affection.

Symptoms.—This serious malady occasionally first shows itself in the form of a very profuse watery nasal discharge; in from one to three days this may become acrid and blood-streaked. Pus is rarely present; the flow consists of mucus and serum, and, perhaps, blood. In a variable time,—from a few days to a couple of weeks,—membrane may appear in the nose and pharynx, after which the course is usually rapid, and often fatal. The neighboring glands are frequently but little enlarged.

Prognosis.—The prognosis is grave. Most children in their first weeks speedily succumb; in older children and in adults, primary nasal diphtheria is not so fatal.

Treatment.—The local treatment is similar to that recommended for croupous rhinitis; the internal measures differ but little from those employed in secondary diphtheria (see "Diphtheria of the Air-Passages").

Therapeutics.

Ammon. carb.—The membrane extends from the nose to the lips, the pharynx remaining free.

Ammon. caust.—Nasal diphtheria with a burning, excoriating discharge, and great prostration.

Nit. ac.—False membrane, dark or yellowish-white, and very offensive; nasal discharge very offensive, watery, and excoriates the nostrils and lip.

PARASITIC AFFECTIONS OF THE NOSE.

Etiology.—The etiology of such affections must be based upon the entrance from without of the various microbes, larvæ, and parasites essential to the production of the several varieties of these maladies.

Thrush is the most usual parasitic affection; it rarely attacks the nose, however, except as an extension from the mouth or pharynx. It creates some irritation, sneezing, discharge, pain, and nasal obstruction. It is rare in adults. Locally, it is difficult to distinguish from croupous rhinitis, from which it can often be differentiated by the microscope alone.

Other forms of nasal fungi are rare, some of which give rise to symptoms similar to those already noted. Their most frequent manifestation is very offensive nasal exhalation. As yet, comparatively little is known of them.

Various insects and larvæ are sometimes found in the nose, especially in tropical climates. Where they find entrance in their matured state, they are to be looked upon as foreign bodies rather than as parasites, and should be treated as such. Flies, etc., may enter during sleep or intoxication and deposit their eggs, which soon give rise to maggots; if this occur in temperate climates, the flies are usually attracted by the presence either of an ozæna or a long-continued suppuration or ulceration.

The chief macroscopic parasites, exclusive of flies, are: ascaris lumbricoides, earwigs, centipeds, thread-worms, snapping bugs, oxyuris vermicularis, leeches, and cimices.

Symptoms. — The symptoms excited depend upon the number, size, and activity of the intruders. Irritation, fullness, usually partial or complete obstruction, sneezing, headache, and epistaxis are among the milder complaints; the more severe symptoms are fever, prostration, loss of appetite, involvement of the accessory cavities, pus formation in the cellular tissue, ulceration, caries, cerebral irritation, meningitis, convulsions, and coma, which may result in death. The irritation and pain arising from the presence of these intruders are sometimes so severe as to force the sufferer to commit suicide, as frequently occurred in Mexico during the French wars.

Prognosis.—The microscopic parasites are curable, but death is not unusual from neglect, in the macroscopic forms.

Treatment.—In the treatment of thrush and the microscopic parasites in general, the first object is to relieve the irritation, if great, by the use of injections which will serve to expel or kill the parasites; if the disturbance be slight, internal remedies will generally so change the patient's condition as to result in a cure of the parasitic affection. For thrush and its allies, borax is the greatest remedy; it may be used internally in dilution or trituration, and locally as a 10-per-cent watery spray. It is often possible to remove the larger parasites or intruders with forceps, but it is frequently necessary to first use a post-nasal syringe, in order to loosen them from their beds; it often seems impossible, however, to extricate them until they have been stupefied by inhalations, either of chloroform, ether, turpentine, or tobacco-smoke. When the parasites enter the accessory sinuses, it may be necessary to trephine these cavities.

For the complications which arise, the case should be treated on the principles noted under the appropriate headings. In order to relieve the nervousness and anxiety of the patient, it is usually advisable to give a few doses of ignatia or hyos.; and to allay the irritation, pain, and fever, aconite, calendula, fer. phos., or hypericum proves useful. For thrush, compare ars., bapt., borax, merc. s., staphis., sulph., and sulph. ac.

CHAPTER V.

Ulcerative Diseases of the Nasal Passages.

SYPHILIS OF THE NOSE.

Etiology.—The syphilitic virus may attack the nose in the primary, secondary, tertiary, or congenital form. Primary syphilis is rare, and is usually carried by some object thrust into the nose, especially the finger; the secondary form is most frequent, and is the result of the natural tendency of the disease, in this stage, to attack the mucous surfaces; the tertiary form is also very frequent; hereditary nasal syphilis is comparatively rare.

Pathology.—In the primary lesion, the same pathology is in force as when occurring upon the genitalia; when the secondary form occurs directly after the invasion, there is only a slight erythema, usually not distinguishable from an ordinary nasal inflammation and often diagnosed only by the history and the concomitant symptoms and appearances. Some observers think this a part of the primary stage, so closely does it occasionally follow it. When the secondary lesions appear some time after the primary infection, mucous patches, papules, abrasions, and superficial ulcerations may occur; gummata are rare. In the tertiary stage, which may occur as early as the seventh month after infection, mucous patches, gummata, deep ulcerations, and caries and necrosis of the cartilages and bones are among the frequent manifestations. The ulcer is deep, excavated, with ragged, overhanging edges, and with the surrounding mucous membrane much reddened. Polypi and exuberant granulations occasionally develop around the edges of the excavation. The hereditary form is similar in most respects to the tertiary.

John N. Mackenzie (*Jour. Lar. and Rhin.*, April, 1889) describes a fibroid degeneration of the nasal passages, especially of the turbinateds.

Symptoms.—The symptoms vary with the condition present. With the primary lesion there is some soreness, decided tendency to bleed, a circumscribed fungous mass, and enlargement and tenderness of the submaxillary or post-cervical glands. In the secondary form, with the erythematous condition, there are usually no marked or characteristic symptoms; with the mucous patch, there is a sensation of fullness and stiffness; when there is superficial ulceration, pain is a frequent, although not a severe, symptom. The secretions may form in thick crusts, and emit a very offensive odor (syphilitic ozæna); slight hæmorrhages are not unusual.

The tertiary form is characterized by ulceration, difficult nasal respiration, nasal voice, pain, and hæmorrhages. The secretions are often offensive. If necrosis and caries exist, much pain is experienced and hæmorrhages may be quite profuse; the stench is intense, requiring fumigation and airing in order to render the surroundings of the patient endurable. The septum, in the early stage of the tertiary form, is often so thickened as to obstruct the nasal passages; or the turbinateds may be so infiltrated as to meet the septum, even though the latter be not thickened. The septum is often perforated,—the triangular cartilage usually yielding first, in which case the bridge of the nose falls in; if the bony septum be destroyed and the cartilaginous portion remain intact, the bridge of the nose does not always fall, and no especial disfigurement results. Frequently, the floor of the nose (roof of the mouth) is perforated,—usually by ulceration beginning within the nose, but occasionally on the roof of the mouth over the hard palate, or at the juncture of the hard and soft palates. This is often followed by passage of food into the nose during deglutition. The bone-degeneration may extend to the frontal or sphenoidal region, and, as the result of the inflammatory or suppurative process, the skull may be perforated, giving rise to fatal meningitis. A large portion of the soft parts of the nose, posterior nasal region, and soft palate may also become involved in the destructive process.

Hereditary syphilis often appears *in utero* or directly after birth. In the latter instance, its first manifestations are nasal catarrh, or snuffles, and a cutaneous eruption. The nose is usually obstructed; but with a watery discharge, which later becomes muco-purulent and acrid. The diagnosis must often depend upon the history and the concomitant symptoms. Later in the disease, gummata appear. These soon break down, giving rise to well-marked ulceration, with the characteristic, purulent, offensive, bloody discharge, which often contains shreds of necrotic tissue. The discharges dry in hard crusts about the nostril, often completely blocking the opening. Its course is exceedingly rapid, necrosis of bone and external deformity often occurring within a few weeks, the disease usually manifesting itself from one to three months after birth.

The symptoms of the late hereditary form are not unlike those of the tertiary affection, though usually more sluggish in their action and less severe in their results. The septum and floor of the nose may be perforated and the soft tissues, including the uvula and soft palate, more or less destroyed. With all the forms of syphilitic rhinitis the hearing may be impaired, but this is especially true of the tertiary and hereditary manifestations. The pharynx and larynx very generally share in the severer forms of the disease.

Prognosis.—The prognosis depends upon the extent of the affection at the time treatment is commenced, the virulence of the condition, the stage of the disease, and the general state of the patient. If it be possible to modify the intensity of the poison by treatment, diet, hygiene, exercise, etc., the condition is to be looked upon favorably; otherwise, not. Even in apparently hopeful cases most unhappy results may follow, as it is not always possible to regulate or modify the virulence of the poison, and perforations will sometimes occur in spite of the most approved treatment. The hearing is often restored by relieving the nose and naso-pharynx. If the cicatrices remain permanently, the voice will be nasal and respiration be ob-

structed. The cicatricial contractions and bands may, however, sometimes be reduced, as suggested under "Stenosis of the Pharynx." Food may regurgitate through the defective posterior nares or perforation in the hard palate. The external deformity is rarely overcome.

The prognosis of the early hereditary form is usually bad, if the disease occur directly after birth; the longer it is delayed, the less serious is the prognosis, as the child is better able to withstand the poison and to nurse.

Treatment.—The treatment should be chiefly constitutional. Local measures, further than cleanliness and disinfection, avail but little. For decided ulceration, cleanliness is of inestimable advantage, and, where there is an intense ozænous odor, disinfection and deodorization are necessities (see "Ozæna"). Cauterants are inadvisable, as they often tend to aggravate the symptoms. If there be loose, necrosed or caried, bone, it should be removed with forceps or curette. If the sequestrum be loose, but too large to remove through the ulcerated sinus, the latter should be first enlarged with a small, blunt-pointed bistoury. The after-care consists in frequent antiseptic spraying, when the opening will soon close. If the bone be only denuded, it had better be curetted. In infants with congenital syphilis, it is frequently necessary to spray the nostrils, and then wipe them out carefully with pledgets of absorbent cotton or blotting-paper, or to introduce small rubber tubes through the inferior meatus, in order that they may have space for respiration during nursing. As their only mode of clearing the nostrils is by sneezing, this may be produced reflexly, by tickling the nose. Syringing is scarcely advisable, as it may force the fluid into the

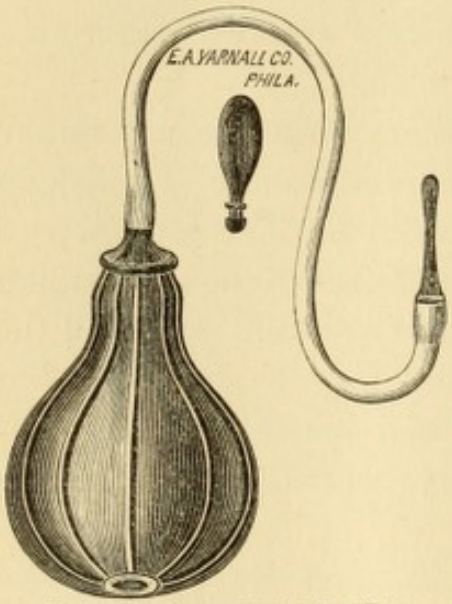


FIG. 34.—POLITZER'S AIR-BAG.

deeper air-passages and cause spasm of the larynx. Politzer's air-bag is to be given the preference, as, with it, the air-current forces the discharges into the naso-pharynx, at the same time that it frees the nasal passages and inflates the middle ears.

In the early stages of the acquired form, merc. iod. is very effectual; but if there be œdema or infiltration, two to five grains of kali iod. crystals (in solution) should be given three times daily. In the tertiary form kali iod. is most applicable, but the treatment is not to be confined to the remedies noted, as special indications may call for others. In the congenital variety, when the disease shows itself soon after birth, merc. dulcis is often the most appropriate remedy.

Therapeutics.

Asafœtida.—Offensive, greenish discharge, with caries of the bones, and a feeling as if the nose would burst.

Aurum met.—Caries of bones of nose and palate; sinking of the bridge of the nose; horribly offensive odor; burning, itching, smarting; sensitiveness of the nose; yellow, thick, offensive discharge.

Aurum mur.—Ulceration of mucous membrane and cartilage; caries of nasal bones; perforation of bony and cartilaginous septum. Horribly offensive odor; greenish-yellow or yellow discharge; offensive crusts and scabs are blown from the nose or hawked out. Nose sensitive to pressure; mental depression, suicidal intent.

Hecla lava.—Ulceration, with caries of the nasal bones.

Kali bi.—"Carious nasal bones. Syphilis of the nose; yellow discharge; nasal ulceration; pain across the bridge of the nose. Ejection of plugs of yellow, sticky, stringy mucus" (Morse, "Nasal Catarrh"). Perforating ulcer of the septum; ulceration of lining membrane.

Kali iod.—One of the best remedies for nasal catarrh occurring in syphilitic patients. Ozænous odor; greenish-yellow, excoriating discharge. Nose red and swelled; throbbing, burn-

ing in the nasal and frontal bones; deep ulcers. I have repeatedly seen intense septal deposits (perichondritis, gumma?) disappear in a few days, without leaving an appreciable change. Drop doses of the saturated solution were given, three times daily, in a teaspoonful of water.

Merc. cor.—Perforating ulcer of septum and other deep ulceration; burning pains and acrid discharge.

Nit. ac.—Destructive process of cartilages and bones; mercurial aggravation of the syphilitic poison. Copious, acrid, bloody discharge, anteriorly and posteriorly; lining membrane is granular in appearance, or ulcerated. The Eustachian tubes are involved, and the hearing usually impaired.

Sang. can.—"Tertiary form affecting the nasal lining; various-sized patches secreting a diphtheritic-like exudation, which, when wiped off, leaves a wounded surface. . . . The nasal discharge stops for a few days, and then returns, making an alternate dry and fluent coryza." (Chargé.)

(See "Syphilis of the Pharynx" and "Syphilis of the Larynx.")

LUPUS OF THE NOSE—EROSIVE ULCER.

Although the primary manifestation of lupus within the nasal canals is not especially rare, it usually appears first on the skin surface of the nose or in the pharynx, whence it extends to the deeper parts of the nose. If it originate within the nose, it makes its appearance first on the septum. It is chiefly found in young and scrofulous persons.

Pathology.—It may appear either as lupus exegens or lupus non-exegens. In the former variety there are nodes (granulation tissue) which are followed by ulceration, both superficial and deep. These ulcers have a tendency to heal at one point, leaving a red, glistening scar; while at another the ulceration continues, or even increases in extent. Necrosis and caries of the cartilages or bones may occur. In lupus non-exegens ulceration does not appear, but the tissues, including the bones and cartilages, may shrivel.

Symptoms.—Subjectively, the symptoms are not characteristic, but the condition can usually be diagnosed objectively. The discharges accumulate on the surface of the ulcers, forming crusts, which, if removed, frequently occasion bleeding, followed by a thin, sero-mucous discharge. Finally, the pharynx and larynx usually suffer.

Diagnosis.—The diagnosis is not difficult, if there exist other evidences of lupus; otherwise, it may be confused with syphilis, with which it is often associated, or with tuberculosis or scrofulosis. Inspection often reveals the presence of a reddish or brownish, granular, exceedingly soft, and insensitive mass, covered with tenacious mucus.

Prognosis.—The prognosis is to be guarded, for, although many recover (some spontaneously), there remains the possibility that the disease may recur, though not necessarily in the same region.

Treatment.—The treatment is not always well defined. It is usually taught that the ulcer should be scraped or cauterized, for the purpose of limiting it; in that case, every particle of the diseased structure should be removed or destroyed by caustics or the cautery, but the efficacy of the procedure, as applied to the nose, is a doubtful one. While in some instances it appears to control the extension of the disease, in others it seems to have no influence, or the ulceration may even spread more rapidly. Locally, the best results follow the application of an 80-per-cent lactic-acid solution.

Alumen., ars., aurum mur., caust., hydrast., iodine, kali bi., kreos., sulph., and thuja are the most efficient remedies.

SCROFULA.

No attempt will be made to settle the vexed question of the relationship of tuberculosis, lupus, syphilis, and scrofula. While some authorities consider every chronic rhinitis with swelled anterior cervical glands a scrofulous rhinitis, others think it necessary that there be actual ulceration, or even caries and

necrosis; but, as the mid-position seems the most probable, the condition will be considered from that stand-point.

Pathology.—Its pathological changes consist in sluggish lymphatic and circulatory function. The glandular elements retain much of the detritus that should be eliminated by them; in this manner the nasal mucous membrane, glands, and muscles frequently undergo sluggish ulceration, and even the bones and cartilages suffer.

Symptoms.—Symptomatically, the condition which first calls attention to the nose is the presence of a profuse, offensive, perhaps ozænous, discharge. The nasal passages may be either considerably obstructed or quite free. There is rarely pain, unless the deeper tissues or accessory sinuses be diseased. The discharge often parts with its moisture so rapidly that it dries on the surface of the membrane, and gives rise to the condition referred to under "Atrophic Rhinitis." Inspection reveals offensive, dry crusts on a pale or dusky-red pituitary membrane. The turbinateds may be early enlarged, but, as a rule, they are wasted, and the septum is quite thin and, perhaps, perforated in several places; in this it differs from syphilis, in which there is usually one large perforation, resulting in deformity. There are nearly always other evidences of scrofula; for example, eruptions, enlargement of the cervical and other glands, or scars indicative of former lymphadenitis. The pharynx, ears, and larynx may participate, and the soft palate be perforated or partially destroyed.

Prognosis.—The prognosis is not generally unfavorable, but perforations of the septum may result in deformity and great annoyance; ulceration of the soft palate may be followed by regurgitation of food into the nose; cicatricial adhesions may hinder or prevent nasal respiration and induce nasal tones. The hearing may be permanently impaired, or even lost. If care have been exercised and treatment carefully and persistently pursued, the milder local forms of the disease usually disappear as puberty approaches.

Treatment.—The treatment is chiefly constitutional. If there be an ozænous odor cleanliness and disinfection are to be used, and if diseased bone be found the treatment outlined under "Syphilis of the Nose" should be instituted. Ulcerations are to be relieved by the use of both internal and local remedies; of the latter, boric acid and calendula are valuable. Diet, hygiene, fresh air, exercise, and codliver-oil and terraline are important.

Therapeutics.

Alumina.—Scrofulous ozæna and ulceration of the mucous membrane.

Aurum mur.—Scrofulous ozæna, with unbearable odor; ulceration of nasal cavities, even perforation of septum; nostrils filled with hard, offensive crusts.

Carbo. an.—Scrofulous ozæna; pimples or little boils inside and outside of the nose.

Hydrast.—Ulceration of the mucous membrane; bloody, purulent discharge; cartilaginous septum sore,—bleeds when touched; post-nasal catarrh.

In addition to the foregoing, calc. carb., calc. fluor., hepar, iodide of lime, iodine, kali bi., kali iod., silica, and sulph. are often indicated. (See "Ozæna" and "Syphilis of the Nose.")

TUBERCULOSIS.

Although this is one of the rarest manifestations of tuberculosis, its existence cannot be ignored. It may attack the nose primarily, but is generally secondary. It may show itself as small tubercles or tumors, granulation proliferations (lupoid?), or as superficial or deep ulcerations, with involvement of the bones and cartilages.

Etiology.—The etiology of nasal tuberculosis is the same as that of tuberculosis in general, but is apparently furthered by marked nasal catarrh and erosions.

Pathology.—The pathological changes consist chiefly in the development of miliary or giant-celled tubercles, tumors,

raspberry-shaped excrescences, or small, gray ulcers, which may remain in their primary condition for years. Although the ulcers are generally superficial, and situated on the septum (about one-half inch from the nostril) or turbinateds, they may become deep, and cause perforation of the septum, with a loss of part of the turbinateds. The ulcer is usually oblong, with slightly raised, but not wall-like, elevated granulation edges, as in lupus. (Hahn, *Deut. Med. Wochens.*, June 5, 1890.) The surface of the membrane is grayish pink, upon which small, yellow spots (tubercles?) are often seen, and which, later, may undergo ulceration. The surface of the ulcer is usually whitish gray and on a level with the surrounding mucous membrane. Its outlines are somewhat irregular and unattended by an areola.

Symptoms.—The symptoms are often unimportant. In the mild forms they may not attract attention for some time; on the other hand, there may be intense pain and a profuse, offensive discharge. When ulceration is present crust-formations are not rare and slight hæmorrhages are frequent. The disease may involve the pharynx, extend to the larynx, or destroy the hearing.

Diagnosis.—The diagnosis is difficult, often impossible, except by exclusion. It must be separated from lupus by the absence of the granular appearance and cicatrices; from syphilis (if the two do not co-exist) by the history, the concomitant symptoms, and the microscope.

Prognosis.—The prognosis is usually grave, although the progress is slow, the period of ulceration sometimes lasting many years. When removed, the tumors may not re-appear for years, sometimes never; but in the ulcerative form, associated with pulmonary changes, the prognosis is dependent upon the general condition.

Treatment.—Cleanliness, disinfection, and deodorization in general should be coupled with the application of lactic acid (40 per cent), eucalyptol (10 per cent), menthol (5 per cent), and the very important constitutional, hygienic, dietetic, and

climatic treatment. Many advise that the tumors be removed and the ulcers scraped and disinfected. The internal remedies indicated and the further local measures will be found under "Tuberculosis of the Pharynx" and "Tuberculosis of the Larynx."

CHAPTER VI.

Pollen Catarrh—Hay Fever—Summer Catarrh—Periodical Vasomotor Rhinitis.

Pollen catarrh was formerly supposed to be an affection of the wealthy classes alone; such is not, however, strictly true, but it is more frequent in those of sedentary habits. Heredity seems to have some influence; age and sex play a part, in that it rarely occurs before the tenth year and seldom first appears after the twenty-fifth. It is about twice as frequent in males as in females. The malady was originally called catarrhus æstivus; later, hay fever, etc. Pollen catarrh, rose cold, summer catarrh, and autumnal catarrh are the names which should, in the future, distinguish this affection.

Pathology. — Two pathological theories of especial note have been advanced; one relegates hay fever to the class of pure neuroses, with the periodical exacerbations characteristic of nervous manifestations; the other places it among the reflexes due to intra-nasal disease.

Etiology.—Pollen of grasses, flowers, etc., seems to be the direct exciting cause; but, "Since comparatively few persons are victims of the affection, there must be some peculiarity, either inherent or acquired, which acts as the predisposing element in precipitating the attack. That this proclivity or idiosyncrasy resides in the nose there is but little doubt; where else in the economy it has its counterpart, I do not pretend to say; but this much is certain, that such a condition on the part of the nasal passages is an essential of periodical vasomotor rhinitis. Two factors, then (pollen irritation and idiosyncrasy), are essential to the presence of the paroxysm, either of which being absent, the other must prove inoperative.

"Most recent writers lay much stress upon the presence of a neurotic feature in every case, and, although not thoroughly

convinced, I am free to admit that in most patients a nervous element is present; yet it is quite true that in others it is apparently absent." (See paper by the author, *Trans. Amer. Ins. Hom.*, 1891; *Jour. Oph., Otol., and Lar.*, July, 1891.)

Pollen catarrh usually makes its appearance, in America, at any time from the first of May to the last of September. The so-called rose cold appears in the Middle States about the first of June; further south it appears earlier than this, and further north still later. Rose cold rarely assumes the asthmatic form. When the affection begins in the middle of summer, from the beginning of hay harvest, it is usually called hay fever; the condition rarely lasts through both seasons. A third variety appears only in the autumn, and is then appropriately called autumnal catarrh. The term pollen catarrh applies to the condition in its entirety.

There are few portions of the civilized world in which the disease does not manifest itself, but it is less prevalent where the verdure is scanty, while in some localities it never occurs; these resorts are a great source of comfort to hundreds of the victims of this tormenting affection, which, according to the late Rev. Henry Ward Beecher, is "worse than the Inquisition." With the exception of tinnitus aurium, it is doubtful if there be any non-febrile disease so distressing; there is sometimes no possibility of evading it, sleeping or waking, day or night, in the house or out-of-doors. Fortunately, however, recent methods of treatment have succeeded in doing much to alleviate the condition, and many are now enabled to live in comfort who, a few years ago, if remaining at home, were doomed to weeks of the trying ordeal.

Although there is possibly no place in this country where every hay-fever patient may find immunity from his paroxysms, there are many so-called hay-fever resorts where most of its victims may find a harbor during its prevalence. Those of chief importance are: portions of the coast of New Jersey; the White Mountains; the Catskills; Allegheny, Adirondack, Rocky, and Sierre Nevada Mountains; Lakes Chautauqua and Superior; Put-in-Bay; Colorado Springs; and Hot Springs of Arkansas.

Bright sunlight is responsible for aggravating the attack, but it cannot produce it; and the sufferers exposed to that element are often greatly annoyed at such times,—doubtless owing to the greater prevalence of pollen grains, which Blackley has demonstrated are the exciting cause. It is well known that the presence of flowers in the house is often sufficient to cause an attack, independent of direct exposure to sunlight or season; and many persons subject to the disease can remain, without discomfort, in the bright sun the whole day if not in the locality of vegetation, as, for example, on barren islands or on the ocean; but the inhalation of the pollen of verdure, added to the preceding, may at once excite an attack of pollen catarrh. On the ocean this affection is almost unknown, and where it has appeared the onset could usually be traced to some accidental occurrence, such as the presence of dust from some portion of the trunks or cargo which has, perhaps, contained some of the pollen of the obnoxious flora; or, as Blackley has shown, these grains can be carried a long distance on ocean breezes. Dead, dried flowers are often more pernicious than when growing or freshly cut. Vasomotor dilatation and psychical influence play some part in the paroxysm.

Symptoms.—The symptoms of the affection vary with the individual and even with the attack. Those which are characteristic of hay fever are a premonitory sense of drowsiness, lassitude, and weariness. The attack declares itself by sneezing, often in long paroxysms, and itching or burning of the nose, eyes, and roof of the mouth. Soon the eyes begin to water, and the nose to exude a thin, ichorous discharge. The eyes often burn and become quite congested, the entire conjunctival surface seeming to exude a profuse lachrymal flow. In some cases respiratory efforts by the nose are very fatiguing, difficult, or impossible, owing to the swelled and turgid nasal mucous membrane. As a result, the mouth is opened; headache makes its appearance; the pharyngeal lining becomes dry and irritated, the larynx irritable and catarrhal; cough makes its advent, and

in some cases the bronchial complications are such as to favor the diagnosis of bronchial catarrh with asthma. Year by year the asthma becomes a more pronounced feature of the attack, until finally the characteristic pollen-catarrh seizures may give place to asthma, the latter constituting the attack.

It is not to be understood that one patient suffers from all of these symptoms at the same time, for such is rarely the case, but the head and throat symptoms are often associated, and the same is true of the head and chest; on the other hand, the symptoms enumerated are not the only ones that harass the poor victim of this yearly scourge, but the foregoing present a sufficiently accurate picture to prevent any error.

Diagnosis.—The diagnosis, it will be seen, is not a difficult matter in these cases, as acute nasal catarrh is the only condition with which pollen catarrh could be easily confounded. From this it may be distinguished by the appearance of the latter affection, as the result of exposure to a draught of air, or some other cause giving rise to an acute coryza. Again, hay fever is not soon followed by a profuse, thick discharge, as is the case with acute cold in the head. Further, catarrh is usually a condition of inclement, changeable weather, while pollen catarrh is strictly a summer visitation. In acute rhinitis the membrane is greatly congested and coated with a partially-opaque discharge at an early date; whereas, in pollen catarrh the membrane is pale or grayish and the coating serous. In this latter affection the venous sinuses are affected almost exclusively; in acute rhinitis the capillaries of the mucosa are engorged. At the outset the two conditions are very similar, but in a few days the diagnosis is easily determined. Those who have chronic nasal catarrh, either of the simple or the hypertrophic form, are subject to hay fever and to acute exacerbations of their condition; but these affections can be differentiated by the duration, the season, and by the previous personal experience. Polypi of the nose may simulate this affection, but the history and examination will serve to differentiate; traumatism and syphilis are easily excluded.

Prognosis.—The prognosis is generally favorable. Although the paroxysms may recur punctually year after year, perhaps on the same date, or possibly the same hour (partially psychical), many cases recover, and all can be benefited. The victim usually suffers yearly, if exposed to the exciting influence, unless the constitution be so changed by remedies as to remove the susceptibility to the attack, or local measures destroy the direct nasal disorder. There is some peculiarity which enables one victim to live in comfort where his fellow-sufferers cannot. A rain-fall often so purifies the atmosphere as to greatly alleviate the attack; but usually this continues until it has "worn itself out," or the special excitant has disappeared with the rotation of flora. There are seasons, usually quite damp, during which hay fever is comparatively mild; finally, a person may outlive a part of his tendency to this malady.

Treatment.—It is now pretty certain that the predisposing irritation is in the nose; on that account, special remedial efforts should be directed to this organ, to combat congestion, hypertrophy, septal deviations and tumors, including ecchondroses and exostoses. In the majority of instances, the proper method to pursue is to treat these defects, during the intervals of the attacks, by the use of internal or local measures, thereby subduing the tendency to the affection. Some advise the use of destructive agents for the purpose of eliminating certain "sensitive areas," thus doing away with that possible source of irritation; for this purpose, the galvano-cautery point is heated almost to a white heat, and drawn over the area recognized as "sensitive" by previous trial with a blunt-pointed probe. Care must be taken not to destroy more than the exact point desired, lest sacrifice of the surrounding healthy tissue prove harmful. Although destruction of these areas does something toward the relief of the subsequent attacks, it has not met the success that was anticipated.

If the turbinated bodies be infiltrated or hypertrophied, they are best reduced by the use of a very fine, highly heated

galvano-cautery knife-blade drawn through the most prominent part. Should the first treatment give insufficient relief, it will be safe to repeat the incision, avoiding the surrounding healthy tissue by following the same line. Hypertrophic tissue should be dealt with as directed under "Hypertrophic Rhinitis," and bony hypertrophy or exostosis sufficient to interfere with the proper respiratory channel should be treated as suggested under "Nasal Tumors."

As cocaine is so transient in its effects, so apt to lose its happy action in allaying irritation and reducing engorgements, and, in strong solutions, so prone to induce constitutional disturbances, I use it very sparingly; never stronger than a 4-per-cent solution, and usually but once daily, at the hour when the greatest aggravation is apt to occur.

If all obstruction be removed, so that the patient has free nasal respiration during the interval of the attacks, there are few whom medicines will not render fairly comfortable, even in their own homes. In many cases remedies will greatly alleviate the suffering where mechanical means prove unavailing. It is not to be expected that entire relief can be given the first or even the second year, but the cases are few in which decided benefit will not follow the first year's careful prescription, especially if the patient be treated early. In order to allay the nasal itching and obstruction, a 10-per-cent solution of naphthalin, a 2-per-cent solution of menthol, or a $\frac{1}{10}$-per-cent solution of chromic acid, in fluid cosmolin or fluid albolene, should be dropped or sprayed into the anterior nares.

Therapeutics.

Ars. alb. is indicated in conditions similar to those calling for ars. iod., but in which there is less prostration, less glandular involvement, and more asthma.

Ars. iod.—Dr. E. M. Hale looks upon this as nearest to a specific. Dr. Blackley ("Hay Fever," 2d edition) gives it "the palm" for its "prophylactic properties in the early stage of hay

fever"; and Dr. J. H. McClelland looks upon it as one of the best remedies "when asthma is a prominent symptom." This remedy is called for in anæmic, delicate persons; it produces glandular enlargements, even to the follicles of the pharynx. The excoriating discharges, prostration, paleness of face, and burning and itching of all the affected mucous surfaces are important characteristics. Its use is most potent in the 3 x and 4 x triturations, but the doses should not be too frequently repeated, neither should the drug be given for prolonged periods.

Artemisia bears an undoubtedly strong relationship to this affection as it occurs in the later months of the season, if associated with asthma.

Benzoic ac.—Highly praised by Dr. Samuel A. Jones, of Ann Arbor.

Cepa.—As a prophylactic for cases which do not present decided symptoms of another remedy, a dose of the 30 x or 200 x once daily. This should be continued until the appearance of the paroxysm, if it occur, when a remedy is to be selected according to the most prominent symptoms. In many instances, however, the attack is so mild or so delayed that the cepa should be continued until the usual pollen-catarrh period has passed. The chief indications for the remedy are: immoderate sneezing; profuse, bland, or excoriating watery flow from the nose and eyes; much itching of the nose, conjunctiva, and naso-pharynx; and nasal obstruction, headache, and disturbance of sleep and appetite. Further indications are dropping of fluid into the pharynx, slight hoarseness, and laryngeal tickling and cough. It is of special value if dust and the odor of onions aggravate.

Chin. ars. is a remedy of undoubted clinical value; but, as yet, I cannot strictly place its symptoms. So far, however, it has acted better in females, where there were associated menstrual irregularities, loss of appetite, nervousness, despondency, and tendency to insomnia. It is deserving of repeated trials, and, judging by my limited use of it, must prove very efficient in pollen catarrh.

Euphrasia has served to lighten the attack by controlling the profuse, excoriating lachrymation, swelling, and inflammation of the lid-margins, together with burning and itching, not only causing the patient to wink frequently, but to rub the eyes.

Gels. often relieves the premonitory symptoms, chiefly the fullness in the frontal region, dryness in the nasal fossæ, and mild nasal obstruction. This remedy is rarely indicated unless there be pain in the occipito-cervical region.

Naphth. is frequently preventive in its effects; but it is in its curative sphere that it stands second only to cepa. In order to obtain good results I have been obliged to use the remedy in the 2 x or 3 x trituration, as it seems almost inoperative in the higher preparations. One of its chief indications is a high degree of asthma. With naphth. there is more fullness in the frontal region, more swelling of the conjunctiva (chemosis), more puffiness of the whole face than in cepa, and the secretions are usually more excoriating. Dr. E. Lippincott says ("Hay Fever"): "In rose cold I have never given any other remedy, and have cured every case, though the number is not great." F. F. Laird (*Trans. Hom. Med. Soc. State of N. Y.*, 1888) wrote: "While it seems to benefit *all* cases of this strange neurosis (?), it is especially adapted to patients who experience more or less asthmatic symptoms. I may safely say that *naphthalin is to 'hay asthma' what aconite is to synochial fever,—as near a specific as anything in medicine can be.*" If the conjunctiva be much affected a 5-per-cent solution of the crude drug should be instilled into the lachrymal sac, as occasion requires, generally with the happiest results. If there be marked photophobia, the daily instillation of a ½- to 1-per-cent solution of cocaine often assists materially, as will boric acid (1 per cent), glycerin (pure or diluted), or warm salt water.

Nux vom. has repeatedly afforded marked relief to the nightly asthmatic attacks. Incessant sneezing and continual watery discharge.

Rosa D. (6 x to 30 x) often acts prophylactically and curatively for the spring form of the disease; later in the season I have never found it of much benefit, and it is not suitable for the asthmatic form of the affection.

Sabadilla.—Abundant serous discharge, violent sneezing, lachrymation, frontal headache, and heat and redness of face and eyes (Bayes). The spasmodic sneezing and copious lachrymation are worse in the open air or bright light; eyelids inflamed. This remedy acts well as an aqueous spray (1 to 10 of the 3 x).

Sang. can.—Susceptibility to odors which sometimes cause faintness. The lining membrane of the nose and throat is dry, irritated, raw, and burning, as if scalded or denuded of epithelium. The coryza is fluent and excoriates the nostrils, the right the worse.

Sang. nit., by controlling the hypertrophic tissue in the naso-pharyngeal region, has prevented subsequent attacks. Calc. phos., as advised by Dr. Robert T. Cooper for adenoid vegetations, is of equal or even greater value, in some instances, than the last-named remedy.

CHAPTER VII.

Neuroses of the Nose.

Under this heading will be found two sets of nervous disorders,—(*a*) those of sensation and (*b*) those of special sense. In the production of the former the trigeminus, or fifth cranial, nerve is affected somewhere in its course; and in the latter the function of the olfactory is impaired.

(*a*) Anæsthesia, Hyperæsthesia, Neuralgia, and Reflex Conditions.

Anæsthesia (lack or loss of sensation of the nasal mucous membrane) is a result of defects in the fifth cranial nerve, either at its origin, somewhere in its course, or in its terminals. It may, however, be reflex, the result of a purely neurotic condition. The diagnosis is made by the absence of sensation or of reflex nasal symptoms, when the Schneiderian membrane is irritated. Uncomplicated anæsthesia is quite rare.

Prognosis.—Its prognosis is usually unfavorable; few cases recover unless of an hysterical origin.

Treatment.—Medicinal treatment is chiefly to be relied upon; galvanism is not to be recommended, as a current strong enough to be of service may injure the retinæ and cause much swelling, or even decomposition, of the nasal mucous lining. The chief remedies are hyos., ignatia, gels., and caust.

Hyperæsthesia (undue sensitiveness) may be local or reflex. In the former instance it is due either to catarrhal conditions or to the presence of irritating bodies, vapors, etc.; and when reflex, to intestinal, rectal, and other remote causes.

Prognosis.—The prognosis is usually good, but a cure is not always possible. The duration of the disease varies from a few days to as many years.

Diagnosis.—The diagnosis is made by testing the sensitiveness to irritants, to the contact of a probe, to the effect of sunlight upon the eyes, etc. In diagnosing such conditions, we should bear in mind the fact that normal nasal reflexes vary within physiological limits.

Treatment.—The first object of treatment is to remove the cause. In addition, the eradication of intestinal worms often relieves the itching and boring at the nose. The remedies are to be selected upon the symptoms presented, after careful diagnosis of the condition. They are chiefly gels., bell., colch., hyos., and spigelia.

Neuralgia is often the result of local nerve-pressure or irritation, but may be reflex from aural or dental involvement of the nerve. It sometimes follows the various operations upon the nose, especially about its floor.

Prognosis.—The prognosis is good, the duration usually short.

Treatment.—The treatment is generally gratifying, and may consist of local washings, cocaine applications, chloroform inhalations, insufflations of finely powdered salt, etc.

Internal remedies are the most potent in the majority of cases. Acon., bell., fer. phos., gels., mag. phos., and spigelia are to be compared.

Reflex conditions, dependent upon "hyperæmia rather than hypertrophy" (Hack), include sneezing; supra-orbital and facial neuralgia; headache; eye affections, including conjunctivitis, phlyctenulæ, blepharospasms, twitching of the lids, asthenopia, muscæ volitantes, scotoma, glaucoma, and even blindness; asthma; chorea; external nasal erythema; nasal cough; syncope; nasal epilepsy; gastric disorders; functional heart troubles; exophthalmic goitre; vocal adductor paralysis and articulation defects; salivation; transitory œdema; neurasthenia, etc. Paresis of the soft palate and of the adductors or tensors of the vocal

bands is noted by Woakes ("Nasal Polypus"). Nasal cough is occasioned by irritation of the "sensitive areas," as pointed out by John N. Mackenzie and others. The patient is usually of a neurotic temperament, with marked nasal hyperæmia. The irritation may originate from the contact of a probe, or, more properly, from the presence of hypertrophied tissue or foreign bodies, the latter including objects introduced, dried secretions, rhinoliths, and nasal tumors.

Syncope, although very rare in operations upon the nose, once occurred to me while making (in a patient of the late Dr. W. B. Trites) an antero-posterior incision through a deviated triangular cartilage. The knife had just completed its work, and scarcely a drop of blood had escaped, when the patient (in the first stage of ether-narcosis, with free respiration, good pulse and color) suddenly sneezed and ceased breathing. Artificial respiration demonstrated the entire freedom of the respiratory tract. The pulse grew weaker and was scarcely perceptible at the wrist, but persistent artificial respiration, continued for fifteen minutes, resuscitated the boy. As soon as natural respiration returned, the patient was comparatively conscious; thus, there was not an overdose of ether, and absence of cyanosis proved that the respiratory tract was patulous.

Nasal epilepsy may be occasioned by various irritants, including tumors, powders, and snuffs, and declare itself in the form of vertigo or complete loss of consciousness, the result of reflex laryngeal spasm, laryngismus stridulus, or laryngeal vertigo (which see). Aphonia is occasionally a reflex nasal symptom, as are also stuttering and stammering, spasm and neuralgia of the pharynx, spasm of the œsophagus (Netchayeff), and even goitre (Fränkel).

Treatment.—The treatment is always to be directed to the seat of the trouble, irrespective of the reflex symptoms, unless they be of grave import, when dyspnœa, etc., should be treated as temporarily indicated. Remedies administered internally often act beneficially, but so slowly, usually, as to bring dis-

credit upon the plan and discouragement to the patient. The most satisfactory measures are local, directed to the removal of the exciting cause,—which is generally contact between the turbinated bodies (usually the middle) and the septum. The treatment, therefore, naturally follows that noted under "Hypertrophic Rhinitis." As an example, I quote from a letter from Dr. E. L. Mann: "In one case of laryngeal spasm (?) and cough the patient complained of a 'clutching feeling in the larynx,' which was completely relieved, after the failure of remedies, by an application of chromic-acid crystals to a very large anterior hypertrophy of the left inferior turbinated body. The peculiar part was, that when the acid was applied the patient complained of pain in the larynx and none in the nasal passages."

(*b*) ANOSMIA, HYPEROSMIA, PAROSMIA.

Anosmia (loss or impairment of the sense of smell) is due to various causes. While frequently central in origin, it is usually due to some local defect. This may consist of the partial destruction of the nerve-terminals or their involvement in a catarrhal, hypertrophic, or obstructive change within the nose. Nasal obstruction may destroy the sense of smell, by preventing odorous particles from coming in contact with the nerve-terminals, and the same result may follow unusual dryness of the olfactory pituitary membrane; irritating, strong, or unpleasant odors, if long-continued; inhalations of strong vapors; the application of a strong galvanic current, caustics, or astringents; the use of the nasal douche; long-lasting catarrh; paralysis of the fifth nerve, when nutrition of the Schneiderian membrane may be impaired; and accidents to the head, whereby the base of the skull is fractured or the olfactory bulb separated from its branches. Anosmia may be congenital, or even hereditary; there may be absence of the olfactory nerves; sometimes no cause can be assigned; and, finally, it may be of purely neurotic origin. Temporary loss of smell is sometimes noticed in the first, or dry, stage of acute coryza.

As anosmia may exist on one side only, the symptom may be overlooked. In making the diagnosis, one nostril should be carefully and completely closed while some familiar odor is placed near the other,—without, however, telling the patient what substance is used. As confusion sometimes arises, it is well to remember that there is a close relationship between the senses of taste and smell; and when the patient is able to taste food, he is often led to believe that he still retains the sense of smell. A current of electricity may be passed through the olfactory nerve, which, if intact, should give rise to a phosphorescent odor.

Prognosis.—The prognosis is bad if the cause reside in the brain; if congenital, or due to a separation of the bulb from the brain, it is hopeless; if due to catarrhal conditions, the cure of the catarrh may restore the function, even after years of loss. One case, recorded by Notta (*Union Médical*, July 10, 1879), was cured after fifteen years. If due to obstruction, the prognosis depends chiefly upon the removal of the obstructing substance; if due to paralysis of the seventh nerve, it is usually unilateral, and frequently curable.

Treatment.—The treatment is both local and internal. The condition giving rise to it, when ascertained, is to be treated upon the principles stated under the corresponding subject. Anosmia has been occasionally "cured by the removal of an elongated uvula." Galvanism and faradism, applied according to the tolerance of the case, have been known to restore the lost function, and repeated attempts at the detection of pleasant odors may have a like influence. Where no mechanical cause can be found, few remedies are better indicated than ammon. mur., caust., hyos., ignatia, magnes. phos., natr. mur., strych., and sulph.

Hyperosmia (exaggeration or overacuteness of the sense of smell) occurs, chiefly, in those who are hypersensitive in other respects, and very nervous or hysterical. Such persons often

detect the slightest odor, even when not perceptible to others. The osmometer, or olfactometer, may be used to measure the olfactory state, in such cases. Hyperosmia should be treated as a condition arising from nervousness or hysteria, for which acon., aurum, bell., dros., graph., hyos., ignatia, lycop., phos., sabadilla, sang. can., and sulph. ac. are indicated.

Parosmia (paræsthesia, or perverted smell) has for its causes many of those found to originate anosmia. Parosmia is often a symptom of hysteria, and sometimes constitutes a form of aura epileptica. It sometimes occurs in pregnancy, and is not an unusual complication of insanity. Occasionally there exists some pathological alteration in the olfactory bulb or nerve or in the brain; anosmia may really exist, the odor being purely of mental origin.

Symptom.—Its characteristic symptom is the real or apparent presence, constantly or at intervals, of various odors, which, though actually present in fact, may be perverted; thus, pleasant odors are considered very unpleasant; the patient is sure he detects some disagreeable smell which is not actually present; or he thinks he is emitting some very offensive, pestilential, or deadly odor which is very unpleasant, or even highly injurious, to those about him.

Prognosis.—The prognosis is bad if of cerebral origin or if due to atrophy of the olfactory nerve. When the result of obstruction or other visible pathological alteration in the nose, the prospects for recovery are much more flattering than when these changes do not exist. When a precursor of epileptic seizures, its cure depends upon the relief to the latter affection; if of nervous origin, the perverted sense can usually be relieved. Parosmia may be the first symptom of incipient brain-lesion or posterior spinal sclerosis.

Treatment.—The treatment must depend upon the cause of the symptom and upon the symptomatic indications. Agnus c., alumina, anacard., ars., aurum, bell., bry., conium, graph.,

ignatia, kali bi., kreos., lycop., mag. phos., natr. phos., puls., silica, and sulph. are of value.

Dr. Geo. Leslie (*Edinburgh Med. Jour.*, January, 1890) has reported cures of facial neuralgia, odontalgia, and allied neuroses by applying powdered chloride of sodium to the nasal mucous membrane; and I have had some agreeable surprises by following his suggestions.

CHAPTER VIII.

Various Conditions.

NASAL HÆMORRHAGE—EPISTAXIS.

Etiology.—The etiology of nasal hæmorrhages is most varied. Primarily and directly, epistaxis may be induced by sudden extreme changes of temperature, ascending heights, sudden concussion in naval engagements, accidents, "picking" or "boring" at the nose, sneezing, or violent exercise. Secondarily, it arises from too great fluidity of the blood; a weakened condition of the blood-vessels, as occurs in the so-called "bleeders," or those of a hæmorrhagic diathesis (hæmatophilia, purpura); in anæmia, either simple or pernicious; plethora; organic heart disease; pulmonary emphysema; degeneration of the blood-vessels, usually atheromatous and fatty changes of old persons; ulcers or new growths; congestion of remote organs, especially the liver or sexual apparatus; in the course of various fevers, scurvy, or splenic defects; and goitres or other tumors pressing upon the return circulation, via the jugular veins. It may be vicarious and supplant the menstrual or hæmorrhoidal flow, or the sudden suppression of the discharge from an ulcer. Martin (*Annales d'Oculistique*) believes astigmatism to be a frequent cause of epistaxis, the result of the strain, especially of the ciliary muscle. According to Bosworth ("Diseases of the Nose and Throat"), "Deformity of the septum, probably more than any other single cause, gives rise to attacks of epistaxis." It is frequent in interstitial nephritis, but rare in other renal diseases.

Origin.—The cartilaginous septum and the anterior outer walls are the most frequent sites; the turbinateds seldom bleed except from direct injury or ulceration. Personal experience leads me to believe that in more than 90 per cent of young

subjects the hæmorrhage arises from the plexus of vessels near the centre of the triangular cartilage (the duct of Jacobson's organ), unless the result of accident or change of air-pressure. In atheromatous conditions the bleeding-point is often in the upper part of the nasal passages. The blood nearly always flows from the nose, but occasionally it is confined beneath the mucous membrane, giving rise to hæmatoma.

Symptoms.—The symptoms which sometimes indicate an on-coming hæmorrhage in plethoric persons are: fullness in the nose and head, congestion of the face, some blurring of vision, dizziness, and tinnitus aurium. In those in whom there is degeneration of the blood or blood-vessels there is rarely any premonition of the approaching flow. If vicarious-hæmorrhoidal, there may be some extra irritation in old bleeding hæmorrhoids, but without renewed bleeding; if menstrual, symptoms occur similar to those which usually precede a menstrual flow, especially the enlarged and tender mammæ. The onset of epistaxis may give immediate relief to headache, tinnitus, and other indications of plethora; it may be sufficient to remove the annoying conditions found in the habitual hæmorrhoidal patient; and it may serve to relieve the menstrual symptoms.

In mild hæmorrhages the blood usually trickles from the nose in dark drops; but when the bleeding is severe the flow may be quite profuse and bright red (arterial), usually the result of ulceration or malignant growths. It may be of short duration and not give rise to any disturbing symptoms, or it may be protracted and occasion profound prostration, coma, or death. If long continued, the first symptoms noted are usually dizziness and weakness; the extremities, ears, and tip of the nose may become cold; later, the patient may faint from loss of blood and the shock arising therefrom. This condition may end in coma, but rarely in death. The bleeding generally occurs from one nostril only, but when from both it is an indication of an accident, degeneration of the blood-vessels, a perforation of the

septum narium, or the passage of blood from one nasal canal into the other through the post-nasal region. The blood may pass into the pharynx and be expectorated, giving rise to the fear of pulmonary hæmorrhage; inspection will, however, reveal a red streak on the posterior wall of the pharynx. The blood is usually easily coagulable, unless it be degenerated.

Prognosis.—The prognosis is generally good, since the bleeding, as a rule, stops without any treatment, and in active fevers and brain congestion it often affords relief and gives promise of a cure; but death sometimes follows from the shock, the loss of blood, or obstruction of the larynx during sleep. If vicarious epistaxis be arrested too suddenly, either as the result of treatment or of cold, distressing, or even fatal, symptoms may follow; nasal bleeding may betoken a grave termination in low grades of fever and in diphtheria; and if the blood-vessels be diseased the prognosis is bad, auguring an early fatal termination, perhaps by cerebral hæmorrhage.

Treatment.—The treatment depends upon the condition present. It is first important to determine whether it be advisable to arrest the flow, basing the decision upon the preceding statements. If it continue long, and the patient seem even slightly exhausted or nervous, it is well to proceed at once to arrest the bleeding. Internal remedies should be prescribed, and, if the case be a mild one, simple mechanical measures should be tested. The patient must assume the erect posture, as bending over, especially with tight neck-clothing, favors the flow of blood by aiding gravity and by preventing the return current through the jugular veins. Firm compression over the superior coronary artery, where it crosses the superior maxillary bone, will stop many cases. A very satisfactory method with children is to force a piece of paper between the upper lip and teeth, as near the nose as possible. Cold applications may be made to the nose, or to an indifferent part of the body (particularly the wrists and back); and cold water may be snuffed up the nose. A very efficient measure, in some obstinate cases, is

to induce the patient to stand upright, loosen all clothing about his neck, and hold one or both hands straight above his head. The inhaled air should be cool and fresh. Pressure over the ala of the bleeding nostril will often bring relief, as the bleeding-point is usually within the vestibule; and pressure with the finger over the artery of the septum often meets with success. Determination of blood to the extremities, by means of ligatures tied tightly about them near the body, often serves a good purpose; the same is sometimes true of hot applications to the feet and hands.

After failure of some of the simplest measures, search should be made for the bleeding-point by means of reflector, nasal speculum, and cottoned probe. If the point be found, pressure may be exerted upon it with either the finger or a pledget of cotton; personal experience, however, has taught the unfailing efficacy of a strong solution of chromic acid applied to the bleeding-point. The galvano-cautery is less satisfactory. As first suggested by Geneiul, lemon- or lime- juice may be injected into the bleeding nostril, which has first been syringed with warm water, that the acid may have a better opportunity to act. In some of the most obstinate cases, insufflation of the powdered leaves of the common astor ("colt's tail") has proved efficient and prompt. Astringents, especially gallic acid, gallic and tannic acid combined, antipyrin, or cocaine, may be tried, but styptics are to be avoided.

If the patient feel faint or cold, or if the pulse seem weak, he should be placed upon his back, and renewed efforts made to control the bleeding. W. W. Parker (*Med. Record*, October 4, 1890) recommends the use of the following device: Fifteen threads of patent lint or largest spool-thread, three and one-half to four inches long, are doubled on themselves and tied in the middle with a string, the end of which should be six to eight inches long, for ease in removal. By the aid of a small probe or stick, the centre of the threads is pushed along the floor of the nasal fossa until it reaches the posterior naris. The probe

is then to be carefully removed and the nostril plugged. The loose ends are said to act as speedy coagulators and unfailing hæmostatics. The method is simple and essentially painless. In twenty-four hours the threads may be removed by gentle traction on the string, preceded by the removal of the anterior plug.

Dr. A. A. Philip (*The British Med. Jour.*, July 18, 1891) advises an umbrella-plug. A piece of silk, thin cotton, or oil-silk is pushed well back into the naso-pharynx, along the lower meatus, by means of a smooth stick or pencil placed against the centre of the material used. When the desired introduction is accomplished, the edges and corners of the umbrella will project from the nostril, when the introducer is withdrawn, and by it the top of the umbrella-pouch is well filled with little pieces of cotton. The introducer is then held firmly against the cotton and the umbrella-corners pulled upon so that the mass may tightly fill the posterior naris. The remainder of the pouch should next be packed, the outer portion tied (bag-like) with a string, and the long corners trimmed, but with the string projecting. When it is desired to remove the plug, open the bag and with forceps pick out the little pieces of cotton; if no bleeding follow, the umbrella may be removed; otherwise it should be repacked. If the material adhere to the membrane, a little warm water dropped in will readily loosen it.

Plugs may also be inserted by the following method, or its modification: Antiseptic non-absorbent cotton is passed into the anterior naris in small pieces, packing each one with a blunt-pointed instrument, until the anterior cavity is quite tightly filled. A number of small pieces of fine sponge may be used instead of the cotton; to the first of these a strong thread is fastened, and the others threaded on it and passed, one by one, into the nasal passage. Rubber or skin bags can be inserted through the anterior naris in a collapsed condition, and, when in position, inflated or filled with hot water. Ignazio Dionisio (*Deutsche Med. Zeitung*, September 25, 1890) proposes an im-

provement upon these by using a rubber-covered tube, which, when in position, does not prevent nasal respiration. Posterior plugging is rarely needed. It is accomplished by the aid of a soft-rubber tube, Eustachian catheter, or Bellocq's cannula threaded with a string and passed through the bleeding canal into the pharynx. A piece of lint, cotton, or sponge, sufficiently large to fill the posterior naris, is then tied to the first string and drawn into the choana. Counter-pressure is

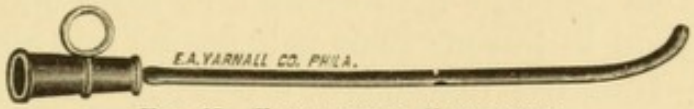


FIG. 35.—EUSTACHIAN CATHETER.

exerted by tying a small pad of lint or cotton to the string projecting from the nostril.

The objection to the posterior plug is that it may create considerable irritation, even ulceration, erysipelas, abscess, pyæmia, or convulsions; therefore, it should not remain in position longer than twenty-four to thirty-six hours, when it should be gently removed, after careful spraying to insure moisture of the plug and membrane. The nose should next be cautiously sprayed with a mild disinfectant.

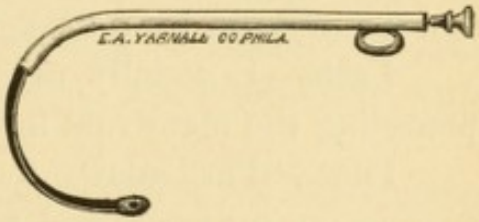


FIG. 36.—BELLOCQ'S CANNULA.

Relief has sometimes followed the application of blisters placed over the hepatic region, when the liver seemed to be the cause of the epistaxis. Transfusion of blood, saline solutions, or warm milk may be imperatively demanded.

The most important after-treatment is medicinal.

Therapeutics.

Acon.—With each paroxysm of cough the nose bleeds; if associated with pain in the upper portion of either eye, the indication is more certain. Epistaxis in children. Nose-bleed from the effects of the sun (glonoin).

Arnica.—Epistaxis after every exertion, following injury, or during low grades of fever.

Bry.—Especially in persons under 40 years of age, as an empirical remedy or with the characteristic symptoms; gastric derangements; vicarious menstruation. My chief reliance is placed upon this remedy for passive epistaxis of young persons, in whom it is almost a specific.

Cactus.—When the result of cardiac troubles.

Carbo veg.—In old persons who are prostrated and whose blood is deficient in fibrin. Face pale during and after bleeding.

China.—Habitual nose-bleed, especially early in the morning. Ill effects following epistaxis.

Crocus.—"Blood thick and dark; for acute attack and as prophylactic." (W. T. Helmuth.)

Hamamelis.—Particularly in hæmorrhoidal patients; dark, venous, passive bleeding. A tendency to general bleeding. Vicarious, or even when occurring with hæmoptysis.

Ipecac.—Especially if occurring during the eruptive fevers, and for purpura hæmorrhagica or hæmatophilia.

Lach.—Especially at the menopause; or for nose-bleed preceding the menstrual flow.

Phos.—Particularly for "bleeders" and hæmorrhages occurring during fevers and jaundice.

Puls.—Passive, venous hæmorrhage; often vicarious menstruation or suppressed menses. Varicose pharyngeal veins.

Sulph.—"Epistaxis associated with chronic vertigo." (P. Jousset.)

Trillium.—Dr. Farrington recommended this remedy in the tincture as a local application, first clearing out all the clots. A piece of cotton is to be soaked in the solution and inserted into the passage.

FOREIGN BODIES IN THE NASAL PASSAGES.

Foreign bodies are rarely found in the nasal fossæ, except in children and insane adults. The objects oftenest introduced are beads, buttons, stones, marbles, glass, beans, grains of corn,

sticks, pieces of metal, insects, maggots, and worms (the latter usually crawling up from the stomach). When the result of accident, broken sticks, stubble, pieces of shell, etc., may find lodgment in the nose. Concretions and necrosed bone, when loose within the passage, act as foreign bodies. When vomiting, particles of food and ascaris lumbricoides are sometimes forced through the posterior nares.

Children sometimes introduce foreign bodies accidentally, but usually in a spirit of playfulness, mischief, or revenge; the insane often insert them as the result of an irresistible impulse; and hysterical adults for the purpose of creating sympathy or care. These sometimes feign such accidents, but examination will reveal their malingering tendency.

Symptoms.—The symptoms depend upon the size and shape of the body, the duration of its presence, and the normal nasal sensibility. If large, it may create nasal obstruction and loss of smell; but if the body be smooth in outline, there is usually little irritation; though beans, etc., may absorb moisture and swell, thereby producing pain. Rough substances generally cause considerable pain and irritation, even ulceration and hæmorrhage.

At first there are often itching, sneezing, and a free mucous discharge; the latter may soon become profuse, purulent, corrosive, exceedingly offensive, and usually contain whitish, flocculent masses. Ulceration sometimes occurs, and perforation of the septum has been observed. Neuralgia may follow, or concretions form about the body, giving rise to a rhinolith; on the other hand, no symptoms may occur. While in charge of the eye, ear, and throat department of the Germantown Homœopathic Dispensary, I saw a woman, 62 years of age, in whose right nasal fossa was discovered a foreign body. This proved to be the cause of neuralgia, conjunctivitis, dacryocystitis, a superficial ulcer on the right side of the nose and cheek, and a considerable swelling of the naso-malar region. There existed a most profuse, offensive discharge from the nostril, with loss of

nasal respiration. The lachrymal duct had been treated and a diagnosis of "cancer" made.

If the nose be examined by reflected light, nasal speculum, cocaine, and probe, the diagnosis is not often difficult.

Prognosis.—The prognosis is good if the secondary ulceration be not very great and if unilateral anosmia have not resulted from the destruction of nerve-cells.

Treatment.—The treatment consists in the removal of the body and the cleansing of the cavities of all offensive or purulent secretions. The former can be done in various ways, depending upon the size, position, and consistence of the object. If it be possible to remove the body by gravity, this may be accomplished by suddenly throwing the head forward just as a strong expiratory blast is forced through the nose; or the free passage may be closed with the finger or thumb while the patient forcibly exhales with closed mouth. Neither of these manœuvres is of frequent utility. Some recommend that the free nostril be tightly closed around a soft-rubber tube, the operator blowing through the latter with the idea of forcing the object out through the nostril of the obstructed side. As yet I have never succeeded in this manipulation, but the following device seems worthy of consideration: The soft-rubber tip of a Politzer bag is passed into the free nostril; the latter is closed around the tip, and while the patient makes a vigorous effort to blow, as in extinguishing a light, the bag is compressed with a strong, quick pressure of the hand.

If well down in the passage, the object may often be removed by a bent probe, wire, hair-pin, or hook; but in such manipulations it is necessary to proceed with great care, lest the extraneous body be forced backward, becoming still more difficult to remove. If a shoe-button, it is sometimes possible to insert a hook or the bent end of a wire into the shank. Soft substances may be similarly extracted, but a little scoop, curette, or wire loop often acts better in such instances. Forceps are frequently useful, but if the body slip from the grasp of the

closing jaws it may be forced still deeper. If necessary, the surface of the body may be thoroughly dried with absorbent cotton, and a camel's-hair brush wet with strong glue held firmly against the dried surface until the glue and brush have had time to adhere to the mass, when all may be removed, if not too large or too firmly imbedded. A bundle of rolled horse-hair may be looped and passed into the nasal passage until beyond the object, when, by unrolling the hairs, it is often possible to draw it out. By means of a diminutive Bellocq's cannula or catheter (see "Epistaxis"), a small pledget of cotton or a piece of sponge may be made to enter the posterior naris, and as it is brought down to the nostril it may draw the foreign body with it. Failing in these, there are two methods to which recourse may be had: first, the foreign body may be pushed into the pharynx, where a finger should be passed to catch the offender, lest it enter the larynx or œsophagus; or, second, the sub-

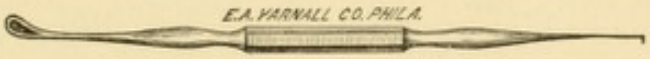


FIG. 37.—GROSS' CURETTE.

stance may be crushed by means of diminutive lithotrites, *écraseur*, wire snare, or very strong, small forceps, after which it may be removed through the nostril,—preferably by means of a post-nasal syringe. Projecting spiculæ of bone may be cut off with small bone pliers or forceps.

If the object can be firmly fixed with any of the preceding devices, careful traction should be exercised, effort being directed to the rotation of the body in such a way that it will conform to the proper axis of the space occupied. If this be done, little fear need be entertained of causing any special damage to the nose. There is sometimes a moderate amount of pain, requiring cocaine; and slight hæmorrhage, which usually stops in a few minutes without treatment. Some writers advise the universal use of a general anæsthetic for children; to this I cannot subscribe, as I find it rarely necessary even in infants less than a year old.

Cleanliness and asepsis are important, following the dis-

lodgment of any extraneous body, especially when a muco-purulent, purulent, or bloody discharge exists.

It is not often necessary to give internal remedies to reduce the inflammation prior to the removal of the object, but acon., hepar, silica, and sulph. may be indicated as after-treatment.

RHINOLITHS (NASAL STONES) AND CALCIFICATION OF THE MUCOUS MEMBRANE OF THE NOSE.

Rhinoliths consist of the formation of concretions within the nasal channels or accessory cavities. These nasal stones usually have some small substance as a nucleus, around which they form by a gradual calcareous deposit, consisting of about 80 per cent inorganic and 20 per cent organic material. The nucleus may be a cherry- or small gravel- stone, a bead, bean, or even a small mass of inspissated mucus. A gouty deposit may be the starting-point. Rhinoliths vary greatly in size; they may be very small, or almost fill the nasal fossa.

Symptoms.—The symptoms are not different from those noted under "Foreign Bodies," except that external deformity is occasionally present, and in Hendley's case an external sinus formed. Occasionally, extensive ulceration supervenes, the septum is perforated, and the turbinateds atrophy. Facial paralysis, ptosis, and epiphora may result.

Treatment.—The treatment is that referred to under the foregoing subject, but the rhinolith is more apt to require crushing. Unlike other foreign bodies, rhinoliths are sometimes deeply imbedded or encapsuled in the mucous membrane, when it is necessary to loosen them with a probe, curette, or spoon before they can be removed.

Calcification of the mucous membrane is very rare; it is usually found in elderly persons, but may occur in children of a gouty or calcareous constitution. The affected parts are white and hard to contact. Usually, nothing is called for in the way of treatment. Remedies are to be prescribed as indicated for catarrhal, ulcerative, or other pathological complication or sequel.

CHAPTER IX.

Nasal Tumors.

Although tumors which affect the nasal cavities are usually primary, they are not infrequently secondary to neoplasms in some other part of the body; when so, they usually attack the nose by continuity, but occasionally by metastasis. These growths often extend from the nose to the face, mouth, pharynx, or accessory cavities. As a rule, they are benign; malignant nasal tumors are rare. The benign growths are mucous and fibrous polypi, papillomata, cysts, angeiomata, enchondromata, osteomata, and exostoses; the malignant, sarcomata and carcinomata.

Myxomata (mucous polypi) are the most frequent of the nasal growths; others are rather infrequent, although a slight exostosis is often encountered, but those sufficiently large to demand operative interference are unusual.

Benign Growths.

mucous polypi—myxomata.

Etiology.—As a rule, these growths start as sessile bodies and, as they grow, generally form a pedicle, the mass of the growth hanging down in the form of a pear. Mucous polypi usually spring from the middle turbinated body or its immediate surroundings; less frequently from the septum, and perhaps never from the superior or inferior turbinateds. They occasionally find origin in the accessory cavities and upon the bulbous and hammular processes of the ethmoid bone.

It is probable that they develop from a catarrhal or other irritation of the Schneiderian membrane. In some instances a very tortuous and narrow canal seems to act as an excitant in the development of mucoid polypi; heredity is a probable factor, and a polypoid diathesis is not out of the question in considera-

tion of the numerous instances in which the ears, the uvula, the uterus, etc., share in the process. Although Woakes, in his "Nasal Polypus," asserts the invariable association of nasal polypi with necrosing ethmoiditis, I must confess to very rarely finding this relationship; but believe such ethmoidal changes the result, not the cause, of the neoplasm. While mostly an affection of adults, children occasionally suffer.

Mucous polypi are chiefly composed of a layer of fibrous tissue, the sac, in which is contained the growth proper, composed of some fibres of this investing tissue, together with a large amount of mucous and fat cells, glandular tissue, and blood-vessels. They often develop rapidly and have a decided tendency to recur, even after repeated removals, thus not only discouraging the operator, but disheartening the patient. Since the introduction of improved methods of operation the results are much better, though repetition of extirpation is not infrequent. Myxomata may be said to consist of two varieties,—true mucous growths and those which resemble adenomata,—but for practical purposes this distinction need not be made. The former may contain cysts, the latter not. Fibrous polypi may be associated with the mucous variety.

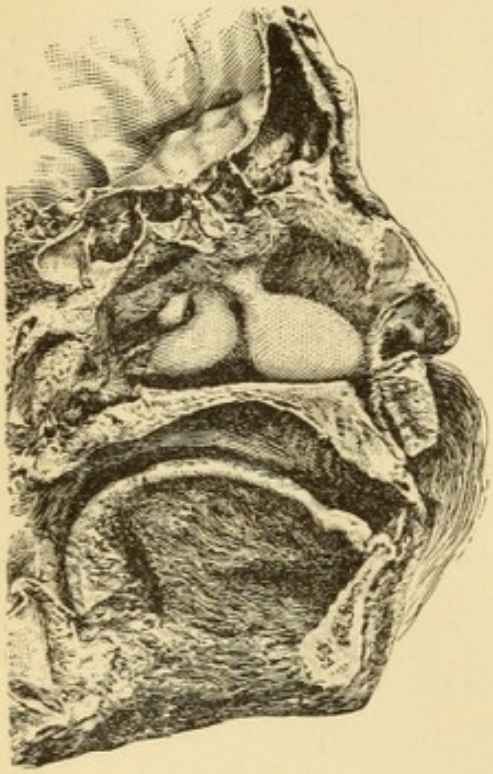


FIG. 38.—MYXOMATA. (From a retouched photographic negative.)

Myxomata vary in size from a mere granule to masses four or five inches long, filling the nasal cavity and extending from the pharynx to the nostril. Occasionally they are chiefly post-nasal. Although they sometimes occur singly, they are usually

manifold and hang from the upper portions of the nasal cavities like bunches of grapes, or, more strictly, clusters of pears. They present the appearance of glistening white or gray masses, and are sometimes mistaken for lumps of mucus. MacDonald ("Diseases of the Nose") says they are pinkish, bluish, and sometimes grayish or yellowish. They are easily indented with a probe, which temporarily destroys the light reflex, but the pitting soon passes off and the gray aspect returns. When large enough to project from their original bed, their mobility may be easily demonstrated by the aid of a probe. Their points of attachment, likewise, may be frequently located.

Symptoms.—The symptoms of the smaller growths are often so slight that the patient makes no complaint; but those of large growths are quite characteristic, namely, obstructed nasal respiration; "nasal" speech; profuse discharge of thick mucus, having a very musty, pungent odor; and loss of smell, partial or complete. In the early stages and in clear weather no symptoms may be present, but dampness may so distend the mucous membrane as to cause difficult nasal respiration. The voice is affected in proportion to the amount of obstruction; sneezing is an occasional symptom of the early stage only. In severe cases it is not unusual to find the face broadened, the result of displacement of the nasal bones, due to lateral pressure exerted by the growths; the turbinateds are often partially, rarely completely, absorbed; and the mucous membrane is sometimes degenerated. When the nasal channels are completely obstructed anosmia is noted, but that defect may arise before this stage is reached. In some instances taste is impaired or even lost. Headache, either frontal or occipital, is often present. Dizziness, loss of memory, and aprosexia may follow.

Diagnosis.—The diagnosis, as suggested, is usually easy, but occasionally the tumor is hidden by overhanging or intervening ledges or prominences, normal or pathological; on that account the lining membrane should be thoroughly cocainized where, on account of reflex nasal symptoms, the peculiar voice,

the characteristic odor, etc., polypi are suspected. After the shrinkage of the tissues, one will rarely fail to discover even very small growths. Occasionally, where suspected, polypi may be discovered by passing a bent probe, as suggested by Dr. C. M. Thomas, into the middle meatus, dislodging them from their beds.

Zuckerkandl describes a rare condition: a cysto-pneumatic expansion of the middle turbinated bone, sometimes associated with mucous polpi.

Prognosis.—The prognosis is good, although anosmia is at times permanent. In some cases the deformity ("frog-face") cannot be relieved, and it is possible that a mucous polypus may degenerate into a sarcoma or carcinoma, with which it is

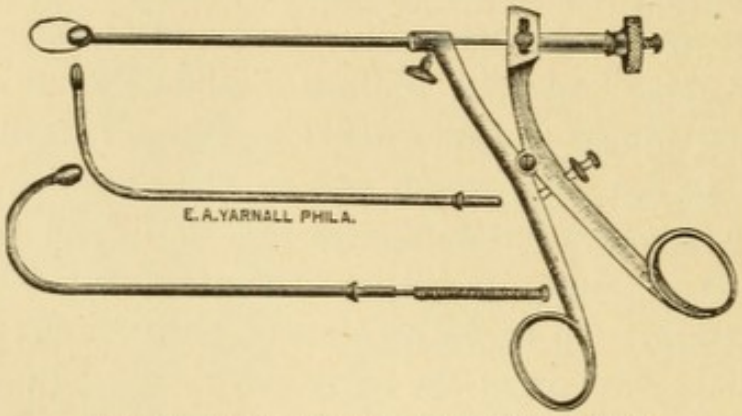


FIG. 39.—SAJOUS' SNARE, WITH THREE TIPS.

sometimes associated. Browne ("Diseases of the Throat and Nose") reports the cure of a glaucoma by removal of a polypus in a case which iridectomy had failed to relieve, and cases of unilateral blindness have been described as cured after the removal of mucous tumors of the nose. Goitres and Graves' disease have been reported cured and caused by removing nasal polypi. If the growth originate in one of the accessory cavities, the prognosis must be guarded. Spontaneous cure is rare.

Treatment.—Although remedies alone sometimes cure, it is usually necessary to supplement them with mechanical or surgical measures. No instruments are so satisfactory as snares. In using them the growth should be surrounded as near its base as possible, when, by tightening and pulling upon the wire loop,

the polypus is either cut off or torn away. For this purpose Sajous' snare is usually the most satisfactory; it can be introduced concealed, and when in position the loop protruded.

Dr. W. E. Casselberry (*N. Y. Med. Jour.*, November 14, 1891) advises breaking or cutting off the antero-inferior portion of the middle spongy bone in order to get into the middle meatus more rapidly, if in any case this cannot otherwise be accomplished, where the polypi are attached to the margins of the hiatus semilunaris. This has been advocated by a few others, but most rhinologists do not advise it.

Polypi which project into the naso-pharynx may be removed by curved tube-attachments, as usually made with

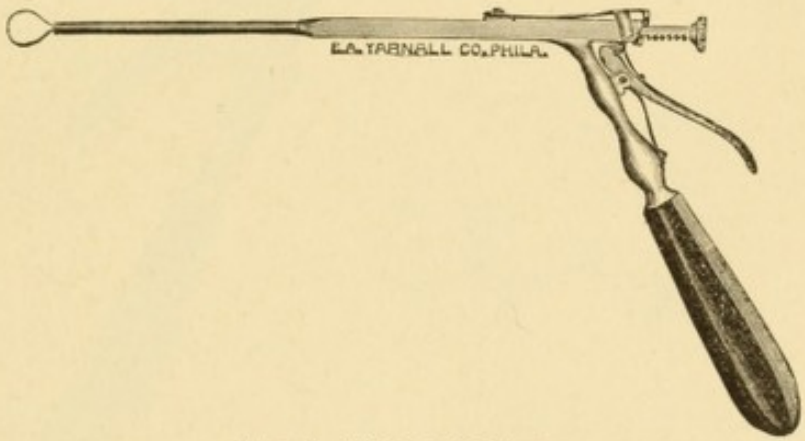


FIG. 40.—WRIGHT'S SNARE.

Jarvis', Sajous', and Wright's snares; on the other hand, these growths can often be grasped with Jarvis' or Mackenzie's straight snare, passed through the nose, or by the post-nasal forceps recommended under "Adenoid Vegetations."

To a few operators, the most satisfactory method of removal is by means of the galvano-cautery wire. The platinum or, better, Glitsmann's platinum and iridium loop is passed around the pedicle, if possible; when in position, the wire is to be tightened until it grasps the tumor or pedicle quite firmly; the circuit is then completed, and the growth divided by gradually lessening the loop. In this operation the chief difficulty encountered is in surrounding the pedicle; this accomplished, the

results are very satisfactory, although personal experience greatly favors a careful and thorough removal with the cold wire.

Electrolysis is sometimes efficient. A large-sized, gold-plated or zinc needle, attached to the positive pole of a galvanic battery, is to be passed into the mass, and the negative sponge-electrode applied over the nose; the circuit is then completed and the current continued for from ten to fifteen minutes. After a few repetitions the polypus will generally shrivel and drop off.

Caustics or coagulants are occasionally useful in destroying

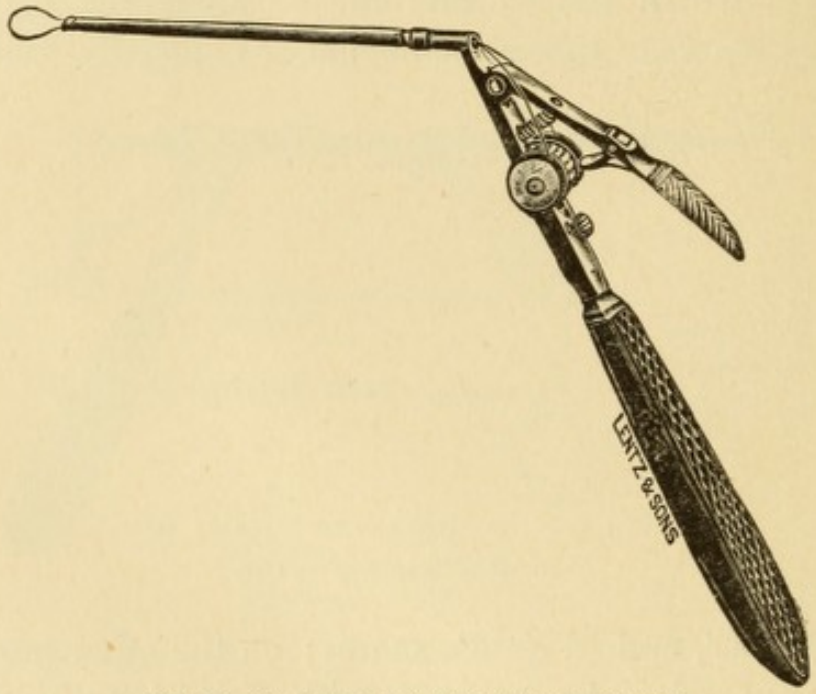


FIG. 41.—MACKENZIE'S COG-WHEEL SNARE.

the growth; a drop or two of pure carbolic acid, preferably, may be injected or forced into the most dependent part of the tumor, either by means of a hypodermic syringe or the sharp point of a glass rod. Care should be exercised not to use too much acid, lest severe reaction follow; nor must more than two or three polypi be treated at a sitting. The acid causes the mucin to coagulate; as a result, the growth frequently shrivels and disappears in a few days, though several injections may be demanded. In place of the carbolic acid, a few crystals of

chromic acid can be fused on a probe and passed into the tumor. Glacial acetic acid is often used in solution, but it requires repetition every four or five days. All acid applications, however, have the disadvantage of causing a possible septic focus by their action on the polypus.

Cocaine, in a 4-per-cent solution, should be used in the nasal fossa before any operation on its tissues: first, to control pain; second, to allay the fears of the patient; third, to allow more room for the employment of instruments; and, fourth, for the purpose of lessening primary hæmorrhage.

Formerly, nasal polypi were generally removed with forceps; and, while this is the method still sometimes employed, it is usually very bloody and painful and, unless performed under

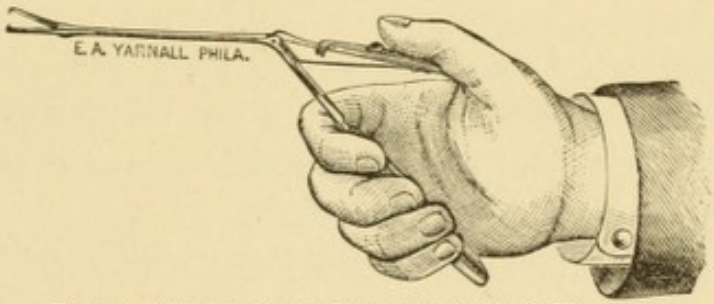


FIG. 42.—CAUGHTRY'S LIGHT ANGULAR FORCEPS.

good illumination, often results in much loss of normal tissue. Light forceps and a small hook are often very useful aids in encircling the growth with a wire loop. Although the usual advice is to touch the point of former attachment with acid, caustic, or cautery in order to prevent recurrence, my results have greatly improved since discontinuing such irritating measures. Dr. E. Harrison (*Jour. Resp. Organs*, August, 1890) advises frequent after-spraying with witch-hazel or alcohol.

The best plan is to remove all of the polypi within reach, repeating the process in about ten days, and so continuing until all have fallen from their pent-up position. The patient is then carefully examined every month for a year, if possible, after which a cure is usually well established.

In addition to the mechanical means referred to, treatment should be directed to the catarrhal condition upon which the growths sometimes depend; but this can be done satisfactorily only when the nasal passages are quite free. The use of powders (for example, sang. can. and lycop.), long ago recommended by the early followers of Hahnemann, has some advocates.

Dr. Wm. R. King told me that his best results had been obtained by blowing powdered sang. nitr. 2 x on the growth, as an adjunct to the internal remedy, which was most frequently sang. can. 3 x.

Therapeutics.

Calc. carb., persistently employed, is Jousset's "most useful drug."

Calc. phos.—"Large polypi of both passages, gray in color and bleeding easily. When the growths are small, they are absorbed; when large, they are detached. Four weeks are sufficient for such results." (Chargé.)

Kali nit.—"A polypus filling the whole right side of the nose was entirely cured by the 3 x." (T. F. Allen.)

Sang. can.—Looked upon by many as the remedy for the cure of mucous polypus, but I must confess to many disappointments and no marked cures; it has, however, seemed to prevent recurrence after mechanical removal. It has been used locally and internally. One of its chief indications is: "Mucous polypi bleed profusely."

Thuja, nit. ac., phos.—Polypi associated with profuse hæmorrhage.

Wyethia.—A letter from Dr. E. Lippincott contains the following: "From the result of treatment, I am inclined to believe that Wyethia H. will cure nasal polypi, and be one of the leading remedies in almost any disease of the air-passages having its origin in catarrh."

Compare alum., coni., fer. phos., kali bi., sulph., and teucr.

FIBROUS POLYPI—FIBROMATA.

Etiology.—The cause of this affection resides in the highly vascular character of the nasal mucous membrane. It is usually found in males from 15 to 30 years of age. In the early stage it is not always possible to distinguish between mucous and fibrous polypi, but later the difference becomes marked. Fibroma is so hard that it cannot be indented with a probe; it is rarely pedunculated, and, if so, the pedicle is very short and broad. Its color is that of the surrounding mucous membrane, or even a darker red. It is glistening and quite irregularly lobulated. The points of origin are similar in the two forms, but fibrous polypi are usually situated more posteriorly. They spring from the periosteum, or even from the bone itself, and not, as the mucous growths, from the mucous lining. The investing membranous sac is of the same character in each, but the central structure is very different. In this form it is chiefly fibrous, with numerous cells and nuclei and enlarged vessels. Fibrous polypi often originate in the naso-pharynx, but rarely in the accessory cavities, although they may find their way to them after partially filling the nasal spaces. Fibromata not only frequently dislocate the nasal bones, but push aside all structures which presume to bar the way. Their growth is usually slow, and they may be years in assuming serious proportions.

Symptoms.—The early symptoms are similar in the two affections; but when the fibroma is large enough to cause pain and produce obstruction to nasal respiration, this defect is almost constant and is not materially influenced by damp weather; nor does position of the head or blowing the nose favor or obstruct nasal respiration as in mucous growths. The face early assumes the characteristic "frog" form, due to dislocation of the nasal bones. When it fills the naso-pharyngeal space, more or less completely, there may be drowsiness and sleepiness; cerebral symptoms are sometimes present, and death may result from brain involvement. The slight ulceration which sometimes

occurs gives rise to frequent, even dangerous hæmorrhages. Happily, this form of polypus is rare.

Hydro-encephalocele (hernia of the brain through the cribriform plate of the ethmoid) may resemble a fibrous polyp, but the former affection is congenital, soft, and, according to Spencer Watson, a pulsating mass.

Prognosis.—The prognosis of fibrous neoplasms depends upon the general constitutional peculiarities of the individual, the size and situation of the growth, and the treatment adopted; but spontaneous cure occasionally occurs. On the other hand, there exists the rare possibility of a cancerous degeneration, brain involvement, and death from repeated hæmorrhages or septicæmia. Holger Mygind, of Copenhagen (*Ann. Univ. Med. Sci.*, 1889), reports a case at first sarcomatous, later fibro-sarcomatous, and finally fibrous. Fibrous growths may be complicated with myxomata, adenomata, chondromata, and osteomata. If the growth be early diagnosed and treated, it is usually possible to destroy it, but recurrences are frequent.

Treatment.—In the early stage, electrolysis and galvano-cautery puncture are the most promising mechanical measures, but when the tumor has assumed greater proportions the galvano-cautery snare is usually more appropriate. In its absence the cold-wire snare, if made to cut slowly, will answer; otherwise the hæmorrhage is very severe, even fatal. The treatment may consist of strangulation with a ligature, but this is unpleasant, owing to the offensive odor; it is also dangerous, as it has led to septicæmia. Medicines, internally administered, sometimes afford decided relief, and may even render recourse to operation unnecessary. The usual means adopted for the removal of these growths, including electrolysis, occasionally fail, owing to their great size; it will then become necessary to resort to one of the more formidable operations of turning back or splitting the nose, in order to gain free access to the nasal cavities. This may be accomplished by one of the following operations: Oliver's, Rouge's, Cassaignac's, Barascz's, or one of

their various modifications. It is not the province, however, of such a work as this to enter into a description of those methods which belong to the domain of general surgery. The nasal fossæ once freely opened, the operation is best completed by the assistance of a needle passed through the tumor, around which a galvano-cautery loop is to be passed. It is better to use a hot wire, as the cold snare is apt to cause very severe hæmorrhage: the same objection applies to the knife and forceps.

Therapeutics.

Conium.—Fibrous polypi, which prick and itch after probing; burning, stinging pains in nose; discharge purulent and bloody.

Compare calc. carb. and silica.

PAPILLOMATA.

Warty growths are rather infrequent, but are occasionally noted in the nasal passages of children and young adults. They may be hard or soft, chestnut-colored or raspberry-like, and are usually attached to the septum by a broad base; they may, however, spring from the lower turbinated body, directly within the vestibule.

Pathology.—Pathologically, they are not unlike cutaneous warts, although they have a mucous covering. Unlike mucous polypi, they seldom recur after removal. Care must be exercised not to mistake them, on the one hand, for carcinoma, which has a broad base and bleeds easily; or, on the other, for a roughness which sometimes occurs in the later stage of chronic catarrh.

Symptoms.—Their symptoms are common to many catarrhal conditions of the nose, and not such as to lead to a diagnosis without inspection. Irritation stands first in the list; this may give rise to reflex cough, sneezing, and acrid discharge. It is unusual for a papilloma to become large enough to interfere with nasal respiration or cause nasal asthma.

Treatment.—Warty growths sometimes yield to the use of internal remedies; where these fail, the neoplasm can be destroyed by the galvano-cautery point or one of the acids recommended under "Hypertrophic Rhinitis"; but mono- and tri- chloracetic acids act too slowly to be satisfactory. Moderately large growths are best removed with the snare.

The chief internal remedies are ars. alb., nitric acid, sang. nit., and thuja.

ADENOMATA.

Glandular tumors are rarely found in this locality, and it is doubtful whether the few reported cases will stand the test of careful pathological investigation, as it will most likely be found that the glandular structure is a part of a sarcoma, carcinoma, fibroma, etc.

ABSCESSES.

Abscess of the septum is usually due to injury or some profound systemic poison. The condition is rare. It may be acute or chronic. The symptoms are those of pus collections generally. Respiration is rarely impaired. It is diagnosed by its bilateral, rounded projection, and by distinct fluctuation. Hæmatoma and hyperplasia and engorgement of the tissues covering the triangular cartilage must be excluded.

The prognosis is good; for, even when the triangular cartilage is perforated, no external disfigurement follows. The bone is rarely, if ever, necrosed.

Treatment consists in the use of hepar and silica internally; if these fail to give early relief, the sac should be incised on one side only.

HÆMATOMATA.

Blood-tumors of the septum are usually traumatic. They closely resemble abscesses, but the mucous covering is of a deeper color—even purple—in hæmatomata.

The prognosis and mechanical treatment are those of abscess, but recently Ricci (*Jour. Lar. and Rhin.*, September,

1890) perforated the mucous membrane beneath the upper lip.

The internal remedies are arn., crotalus, ham., lach., and sil.

CYSTS—CYSTOMATA.

Cystic tumors of the nasal cavities are very rare, and usually arise from the adenoid tissue of this region. They closely resemble mucous polypi, but are usually darker in color, less glistening, not so movable, and occur singly. Cystic tumors contain a clear, colorless fluid; if the sac be opened or torn, the tumor at once collapses and is not prone to recur.

The symptoms are not in the least characteristic of the affection, and are analogous to those of papillomata, with the absence of the irritating discharge. The prognosis is good.

Internal remedies seem to have little effect, but evulsion, incision, or galvano-cautery acts promptly. The sac may be ruptured if the nose be blown vigorously or the patient sneeze violently. The usual remedies are apis, apoc., ars., and sil.

ANGEIOMATA.

Vascular tumors of the nose are quite rare. I have seen but one case, which was diagnosed microscopically by Dr. C. V. Vischer, thus making the eleventh recorded case. To these Dr. H. P. Bellows has just added a twelfth (see forthcoming *Trans. Amer. Inst. Hom.* and *Jour. Oph., Otol., and Lar.*). Operations upon these growths are usually followed by free primary and often secondary bleeding.

The prognosis is not always good. Although others, with the exception of Dr. Bellows, have noted no tendency to recurrence after removal, the case upon which I operated showed evidences of recurrence in less than one year, and is at present undergoing treatment at the Hahnemann College Dispensary of Philadelphia, under the care of Dr. I. G. Shallcross. Dr. Bellows cured the secondary growth in his patient, by the local use of a saturated solution of kali bi.

ENCHONDROMATA.

Cartilaginous tumors are not so rare as either papillomata or cysts. They usually grow from the septum, less frequently from the floor of the nasal chamber; in exceptional instances they develop in the accessory cavities. As a rule, these overgrowths of the normal cartilaginous tissue give rise to no inconvenience, although they may slowly increase in size until nasal respiration is impaired, and pain, sneezing, and nasal voice become annoying. If both nasal passages be obstructed, mouth-breathing will be necessitated and asthma may follow. If the unaffected side have free respiration, the symptoms are almost overlooked until some catarrhal or other swelling obstruct the free passage and occasion annoyance.

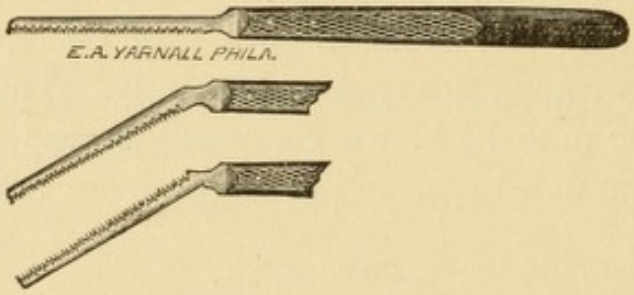


FIG. 43.—NASAL SAWS.

Enchondromata are usually of slow growth when they arise from a cartilaginous base, but if they spring from bone they increase rapidly and often undergo a sarcomatous degeneration. If of rapid growth, ulceration frequently arises as a result of pressure, or, as with polypoid growths, deformity may occur and the collateral cavities become implicated. Removal of a simple enchondroma is usually equivalent to a cure, but not so with the rapidly-growing variety, which usually returns after removal.

In general, enchondromata are somewhat round and the color of the normal mucous membrane. They are so hard that a needle cannot be forced into them without effort. When they spring from the septum they may resemble spicules of bone projecting toward or even into the opposed turbinated body.

Treatment.—Unless enchondromata interfere with respiration or vocal resonance, or cause pain, reflex, or catarrhal symptoms, it is not advisable to disturb them. If situated in the lower portion of the canal they can be sawed off, or, when transfixed with a needle, cut off by a loop of wire, either hot or cold. Considerable time should be consumed in their removal with the cold wire. If very large and situated in the roof of the nasal cavities, it may be found necessary to resort to one of the operations suggested for the removal of large fibrous tumors from that region. In operating upon cartilaginous growths in the nasal



FIG. 44.—JARVIS' TRANSFIXING NEEDLES.

vault, one should bear in mind the close proximity of the brain, the bony floor of which may have been absorbed by the pressure of the tumor.

OSTEOMATA.

It is important that bony tumors be carefully distinguished from exostoses, which occur very frequently in the nasal passages. Osteomata are quite rare, and are the result of ossification in the newly-formed connective tissue; unlike exostoses, they usually originate in the mucous membrane. Bony growths are nearly always pedunculated and freely movable, but, like exostoses, they are the color of the surrounding membrane. In either instance, it is usually impossible to introduce a needle into the body of the tumor, but the pedicle of the osteoma is usually so soft that it can be readily divided with forceps, snare, saw, or cautery loop, and occasionally with scissors. Spontaneous separation of the pedicle has sometimes occurred, giving rise to a dead osteoma. The tumor proper is usually so hard as to merit the name "ivory-like."

If small, there are rarely sufficient symptoms to attract the patient's attention; if large, it may press upon the opposite side of the canal and cause erosion and a bloody or ichorous discharge. Osteomata may grow to such a size as to invade neigh-

boring structures and give rise to marked deformity. After removal there is little tendency to recur.

The remedies suggested are calc. carb., fluor., hecla, iod., merc., phos., silica, and sulph.

EXOSTOSES.

Osseous outgrowths spring from the bony walls,—as a rule, from the septum. They project in the form of a spur or shelf of hard, bony tissue, occasionally so large as to press upon the structures on the opposite side of the nasal canal, but generally they are quite small and self-limiting. Most exostoses are of ivory hardness, being devoid of cancellous tissue; but the softer projections usually contain some of this structure within their interior. They may return after removal, but there is no tendency

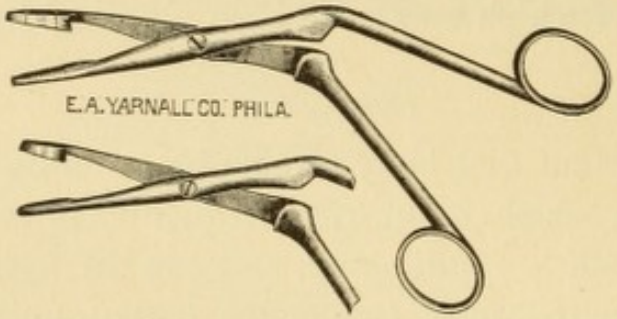


FIG. 45.—TEETS' NASAL BONE-FORCEPS.

to degeneration. Malnutrition seems to play an important part in their formation.

Symptoms.—Frequently there are no symptoms indicating the presence of an exostosis, but it may reach such dimensions as to occasion pressure-pain, reflex asthma, or even obstructed respiration. The septum is sometimes thickened or forced into the opposite fossa.

Treatment.—Medicines have not proved useful in combating these bony outgrowths; so that their removal depends upon surgical measures. It must be remembered, however, that there are comparatively few cases that require treatment. The septal saw (preceded by the use of cocaine or, in very nervous subjects, a general anæsthetic) will be found the most useful

instrument in removing these projections. The hæmorrhage is rarely profuse, and, if anything be required, can usually be controlled by pressure.

When the spur of bone is small Teets' nasal bone-forceps will usually be sufficient, but, on account of the density and hardness of the exostosis, it may be necessary to resort to the use of trephines or burrs. For this purpose the dental engine acts well, but the electric motor will rotate the drills with greater precision and regularity.

If the exostosis be large, it is often better to turn the mucous membrane and periosteum back before the saw is introduced,—

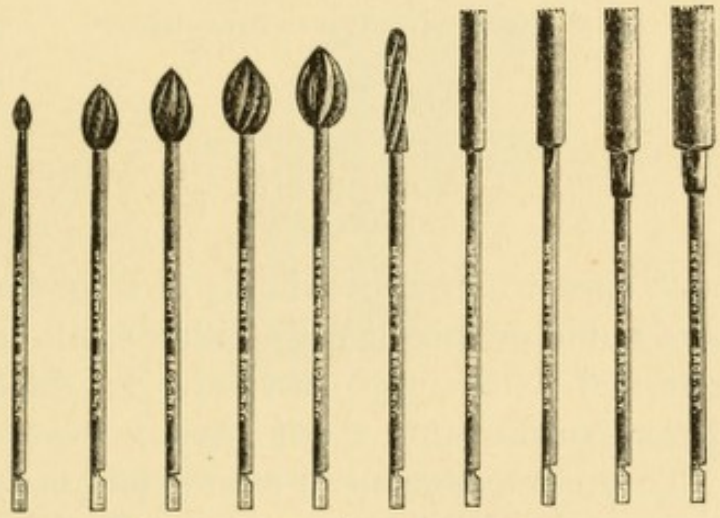


FIG. 46.—BURRS AND TREPHINES.

an unnecessary precaution with small growths. If the trephine or burr of the dental engine or electric motor be used, the covering of the growth should be divided and the point passed through the incision. If the burr rotate quite rapidly, the soft tissues escape much injury while the hard bone is speedily reduced. The hæmorrhage is quite profuse for a time, but is easily controlled by pressure. Electrolysis is strongly advised by Drs. Mouré and Bergonié, and has acted well for me. Both monopolar positive and bipolar galvano-puncture have been employed. Sail-makers' needles (of steel) are best for the purpose.

C. H. von Klein (*The Times and Register*, November 23,

1889) has devised nasal bone-forceps which make the section from below, leaving the membrane intact above; by the aid of forceps the severed spur or ridge is removed, when the membrane is to be gently pressed into position, where it promptly unites. The galvano-cautery and acids act well for small exostoses.

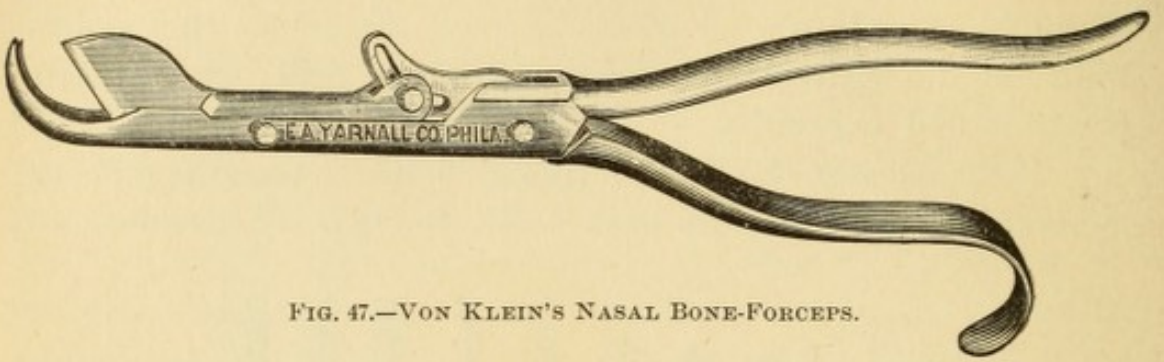


FIG. 47.—VON KLEIN'S NASAL BONE-FORCEPS.

MALIGNANT TUMORS.

SARCOMATA.

Sarcomata appear either as primary or secondary growths. They consist of round or spindle cells, either small or large, and are quite soft and exceedingly vascular. In some instances they extend from surrounding tissues and involve the nose by continuity. They are malignant in nature, and usually re-form rapidly after removal. While there is generally the underlying cancerous cachexia, these tumors sometimes result from the degeneration of benign growths.

Symptoms.—In the early stages nasal obstruction and pain are the chief symptoms, but soon superficial ulceration, offensive, ichorous discharge, and headache are noted; the accessory cavities often being early invaded. Later, deep ulcerations occur and involve the surrounding parts by extension; the features may be distorted, or the growth extend to the brain and speedily terminate life.

Diagnosis.—The diagnosis is generally easy, owing to the decidedly characteristic indications. Sarcoma presents a bluish-gray appearance, is soft and doughy to the probe or finger, and

bleeds easily, sometimes profusely, from ulcerative destruction of the blood-vessels. The tumor is always pedunculated, and, consequently, quite movable.

Prognosis.—The prognosis should be guarded, although statistics would seem to prove that when thoroughly removed nearly 50 per cent recover; but in some of these cases the time elapsing after the operation was too short to determine a cure.

Treatment.—Their total ablation is usually difficult and, indeed, often impossible. In the homœopathic materia medica, however, there are remedies capable of relieving nearly all



FIG. 48.—MELANOSARCOMA OF THE NOSE.*

cases, and of curing some that seemed hopeless. Owing to the rapid growth and difficulty in radically removing nasal sarcomata, it is important to do all that can be done, in the way of remedies, to control the growth as well as to alleviate the distressing symptoms. Among adjuvants, nothing seems better than actual cleanliness of the affected parts, especially by the aid of sprays of eucalyptol, cosmolin, etc. A spray composed of hydrastin and cosmolin (as prepared by Buffington, of Worcester, Mass.) is not only very soothing and cleanly, but has a decidedly healing effect, on account of both its ingredients. If the discharge be very offensive, a drop or two of carbolic acid or a

* See the case reported by Dr. I. G. Shallcross, *Hahnemannian Monthly*, January, 1892; also, *Trans. Homœo. Med. Soc. Pa.*, 1891.

small quantity of thymol may be added to the spray. When there is severe pain, cocaine often mitigates it temporarily and may control the bleeding, but is apt to increase both secondarily. A 20-per-cent calendula solution often acts very satisfactorily. Bosworth (*Amer. Lar. Assn.*, 1890) says that, in his experience, sarcoma is best treated by mild measures. A radical operation is doubtful; he, therefore, advises its removal piecemeal, preferably by the cold snare.

The remedies are noted at the close of the chapter.

CARCINOMATA.

Cancerous growths of the nose are quite infrequent; they are rarely primary, usually extending from neighboring tissues. The causes and pathology are the same as when carcinomata occur elsewhere; likewise the pain and hæmorrhage.

Symptoms.—The symptoms are not very different from those recorded under "Sarcomata," but the pain, although occasionally absent, is often more severe, lancinating, and continuous. The growth appears as a pimple, which later becomes a general swelling, inducing obstructed nasal breathing; the discharge is usually fetid and ichorous, and hæmorrhages are frequent. The cancerous cachexia is at times an early symptom.

Prognosis.—The prognosis is very grave, but an occasional cure is recorded. The average duration of life is about three years.

Treatment.—The treatment is similar to that recommended for sarcomata. Although many advise removal of these growths, it seems better, in most cases, not to attempt it, as the entire cavity may be refilled in two or three days; and, further, operative interference often hastens the fatal termination. Conservative treatment, by the use of sprays of cleansing and disinfecting fluids and internal remedies, will do much to alleviate the suffering.

Therapeutics of Malignant Tumors.

Alcohol, if run up to a high potency with pure water, Dr. M. Macfarland claims, will speedily cure the pains of cancer.

Alumen.—Sanious discharge, especially during the ulcerative stage.

Ars. alb.—Burning, stinging pains; ulcer of right ala; ichorous, sanious, fetid, excoriating discharge; marked prostration and debility (ars. iod.).

Aurum met.—Pus greenish, ichorous, putrid. Bruised, shooting, drawing pains.

Carbo an.—For the offensive odor and in the aged.

Conium.—In the early stage, especially if caused by contusion; glandular deposit.

Cundurango and **galium aper.**—During ulceration; especially for the stinging, burning pains.

Ergot, locally applied, will very often relieve the offensive discharge.

Hydr. can.—During degenerative softening.

Kali sulph. is recommended by Schüssler for nasal epithelioma.

Kreos.—Profuse dark-bloody, ichorous discharge; intense burning. Epithelioma of the right ala.

Lapis alb.—Before ulceration.

Tarentula.—Especially for sarcoma, where W. S. Searle strongly praises it (*Jour. Oph., Otol., and Lar.*, January, 1891).

Thuja.—Cauliflower excrescences; fungoid cancer.

CHAPTER X.

Defects in Bones and Cartilages.

DISLOCATION OF THE BONES AND CARTILAGES.

Dislocation of the **nasal bones** is quite rare. The vomer can be dislocated from the frontal bone and the nasal plates of the superior maxilla by strong lateral blows only.

The diagnosis is easy; the deformity occurs as a lateral sinking. The dislocation is reduced by means of a probe, straight catheter, or lead-pencil introduced into the canal, by which the bone is elevated into position, where it usually remains; it may, however, require some internal packing, as recommended under "Fracture of the Nasal Bones."

Dislocation of the **triangular cartilage** is a much more frequent accident, and one which gives rise to greater annoyance and disfigurement. When replaced, the cartilage is apt to slip out and to interfere with respiration. On that account, it is usually better to treat it as recommended after the division of a deviated septum.

Dislocation of the **columnar cartilage** is very unusual. It gives rise to visible deformity, in that the horizontal columnar cartilage is slipped from its attachment to the anterior extremity of the triangular cartilage, giving rise to a marked prominence in the septal side of the nostril into which the cartilage slips. Bosworth has reported two cases, and I had one some years ago.

The treatment in these three cases was the same, namely, the cartilage was dissected out and the lips of the incision united with fine sutures. The results were satisfactory.

Internal remedies are little called for, but acon., apis, bell., fer. phos., or hepar may be required to subdue inflammation.

FRACTURE OF THE NASAL BONES.

Although the nose is the most prominent feature of the face, its elastic tip and bony surroundings (forehead, chin, and cheek-bones) render its bony walls quite secure. If struck very hard, however, these usual safeguards may prove insufficient.

Symptoms.—The symptoms are disfigurement, hæmorrhage, ecchymosis, swelling, emphysema, and abscess formation. Disfigurement is usually due to the depression of the nose, but may depend upon the swelling and ecchymosis. The pain is not usually severe, unless there be much swelling or an abscess form. Hæmorrhage is at times severe, but rarely so marked as to require special attention. Swelling may occasion difficult respiration and render the diagnosis doubtful. Emphysema frequently results when the mucous membrane is torn; the air being forced into the deeper tissues while sneezing, blowing the nose, etc. It may greatly impair respiration, but is not dangerous to life. Abscess may result from laceration of tissue or impairment of circulation. The mucosa and cartilages are often damaged.

Diagnosis.—The diagnosis is not always easy, and, as the examination is usually quite painful, it is often best to use a general anæsthetic for highly nervous patients. It is not always possible to give an opinion until the swelling has been somewhat reduced; but the defect should be determined as early as possible, for the bones unite so readily that they may become fixed before being replaced. By inserting a probe within the nose and placing a finger outside, alternate pressure will usually detect crepitus. This may often be discovered by simply moving the nose from side to side; but care must be exercised to exclude the occasional physiological crepitus of the cartilages.

Prognosis.—The prognosis is good if the patient be seen early, the diagnosis made with certainty, and the fragments properly replaced; otherwise great deformity may follow.

Treatment.—The fragments are to be replaced by means of

such apparatus as a small probe, metal catheter, or lead-pencil. With the aid of the fingers outside, the fragments are to be gently molded into position, where they will usually remain; when the swelling is great, it may be necessary to reduce a part of it before the broken bones can be re-adjusted; to this end, hot applications act best in the early stage. If the nose be very much crushed, it may be necessary to insert nasal plugs to retain the bones in position, or a pin to keep the parts upright. If the former be employed, hollow tubes are the best, although cotton or oakum pledgets may be fitted to the cavity; in either case they should be carefully removed daily, and the passages thoroughly sprayed or syringed. The bones will sometimes remain in position at the end of two days, so that the plugs may be left out at the expiration of that time; but it is better to replace them for five or six days. If a pin be required, it may be passed through the nose in such a manner as to support the bones; it can be held in position by a rubber band passed over the point and head, and may be left in position six or seven days, removing the rubber band each day to relieve the pressure. When abscesses form, they should be treated as stated under "Abscess of the Nose." Emphysema needs no especial care.

Internal remedies are to be governed by the character of the symptoms; acon. and calend. are the most important.

DEVIATION OF THE SEPTUM.

This is one of the every-day conditions of the nose, and exists to a slight degree in most persons. Unless sufficient, however, to give rise to some annoyance, it should not be considered worthy of treatment, for in the great majority of deviations the departure from nature is so slight that it never attracts the patient's attention.

Etiology.—The causes of deflected septi have been variously described. They were formerly considered congenital in many instances, but the careful and extensive researches of Zucker-

kandl have partially disproved this idea. He says that before the age of seven years the bony and cartilaginous septum is always straight. This is not true of every case, however. Some attribute, as a cause of deviated septum, the habit of constantly using the handkerchief in the same hand when wiping or blowing the nose, thus always forcing the cartilage in the same direction; others, the habit of always lying with the same side of the face on the pillow. It is possible that a highly-arched or angular hard palate has to do with this defect, as the septum, in attaining its growth, is obliged to bend to one side. Accident, either the result of a blow or a fall, is the most frequent cause of deflections. In many cases the septum grows more rapidly than the space which it occupies; especially is this true of its cartilaginous portion, where most deviations exist; thus it must bend upon itself and form either a curve or an angle; in such a case, one nasal canal is enlarged at the expense of the other.

Variations.—Where a double curve is formed, one passage may be narrowed in front, the other behind. If the S-shaped curve occupy a vertical position, the concavities and convexities running antero-posteriorly instead of vertically, both passages may be encroached upon anteriorly, posteriorly, or both, except at the posterior fourth of the septum, where there is often hypertrophy, but, perhaps, never deviation. The septal deviation may be in the form of a sharp bend on one side, with a corresponding concave V on the other; or the ledge may extend in either a vertical or a horizontal direction. The septum inclines to the left side more frequently than to the right, be the cause what it may.

Symptoms.—The symptoms are chiefly those of obstruction. Deformity is unusual. There is generally a concomitant nasal catarrh, due to hindrance to the anterior escape of the discharges. When the projection presses against the tissues of the opposing wall, irritation, reflex symptoms, erosion, ulceration, or even frequent epistaxis and pressure atrophy may follow.

It is difficult, without careful examination, to determine the exact condition present. It may resemble a polypus, a thick-

ened septum, perichondritis, abscess, hæmatoma, or a new growth. Deviation may be distinguished from a new growth or septal thickening by the corresponding concavity on the opposite side of the septum, and from abscess, hæmatoma, or perichondritis, by the elasticity and bilateral nature of the enlargement in these disorders. When the deflection has existed for a long time, hypertrophies are not unusual; so that both sides may be too prominent.

Treatment.—The treatment is to be varied according to the form and amount of the defect. If very slight, the frequent daily pressure of the finger against the most prominent part may do some good, but cases which apply for treatment are rarely mild enough for such means. The various tents (sponge, laminaria, gelosin, and tupola) or Waldenburg's pneumatic douche may be of service, but Jurasz's spoons (splints), which are made separable from Adams' forceps, of which they form a part, are best in cases where there is not a great redundancy of septum. Independent splints or clamps, of various patterns, are also used. Pure, soft-rubber intubation-tubes (Goodwillie) are of use in mild cases, and after operations, in some of the more severe forms. Adams' straight forceps have gained a reputation in straightening bent septi, but recently other and more individualizing methods have been instituted. Originally circular or oval pieces were punched out of the cartilaginous septum and the wound allowed to heal, leaving a smooth-edged perforation. This, however, sometimes caused much annoyance, owing to occasional passive hæmorrhages from the edges of the opening and to the accumulation of scabs and crusts about it. Steele's forceps and their numerous modifications were designed to overcome these defects. They are made with stellate and other shaped attachments for the purpose of breaking the continuity of the cartilaginous (more rarely the bony) septum, after which a pair of Adams' smooth blades are used to crush or

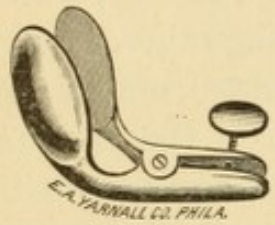


FIG. 49.—BOSWORTH'S CLAMP.

force the parts into position. Plugging is not often required, but, when demanded, the formerly obstructed passage is filled with an ivory or hard-rubber plug or hollow tube, or packed with glycerin- or vaselin- coated cotton, lint, or oakum. This should be removed each day, the nose sprayed with permanganate of potassium or peroxide of hydrogen, and the dilator replaced until healing is complete.

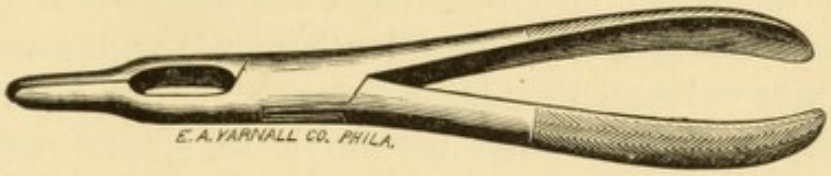


FIG. 50.—ADAMS' FORCEPS.

Sajous ("Diseases of the Nose and Throat") makes a linear, antero-posterior incision through the most prominent portion of the convexity; the index finger is then introduced, and the fragments forced into position by the overlapping of the cut edges. They are held in this position for some days by the use of oakum, daily changed until union is firm, which occupies a period of about ten or twelve days. John B. Roberts holds the overlapped fragments in position by pins passed

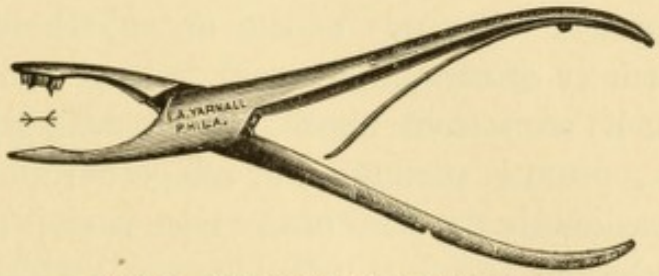


FIG. 51.—STEELE'S SEPTUM-FORCEPS.

through the nose and septum. No after-treatment is required; when union is complete the pins are removed.

Ingals has recommended an oblique incision from above downward and forward, through the mucous membrane covering the greatest convexity. The membrane is then carefully dissected from the underlying cartilage, and a triangular piece of the deviation removed; the base of the triangle should be

directed downward. In removing the cartilage, care must be exercised that the mucous membrane of the healthy side be not perforated. The cut edges of the membrane are to be united by sutures. Oakum is used as in the other operations.

In one case, in which a deflected cartilage was so long as to project from the tip of the nose, causing much annoyance by obstruction and disfigurement, I divided the mucous membrane covering the sharp, projecting edge, and dissected it from the redundant cartilage, which was then removed with scissors; the incision was united with sutures.

Atrophy of the septum narium is so often a part of the same process in other portions of the nasal labyrinths that it need not be dealt with here, although it is sometimes independent of other atrophic changes; it is then chiefly confined to the cartilaginous portion.

CONGENITAL MALFORMATIONS OF THE NOSE.

If the trifling deflections and the *retroussé* nose be exempted, congenital malformations are rather infrequent. They vary in degree from complete absence of the nasal feature to the mildest form of internal defect; of the former, one case alone has been reported. Fissures of the organ, whereby its upper surface is partially or completely open, so that the interiors of the fossæ can be seen from above, are exceedingly rare; cases in which the septum is perforated or altogether absent are more frequent; occasionally the floor of the nose is cleft (cleft palate); or there may be the so-called "double-nose," which consists of a bifid septum, sometimes so complete that a probe can be passed through the opening from one end of the septum to the other. The posterior nasal opening may be entirely closed, either by bony, cartilaginous, or membranous structure (rather rare), or the anterior passages may be similarly affected; of the latter, three cases have been recorded,—one by Delstanche and two by Jarvis. One or more of the turbinateds or other bones of the nose may be absent; there may be adhesions between

the various portions of the nasal fossæ of an osseous, cartilaginous, or fibrous nature, whereby the passage is partially obstructed; or one nasal canal may be smaller than the other.

The causes are the same as those which give rise to congenital defects in other portions of the body.

Symptoms.—The symptoms depend upon the position, amount, and form of the defect. If the nose be absent, deformity, anosmia, and mouth-breathing will exist; with fissure the chief symptom is disfigurement with greater exposure; a perforated or absent septum need not occasion any annoyance, but the bridge of the nose may sink; if the hard palate be cleft, defective speech will be the chief annoyance; when the anterior or posterior nares are closed, nasal breathing will be impossible; absence of the turbinateds may not be noticed by the patient; non-development of other bones may give rise to deformity; adhesions, or synechiæ, may interfere with easy respiration and impair the voice and sense of smell; when one passage is smaller than the other, the function of the smaller will naturally be interfered with; when the septum is bifid, few, if any, symptoms may arise, but the partition may encroach upon the normal calibre of the canals and impair respiration.

Treatment.—The treatment of absent nose is purely mechanical, and consists of plastic operations; the same is true of clefts. An absent or perforated septum can scarcely be restored; a cleft in the hard palate requires palato-plastic operations or plates; occlusion of the nares requires immediate operation, in order to permit free nasal respiration, so essential to the newborn babe. Membranous or cartilaginous obstructions may be overcome by the curved, guarded knife, although the galvano-cautery is usually to be preferred. Bony obstructions require the use of a chisel, saw, electric motor, or dental-engine drill. Synechiæ which interfere with breathing or affect the voice require division with knife, scissors, galvano-cautery, saw, chisel, drill, gouge, or bone-forceps.

CHAPTER XI.

Diseases of the Accessory Cavities.

The **antra of Highmore** are those usually affected. Their diseases arise by extension from the nasal canals; from stenosis of the duct due to hypertrophic rhinitis, nasal polypi, or traumatism; injury; projection of the teeth (especially carious)

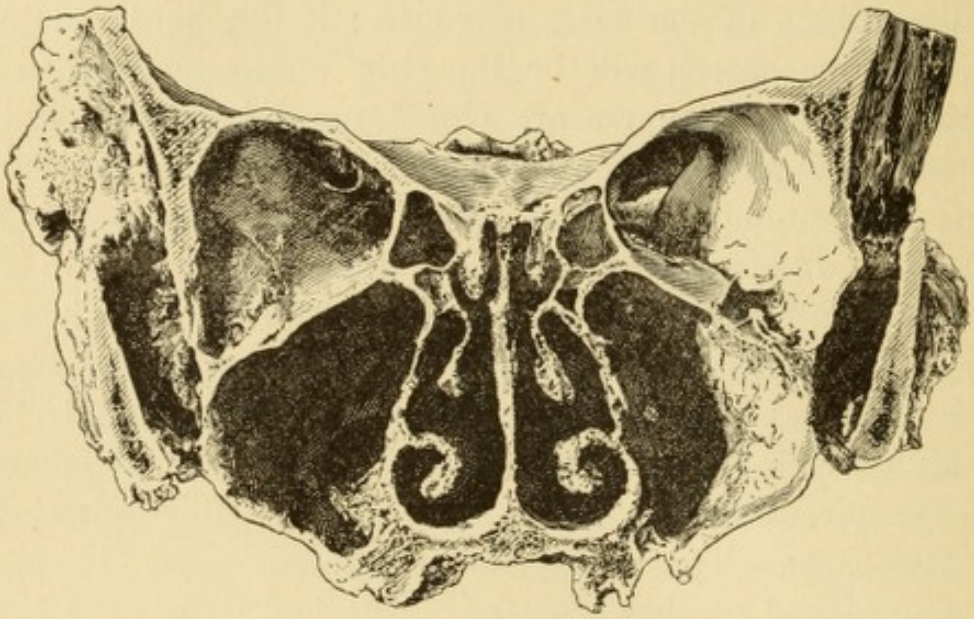
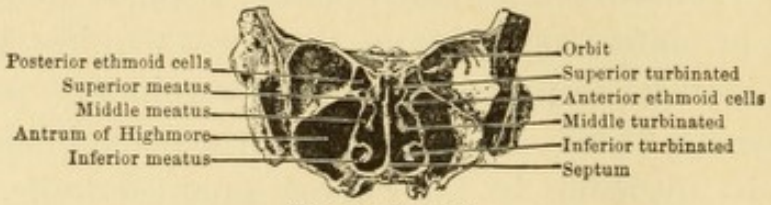


Fig. 52.—Transverse Vertical Section through Orbits: Looking Backward.
(From a photograph.)



Key to Fig. 52.

into the cavity; caries of the alveolar processes; the presence of tumors; or division of the infra-orbital nerve.

The changes which occur in antral disease are similar to those of catarrhal processes elsewhere; but, as the disease progresses, the cavity may become filled with a mucous, muco-

purulent, or purulent accumulation, or new growths. Softening, caries, or necrosis of the bone may occur, or abscess form.

Symptoms.—The symptoms are: pain in the superior maxilla, usually severe and throbbing, lancinating or dull, and worse when leaning forward; swelling and tenderness may appear over the affected region. The pain often extends to the teeth, or may originate in them, if they be the prime cause of the trouble, when there will be associated earache and much redness and sponginess of the gums. In some cases the pain involves the orbital region, and from pressure the optic nerve may be affected; if neglected, this may result in blindness. The eye is occasionally forced upward and inward. The swelling of the antral region may be extensive, and, as the bone yields, the enlargement become quite doughy, even fluctuating. If pus form (empyema), it may find an exit through the natural opening into the middle meatus, giving rise to a unilateral discharge of offensive, yellow pus, usually when the head is turned to the opposite side; the teeth may loosen and fall out, giving exit to the pus through their sockets; or the abscess may burst through the bony walls, alveolus, cheek, or orbit. When the nasal pus is carefully wiped away, a change of position will usually cause its re-appearance.

Diagnosis.—In doubtful cases, where the symptoms are not characteristic, M. R. Brown (*N. Y. Med. Jour.*, July 19, 1890) thoroughly cocainizes the nasal cavity and forces peroxide of hydrogen into the antrum with the aid of a long hypodermic cannula, bent at a quarter of an inch from its end; this "is passed into the hiatus semilunaris, and a solution of peroxide of hydrogen (1 part to 12 parts of water) is injected into the antrum. If pus be present, it is driven out, and fills the nose as a white foam. That the solution has entered the antrum will be made evident by the patient complaining of slight pain at the roots of the teeth and a sense of fullness in the cheek." Link suggests percussion of the hard palate to determine the condition of the antrum.

Voltolini introduced a method of examination which sometimes aids in the diagnosis of antral diseases. The patient is placed in a darkened room, when a tongue-depressor, furnished with a small incandescent lamp, is introduced into the mouth; the lips are then closed, when the antral region, if normal, will appear slightly less illuminated than the surrounding bone; but, if the cavity be the seat of tumors or opaque accumulations, it will not be so bright. In all cases the sides should be compared. Cystic cases will be well illuminated, and where there exist marked pathological changes in the nasal cavities this method of examination is practically valueless. Latent antral diseases are, thus, frequently detected.

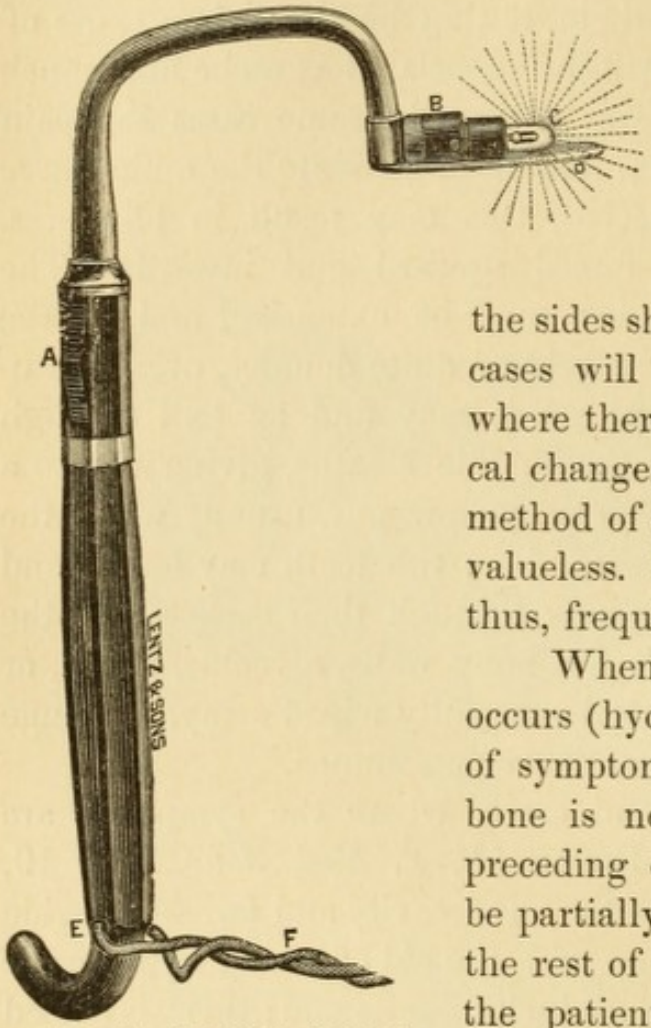


FIG. 53.—BLEYER'S TONGUE-DEPRESSOR AND INCANDESCENT LAMP.

When a collection of mucus occurs (hydrops antri), a similar set of symptoms presents itself, but the bone is never softened, as in the preceding condition. If the space be partially filled with mucus or pus, the rest of the cavity containing air, the patient will notice a swashing sound when the head is shaken. The tumors usually found in the antri are polypi, which occasion pain, swelling, and protrusion. Phlegmonous inflammation sometimes attacks the maxillary sinuses, the result of erysipelas, diphtheria, croupous rhinitis, or injury.

Prognosis.—The prognosis is usually good if relief be afforded before much destruction of tissue, optic-nerve pressure, or blood-poison has occurred. Otherwise one or more teeth

may be lost, the face disfigured, the eye protruded, or vision destroyed. Death may result from blood-poison or from extension of the disease to neighboring cavities.

Treatment.—The treatment should be medicinal and mechanical. In the case of abscess, etc., if the pus cannot find an exit through the natural opening, an attempt may be made to pass a curved probe through this canal,—an exceedingly difficult and often impossible procedure. When the attempt is successful, the fluid may be drained off, although it may still become necessary to make an opening into the chamber, usually through the space left after the extraction of the first or second molar tooth. If the extraction fail to give exit to the pus, a probe or director should be pushed from below upward, toward the inner canthus; but in some cases it is impossible, without drilling the bone, to enter the antrum through this partial opening. A gold or silver drainage-tube should be fitted, and, to prevent the entrance of particles of food, a plug adjusted; this can be removed for cleansing purposes. Vent is thus given to the accumulated fluid. Mickulicz recently revived the operation of opening through the inferior meatus, using a bent knife. M. R. Brown proposes a new and apparently good procedure, the advantages of which appear to be better drainage, the retention of the tooth, and less danger that foreign substances (food) will enter the cavity. An opening is made "through the upper part of, or immediately above, the alveolus." Cocaine is used, and an incision made or a small piece cut out "just below the gingivo-labial fold, between the upper portions of the roots of the second bicuspid and first molar teeth. A drill, preferably driven by an electric motor, is entered, at the point of incision, into the soft tissues and directed upward, inward, and slightly backward, forming an angle of about forty-five degrees with the plane of the alveolus."

After the maxillary sinus has been opened it is usually necessary to syringe the cavity frequently with a warm solution of permanganate of potassium, carbolic acid, or peroxide

of hydrogen. This should be repeated, by the patient, two or three times a day. Often the liquid forced through the new opening will find an exit into the nose. When pus has ceased to escape, the outer end of the drainage-tube may be permanently filled with a gold or other plug, in order to prevent the continuous and annoying discharge of normal mucus.

When necessary to remove tumors, an incision may be made into the cheek over the antral prominence, the periosteum pushed to one side, and the bone trephined.

Therapeutics.

Arnica.—If there be symptoms of pyæmia, R. T. Cooper ("Diseases of the Ear") advises this medicine, and adds: "Arnica seems to exert an almost specific effect upon septic poisoning." Von Grauvogl considers it a pyæmic prophylactic.

Puls.—Orange-colored discharge from the nostril, especially the right, in antral abscess.

Compare acon., bell., china, hepar, kali iod., and silica.

Disease of the **frontal sinuses** usually appears as a result of catarrhal conditions accompanying nasal affections; but it may originate in the frontal cells, or be due to syphilis or injury. (See Fig. 54.)

Symptoms.—The symptoms are sensitiveness to pressure; pain, usually very severe, in the frontal region; supra-orbital neuralgia; defective memory; and impaired thought. If abscess form, the symptoms are most distressing,—pain is excessive, diplopia occurs, and the eye is often dislocated and protruded; fever, malaise, and prostration appear.

Sapejko (*An. d'Oculistique*) says: "Displacement of the eye outward and downward in young persons, downward and outward in adults, with almost normal mobility of the eye, means ectasis of the frontal sinus of that side."

The abscess may discharge into the nose through the natural canal, it may project the bone forward and require incision

from without, or it may find an exit at the angle of the orbit or into the brain. If a fistula exist at the anterior or superior border of the orbit, with pulsation of pus or muco-pus, there need be little doubt of its connection with the frontal sinus.

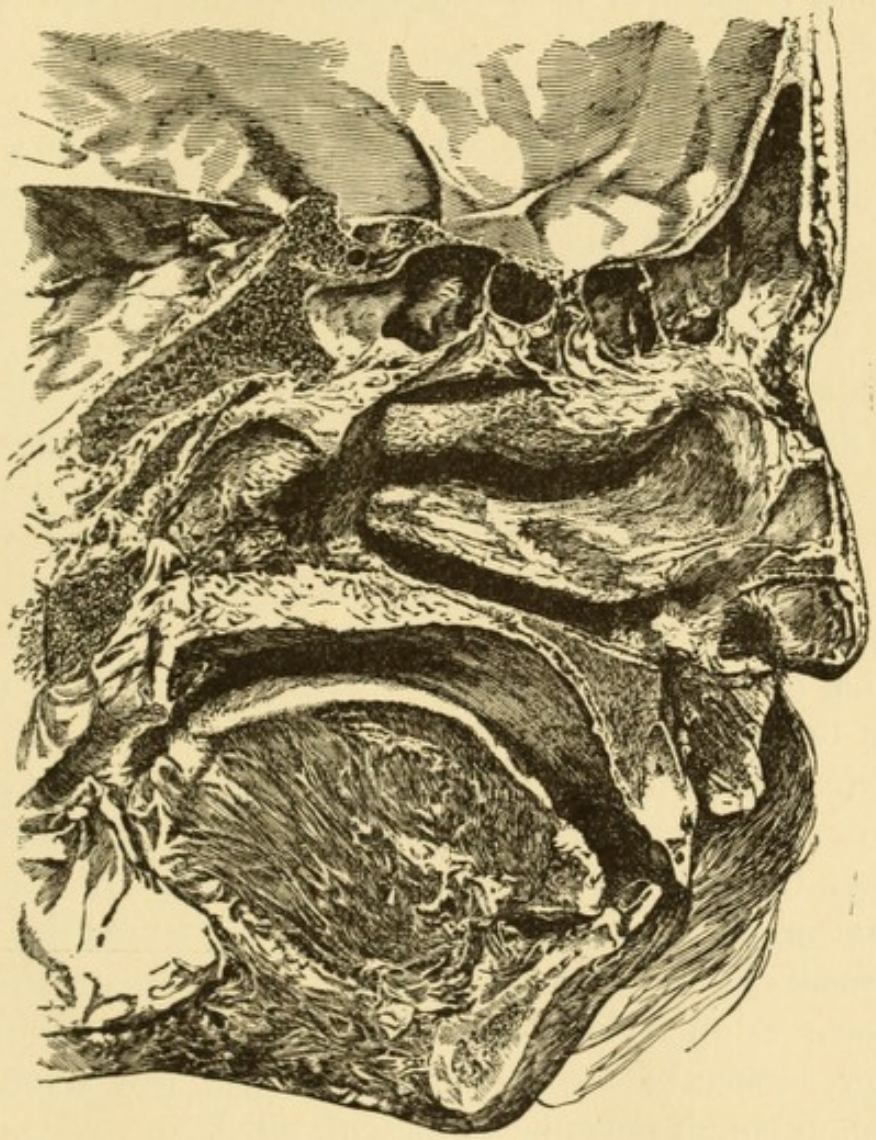


FIG. 54.—VERTICO-ANTERO-POSTERIOR SECTION. SEPTUM REMOVED, DURING SECTION, REVEALING LEFT NASAL REGION. (From a photograph.)

When the abscess empties through the temporarily closed infundibulum, there will be a profuse flow of pus into the nose, followed by immediate improvement. In ordinary catarrhal conditions of the frontal sinuses, the symptoms are relieved by the free discharge of mucus from the cavities. If the outlet become

permanently blocked, an accumulation of mucus will give rise to hydrops, and a purulent collection to empyema of the cavities. Sometimes new growths occur in the frontal cells, and, although osteomata are the most frequent, mucous polypi and cysts may form. All are accompanied by severe brow-pain and supra-orbital neuralgia.

As the result of accident or syphilis, the bone covering may be partially destroyed, opening the cavity from the forehead and giving rise to chronic suppuration. The cells are occasionally dilated on account of repeated mucous or purulent collections, resulting in many of the symptoms enumerated under abscess. As these swellings press backward against the brain, symptoms of brain-lesion may be present, but, owing to the gradual dilatation, the brain-recession may be so insidious as to avoid any such symptoms. Occasionally, hernia of the mucous lining occurs, so that, at each time the nose is vigorously blown, air enters and distends the sac.

Treatment.—If there be temporary closure of the infundibulum, relief will usually follow internal medication directed chiefly to the nasal condition. Sang. can., hepar, kali mur., puls., etc., are often indicated. Applications of iodide of glycerin (10 grains to 1 ounce), menthol (2 per cent), or menthol and camphor (3 grains of each to 1 ounce of glycerin), made to the mucous membrane of the middle meatus near the hiatus; or a small piece of absorbent cotton, thoroughly soaked in a 4-per-cent solution of cocaine, carefully passed up over the anterior surface of the inferior turbinated, will usually give prompt, although sometimes transient, relief.

Some have advised and even practiced passing a probe or style through the canal to the frontal sinus. As this is very difficult, and often impossible, it may become necessary to make an opening from without. The skin should be divided immediately below the eyebrow, near the bridge of the nose, the periosteum pushed back, and the bone perforated with a small trephine or drill. Relief may follow perforation of the anterior

plate; care should be exercised not to penetrate the cranial cavity. The opening made, it is advisable to attempt the passage of a probe through the infundibulum, or, failing in this, a small bistoury may be passed into it, after which the probe will follow, as in operations upon the lachrymal apparatus. This accomplished, a drainage-tube should be inserted into the naso-frontal passage and the wound kept clean by syringing with antiseptic warm water. As deformity usually follows trephining, and as sepsis is apt to occur, the operation should not be undertaken, if milder means offer hope. When tumors are to be removed, it may be necessary to first trephine or chisel away the bone. Herniæ may require some form of pressure appliance; in one case reported, the removal of a piece of necrosed bone resulted in a "radical cure" of the hernia. When the tissues are emphysematous, a pressure bandage will afford relief.

Following operations upon the frontal cavities, the same care is required as in other operations, and similar medicines may be indicated.

The **ethmoid cells** are quite frequently involved in nasal catarrh, less frequently in abscess-formations. Where some of the individual cells have been fractured, emphysema may result while forcibly blowing the nose. Ethmoid disease develops from nasal catarrh, either acute or chronic; polypi or other tumors; and traumatism.

Symptoms.—The symptoms are: severe pain in the lower frontal region and exophthalmos, if there be much thickening of the ethmoidal tissue; if ethmoiditis exist, the septum may be greatly thickened, impairing nasal respiration. Pus may be seen issuing, from the posterior cells, near the junction of the middle and posterior thirds of the upper surface of the middle turbinated, and, from the anterior and middle cells, from beneath the middle turbinated, as in antral suppuration. Nasal neoplasms, especially mucous polypi, sometimes have their origin in

the ethmoid cells; finally, the ethmoid may become ivory-like, from the existence of an osteoma.

Prognosis.—The prognosis of the simple catarrhal affection is usually good; suppurative changes are difficult to cure, but are not dangerous to life, unless they extend to the cranial cavity. Ethmoiditis may result in polypoid growths or necrosis.

Treatment.—The treatment consists in thorough cleanliness of the nasal cavity in the region of the ethmoid openings, and, in some cases, surgical interference, chiefly by snaring off the middle turbinated bone, and, if necessary, drilling or curetting into the cells.

The **sphenoid cells** are, so far as known, very rarely diseased, but, as they are so situated as to render examination impossible and diagnosis extremely difficult, their diseased condition may be overlooked. This difficulty in diagnosis is augmented by the fact that nearly the same symptoms may arise from disease of the antrum; and Rougé has recorded one case in which he diagnosed disease of the maxillary sinus, which, when opened, was found normal, but the sphenoid sinuses furnished a large collection of pus. Owing to the difficulty of normal drainage of these cells, the secretions do not flow off freely, so that mucous and purulent accumulations may sometimes exist; tumors are infrequent. Owing to the proximity of the brain, great danger is to be apprehended from any decided collection within the sphenoid cells, and sudden unilateral blindness may arise from involvement of the optic-nerve sheath. Fortunately, such accumulations usually find an exit by the natural opening before serious damage occurs. Operations upon the cells are not only difficult, but very dangerous; although the sinus might be opened through the nose, or by means of a curved trocar passed back of the soft palate. As yet, however, such procedures are too dangerous to be recommended. Tumors of the sphenoid may occasion symptoms similar to the preceding, and, like purulent collections, may

enter the cranial cavity, causing cephalalgia, meningitis, cerebritis, hæmorrhage, and death. Epileptic seizures are possible.

According to E. Beyer, of Gratz (*Ann. Univ. Med. Sci.*, 1889), wounds of the sphenoid bone may result "(1) in fissures of the superior wall of the sinus, continuous trickling of cerebro-spinal fluid; (2) ruptures of a fragment of the body of the bone may wound the internal carotid to the inside of the cavernous sinus and cause pulsating exophthalmia; (3) continuation of the fissure in the canal of the optic nerve will cause compression or rupture of the optic nerve, and, consequently, amaurosis; (4) if the fissure extend to the oval or round foramen, it will produce anæsthesia of the second and third branches of the trifacial, and a rupture or wound of other and cerebral nerves may present simultaneously."

It should be noted that in all the cavities maggots and other parasites may accumulate and give rise to intense suffering. Virchow has demonstrated the occasional presence of a calcareous lining of the pneumatic cavities, which may extend to the mucous membrane of the nose through the various cell-outlets.

PART II.

The Pharynx and its Diseases.

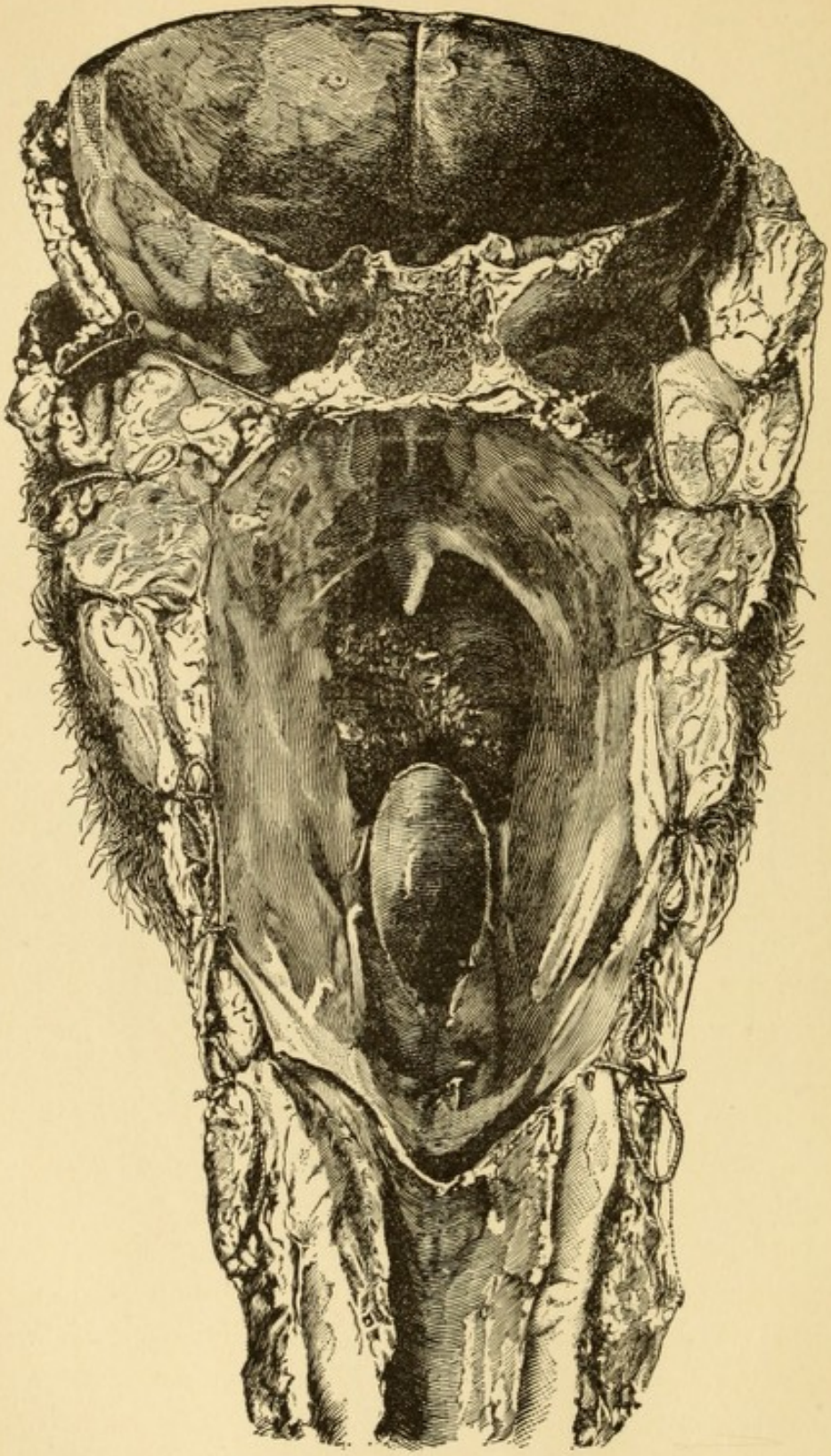


FIG. 55.—VERTICAL SECTION THROUGH BASILAR PROCESS.
(From a photograph.)

Upper and posterior portions of skull and the spinal column removed. Posterior pharyngeal wall divided vertically and stitched aside, revealing the naso-pharyngo-laryngo-œsophageal region; looking forward.

CHAPTER XII.

Anatomy and Physiology of the Palate and Pharynx.

The palate is composed of an anterior (hard) and a posterior (soft) portion. The former is bounded anteriorly and laterally by the alveolar processes, posteriorly by the soft palate. The mucous covering is tightly adherent to the periosteum; it has a median ridge and lateral corrugations, and is lined with squamous epithelium; under it are numerous glands. The soft palate (velum pendulum palati) is attached to the posterior border of the hard palate,—with which it is continuous,—the lateral walls of the pharynx, the edges of the base of the tongue, and the nasal fossæ. It is a movable, membranous curtain, the lower border of which is free, and, when relaxed, generally rests on the tongue, separating the mouth from the pharynx; but, when elevated, the curtain is withdrawn, revealing a new cavity,—the oro-pharynx. The soft palate is composed of layers of muscular fibres and aponeuroses; contains vessels, nerves, and glands, and is covered on both sides with mucous membrane. Like the hard palate, it has a median raphé on its oral surface, which marks the line of union between the two sides; occasionally, however, this bond of union is incomplete, and a cleft results. This may appear both in the hard and soft palates; as a result, there may be regurgitation of food, defective articulation, imperfect resonance, etc.

Extending from the soft palate, on each side, are two folds of tissue. Each anterior mucous fold incloses the corresponding palato-glossus muscle, and is known as the anterior half-arch, or anterior pillar of the fauces; it passes to the tongue and acts as a constrictor of the fauces. The posterior folds, half-arches, or pillars of the fauces, contain the palato-pharyngei muscles, which pass to the pharynx. Between the anterior and

posterior arch of each side is one of the faucial tonsils, the tonsils of daily speech, which form the lateral boundaries of the fauces. The anterior boundary of the fauces is an imaginary plane drawn between the anterior pillars; the posterior boundary is a similar plane drawn between the posterior pillars. The base of the tongue forms the lower boundary.

The *uvula* partially divides the faucial space into the arcades. This little appendage is covered with mucous membrane, and is composed of connective tissue, glands, and the posterior extremities of the two azygos uvulæ muscles, which

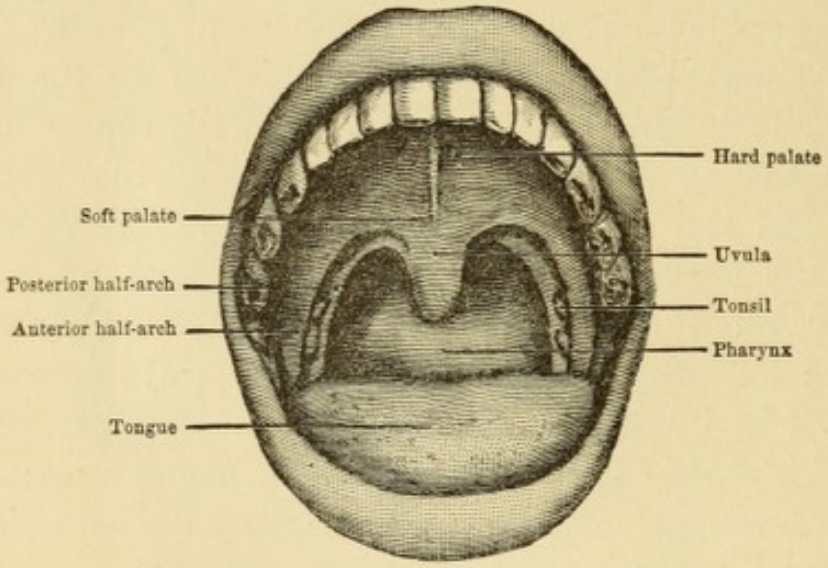


FIG. 56.—THE NORMAL PALATE AND PHARYNX.

lie side by side in the median line of the soft palate. Their functions are to elevate the uvula and aid the palato-pharyngei muscles in separating the mouth and pharynx. The uvula seems to aid in swallowing, in tone production, and in directing the post-nasal glandular secretions to the lingual tonsil.

In addition to the muscles considered, namely, the palato-glossi, palato-pharyngei, and azygos uvulæ, there are two other pairs of palatine muscles,—the levator palati, which serve to raise the soft palate, and the tensor palati, the action of which is indicated. These various muscles aid both in deglutition and in vocalization, while the levator palati have another function,—

that of aiding in opening the mouths of the Eustachian tubes, thus permitting aëration of the middle ears. Therefore, these muscles have much for which to be accountable, as they are instrumental in many cases of deafness.

The *faucial tonsils*, or *amygdalæ*, are oval glands, the size and shape of a hazel-nut. In health they should rarely be seen, unless the anterior pillar be pushed aside; yet they vary much in size, form, and color within normal limits. Each gland is imbedded in the faucial, peritonsillar tissue, and inclosed in a capsule of connective tissue. On the free surface are from eight to eighteen openings, the entrances to the crypts (tonsillar lacunæ, or follicular glands). In addition to these, the tonsils contain "single-layer cavities, each of which includes several follicular folds and procures their common discharge at the periphery. The crypts of largest size and greatest depth are filled more or less with a yellowish substance composed of fat-molecules, loosened pavement epithelium, lymph-corpuscles, small molecular granules, and cholesterin crystals." (Bryson Delavan.) They contain no mucous glands. Their functions seem to be, as suggested by Kingston Fox (*Jour. Anatomy and Physiology*, 1886), that of absorbing the superabundant saliva. They may absorb septic germs as well. As, however, these organs secrete a clear, viscid liquid, there can be little doubt that a part of their duty is to lubricate the food, thus aiding its passage through the faucial canal, pharynx, and œsophagus. It is generally believed that the tonsils, in common with other ductless glands, modify the blood elements and aid in the formation of the white corpuscles. Killian (*Morphol. Jahrbuch*, Bd. xiv) thinks the contained leucocytes have the power to destroy micro-organisms. It may be said, however, that the exact physiology of the normal faucial tonsils is still open for investigation.

In the vault of the pharynx is an aggregation of follicular glands, known as the *pharyngeal*, *third*, or *Luschka's tonsil*. Its anatomical structure is similar to that of the faucial tonsils.

Its physiological function is said to be that of lubricating the parts directly below, of absorbing waste nasal and lachrymal secretions while the body is recumbent, and of aiding blood formation. It is a reddish mass, and projects somewhat from the level of the surrounding mucous membrane. Until recently a bursa (pharyngeal bursa) was believed to have an anatomical existence in the centre of the pharyngeal tonsil. It is a fissure, presumably the remains of a fœtal fissure, in the centre of

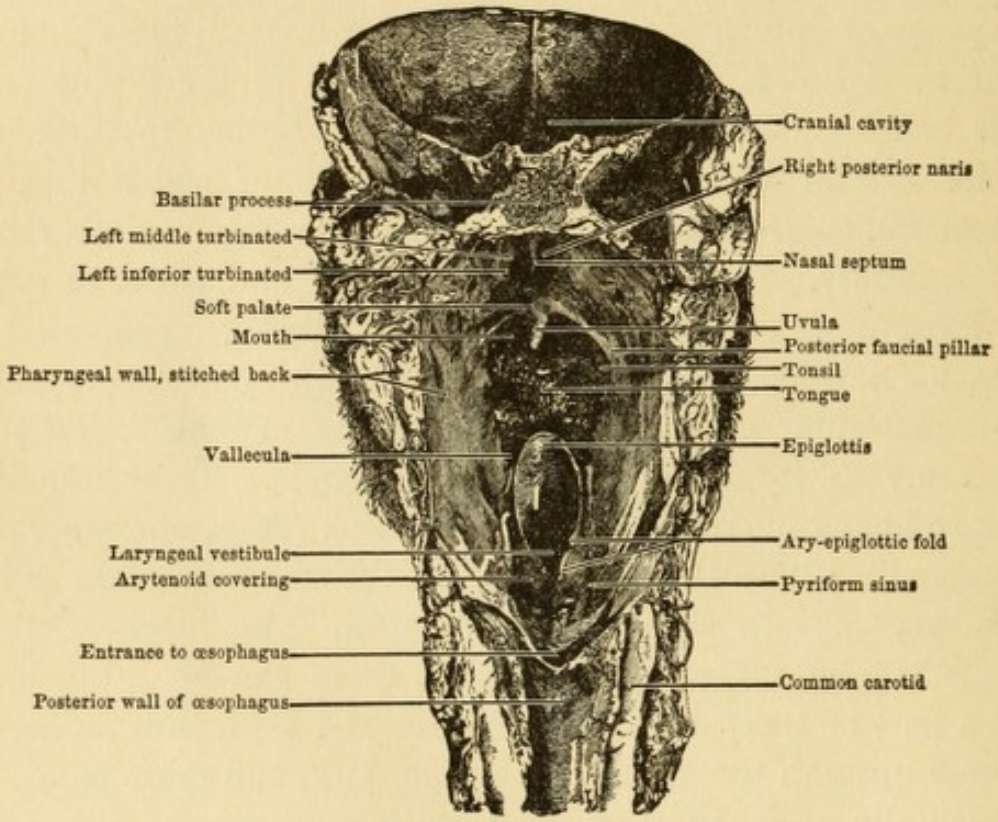


FIG. 57.—KEY TO FIG. 55.

which is a small opening. Ganghofner says the so-called bursa pharyngea is a more or less deep depression or cavity. The opening of this depression is sometimes quite small, and, doubtless, retention cysts of considerable size occur, owing to the inflammatory narrowing or closure of this opening. Besides the pharyngeal tonsil, the naso-pharynx contains numerous isolated follicular and conglomerate glands.

The *lingual*, or *fourth tonsil*, situated at the base of the

tongue, directly in front of the epiglottis, seems to have uses in the economy similar to the other tonsils. It receives much of its fluid for absorption from the tip of the uvula. All of the tonsils are analogous to Peyer's patches.

The *throat*, *pharynx*, or *pharyngeal space* is that cavity which extends from the base of the skull above to the lower, posterior edge of the cricoid cartilage below, where it ends in the œsophagus. It is from four to five inches long, quite elastic, and capable of expansion and contraction. It is largest above and smallest at its lower end. It is freely movable in all directions. Posteriorly, the pharynx is attached to the bodies of the first four cervical vertebræ; laterally, it is in relation with the large vessels and nerves of the neck; anteriorly, it has three extensive openings,—one above, into the nose; a second near the centre, into the mouth; and a third near its lower portion, into the larynx. (See Figs. 55, 57, and 58.)

It is customary to divide the pharynx into three parts,—an upper, naso-pharynx, which extends from the vault to the level of the base of the uvula; a middle, oro-pharynx, from the base of the uvula to the base of the tongue; and an inferior, laryngo-pharynx, from the base of the tongue to the beginning of the œsophagus.

The *naso-* or *respiratory pharynx* is bounded in front by the posterior portion of the nasal space, the septum, turbinateds, and posterior surface of the soft palate; posteriorly, it is limited by the tissues covering the vertebral column; laterally, by the mouths of the Eustachian tubes (sometimes congenitally occluded) and Rosenmüller's fossæ (pharyngeal recesses). The *oro-pharynx* is bounded by the uvula, fauces, and base of the tongue, in front; posteriorly, it has the same limitation as the naso-pharynx; laterally, it is confined by the muscles of the sides of the pharynx. This is the channel for air and food, and forms the upper part of the so-called alimentary pharynx, the lower portion of which is the *laryngo-pharynx*. This latter division is bounded posteriorly as the others, anteriorly

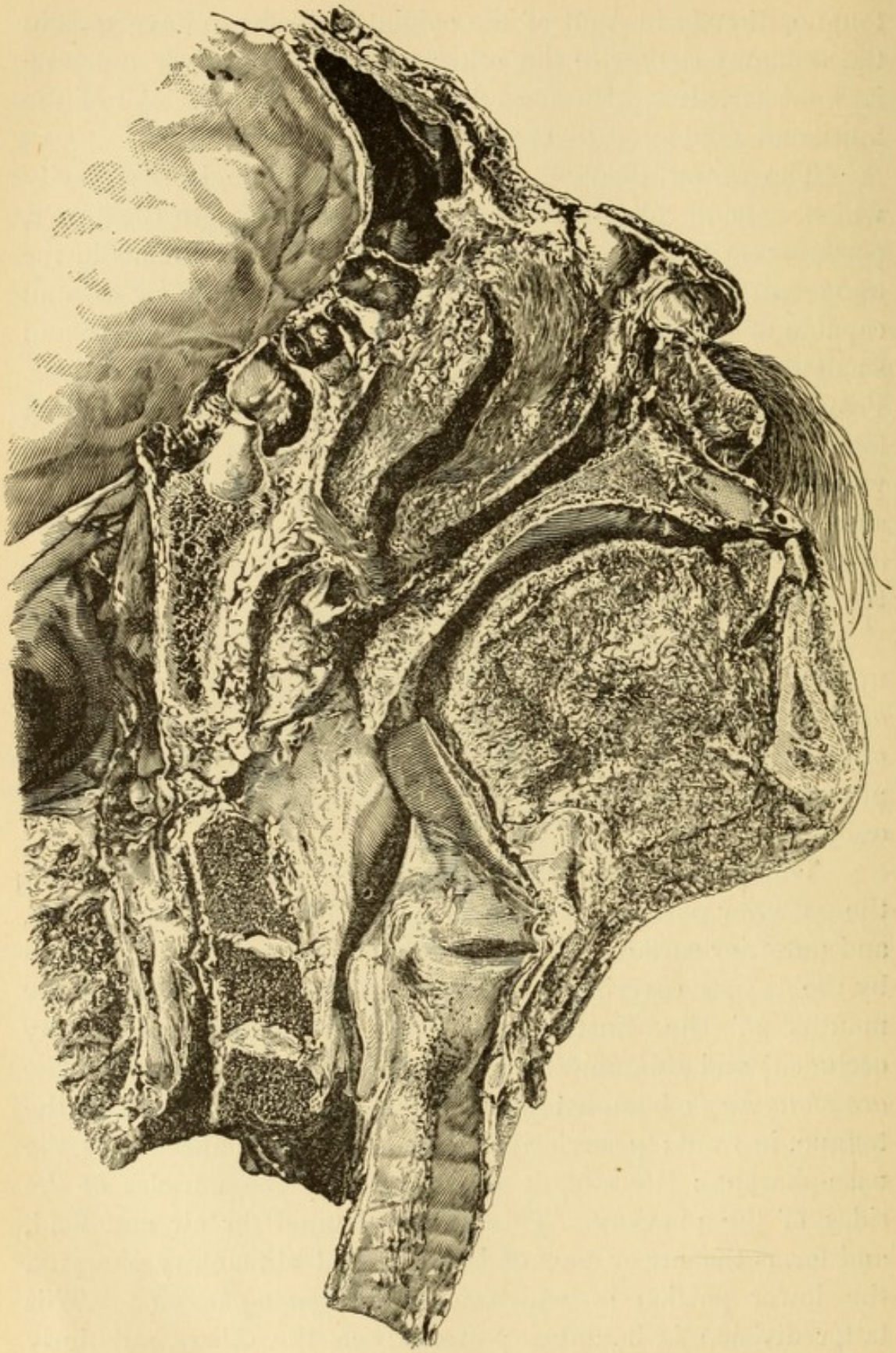
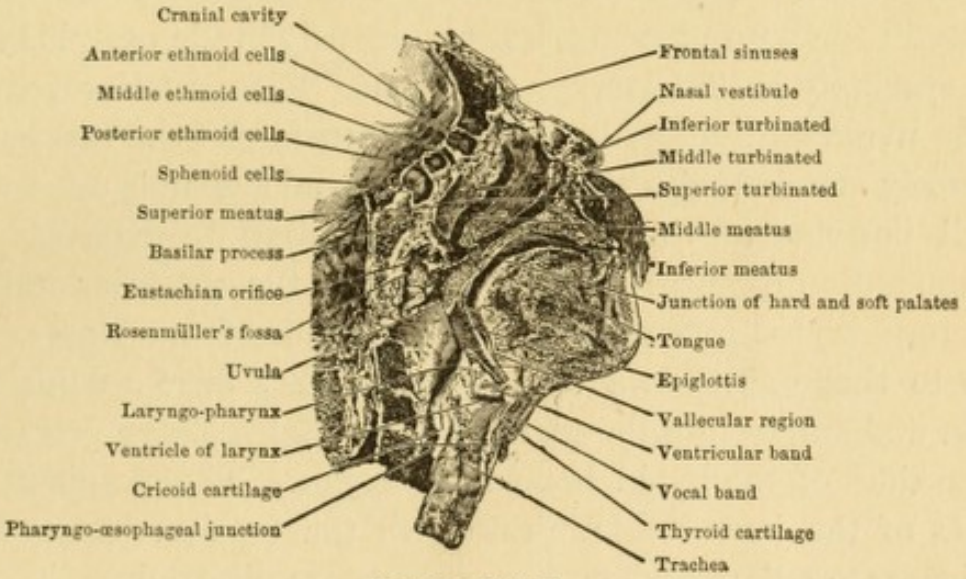


FIG. 58.—ANTERO-POSTERO-VERTICAL SECTION, REVEALING NASO-PHARYNGO-LARYNGEAL REGION. Compare Frontispiece. (From a photograph.)

by the larynx, and laterally by the same class of structures as furnish boundary for the oro-pharynx.

In front and back of the mouths of the Eustachian tubes are two prominent folds of tissue,—the Eustachian lips. Back of each posterior lip is one of the fossæ of Rosenmüller; these contain both mucous glands and adenoid tissue. At the lower end of the naso-pharynx is a fold of tissue, composed of mucous membrane, muscles, and glands, which stretches directly across the posterior pharyngeal wall at this point. This is known as the plica salpingo-pharyngea; it assists in the closure of the



KEY TO FIG. 58.

respiratory pharynx during deglutition. It moves downward and inward during phonation and deglutition, shutting off the superior from the middle pharynx. Its action is best seen in those who have cleft palate.

The oro-pharynx needs no further consideration.

The anterior portion of the laryngo-pharynx opens into the larynx and the lower into the œsophagus. Anteriorly, it is bounded by the epiglottis and the base of the tongue; the pyriform sinuses (Fig. 55) are at the anterior lateral portions, being the spaces between the thyroid cartilage and the vestibule of the larynx. Between the base of the tongue and the epiglottis

are the valleculæ, into which food and other foreign substances are apt to fall.

The entire pharynx is lined with *mucous membrane* continuous with that of the nose and ears above, the mouth in front, and the larynx and œsophagus below. The naso-pharyngeal membrane is lined with columnar ciliated epithelium, the rest of the pharynx with the squamous, pavement, form. The mucous membrane is freely supplied with glands, blood-vessels, lymphatics, and nerves.

The *glands* imbedded in it are of two kinds,—racemose and follicular. The former (acinous, or racemose) are found chiefly in the naso-pharynx, less abundantly in the oro-pharynx, and sparingly in the laryngo-pharynx. The posterior portion of the uvula and the posterior superior surface of the soft palate are freely studded with them. The follicular glands are found in all portions of the pharynx. According to Kölliker, an agglomeration of these glands is found in the posterior wall of the oro-pharynx, extending from the mouth of one Eustachian tube to that of the other. The lymphatics form a dense network, and empty into the glands at the angles of the jaws and at the sides of the hyoid bone and larynx. The glands at the angles of the jaws communicate with the tonsils; hence their proneness to enlarge when these organs are diseased.

The posterior portion of the pharynx, as well as the greater part of the lateral walls, is lined with a strong fibrous tissue attached to the anterior surface of the vertebral column, with which it is in relation by means of retro-pharyngeal cellular tissue. To this fibrous tissue are attached the constrictor and other muscles.

The *arteries* of the pharynx are the superior and ascending palatine, the tonsillar, the ascending pharyngeal, the terminal branches of the internal maxillary and vidian, and the pharyngea suprema. Occasionally, the vertebral artery is seen pulsating in front of the bodies of the vertebræ. The superior and ascending palatine arteries go to the palate and the tonsillar

to the tonsils, lateral walls of the pharynx, and root of the tongue. The veins form two plexuses.

The sensory *nerves* spring chiefly from the trigeminus, and participate in the functions of taste, secretion, and reflex muscular control. Meckel's ganglion supplies some of the tissues, while the gustatory portions of this region receive their nerve-supply from the glosso-pharyngeal. Most of the secretory branches arise from the chorda tympani. The motor nerves arise from the third division of the fifth, the facial, and the spinal accessory.

The *muscles* of the pharynx are quite numerous, the most important of which are the stylo-pharyngei, which elevate the pharynx for the reception of food from the mouth, and the three constrictors—the superior, middle, and inferior—which, in turn, contract upon food and force it from above downward. They arise from the sphenoid and palatine bones, from the hyoid bone and stylo-hyoid ligament, and from the sides of the cricoid and thyroid cartilages, respectively. They are all inserted into the fibrous aponeurosis of the pharynx posteriorly.

Ruedinger has shown that there exists a special muscular stratum between the glands of the palate and the muscular tissue, by which, in conjunction with the various muscles, the glands are compressed.

The œsophagus extends from the lower end of the pharynx, back of the trachea, to the stomach; its upper extremity is seen (by reflected light) as a transverse shadow-line, as it is only opened by the entrance or exit of gases, fluids, or solids. It can, however, be dilated with the œsophagoscope, when its interior may be viewed.

CHAPTER XIII.

Examination of the Pharynx—Pharyngoscopy.

The illumination and position of the patient are practically the same for pharyngeal as for posterior rhinoscopic examination. During the inspection of the fauces and oro-pharynx, the patient can usually depress the tongue and elevate the soft palate and uvula sufficiently to permit a fair view; where this cannot be done, however, some form of tongue-depressor will be a necessity. These depressors vary from a smooth stick, probe, or spoon-handle to instruments especially constructed for the purpose. The simplest and most useful depressor is the back of a rhinoscopic or laryngoscopic mirror. It is light, easily handled, and, when once in the mouth, can be used to examine the naso-pharynx, the laryngo-pharynx, or the larynx. This is a great desideratum, especially with children and very nervous adults.

In selecting a regular tongue-depressor, it is well to see that it is aseptic; that is, with no roughness or transverse serrations for the lodgment of dirt, germs, or disease products. Smooth, slightly concave, hard-rubber, celluloid, or plated metal is the nicest surface to place in contact with the tongue, although fenestrated, wire tongue-depressors answer every purpose. After contact with the mouth or nose, every instrument should be thoroughly washed in a disinfecting solution and wiped before further use. A cherry-colored solution of permanganate of potassium seems least objectionable and sufficiently germ-destroying for all save such diseases as diphtheria and syphilis. For the latter special instruments should be used, and in no case should a throat instrument once used near a secondary syphilitic ulceration or mucous patch be used for non-syphilitic cases.

When depressing the tongue, the patient should be re-

quested to open his mouth without moving his tongue from its position. The depressor should be introduced well toward the back of the tongue, and gentle, but firm, pressure exerted downward and forward; at first the tongue may push against the instrument and rise above its former level, but a moment's gentle pressure will serve to depress it. In the majority of subjects, however, no force will be required, as the tongue will at once yield; on the other hand, the patient may be so sensitive as not to permit the entrance of any instrument within the mouth. It may then become necessary to institute gentle but careful practice; this failing, the patient may be requested to hold pieces of ice or iced water in his mouth, or (rarely) the

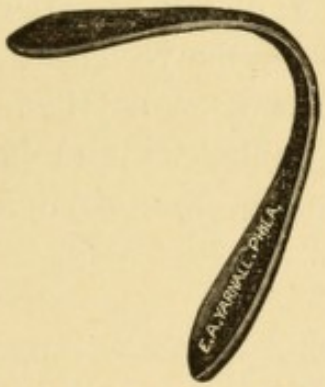


FIG. 59.—COHEN'S HARD-RUBBER TONGUE-DEPRESSOR.

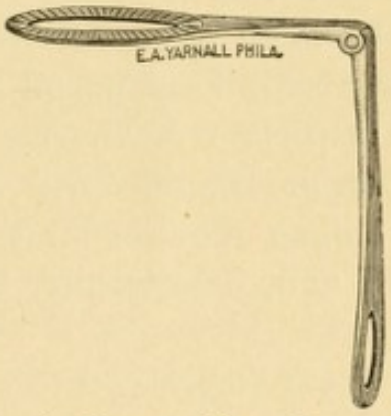


FIG. 60.—HINGED METAL TONGUE-DEPRESSOR.

mouth and throat may be sprayed with a 2- to 4-per-cent solution of cocaine. When examining an exceedingly refractory child, who will not open his mouth, the nostrils should be tightly closed for a few moments, when the lips (and generally the mouth) must of necessity open. As children will sometimes bite, it is important, before introducing the finger into the mouth for the purpose of examination, to protect it by a guard (Fig. 18, page 25), made of either metal or leather.

In making an examination of the throat, it is advisable to look at the lips and inside of the cheeks for the presence of mucous patches, ulcers, new growths, anæmia, etc.; the gums for vascular, scorbutic, phthisical, or lupoid changes; the teeth

for hereditary syphilis, overcrowding, necrosis, and capability to properly masticate; the tongue as a general guide and index; the hard palate, especially with reference to anæmia, hyperæmia, syphilitic and parasitic affections; the soft palate as to color, diphtheritic and other deposits, parasites, syphilitic gummata and ulcers, phthisis, mobility, clefts, etc.; the uvula as to retraction, relaxation, new growths, malformation, etc.; the half-arches as to color, adhesion to the tonsils, new growths, ulceration, etc.; and the tonsils with reference to size, ulceration, inflammation, abscess, new growths, etc.

The oro-pharynx should be rather pink, smooth, moist, and lustrous; but to these there are some physiological exceptions: thus, there may be slight irregularity, or one side of the pharynx may be more prominent than the other, owing to correspondingly greater development of the bodies of the vertebræ.

Inspection of the naso-pharynx has been detailed under "Posterior Rhinoscopy." The laryngo-pharynx and base of the tongue require, for their examination, the laryngoscopic mirror and, occasionally, the finger.

CHAPTER XIV.

Pharyngeal Diseases.

ACUTE CATARRHAL PHARYNGITIS.

Although the pharynx receives the force of the inflammation, the uvula, tonsils, fauces, and even the soft palate rarely escape. As the inflammation descends, the larynx often suffers, the extent of its involvement depending upon the severity of the attack, the already weakened condition of the organ, and the force of the exciting causes. In the first place, the vasomotor nerves receive a shock from which they do not promptly recover, the capillaries are dilated, the blood-current slowed, leucocytes escape, and the mucous cells wander, giving rise to an inflammatory process. The follicles of the pharynx and tonsils participate, although not so exclusively or extensively as in true follicular pharyngitis or tonsillitis.

While the force of the attack is expended upon the mucous membrane, the deeper tissues do not escape; as a result, there is often marked infiltration and an exudation of a cheesy material from the tonsils, or even from the surface of the pharynx. In addition, there is sometimes transudation of the serous properties of the blood, giving rise to veritable œdema.

Etiology.—The causes of this affection are numerous, the chief of which is the contraction of "cold" from draughts of air, either warm or cold; from profound chilling, the result of exposure; from too sudden changes of temperature, want of proper food or clothing, wet feet, alcoholism, mechanical irritants, tobacco, numerous irritant drugs, etc. The pharynx may offer the least resistance, and thus become inflamed, unless promptly treated. The person attacked may have been singing or speaking and gone into the cold air before he was thoroughly cooled, or he may have neglected his customary, but pernicious,

habit of wrapping or muffling the neck. Spring and autumn (the changeable seasons) furnish a large proportion of such attacks. Children suffer more than adults, women more than men. The scrofulous and syphilitic diatheses act unfavorably in youth. In adults, rheumatism, gout, poor or too highly seasoned food, improper clothing, bad hygiene, vitiated atmosphere, sedentary habits, tobacco, and alcohol each has its share of the burden in producing acute pharyngitis.

Symptoms.—The attack may be ushered in by a chill or, more usually, by a feeling of malaise and chilliness, rise of temperature, headache, and pain in various joints; the neck and back frequently ache; the cervical glands swell; and pain, soreness, and sticking are often constant on one or both sides, aggravated, however, by deglutition. During the latter function, pain may shoot up into the ears through the Eustachian tubes. Air inhaled may seem cold or hot, and the throat is usually dry and stiff. Thirst is often considerable and attended by frequent efforts at empty swallowing, usually more painful than deglutition of large mouthfuls of food or liquid, which generally relieve by their moisture. The voice is thick; there may be repeated efforts to clear the throat of a viscid, transparent, grayish mucus; and the hearing is frequently affected from involvement of the Eustachian mucous membrane. Should the larynx be involved, hoarseness, irritating cough, and a fullness or painful sensation in that organ usually result. The neck is often stiff and the laryngeal region tender.

Early inspection of the pharynx reveals a congested and often a dry, glazed surface; later, it becomes thickened, frequently irregularly roughened from swelling of the follicles, and partially covered with a glossy, gluey, or brownish secretion, through which enlarged vessels are often seen. This appearance is sometimes mistaken for mucous patches. The fauces participate in the inflammatory process; the uvula is generally elongated, thickened, and sometimes œdematous; the soft palate congested; and the tonsils somewhat enlarged and at times

studded, especially on their posterior portions, with spots of whitish deposit, the secretion from inflamed follicles. This is easily removed, is not followed by any bleeding, and does not leave an abraded surface, as in diphtheria. If both tonsils and uvula be swelled, the breathing is rendered somewhat difficult, especially in children. At first the expectoration is slight and accompanied by painful efforts to dislodge, but later it becomes profuse, muco-purulent, purulent, or bloody, and, usually, readily removed. Should the larynx be implicated, its lining membrane will be congested or even well inflamed. As the disease subsides the cervical glands, if enlarged, decrease in size, tension, and tenderness, and the pain on deglutition grows less: but the symptoms may pass away suddenly.

Prognosis.—As the disorder is usually a mild one, prompt recovery is the rule; but occasionally the process of resolution is incomplete, leaving the throat subject to chronic catarrh or to another attack at the next unusual exposure. The duration of the attack is usually from two to eight, rarely ten to fourteen, days, the average being about four, provided prompt treatment be instituted. As a rule, the attack can be aborted. One of the worst features is the implication of the larynx, which usually augments the duration of the inflammation.

Treatment.—The treatment is usually clearly defined and the remedy well indicated. The patient can often be made more comfortable by the use of carefully directed local measures, first of which is the use of a spray of a fluid petroleum preparation: pieces of ice, held in the mouth, are grateful to many patients, while to others warm water is more soothing. When there is œdema, tannic-acid applications, 15 grains to the ounce of glycerin or fluid albolene, are of value. Gargles are of considerable utility if the procedure be carried out according to the method of Hagen, but, as usually practiced, the fluid used rarely passes the limits of the posterior pillars. Hagen advises that the mouth be a little more than half filled with the gargle, the head bent back, the mouth widely opened, and a complete

movement of deglutition performed, with the mouth open; if necessary, a wedge may be placed between the teeth. Little, if any, of the fluid will reach the stomach. The air is then allowed to gurgle through the liquid as long as possible, when the tip of the tongue is to be placed against the upper incisors and the head thrown quickly forward, followed by the ejection of the fluid through the nose. Oily sprays and nebulæ are both soothing and beneficial.

The food should be bland and usually soft, and, if the attack be severe, chiefly liquid. Hygienic care is important,

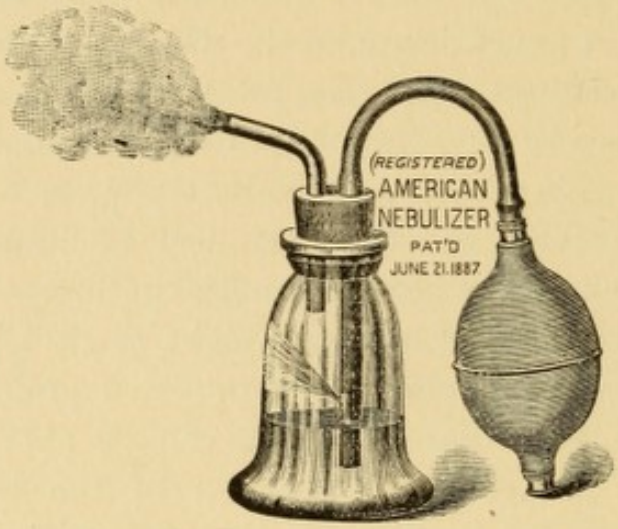


FIG. 61.—THE AMERICAN NEBULIZER.

and will be found sufficiently considered under "Chronic Pharyngitis."

Therapeutics.

Ammon. mur.—Sore throat, with a viscid phlegm so tough that it cannot be hawked up. Throat swelled externally and internally. Sensation of rawness in the naso-pharynx and pharynx. Hoarseness, with burning in the larynx.

Amygd. pers.—"Angina faucium, with soreness and aching pains, but without any characteristics calling for other remedies.—Jeans." (Korndœrfer.)

Apis.—Throat feels constricted, as if a foreign body were in it; burning, stinging pains; swelling or œdema of the uvula

and fauces; tonsils red and swelled; pharynx shiny and puffed; difficult deglutition and respiration.

Bell.—Bright-red throat; pains (right side the worse) extend up the Eustachian tubes; painful or impossible deglutition, yet constant effort to swallow; fluid escapes through the nose. Anterior cervical glands swelled and tender, even before the throat feels sore.

Caps.—Elongated and œdematous uvula; dusky-red fauces and pharynx; burning soreness.

Dolichos.—"Pain, as from a splinter, near the right tonsil; worse when swallowing. This pain like a splinter reminds us of hepar, silic., carbo veg., and nitr. ac." (Dr. A. Korndœrfer, *Hahnemannian Monthly*, June, 1890.)

Fer. phos.—Throat, palate, fauces, and tonsils dry, red, burning, and painful. High fever.

Guaiac.—"In the ordinary forms of pharyngitis, such as so frequently develop after cold, it is nearly a specific remedy, much superior to bell. and other medicines which are generally prescribed." (W. C. Goodno, *Hahnemannian Monthly*, February, 1891.)

Iodide of silver.—"Swelling in the submaxillary-gland region; stiff neck; difficult deglutition; has to force food down; viscid, gray, jelly-like mucus, easily expectorated early in the morning. Throat raw and sore; when yawning, painful tension in the fauces. Constriction in the throat, impeding deglutition; ulcer in the throat, with swelling of the glands of the neck (chlor. gold)." (E. M. Hale, *Trans. Amer. Ins. Hom.*, 1889.)

Kali bi.—Mucus thick, tough, stringy, viscid; pharyngeal fullness, rawness, and burning; shooting pains through the tonsils and up the Eustachian tubes; membrane red or pale and relaxed.

Kali mur.—Although purely clinical, I have come to regard the following symptom as an integral part of the kali-mur. picture: A dry, stiff, burning sensation, confined to the naso-

pharynx; gaping, and, to a less extent, deglutition, produces a painful feeling, which might be likened to the crumpling of a varnished throat.

Lach.—The subjective symptoms are often much worse than the appearance would indicate; as a rule, little change is noted at first (many times verified). The throat feels constricted; constant desire to swallow, although difficult and painful; throat dry, shining, dusky red, mottled. Tenacious mucus; pain extending up to the ears (left worse). External tenderness.

Merc. iod. ruber.—The following (clinical) symptoms have repeatedly disappeared during the administration of the 3 x in 1-grain doses every four hours. A white, follicular point with a red areola on the left posterior pillar; sensation of a sore spot, with or without the foregoing; sticking on swallowing saliva, but scarcely noticeable when swallowing food or liquid. This condition is associated with pharyngitis, and is especially noticed in those who have been in attendance upon diphtheritic patients.

Merc. sol.—The tongue is thickly coated, white, and takes the imprint of the teeth; free flow of saliva; metallic odor and taste; pharynx dull-red and swelled; lancinating pains extend to the ears during deglutition; anterior cervical glands swelled; and pain in the muscles of the neck.

Natr. ars.—Thickening of the pharyngeal lining; varicose veins; œdema. Dissecting-room sore throat, with intense dryness, smarting, and burning in the pharynx, I have repeatedly seen cured by natr. ars.

Phyto. "has proved of considerable value in acute pharyngitis, especially in the early stages and when the attack is in a rheumatic or syphilitic subject. The symptoms that call for its administration are: General debility, nausea, and severe headache; stiffness and soreness of the muscles; rheumatic and neuralgic pains in various parts of the body; swelling of the lymphatic and other glands, and irritation of the eyes and

nose. The tongue is rough and sore on the edges, very red at the tip, with severe pain at the root; the throat feels full, dry, rough, and smarting; the soft palate and tonsils are swollen; the mucous membrane of the throat is dark-red, sometimes ulcerated, or there is a dark pseudomembrane upon it; a thick, tenacious saliva fills the fauces, causing hawking and cough; swallowing brings a feeling of a lump in the throat, and severe pain that shoots along the Eustachian tubes through the ears." (Winslow, "The Human Ear.") In addition, it may be said, the throat feels rough, hot, dry, and burning; the lining membrane may be of a dark, bluish red.

Sang. can.—Throat feels as if scalded by hot fluids or as though it would crack; dry, burning not relieved by drinking; pharynx very red.

SUBACUTE CATARRHAL PHARYNGITIS.

Etiology.—Subacute pharyngitis has for its causes similar conditions to those referred to in treating of the acute form. Pathologically, the changes are slight, consisting of mild hyperæmia and blood-stasis, with exceedingly mild inflammation.

Symptoms.—The symptoms calling attention to this affection are aching, dryness, burning, fullness in the throat, and pain or discomfort from "empty" swallowing. Swelling and tenderness of the cervical glands are rather frequent. These symptoms are usually worse in the morning, and often pass off after eating, to return, however, in a short time, or perhaps not till the following day. The affection may last for some days, but its usual duration is short, frequently not longer than a few hours. Inspection rarely reveals more than a slight hyperæmia of the pharynx or tonsils.

Prognosis.—The prognosis is good, although subacute pharyngitis may act as the starting-point of the acute disorder.

Treatment.—Merc. sol. stands as almost the panacea for such a condition. A salt-water gargle and cosmolin spray or nebula are the most useful adjuvants. Gastric disorders should

be regulated and the hygienic principles noted under "Chronic Pharyngitis" considered.

ANGINA ULCEROSA—HÆMORRHAGIC PHARYNGITIS—CACHECTIC ANGINA.

This affection was originally described by Morell Mackenzie and E. Wagner. There appear slightly elevated white or yellowish-white spots, either diffuse or circumscribed. The outer epithelial layers are lost; the deeper are œdematous, purulent, or hæmorrhagic; ulcers may finally result. The condition occurs in impoverished persons, septic states, dissection wounds, etc. The chief remedies are ars. alb. and iod., fer. phos., lach., phos., and sang. can.

CHRONIC CATARRHAL PHARYNGITIS.

Etiology.—The causes of the affection are: incomplete resolution of some of the preceding forms of pharyngitis, chronic nasal catarrh, exposure to irritating vapors or dust, unaccustomed exposure to bad weather, insufficient clothing, damp feet, highly seasoned or hot food, gastro-intestinal disorders, use of the voice in the open or dust-laden air, an improper use of the voice in singing or speaking, etc. It has been denied by some that alcohol and tobacco take an active part either in the production or perpetuation of this affection, but their deleterious influence is now well established upon the testimony of hundreds of trustworthy physicians and patients. If any further elucidation be desired, it may be obtained from Mr. Lennox Browne's "Voice Use and Stimulants." Mouth-breathing, as a cause of chronic pharyngitis, must not be overlooked (see "Physiology of the Nose").

As a result of these influences, the mucous and submucous tissues are thickened (hypertrophied); the glands enlarge, become overactive, and throw off a superabundance of a more or less thick, discolored secretion, which, when exposed to the air, parts with its moisture and dries on the mucous surface. The

chronic change is aggravated with each subsequent acute exacerbation. As the disease progresses, the membrane thus thickened presents an irregularly roughened appearance, with here and there atrophic patches. Ulceration is never present in purely catarrhal pharyngitis, but atrophy may occur late in the affection and lead to a true atrophic pharyngitis. Heryng first described a non-catarrhal ulcerative pharyngitis of short duration, which leaves no scar. Its favorite location is on the lateral walls.

Symptoms.—The symptoms of chronic pharyngitis, although varied, are quite characteristic. They chiefly consist of dryness, fullness, and burning in the throat; and the accumulation of scanty or profuse mucus of a thick, thin, viscid, ropy, tenacious, or lumpy nature, and which may be white, green, yellow, brown, or bloody. The patient usually clears the throat frequently, and at times makes fruitless efforts to expectorate; deglutition may be frequent, painful, and difficult; the voice is often husky, weak, and uncontrollable, and its use fatiguing and followed by hoarseness; the singing compass is generally curtailed and the tones are frequently flat. Irritation of the superior laryngeal nerve may be accountable for the loss of the higher tones and, to some extent, the fatigue and hoarseness. As complications of chronic catarrhal pharyngitis, none are so distressing, so disabling, or so constant as chronic laryngitis. One of the accompaniments of this disease is irritation and cough, arising either from the enlarged glands or vessels, or from the presence of an elongated uvula. The voice is frequently interrupted by a sudden dropping of discharge into the larynx or the dislodgment of secretion from some part of that organ, into which it has gradually trickled from above. Hearing is often impaired, even lost, either from mucous accumulation in the Eustachian orifices or an extension of the catarrhal process to the middle ear.

Should the pharyngitis result from indigestion, the symptoms will be, prominently, a sense of burning and smarting; the

tongue generally more or less coated; the glands somewhat hypertrophied; the mucous membrane rather dull, with some enlarged vessels coursing over its uneven surface: not unusually, the tonsils partake of the hypertrophic process. If of syphilitic origin, without any well-defined characteristics, the membrane may be purplish; if of hepatic origin, the appearance will be much as in the gastric variety. When scrofula has its share in the production of chronic pharyngitis, the cervical and other glands may be involved and the patient present the peculiar scrofulous appearances, the special features of which will be described under "Scrofula of the Pharynx." The same may be said of the phthisical and follicular forms.

The appearances presented in the uncomplicated catarrhal variety are thickening and irregular congestion of the mucous membrane, which is often coated with discolored discharge. The pharynx may be somewhat unevenly hypertrophied, or spots of atrophy may appear, and enlarged vessels be seen within the membrane. The soft palate and pillars are often congested and thickened, the uvula relaxed and enlarged, and the tonsils increased in size.

Although rarely described, **Lateral Chronic Pharyngitis** is not an infrequent condition. This form of pharyngitis seems to be due to imperfect methods of voice production and to the inordinate use and abuse of the voice.

In this variety the tissues back of the posterior pillars are hypertrophied, deeply congested, and especially prominent when the patient makes an effort to depress the tongue and elevate the soft palate. The posterior pharyngeal wall is usually pale, indicating a partial atrophy of its tissues, thus pointing to a long-existing process. It is, therefore, natural to infer that the tissues in the posterior wall are less able to withstand the atrophic process than are those in the lateral walls. Although I have carefully noted the progress of these cases, I have never seen a true lateral atrophy follow the hypertrophic process. Partial deafness is frequently associated with lateral hypertrophy,

owing to extension of the process to the Eustachian tubes; and varicose veins often appear in the glosso-epiglottic space and on the base of the tongue; these may require treatment with the galvano-cautery point, although hamamelis, internally, has often acted satisfactorily. Under the influence of iodine 3 x or fer. iod. 3 x internally, and the iodide of glycerin locally, the lateral tissues often assume a fairly normal appearance.

Prognosis.—It may readily be inferred that the prognosis of chronic pharyngitis is not good after the pathological change is great, as it is difficult to restore even a fair amount of the normal character of the mucous membrane. On the other hand, some very severe cases yield so gracefully to treatment that one is agreeably surprised at the recuperative forces of nature, when properly aided by judicious treatment. It is unwise, however, to promise a cure even in mild cases; yet,

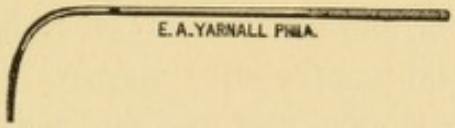


FIG. 62.—AUTHOR'S PHARYNGEAL AND POST-NASAL APPLICATOR.

relief can safely be promised in all, provided the patient faithfully obey instructions and will remain under treatment a few months.

Treatment.—From a review of the causes that may give rise to chronic catarrhal pharyngitis, it seems but proper to lay down this wholesome axiom: Remove the causes and treat the symptoms that first appeared, leaving those not easily included with the primary symptoms for later consideration. As many of the patients are dyspeptics of the most settled form, the gastric, hepatic, and rectal regions are to be looked to with especial diligence.

In the treatment with adjuvants, the first and most important point is to practically cleanse the affected area. This may be done either with the spray or cotton carrier, after which the adjuvant should be applied by the same means. Where prac-

ticable, the remedies indicated internally should be used on the pharynx. Aqueous hydr. may be used in its crude form; kali bi. or kali permang. in a 1-per-cent aqueous solution; soda bicarb. 5 per cent; and eucalyptus 10 per cent. Tannic acid, gr. x; chloride of zinc, gr. v; and iodine, gr. x, to glycerin, ʒj, are good as occasional applications when the previous remedies fail. Dr. C. Bartlett recommends pyoktanin (blue), ½ gramme to 2 drachms of water. Ten minims of this are added to 1 ounce of pure glycerin, and applied with brush, etc., especially in hypersecretion. (*Hahnemannian Monthly*, June, 1891.)

Wet or damp feet should be properly dried after an exposure, and, in order that the occurrence of habitually damp feet may be prevented, it is well for the patient to have two or three pairs of shoes, so that they may be worn on alternate days. Muffling the neck is to be avoided, as it tends to weaken the throat. For the purpose of improving the circulation in this region and of strengthening the tissues, it is well to bathe the neck and upper chest in cold salt water every morning, following this application by a moderate rubbing with an ordinary towel and vigorous friction with a crash or Turkish towel or flesh-gloves, until the parts become quite pink. If this be started in mild weather, any one will soon become accustomed to it; but if it be instituted in cold weather, the water should be slightly warm at first, followed successively by cooler applications, until it can be used as it flows from the faucet.

Therapeutics.

Aesch.—As noted by Dr. T. F. Allen, this remedy well suits pharyngitis beginning in the posterior nares, and associated with dryness, burning, and scraping; the mucous secretion may drop into the larynx and cause choking. Backache, constipation, hæmorrhoids.

Alumina.—Throat feels very dry, especially on waking; sensation of a splinter; frequent post-nasal droppings; thick and tough mucus; nasal catarrh; fullness in Eustachian tubes, which momentarily open with a snap on deglutition. Hoarseness.

Argent. met.—Expectoration of lumps of pure mucus, like boiled starch.

Calc. phos.—Sensation of dryness and burning in naso-pharynx during empty swallowing or when swallowing first mouthful of food or fluid, not after. Worse if one have not spoken or swallowed for a short time; fullness in naso-pharynx, either imaginary or due to the presence of mucus mixed with blood; pure, partly-coagulated blood; or yellowish-white and thick discharge. Adenoid vegetations furnish the pathological basis for these symptoms in many cases, and, as pointed out by that close observer, Dr. R. T. Cooper, this remedy is almost a specific for these growths. When swallowing saliva, the calc.-phos. patient sometimes feels as though the uvula had been swallowed and had adhered to the posterior wall of the pharynx, where it would choke him; only relieved by a repetition of deglutition.

Cepa.—Sensation of water dropping into pharynx. Nasal secretion watery and acrid; lachrymation bland; pharynx feels rough and raw, with a tickling in the larynx, producing cough.

Elaps.—In speaking of otorrhœa, Dr. H. C. Houghton says ("Clinical Otology") it is "indicated in the chronic suppurative form of disease, complicated with naso-pharyngeal catarrh; the posterior wall of the pharynx covered with crusts, or mucous membrane fissured; nasal mucous membrane in same condition; external [auditory] meatus full of offensive, yellowish-green discharge, which stains the linen green; membrana tympani usually perforated. Subjective symptoms: Congestive, lancinating, frontal and occipital headache, aggravated by motion and stooping. This remedy is of great value in the naso-pharyngeal catarrh which complicates aural disease in children. The patients are compelled to sleep with the mouth open, on account of the obstruction of the nose; hence the term snuffles, used by mothers and nurses." (See also "Chronic Nasal Catarrh.")

Fagopyrum.—Mucus dries in crusts in the naso-pharynx; rawness, dryness, and dry crusts; intense itching and burning; follicular pharynx; aggravation from the least exposure.

Hamam., natr. ars., phytolac., puls., and **vespa.**—Varicose veins in the pharynx.

Hydr. can.—Tenacious, yellow, or white expectoration from the posterior nares; rawness of the pharynx and faucial region; sticky, stringy mucus, which runs down from naso-pharynx in ropes, difficult to remove with instruments. Hydrastis has an especial affinity for the posterior nares and Eustachian tubes, and is often associated with tinnitus aurium, depressed and opaque drum-membranes, and impaired hearing. The pharynx may be glazed, tense, or dry, with expulsion of tough, greenish masses.

Kali bi.—Pharynx glossy, dark-red, or coppery. Mucus very stringy or ropy; hoarseness in the evening. "Usually where hyperæmia of the vault exists, with dryness and moderate secretion." (Malcolm Leal.)

Under date of November 20, 1889, Dr. A. C. Peterson, of San Francisco, wrote: "I have seen many cases of hypertrophic forms of disease attacking the naso-pharynx, with marked increase in size of the pharyngeal tonsils, attended with symptoms of ever-present constriction, fullness, and often with an acute susceptibility to extremes of temperature; very hot or very cold food and drink causing extreme pain. In such conditions I have had excellent results from the application of absorbent cotton carrying a solution of kali bichromicum varying in strength from a half-drachm of the drug to the ounce, up to a saturated solution, even.

"In general hypertrophic pharyngitis, where the hypertrophy is considerable and the redness pronounced, the kali solution in a spray has been of signal service in restoring a natural condition of the part."

Kali iod.—"Burning, scraping, roughness of the throat; expectoration is greenish, stringy, and salty. Also in specific cases with throat symptoms after mercury." (C. F. Sterling, "Diseases of the Ear.")

Kali mur.—Dr. Sterling, in speaking of this remedy in chronic tympanic catarrh, says: "It seems to lessen the secre-

tion, clear out the accumulated mucus, and reduce the chronic swelling of the mucous membrane in the throat, tubes, and tympanum. The particular indications for its use are a palish, anæmic throat, more or less thickened conditions of the mucous membranes and membrana tympani, closure and stoppage of the Eustachian tubes, and adhesions of the drum-head." Thick, tenacious secretion; small, cheesy lumps; opaque, white, or yellowish-green crusts in the vault of the pharynx.

Magnes. phos.—Hypertrophy of pharyngeal structures; choking often during deglutition; spasmodic cough.

Merc. dulcis.—Mucosa dark-red; pharynx and uvula thick, relaxed, and infiltrated; secretion thick, yellow, often with a dry, sore, raw, obstructed sensation extending up the Eustachian tubes.

Merc. iod. rub.—Enlarged and indurated tonsils and cervical glands; tough, white, or green mucus collects, in hard lumps, in the naso-pharynx; throat feels sore and scalded on waking, especially during empty swallowing; throat dark-red; chronic follicular tonsillitis and lacunar, cheesy collections.

Natr. mur.—Glazed appearance and dry, smarting sensation, despite a frequent hawking up of thin, transparent mucus. Uvula elongated. Tobacco-users' sore throat.

Nux vom. is an invaluable remedy in chronic pharyngitis; especially when prescribed upon the gastric indications and with a raw, sore, rough, scraped feeling in the throat; loose cough, with thick, grayish expectoration, and a sensitiveness to pressure in the supra-sternal notch.

Penthorum.—"Posterior nares raw as if denuded; continual feeling as though the posterior nares were moist." (H. D. Champlin, *Med. Advance*, September, 1888.)

Phytol.—Sensation of dryness, scraping, rawness, or of a ball of fire in the throat, and dryness aggravated by hot fluids. Constant desire to clear the throat; swallowing produces severe pain in the ears on account of dryness.

Wyethia.—Pricking, dry, burning sensation in posterior

nares; difficult deglutition, with dryness of the pharynx, often associated with the sensation of a lump in the naso-pharynx. Swelling of the lining of the pharynx and fauces. (I am chiefly indebted to Dr. F. M. Selfridge for my knowledge of this valuable drug.)

ACUTE TRAUMATIC PHARYNGITIS.

Etiology.—This, as its name implies, is an acute inflammation of the pharynx and surrounding tissues, the result of injury, either from the introduction of foreign bodies, a thrust from some object, the inhalation of caustic vapor, or the deglutition of scalding water, ammonia, etc. The accident may result in the formation of œdema, emphysema, a slough, or an abscess.

Symptoms.—The symptoms are not unlike those of acute catarrhal pharyngitis, but the sensation of sticking or of a foreign body is more marked. Should the inflammation extend to the larynx, it is not unlikely that the voice will be lost and the breathing impaired; necessitating astringent inhalations, scarification, intubation, or tracheotomy. If a large abscess or marked œdema of the pharynx occur, there will be more or less difficulty in respiration. The temperature often rises to 103° or 104° F.

Prognosis.—If the pathological process be checked early, the prognosis is usually good; but an abscess may form, important tissue be destroyed, or blood-poison ensue. When the pharynx has been punctured with a blunt, rusty, or dirty instrument, retro-pharyngeal abscess may result.

Treatment.—If a foreign body be present, it must be removed. If the pharynx be scalded or injured by caustics, the inflammatory reaction should be promptly combated with medicines and soothing, emollient applications or sprays. Calendula (20 per cent), peroxide of hydrogen (15 volume), or pyoktanin (1 to 100) should be frequently applied. It is necessary to neutralize the caustic or acid swallowed if it have entered the stomach or if some particles still remain in the pharynx or

œsophagus. A large abscess should be opened with great care, as noted under "Retro-pharyngeal Abscess"; when near the surface, it may be evacuated by dissection from the skin surface.

Acon., calend., fer. phos., and staph. should usually be our main remedies. The complications call for the remedies noted after them.

ACUTE FOLLICULAR PHARYNGITIS.

Etiology.—The etiological factors are not different from those of acute catarrhal pharyngitis, with which this affection is closely allied; but, while the inflammatory process in the former is generally distributed to the mucous membrane, tonsils, and follicles, in follicular pharyngitis the force of the pathological change is expended on the follicles themselves, the surrounding tissues being but slightly involved.

The process consists of a fibrinous overdistension of the follicles, which shows itself in the enlargement of a number or even a chain of these little glands. The vessels running up to the elevation early enlarge, and the mucous membrane surrounding the follicle inflames: a fibrinous product soon appears at the apex of the reddened prominence, and is expelled, so that the follicle generally returns to its normal condition in a few days. The fibrinous exudation is usually very tenacious and scant, though at times so profuse as to give the impression of a pseudomembrane not unlike that found in diphtheria; upon careful inspection, however, it will be found in isolated points, and not in a continuous layer. In other instances the rupture of the follicle leads to ulceration, especially in debilitated and dyspeptic persons or in those who are addicted to the use of alcoholics.

Symptoms.—The affection is often ushered in with a chill and general aching of the neck, back, and legs; the prostration is frequently pronounced; and the temperature elevated to 102° or 103° F. The subjective throat symptoms are acute pain, worse in the median line and on swallowing, and a sensation of splinters, constriction, and dryness in the throat. Expecto-

ration is moderate, and of a glutinous, fibro-mucous character. The objective changes are often so slight that it is difficult to account for the severity of the pain and dryness; for this reason acute follicular pharyngitis is often overlooked in a hasty examination. In some cases the glands are very small and the surrounding inflammation slight; while in others the glands present quite large, red elevations, with decided involvement of the surrounding membrane. The follicular apices become lighter in color, after a day or two, and exude a cheesy, fibrinous material. It is not unusual to be able to insert a small probe into the crypt and give exit to the accumulated discharge. The enlarged follicles may occupy the upper part of the pharynx only, or reach to the œsophagus; and although they are usually situated on the sides of the pharynx, near the posterior pillars, they may form in the median line, or extend from the vault of the pharynx in such a manner as to present a chain of enlargements running from above downward. Examination of the external surface of the neck will generally demonstrate the presence of enlarged and tender glands.

By attention to the preceding indications the *diagnosis* is usually very easily established.

Prognosis.—The prognosis is generally good; resolution occurs in a few days, often in forty-eight hours; but, as with acute pharyngitis, there is a possibility of imperfect resolution and the establishment of a chronic follicular pharyngitis.

Treatment.—Internal remedies are of chief importance, but, owing to the burning dryness, it is advisable to order a gargle of salt water; a gargle or spray of glycerin (one teaspoonful), alcohol (one-fourth teaspoonful), and water (four teaspoonfuls); a spray of a 5-per-cent albolene solution of eucalyptol; or pure fluid albolene, fluid cosmolin, or benzoinol.

Therapeutics.

Alumina.—Throat dark-red, follicular, and relaxed.

Caps.—Much burning and an enlarged chain running down the side of the pharynx, the left especially.

Fer. phos. and **kali mur.**—In speaking of follicular pharyngitis, Dr. W. A. Dewey writes: "I am pretty sure I cure ulcerated sore throat more quickly with fer. phos. and kali mur. than I used to with mercury and kali bi. or bell. I always give these two remedies, and have come to look upon them as sure."

Kali mur.—Where the post-nasal burning is the most prominent symptom; the inflammation and glandular enlargement are chiefly confined above the soft palate.

Sang. nit.—One of the best remedies, clinically. Burning, stinging in the pharynx; stringy, gluey discharge.

Compare æsch., rhus tox., and wyethia. (See next subject.)

CHRONIC FOLLICULAR PHARYNGITIS—CLERGYMAN'S SORE THROAT.

Although this is usually merely a local expression of some other condition, it seems best to present the subject in a special division, as the symptoms are characteristic and distinct from all other forms of pharyngitis.

Etiology.—The causes of chronic follicular pharyngitis are: rheumatism, gout, alcohol, tobacco, illy-ventilated rooms, irritating fumes, obstructive nasal catarrh, and imperfect subsidence of congestion of the mucous membrane and follicles. The last either as the result of inflammatory action or, more often, of congestion of a purely local nature, as when the blood is driven to the part by the over- or improper use of the vocal apparatus, known as the "throaty" method of voice-production.

Pathology.—The blood-vessels, when overdistended and weakened by the intense pharyngeal contraction during throaty vocalization, do not return promptly to their normal calibre; as a result, the pharyngeal follicles are forced into too great activity; an over-amount of mucus is secreted and temporarily retained, which, if often repeated, leaves the follicles distended or even hypertrophied. In a short time the walls of the vessels become thickened, the fibrous elements increased, and the gland overfilled with the extra secretion, which cannot escape on account of inflammatory thickening and narrowing of its punctum.

Finally, this secretion becomes thick, cheesy, fibrous in nature and consistence, and is often expelled in round lumps, which, when broken, are very offensive. They are frequently ejected violently when coughing or clearing the throat. Ulceration sometimes occurs from long retention and pressure of these cheesy masses. If the congestion occur infrequently, and the parts return to their normal condition each time, hypertrophy may not follow.

Although often called clergyman's sore-throat, it is not entirely, or even generally, confined to members of that profession; for singers, speakers, smokers, drinkers, dyspeptics, and even those who make no special use of the voice are sometimes its victims. Congestion of other organs is often a coeval change; this is particularly true of the pelvic viscera and liver.

Symptoms.—In the early stages the patient usually makes no complaint, as there may be nothing more than a slight dryness or stiffness present, with frequent desire to swallow. Later, the symptoms become more pronounced, and cough and hoarseness supervene, from involvement of the larynx. This may follow the use of the voice during acute attacks of pharyngitis, when much fatigued bodily, or when the easy high limit of the voice has been transgressed. As a premonitory condition the stomach is often deranged, but, if it escape at first, it is usually affected later, owing to entrance of the discharges. These are occasionally frothy, dark-brown, or black, from admixture of dust, etc., although generally tenacious, the patient not infrequently gagging or even vomiting during efforts at dislodgment.

Inspection of the pharynx reveals the presence of enlarged patches, which vary in size from small granules to grains of sago, or larger. The surface of the membrane is often congested, and enlarged veins course through it from follicle to follicle. The elevations may be pale, dark red, or almost purple, and sometimes yellow at their summits (obstructed follicles filled with fatty material). The enlarged follicles usually occupy the sides of the pharynx, or occur opposite the

lower border of the soft palate. Sometimes there are only two or three of them, but usually they are quite numerous, even studding the entire surface of the pharynx; the uvula may be almost covered with them. The enlarged vessels, at times, form true varix at the base of the tongue and greatly complicate the case.

Prognosis.—The prognosis is favorable, for, while the affection is stubborn, it is not usually incurable. It may, however, destroy the glands and adjacent tissues, giving rise to atrophic catarrh or true pharyngitis sicca; but usually some glands remain hypertrophied after others atrophy, thus producing an uneven surface.

Treatment.—It is the almost universal teaching that the use of the singing voice be discontinued while the diseased condition is being treated; it is my practice, however,—and experience fully warrants its continuance,—to insist upon the patient continuing the use of the voice, but under the strict supervision of a competent vocal instructor. Without this aid treatment is incomplete.

Remedies should be administered internally and locally. Of the latter, glycerin and iodide of glycerin prove most useful. If the symptoms call for the employment of either ammonia, argent. nit., cubebs, kali bi., sang. can., or sang. nit., the drug may be used locally, as well as internally, either as gargle, spray, insufflation, or pastille; in the latter instance gelatin or sugar of malt should be used as a base. One of the most efficient gargles is: glycerin, 1 teaspoonful; alcohol, ½ teaspoonful; water, 4 teaspoonfuls. Local remedies may be used by the patient once or twice daily, according to circumstances.

Some have recommended the destruction of the enlarged follicles with cautery, galvano-cautery, or caustics; others, that the blood-supply of the follicle be cut off by destruction of the afferent vessel with the galvano-cautery point. These destructive agents often hasten the atrophic change, if, indeed, they be not the first step in its production; they are, therefore, not to

be compared with the milder measures, which frequently restore both the hypertropied follicle and the adjacent tissue to a fairly normal condition.

Therapeutics.

Aesch.—Dry, uncomfortable feeling, or constriction with raw, excoriated, pricking sensation; frequent hawking of clear mucus; pharynx and fauces relaxed, swelled, and dusky red. Hæmorrhoidal patients.

Ammon. bromat.—Follicular pharyngitis with chronic cough; scanty, stringy, mucous expectoration (ammon. iod.). Pharynx looks mottled; fauces dark-red and congested.

Ars. iod.—Pharynx both follicular and hypertrophied, with burning, rawness, and soreness; frequent hawking; nasal discharge watery and often excoriating. Tinnitus aurium; laryngeal involvement; general weakness; threatened tuberculosis.

Badiago, chemophil., kali bi.—Pellets of cheesy matter fly from the mouth during coughing and hawking.

Calc. phos.—In young persons with glandular and tonsillar enlargements; strumous and lymphatic individuals; besides the enlarged follicles, there is some general pharyngeal hypertrophy. An intercurrent.

Cinnabar, kali bi., sepia, and **teucr.**—Hardened clinkers are hawked from the posterior nares. Teucr., when very large and irregular; cinnabar, if of a dirty-yellow color.

Hepar.—Cough, muco-purulent discharge, and hoarseness with relaxed uvula, all of which are aggravated in changeable weather, especially in changes from warm to cool.

Kali bi. presents a picture very closely resembling the affection under consideration, in the dry, irritable state of the pharynx; the scanty discharge, which is tough, stringy, sticky, and difficult to dislodge; and in the discharge of little pellets.

Kali brom.—Dr. John Meyhoffer says: "We have derived much satisfaction from its use in follicular pharyngitis when *atony* was the predominant feature of the morbid process, while iodine or iodide of potassium requires *irritation* as the leading symptom."

Kali mur.—Membrane between the enlarged follicles rather pale and thin; discharge of white, tough mucus; adenoid vegetations. Catarrhal deafness; throat deafness; closure of the Eustachian tubes. If given for some time it lessens the tendency to acute attacks of both nasal and pharyngeal catarrh; the same is true of hydrastis, but in a higher degree.

Lach. "has a state of venous congestion, a puffed look of the uvula, tonsils, and soft palate; it has irritability of the throat, a constant desire to swallow, a feeling of a plug in the throat, and a tenderness of the larynx; but there is not that deep-seated chronic inflammation of the glands of the pharynx that makes *Kali Bichromicum*, *Mercurius Iodatus*, and *Hepar Sulphuris* come tripping along to our memory. As the *Iodide of Mercury* bites deep down to the follicular disease of the pharynx, so should the *Iodide of Sulphur* penetrate to the inmost recesses of the gouty or scrofulous constitution." (E. B. Schuldham, "Chronic Sore Throat.")

Nux vom.—The following observations are purely clinical, but I have so often verified them that I look upon them as characteristic. Atrophic, white patches, the size of a split pea, with a few enlarged follicles; as soon as a tongue-depressor or mirror is passed beyond the lips the patient gags and retches, but especially for those who have, as a pharyngeal reflex, a laryngeal tickling, augmented by tobacco-smoke; persons with gastric disorders and constipation; and those who are addicted to the use of alcohol and tobacco.

Sang. nit.—Burning, soreness, rawness in the naso-pharynx and pharynx; discharge of thick, yellow, or even bloody mucus. This is my sheet-anchor in chronic follicular paryngitis, and is the remedy to use in the absence of clear indications for another.

Wyethia.—Dryness, burning, constant desire to clear the throat; tendency to atrophy; pharynx dark-red, sensitive; feels swelled; constant desire to swallow to relieve the dryness; swallowing difficult.

ATROPHIC PHARYNGITIS—PHARYNGITIS SICCA.

Etiology.—Pharyngeal atrophy is an occasional sequel to those affections which have just been considered. Further causes are atrophic rhinitis, post-nasal catarrh, adenoid vegetations, hypertrophied tonsils, mouth-breathing, and senile changes. Atrophic pharyngitis is rarely occasioned by any of these conditions, however, without the long-continued accompaniment of chronic pharyngitis.

In looking for an expression of the changes which give the disease its distinctive title, it will be noted that there is often atrophy of the glands, vessels, mucous membrane, or even of the muscles; thus, the secretion is scanty or almost suppressed, the blood-supply diminished, and muscular tone lessened or lost. The pharynx becomes dry, glazed, very pale, and appears spacious; the uvula and soft palate are often thinned. The deeper pharyngeal structures lose their elasticity and, owing to lack of nourishment, atrophy; so that the bodies of the vertebræ may stand out in decided contrast to the smooth, rounded, velvety pharynx of health. Pulsating arteries and veins are occasionally seen in the posterior pharynx.

It may be stated, in the way of explanation, that there is a net-work of veins, on the lateral and posterior pharyngeal walls, which empty into the jugular veins. This net-work is the terminal for numerous veins which come from the muscles and mucous membrane, and go to form the submucous venous net-work.

Schech ("Diseases of the Mouth, Throat, and Nose") calls attention to the frequent association of diabetes and Bright's disease with atrophic pharyngitis.

Symptoms.—The first symptom that is apt to attract the patient's attention is the decided dryness and stiffness of the pharynx, especially during empty deglutition; when swallowing food, the first mouthful may cause annoyance, but the throat soon becomes lubricated and the meal is finished in comfort; at its conclusion there is a decided sense of relief. Owing to the

loss of muscular tone, the epiglottis often participates and remains partially erect; on that account food often passes into the larynx and elicits reflex cough and spasm. This mishap is aided by the insensitive condition of the membrane lining the epiglottis and the upper part of the larynx.

As stated, the pharynx is glazed in appearance; at first, atrophy occurs at numerous points, but as these spread the posterior portion may present pale, vertical streaks, due to loss of the mucous and glandular tissues and the exposure of the underlying fibrous structure. Later, the entire pharynx may present a peculiar, white, sclerosed, glazed appearance. At

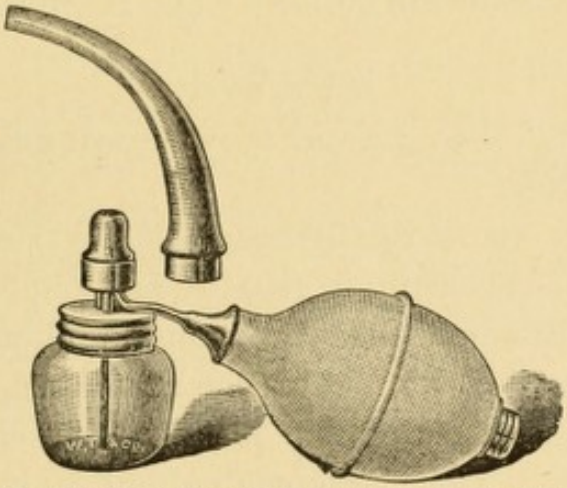


FIG. 63.—WHITALL, TATUM & CO.'S VASELIN ATOMIZER.

times small particles of adherent, tenacious, dry mucus appear upon the surface; at others the greater part of the pharynx is covered, the discharge trickling from the posterior nares.

Prognosis.—The natural inference would be that such a condition could not be much improved; but this is not always true, especially in young subjects. When well advanced in years temporary improvement is all that need be anticipated.

Treatment.—Treatment should be directed to the nose and naso-pharynx, as well as to the directly local and constitutional condition. The pharynx should be kept thoroughly cleansed with some slightly irritating solution for the purpose of exciting the atrophic tissue to greater activity. To this end hydrastis

canadensis goes a long way; the muriate of ammonia, iodine, and chloride of zinc also prove efficient. These remedies are best applied in the second decimal dilution or trituration, with glycerin as a vehicle. In the absence of an atomizer, the preparation should be applied with the aid of a brush or cottoned probe. Galvanization and massage of the diseased structure have recently proved additions to the treatment of atrophic pharyngitis. The positive pole should be applied to the pharynx, the negative to the neck, preferably back of the sterno-cleido-mastoid muscles. "In atrophic catarrh my best results have been from ars. iod. 3 x and a local use, after thorough cleansing, of thymol and olive-oil, 20 grains to the ounce." (E. L. Mann.)

Therapeutics.

Argent. nit. 2 x to 6 x has proved most efficient during the early atrophic stage.

Ars. iod. is one of the first remedies to think of.

Calc. iod.—Especially in rachitic and scrofulous patients.

China.—Muscular relaxation, cough, dilated vessels.

Kali bi. "has an affinity for the mucous membrane, and is occasionally needed in atrophic pharyngitis, complicated or not by nasal catarrh. The symptoms calling for its administration are: A yellowish-red or tawny color of the pharynx; relaxation of the palate, and œdema of the uvula; shallow, grayish ulceration, showing no disposition to heal; red, swollen, or ulcerated tonsils; dryness and soreness of the posterior surface of the soft palate; hawking of thick, tenacious mucus, difficult to dislodge; and mucous râles in the Eustachian tube and ear." (Winslow, "The Human Ear.")

For other remedies, see "Atrophic Rhinitis."

CHAPTER XV.

Acute Infectious Diseases.

ERYSIPELAS OF THE PHARYNX.

Erysipelas occasionally manifests itself in the pharynx after the skin is involved (usually severe), before the external redness appears (usually mild), or at the same time (moderately severe). Young adult females are more frequently attacked than males.

Etiology.—The causes are the same as those which give rise to the external variety. Its course is a rapid one. Although usually epidemic, it may be sporadic. Extension from the ears, nose, and throat is by continuity of tissue.

Pathology.—Pathologically, the changes are the same as when other parts are invaded by the disease, but ulceration and gangrene are more frequent in the pharynx. Some writers consider erysipelas of the pharynx and phlegmonous pharyngitis identical.

As erysipelas of the pharynx is associated with the external eruption, its diagnosis is not difficult, after the appearance of the external rash; but previous to this the greatest difficulty obtains. The one appearance most nearly pathognomonic is a peculiar glazed red, which does not seem to occur in other forms of pharyngitis.

Symptoms.—Before any other symptom manifests itself, the temperature usually rises to 103° or 104° F., and the frequency of the pulse and respiration is augmented in like proportion; pain on deglutition, swelling of the cervical glands, and a burning, stinging stiffness in the affected part are among the early symptoms; these may last two or more days before either the cutaneous or mucous erythema makes its appearance. Soon the bright, glazed redness occurs; this may be the only observ-

able pharyngeal change, but, as a rule, the process goes on to the formation of phlyctenulæ; these may burst in a few hours and leave a whitish or yellowish spot, but they are usually replaced by bullæ and vesicles, which sometimes become as large as ordinary grapes. The vesicles and bullæ contain pus or serum, and bear a general resemblance to herpes of the pharynx.

The two conditions described are those usually seen, although ulceration and gangrene may supervene, with the separation of superficial sphaceli. Even from this condition the patient may recover, although death usually results from collapse or a low typhoid state. Œdema is frequent, and the inflammatory area may extend over the entire pharynx, including the soft and hard palates, uvula, and tonsils; it may pass downward to the larynx, or upward and involve the nasal cavities, lachrymal canals, Eustachian tubes, and middle ears. When the patient recovers, the mucous membrane desquamates over the entire area affected.

Prognosis.—The prognosis is grave,—much more so than in the purely cutaneous variety,—for deglutition and nutrition are impaired, and the ulcerative and gangrenous processes may result in great loss of tissue, hæmorrhage, and septicæmia. When erysipelas attacks the larynx as well as the pharynx, it may produce fatal dyspnœa, the result of œdema. About 20 per cent of the cases prove fatal under ordinary methods, but by careful homœopathic treatment this fatality can be decreased.

Treatment.—Internal remedies usually relieve, but the patient can generally be made much more comfortable by mild local measures; in the severe forms the latter are demanded either for the purpose of disinfection or for aiding the separation of the sphacelus. The patient may suck pieces of ice to advantage; a spray of carbonate of soda and water is soothing and cleansing; steam inhalations are valuable if gangrene appear; and peroxide of hydrogen and permanganate of potassium are best as disinfectants.

Therapeutics.

Apis.—Œdema of uvula; fauces and pharynx violet-red; stinging, burning pains, with a sensation of constriction; erysipelas, beginning on tonsil and palate and extending to larynx.

Anthracinum.—"Submucous tissue infiltrated, œdematous; erysipelas; cellular cynanche." (Hering.)

Ars.—Extension from the skin; tendency to attack the various internal organs; intense burning in the pharynx; great prostration; marked œdema, even gangrene.

Bell.—"Swelled glands, preventing the patient from opening his mouth without difficulty and pain; pharyngeal mucous membrane dark cherry-red, and shining as if varnished; swelling great, especially in the region of the tonsils; breathing embarrassed and swallowing difficult; throat painful and shooting pains aggravated by swallowing; burning heat and dryness." (Nichol.)

Canth.—"Swelling with erysipelatous flush and turgid veins across the fauces; swelling of tonsils." (Allen's "Hand-book of Materia Medica and Therapeutics.")

Compare carbolic acid, lachesis, merc. sol., rhus tox., and terebinth.

PHLEGMONOUS, PARENCHYMATOUS, ŒDEMATOUS, OR SUPPURATIVE PHARYNGITIS—HOSPITAL SORE THROAT.

Although this affection is often described with erysipelas of the pharynx, and by some considered the same disease, yet to me the outlines are sufficiently distinct to demand separate consideration. In phlegmonous pharyngitis the mucous membrane and submucous and peritonsillar tissues suffer, and abscesses form. The affected parts may slough, thereby destroying considerable areas.

Etiology.—The primary causes are sudden chilling of portions or the entire body, wet feet or clothing, and injury from knives, sticks, surgical instruments, caustics, mineral acids, etc. The secondary influences are surface erysipelas, acute infectious

diseases, chiefly scarlet fever; a depressed system from overwork, poor or insufficient food, and imperfect ventilation and drainage. Its onset is sudden, unless it succeed an acute catarrhal pharyngitis.

Symptoms.—The symptoms are chill, fever, rapid pulse, prostration, delirium, aching in the head, neck, and back, and stiff and painful pharynx, especially on deglutition. Although any portion of the throat may be affected, the faucial region usually bears the brunt of the malady. The diseased parts are red and swelled; the secretion, at first scant, soon becomes purulent or bloody. Submucous hæmorrhages are occasionally noted. When the soft palate is attacked, the affected side is bright-red and bulges forward, the uvula is œdematous, but the tonsils may be only slightly inflamed; on the other hand, they are sometimes greatly enlarged, phlegmonous, and press upon the post-pharyngeal wall, preventing nasal and oral respiration. When peritonsillitis or abscess exists, the suffering is greatly augmented. The tissues of the mouth are often so infiltrated as to prevent inspection. Œdema of the pharynx or larynx may occasion fatal dyspnœa.

The dry sensation first experienced is soon followed by thick, ropy, mucous secretion, salivation, loss of appetite, nausea, and fetid breath. Pain on swallowing becomes so severe as to induce the patient to starve rather than eat, and when food is forced down it may be at once regurgitated, owing to paralysis. The voice is thick, nasal, or suppressed. The epiglottis, ary-epiglottic folds, and ventricular bands may be affected by continuity so that respiration is difficult, even impossible. The cervical glands are usually enlarged, painful, and very tender. As the disease subsides, resolution may occur from re-absorption of the infiltration; otherwise an abscess will follow, and, if not artificially evacuated, the pus, blood, and pieces of connective tissue may be gradually expectorated. When this form of expectoration begins, the painful symptoms usually disappear quite suddenly; deglutition becomes easy; and sleep refreshing.

Prognosis.—The prognosis is to be guarded in all cases, as death may occur from asphyxia due to enlarged tonsils, abscess, or laryngeal œdema. Occasionally the abscess burrows toward the chest, breaks into the trachea, or causes erosion of the carotid; pyæmia or gangrene may result. When complicated by surface erysipelas, the prognosis is very grave. The disease is essentially acute, terminating in from five to twelve days, though relapse may delay convalescence two or more weeks. Suppuration may continue for a long time, and paralysis of the pharyngeal and palatine muscles is not infrequent.

The diagnosis depends, chiefly, upon the objective appearances and, at first, is often obscure; even after pus actually exists, it is not always easy to locate it; palpation offers the best means of detection. Stoerk recommends that one hand be placed under the angle of the jaw and pressure made in order to form a support; the index finger of the other hand is to be placed upon the soft palate and tonsil. The bulb-pointed probe may be substituted for the introduced finger.

Treatment.—In the early stage, pain and dryness may be alleviated if the patient suck small pieces of ice. Cold cloths or a Leiter lead-coil may be used externally. When pus has actually formed, steam inhalations and warm gargles are advisable locally, and heat or poultices externally. Internally, hepar 2 x is almost specific, but, should it fail, careful incision may be made with the hope of evacuating the sac. Should laryngeal œdema be present, tracheotomy is usually the only relief, though, if swelling of the superior passage be not too great, scarification or intubation may act more satisfactorily. If the tonsils interfere with respiration, it may become necessary to amputate them, although puncture is usually sufficient.

Therapeutics.

Ailanthus.—"Throat livid, swollen; tonsils prominent and studded with deep ulcers, oozing a fetid, scanty discharge; external neck swollen." (Hering's "Guiding Symptoms.")

Compare apis, iodine, kali mur., merc., hepar, and the "Therapeutics" of the following subject.

GANGRENOUS, MALIGNANT, OR PUTRID SORE THROAT.

Etiology.—This affection was formerly classed with diphtheria, but the lines of demarcation are well drawn; it is a rare condition,—the result of blood-poison. Gangrenous sore throat, strictly speaking, is primary, and not the result of such pharyngeal changes as accompany scarlet fever, diphtheria, erysipelas, retro-pharyngeal abscess, scurvy, typhoid fever, phlegmon, etc.; the gangrene associated with those conditions should be considered as secondary.

It starts as a severe inflammation, which speedily assumes the gangrenous form; although this change often occurs so quickly that its gangrenous nature is sometimes apparent at the first examination.

The affection invades both the mucous and submucous structures, but does not attack the muscles, which may, however, be softened and exposed on account of the destruction of the overlying tissues. The gangrenous mass may be small, circumscribed, dirty yellow, and oval or circular. After the sphacelus has come away, the edges of the depression are perpendicular and the surface covered with a delicate pseudomembrane.

Symptoms.—The throat symptoms may be preceded by fever and malaise, but generally dryness, burning, stiffness, and aching in the pharyngeal region first call attention to the malady. In two or three days gangrene may have supervened, with loss of some of the pharyngeal tissue. The cervical glands are often involved and the tonsils greatly enlarged, perhaps gangrenous. The early objective symptoms are not characteristic, but the putrid odor is often one of the first, and, later in the affection, becomes almost unbearable. When the disease is established, the pharynx, tonsils, uvula, and soft palate may be covered with discolored patches, raised somewhat above the surrounding surface. These soon change, become dark, almost

black, and are exfoliated, leaving an ulcerated surface. If the disease still progress the mouth, nose, larynx, trachea, œsophagus, stomach, and the entire alimentary tract may participate in the gangrenous process. Swallowing is very painful, almost impossible from the first; and vocalization and respiration are impaired as soon as the interior of the larynx is affected.

The general economy early feels the influence of the fatal malady. The vital forces fail, prostration is marked, the pulse and temperature rise, but soon a state of collapse occurs, with decrease in the heart's frequence and a depression of bodily temperature below the normal. The pulse may be exceedingly slow (in one case reported by Gubler it was only fifteen beats per minute), and the feebleness of the circulation is pictured in the pale, bluish, cold exterior in which the extremities, especially, participate. The face is not unlike that seen in the collapse of cholera.

When the lungs are affected, hæmorrhages and pneumonia follow; when the alimentary tract is diseased, diarrhœa and hæmorrhages result; and when the larynx is œdematous, dyspnœa may prove fatal in a few minutes. The abdominal and thoracic organs may suffer in general; the superficial veins be phlebitic; or bleeding may occur from the nose, ears, mouth, pharynx, lungs, bowels, and bladder. Although the patient may die from coma, syncope is the usual form of death.

Diagnosis.—The diagnosis is not usually very difficult, although diphtheria bears some points of resemblance. In diphtheria the odor is different from that of gangrenous sore throat, and is less intense, especially at the beginning of the attack; the membrane is whitish, yellowish, or, at a later stage, dirty yellow, and not raised above the surrounding membrane: in gangrene the deposit is dark from the first, and soon gives place to an ulcer. In diphtheria the cervical glands rarely escape; in gangrene, frequently. In diphtheria there is prostration, with continued increase in the pulse and temperature; in gangrene there

is, at the outset, greater prostration, with subnormal pulse and temperature.

Prognosis.—This is generally grave; it is greatly dependent upon the intensity of the blood-poison. Death usually occurs in a few days.

Treatment.—The management of putrid sore throat must be actively disinfectant and medicinal. Disinfectants are best applied as spray or gargle, and should consist of peroxide of hydrogen, permanganate of potassium, or boric acid. Internally, concentrated, nutritious diet should be administered, and stimulants occasionally given. Nutritive enemata are frequently required to aid the food taken into the stomach, especially if deglutition be greatly impaired. If œdema of the larynx occur, even scarification, intubation, and tracheotomy offer slight hope.

Therapeutics.

Ailanthus.—Throat gangrenous, livid, puffed; tonsils covered with confluent ulcers, which ooze a scanty, fetid discharge; throat covered with a dark-brown membrane; greenish expectoration; dark-colored hæmorrhage; cannot swallow anything; neck swelled, mottled, and very sensitive to contact.

Ammon. carb.—Gangrene of tonsils, which are bluish; ulcers violently painful; burning in pharynx; drowsiness and stupor.

Ars.—Throat burns like hot coals; tonsils dark-red, swelled, gangrenous; vesicles in the pharynx; paralysis of the pharynx and soft palate; fluids pass into the nose; malignant cases (ars. iod.); restless, anxious, prostrated.

Bap.—Painful, dark, putrid ulcers; throat dark-red, feels constricted; burning rawness; profuse, viscid mucus, which can neither be swallowed nor expectorated; rattling in throat; salivation; stupor; low, muttering delirium.

Bell.—Neck so stiff that the head cannot be rotated; great prostration and fever; heavy pain in the throat; mucous membrane deep-purple, almost black; œdema of epiglottis and ary-epiglottic folds.

Carbo veg.—Rapid loss of strength; cold breath and extremities; clammy perspiration, but with a desire to be fanned; sloughing of the faucial tissues.

Silica.—Gangrene especially of tonsils; deep ulcers.

Compare ars. iod., cinch., iod., kali mur., kali phos., and natr. ars.

CHAPTER XVI.

Abscess, Ulceration, Parasites.

RETRO- OR POST- PHARYNGEAL ABSCESS.

Etiology.—Abscess in the tissues of the posterior wall of the pharynx may be either idiopathic or secondary; the former is usually found in young children, mostly under one year of age, and often has for its origin rickets, tuberculosis, syphilis, scrofula, or lymphadenitis. These lymphatic glands are of considerable size in infancy, but usually disappear soon after the fifth year (Henle). Secondary abscess occurs at any age, but chiefly in childhood, and may originate in caries of the bodies of the cervical vertebræ; but usually in an inflammation of the post-pharyngeal glands (lymphadenitis), phlegmonous pharyngitis, diphtheritic and œdematous pharyngitis, scarlatina, and suppurative otitis media. Traumatic abscess is usually due to scalds, burns, or thrusts of instruments, sticks, etc.

Sometimes the abscess develops very gradually, occupying two or three months, in which case it is usually secondary; or it may appear suddenly, in two or three days,—usually idiopathic, but occasionally secondary.

Symptoms.—The first symptoms calling attention to it are dysphagia and odonphagia; later it is difficult to open the mouth widely, the cervical glands become enlarged and painful, food regurgitates through the nose or passes into the larynx, the voice becomes nasal or, more properly, guttural, and nasal respiration is impeded or even impossible. If the swelling be situated in the region of the larynx there is apt to be dyspnœa, when the condition is sometimes mistaken for croup; but it will be noticed that in post-pharyngeal abscess there is rarely cough, although frequent efforts are made to clear the throat; neither is the voice croupy, but naso-guttural. The larynx is

occasionally involved secondarily. In the more chronic form there is rarely any pain, but in the acute variety it is quite intense and often throbbing and lancinating. The head is apt to be turned toward the side less affected, or if the abscess be in the median line the head may be thrown forward and can only be raised with difficulty. If the abscess be due to spinal caries, rotation of the head is very painful. The patient is much prostrated and a typhoid condition is frequent; with children convulsions may occur. Occasionally when the abscess bursts it floods the larynx and parts below, sometimes causing suffocation. In other cases death is due to asphyxia, the result of œdema or abscess of the larynx.

The disease is liable to be mistaken for a soft tumor, but in that condition the sense of fluctuation is wanting, except in hæmatoma. In some instances the first impulse is to diagnose an inflammatory affection of the soft palate, on account of its redness and swelling, but this is easily corrected by passing the finger into the post-palatine space, when the swelling and perhaps the fluctuation may be detected back of the curtain. If the patient be old enough to examine with the rhinoscopic mirror, the nature of the swelling can be determined by inspection. The abscess is dusky red, and imparts a boggy sensation to the finger. Although the pus usually forms in the posterior wall of the pharynx, it sometimes occupies the sides; whatever its position, there is danger that it may burrow down the tissues of the throat or neck, causing serious damage by pressure; but it may find an exit on the skin surface, forming a fistula.

Prognosis.—The prognosis is very grave in secondary cases, the intensity depending, very often, upon the original affection. In idiopathic cases, the prognosis is generally good, if the treatment be prompt; otherwise, death may occur from spontaneous rupture and suffocation.

Treatment.—As soon as pus is detected the abscess should be opened, either with a knife or trocar; the incision being made as nearly as possible in the median line, lest the internal carotid

be injured. In making the puncture the instrument should never penetrate far beyond the anterior abscess-wall, else the posterior wall, the vessels, or even the parts directly surrounding the vertebræ might be injured. The patient's head should be well thrown forward before the incision is made, that the pus may find an exit through the mouth or nose and not pass into the larynx and trachea; for a similar reason, it is better to make a small incision at first and, if necessary, enlarge it afterward. When the pus is evacuated by the trocar this danger is obviated, but, as the tissues are rather resistant, they may slip from the point of the instrument and serious, if not fatal, damage result; on the other hand, the point may penetrate too far and do harm. These dangers, however, can usually be overcome by the use of a curved trocar-cannula, so that the puncture may

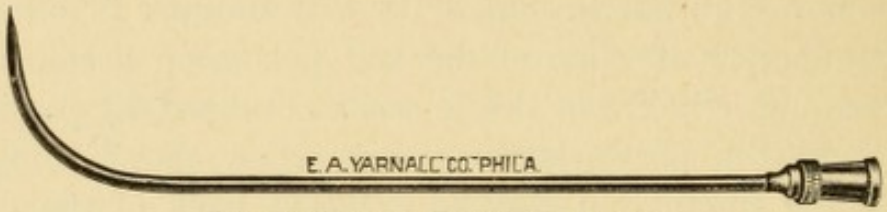


FIG. 64.—CURVED TROCAR-CANNULA.

be made in a nearly vertical direction. Hilton and, later, Chiene recommended evacuation by dissection behind the sterno-mastoid muscle.

In the early stage, remedies will often obviate the necessity for operative measures, chief of which are bell., hepar, and merc.; after evacuation of the pus, hepar, kali mur., puls., and silica.

General treatment and hygienic care are very important.

ULCERATION OF THE PHARYNX.

Pharyngeal ulceration may result from syphilis, phthisis, scrofula, cancer, lupus, leprosy, injuries, scalds, burns, corrosives, diphtheria; scarlet, typhoid, and typhus fevers; erysipelas, phlegmonous pharyngitis, glanders, acute follicular pharyngitis, herpes, etc.; lately Heryng has described an idiopathic (?) form.

PARASITIC DISEASES OF THE PHARYNX.

Parasitic affections of the pharynx are quite rare, even in children, in whom the parasites generally extend from the mouth. In adults these affections are usually primary. Such diseases appear when the patient's mucous membranes furnish a suitable soil for the development and propagation of the special micro-organisms. The parasites appear in the form of tufts, lumps, nodules, etc., according to their nature and characteristics; in some cases they are entirely benign, in others by no means harmless. The epithelium and mucous membrane are the structures usually invaded, but some of the varieties burrow deeper, and may even attack the muscles.

Thrush is the most frequent parasitic affection, and is so mild that its presence is often overlooked. In other cases the symptoms are more pronounced; the pharynx may feel dry, burn, smart, or there may even be sharp pain; digestion is often impaired and deglutition greatly hindered. There may be febrile action and malaise, but the general system rarely participates, unless the attack be due to some severe systemic affection.

Diagnosis.—The diagnosis is usually easy, but it is not impossible to confuse parasitic conditions with diphtheria, follicular pharyngitis, follicular tonsillitis, or even with tonsillar concretions. It is to be distinguished from diphtheria by the absence of fever, restlessness, and prostration, although in severe cases it is possible for the general system to be so involved as to present some prostration; in diphtheria, again, the pseudomembrane is usually in larger masses, and there is greater involvement of the surrounding mucosa. In follicular pharyngitis the cheesy material can be wiped away, showing the enlarged, open-mouthed follicles. In follicular tonsillitis there is severe pain in the throat and back of the neck, and it is usually possible to pass a probe into the lacunæ, or to withdraw

some of the folliculous material. Concretions are intensely hard, and can usually be moved with a probe.

Prognosis.—The prognosis is generally good, but it is often a very difficult matter to remove the tendency to the development of these parasitic masses. Recurrence is prompt after removal with knife or scissors, and ordinary antiseptics are powerless. If an enlarged tonsil alone be involved, it may be excised. If the condition be benign, no mechanical measures are to be advised, and in all cases internal remedies should be our chief reliance, as the condition is merely a local manifestation of a more general change.

Treatment.—The constitutional treatment should consist of proper diet and hygiene and the administration of the appropriate remedies, borax heading the list.

Mycosis is a painless and rare affection. Its favorite site is the crypts of the tonsils, during chronic lacunar inflammation; in the latter stage of acute tonsillar affections, the parasites may be found at the base of the tongue, between the tonsils and half-arches, or in the crypts of the tonsils. They appear as white or yellow deposits, not unlike diphtheria, but, when uncomplicated, are devoid of pain or inflammation, and impart a sensation of hardness. Although promptly destroyed by the galvano-cautery, they may recur, if there be an irritation such as lacunar concretions or deposits, sharp-angled teeth, etc.

CHAPTER XVII.

Exudative Pharyngitis.

HERPES.

Etiology.—As a result of cold during the changeable weather of autumn and spring, herpes may develop in the pharynx, in all essential respects like that condition when found upon the skin, with which pharyngeal herpes is usually associated. Many authors believe it associated with neurotic temperaments. It is rather rare, and is most frequently found in women and children and in those who are weak and delicate, although it may attack the robust individual when mentally or physically prostrated. Syphilitic patients frequently have concomitant herpes.

Féron has suggested an association between mental emotions and herpetic pharyngitis; Berthollé believes in its connection with uterine and menstrual disturbances; and Herzog bases his theory of a neurotic origin on its one-sided manifestation, its unilateral headache at the beginning, and its postherpetic paralysis of the soft palate. The use of condiments has a decided influence upon the appearance of pharyngeal herpes, and, as suggested by Trousseau, the affection is sometimes seen during epidemics of diphtheria.

Pathology.—Pathologically, the only noticeable difference between this disease and herpes of the skin is that the process which causes the cutaneous crusts may here occasion a pseudomembrane.

Symptoms.—Symptomatically, herpes is frequently ushered in by unilateral headache, malaise, and chilliness; later, there appear salivation and heat, pain, and soreness in the pharynx, aggravated by deglutition. The pharynx, at first, presents a number of small whitish vesicles, which may be single or

grouped. The faucial region is the part chiefly involved, although scattering vesicles are frequently found on the posterior pharyngeal wall. The whole number of vesicles varies from one to thirty or forty; at the base of each the mucous membrane is red and tumefied, while each summit presents a dark spot; although generally unilateral, both sides may be attacked.

The duration of the affection is from four to fourteen days, although the vesicles generally disappear in from twenty-four to forty-eight hours; but they may recur in crops. These vesicles disappear by absorption; by rupture, ulceration, and speedy cure; or by rupture, deep ulceration, and the establishment of a false membrane, chiefly upon the palate, rarely on the pharynx. The ulcers and pseudomembrane usually disappear in three or four days.

Diagnosis.—The diagnosis is simple, in most cases. It is sometimes difficult, however, to differentiate this affection from diphtheria, although, if early seen, the vesicles render the diagnosis certain; but where there are several patches of false membrane the diagnosis is difficult, if not impossible. Peter gives two indications for the identification of herpes: (1) the presence of small ulcers, and (2) small, circular spots of transparent pseudomembrane. To these should be added its frequent association with herpes of some other portion of the body; on the other hand, it is not improbable that the herpetic condition may co-exist with diphtheria. The latter has submaxillary and cervical adenitis, herpes submaxillary. Finally, during epidemics of diphtheria the milder affection may give place to the graver.

Prognosis.—The prognosis is good if the preceding transformation be excepted.

Treatment.—The treatment is chiefly constitutional, but some soothing application is often beneficial. At times, steam inhalations lull the pain. When the membrane loosens, it may be necessary to use disinfectants to neutralize the odor.

Therapeutics.

Apis.—Clusters of vesicles, filled with clear lymph on posterior wall of pharynx. Throat puffy and shining as if varnished.

Caps. an. 6 x.—A clinical observation only. Stinging and burning in the soft palate and fauces; on the right side of the soft palate, near the base of the uvula, two well-defined herpes, which appeared as though covered with a pea-green fungus.

Compare acon., ars., clematis, conium, graph., iris, lach., lycop., natr. m., natr. sulph., phos., staphis., etc.

Pemphigus of the pharynx is either an independent affection or is a forerunner of the cutaneous form. Its etiology is not clear in all cases, although it is usually applied to syphilis or to uterine disorders. Its beginning is like herpes. The vesicles (bullæ) are much larger than those of herpes, and contain a milky-white material resembling a false membrane; like herpes, ulcers follow rupture. The larynx may participate, resulting in altered function.

Pustules are rare except in variola or as the result of herpes or pemphigus.

Aphthæ consist of an inflammatory change with a fibrinous deposit upon the mucous membrane.

They occur chiefly upon the fauces, less often upon the pharynx, and rarely upon the larynx. Aphthæ are either acute or chronic. In either there are burning, shooting pains, worse during functional activity. The deposits are apt to be mistaken for mucous patches.

ACUTE MEMBRANOUS (CROUPOUS) PHARYNGITIS.

Etiology.—The diagnostician is often greatly puzzled to distinguish this benign affection from diphtheria. Like the latter, simple membranous pharyngitis occurs in those who are in a weakened condition; who have been thrown in contact with contagious diseases, more especially diphtheria; and who

have been subjected to the influence of putrefying matter or bad ventilation.

Pathology.—Pathologically, membranous pharyngitis differs little from diphtheria, although in the former the pseudomembrane forms upon the mucous lining, whence it is easily removed; whereas in the latter it penetrates the mucosa, and is, therefore, difficult to remove, and, if torn away in the earlier stages, the tissues bleed freely, although, at a later period, the membrane of diphtheria peels off quite easily.

Symptoms.—The affection is often ushered in with a chill and slight rise in temperature; headache and sore throat are early symptoms. On inspection the throat is seen to be inflamed, more especially in the areas which are to become covered with membrane. Its favorite seat is on or near the tonsil, although the back of the pharynx is often slightly covered. As the early diagnosis is frequently uncertain, such cases should be watched very carefully and the precautions noted under "Diphtheria of the Pharynx and Larynx" instituted.

In diphtheria the membrane is frequently rolled up at the edges, which is unusual in membranous pharyngitis. In the former the membrane generally assumes the color of chamois-skin, but may be whitish; in the latter it is usually white, but may be slightly gray or even a little yellow. The extent of the deposit has little to do with the diagnosis. In diphtheria there is usually a circumscribed red zone; this is not present in non-diphtheritic membranous pharyngitis.

Prognosis.—The prognosis is good, except that the pseudomembrane sometimes extends to the larynx and causes death by suffocation. Although the disease may last two weeks or more, it is sometimes cured in a couple of days.

Treatment.—If the throat be well sprayed a few times with a 20-per-cent solution of lactic acid or peroxide of hydrogen, the deposit will usually disappear quite promptly. It is not necessary to attempt the solution of a slight amount of deposit. The best disinfectants are a 10-per-cent solution of permanga-

nate of potash, 30 per cent alcohol and water, or lime-water. These may be used either as sprays or gargles. Internal remedies have a well-marked action upon this disease and will usually cure it in a few days, but the preceding aids are often beneficial. Should the larynx be attacked, the treatment must be still more watchful and dyspnœa promptly met by intubation or tracheotomy.

For therapeutics, see end of the following subject.

DIPHTHERIA OF THE PHARYNX AND LARYNX.

Despite the vast amount of time and labor bestowed upon the practical and theoretical study of diphtheria, too little is still known from an absolutely curative stand-point, and it must be acknowledged that even the etiology and pathology are not clearly understood.

Etiology.—Diphtheria may be either endemic, epidemic, or sporadic. That it is contagious and infectious there seems to me little room for doubt; but there must be a suitable soil for its propagation, either in the usual condition of the individual or in his temporary state. It may be transmitted from one person to another or from some of the lower animals to persons by contact, the healthy person receiving the inoculation on a mucous surface or cutaneous abrasion. There seems little doubt that chickens may transmit the affection to human beings; and there is a growing tendency, especially in Europe, to attribute the cause of diphtheria in the lower animals to the presence of continuous damp soil which is not reached by the sun. In speaking of the transmission from cats, Dr. E. Klein (*The Times and Register*, July 19, 1890) says: "The natural disease in the cat is, in its symptoms and pathology, a lung disease, and it is reasonable to suppose from analogy that the lung is the organ in which the diphtheritic process in the cat has its seat."

It is fairly certain that the infection may be carried from the cow, so that those who drink the milk are liable to contract

the disease, and evidence is accumulating to show that it can be conveyed through drinking-water. The contagion may be received from direct contact of the pseudomembrane (especially with grayish-white membrane, less with that which is yellowish white), from the presence of the specific products floating in the atmosphere, or from contact with clothing or other objects contaminated with the diphtheritic poison.

One of the recent theories, in reference to diphtheria, is that it owes its existence to the chemical products of decomposition. Of these, the alkaloid ptomaines have been selected as the dread body-guards of the deadly diphtheritic process. They are almost always present in diphtheritic membrane, and it is thought probable that this chemical product of the putrefactive and fermentative vegetable changes is the vehicle of transmission through liquids, foods, etc., which have been infected by the ptomaines, either from the decomposition of organic life or the entrance of these bodies from an actual diphtheritic process.

Recent investigators claim that the Klebs-Lœffler bacilli are comparatively innocuous on healthy or unabraded mucous membrane, that the ptomaines are the poisonous principle, and that, while the bacilli will produce the pseudomembrane, no constitutional effects will follow previous to the development of ptomaines. Porcelain-filtered diphtheritic fluid freed of the organisms, but abounding in ptomaines, will cause death from diphtheritic changes without the deposition of pseudomembrane. The Klebs-Lœffler bacilli may be detected by staining with methyl blue, gentian violet, or by a blue composed of equal parts of a watery solution of violet dahlia and methyl green, to which sufficient water is added to make a moderate blue solution.

There seems to be little doubt that diphtheria sometimes originates independently of such a diseased condition, as many good authorities claim that decaying animal or vegetable products may generate the disease; but it is more probable that

the combination of decaying animal and vegetable material is the strongest link in this formative process.

Those insanitary conditions most prone to produce diphtheria are bad sewerage, ill-trapped drains, soil permeated with sewer-gas, and drinking-water, milk, etc., rendered noxious by admixture with diphtheritic or ptomainic impurities. Diphtheritically-infected houses or neighborhoods may be rendered non-infectious by proper sanitation, and those houses in which the disease returns periodically should be thoroughly inspected and renovated. It is claimed, on good authority, that the germs may remain dormant for years and then be suddenly revivified; the cases thus recorded may now receive a new light from the ptomaine theory of production, thereby proving them independent of previous poison; although the virus which adheres to clothing, etc., may remain potent for a long time, often months. There seems to be a specific diphtheritic microbe, but every diphtheritic patch contains many species of bacteria. Although the Klebs-Lœffler bacilli (No. 2) are said by Klein (*ibid.*) to be invariably present in the diphtheritic membrane, neither the blood nor the diseased viscera contain them.

Diphtheria may attack persons of any age, but childhood is the most fruitful period. It is not usual during the first year, but is most frequent between one and five years of age, after which it seems to gradually decline until adolescence; and it is quite unusual in the adult.

It is often claimed that constitutional conditions have no influence upon the appearance of diphtheria, but personal observation has led to a different conclusion. Those who have catarrhal affections of the upper air-passages, including enlarged tonsils, are more ready victims than those less catarrhally inclined. Those who are of fine physique, and surrounded by luxury and cleanliness, are less apt to suffer endemically; but during epidemics they are little less exempt than those with less sanitary surroundings. Season has considerable influence upon the disease; damp, changeable winters are worse than clear

ones, while summer is a season of comparative immunity. High and dry altitudes are generally exempt, but even there fatal epidemics sometimes occur.

Many believe that one attack gives immunity to a second, others that one attack renders the patient more susceptible to the disease; but it seems most probable that the patient who once suffers is neither more nor less prone to diphtheria, as a result of his experience.

The time of incubation is from two to seven or even fourteen days. As a rule, the closer and more continuously healthy persons come in contact with the sufferer, the earlier the symptoms appear in the one exposed.

Pathology.—The throat affection starts with an inflammation, often mottled in appearance, but soon becoming general and extending over large areas of mucous membrane. The deposit follows; beginning at one or more points, it may extend to any portion of the respiratory or alimentary tracts, to the lips, eyelids, or skin surface. The mucous membrane undergoes a change, whereby patches of exudative products are thrown out upon its surface; a necrotic process soon occurs, followed by the development of a pseudomembrane. As a result of fibrinous obstruction of the blood-vessels the mucous and fibrinous degeneration—deposit—soon yields to circumferential necrosis, and later to fatty changes, with separation of the pseudomembrane. The membrane presents, microscopically, two distinct layers, even before the stage of separation. The superficial layer contains epithelial cells, evidently from the mucous membrane, which have undergone proliferation, cloudy swelling, and mucoid and granular degeneration of the cell contents. Next to this is often a net-work of interlacing fibrillæ (coagulated fibrin) inclosing leucocytes, beneath which is the basement membrane. Since the pseudomembrane infiltrates the tissues, the necrotic process may destroy the superficial structures, so that ulceration frequently follows the separation of the false deposit. It is believed by many recent pathologists that the

disease is primarily local; soon, however, the microbes multiply, are carried into the circulation, and involve the lymphatic vessels; the entire system is speedily impregnated, the resultant ptomaines giving rise to blood-poison and adynamia. The heart is affected later and death follows unless something be done to relieve the blood of the ptomaines and prevent the formation of fresh bacilli. Post-diphtheritic paralyses are thought to be the result of this ptomainic influence. Judging from personal clinical experience, I can but agree with many close observers, and express my belief that the disease is constitutional. Although strictly an acute malady, chronic cases have been recorded.

Symptoms.—The symptoms vary with the age of the patient and the severity and progress of the attack. In young children they often appear suddenly, with marked lethargy, indifference, indicative of a violent constitutional disease (septic diphtheria), but the onset is usually more gradual and more suggestive of a local affection (fibrinous diphtheria). In the rapid onset the patient complains of malaise; feverishness; pain in the neck, back, throat, and head; the lips are dry, and there is pain on deglutition. Nausea, vomiting, and diarrhœa may occur. Cutaneous eruptions (erythema, urticaria, petechiæ) and ecchymoses are frequent. The face may be flushed, the pupils dilated, and the expression one of impending illness. The throat is congested in the onset, but does not show any signs of exudation until some hours later. The pulse may be rapid and hard, and the mercury register 103° to 106° F.; as a rule, however, the fever is very mild at first, and the chief symptom noted is a marked loss of strength with complete indifference to everything. An early examination may indicate a mild angina, and usually an enlargement of the cervical glands. Later the throat swells, the aching and pain in the throat and neck increase, deglutition becomes painful or difficult, and exudation appears; at this stage there is usually backache. The glands below the angle of the jaw, the submaxillary, and the

cervicals swell and become tender. The pulse remains above normal, but for one or two days the temperature often falls, to rise again. As the disease progresses, the symptoms of the two forms run more parallel, but may be widely different in intensity: the originally mild case may become the more severe, or the reverse order may obtain. The often scanty, thick, milky, brown, or bloody urine should be repeatedly examined for albumin, blood, and tube-casts; uræmia may thus be anticipated. The kidneys are only hyperæmic at first, but later a true parenchymatous nephritis is not infrequent. Hæmorrhages may occur both in the kidneys and spleen.

The pharynx, tonsils, or half-arches are usually studded here and there with patches of deposit, but the exudation may completely cover these parts, even extending to the mouth, Eustachian tubes, nose, accessory cavities, larynx, trachea, and bronchi, or to the œsophagus and thus through the alimentary canal. The membrane is usually white at first, but often becomes yellow, dirty brown, or even black. The patient generally has much difficulty, and sometimes pain, in deglutition, but in mild cases the act is little impeded. Sometimes food regurgitates through the nose or passes into the larynx. The voice is often thick, nasal respiration impeded, and, if there be much swelling about the isthmus of the fauces, the passage of air to the larynx will be impaired or prevented. The glands are frequently so enormously swelled as to obliterate the outline of the lower jaw; sometimes, however, they are enlarged in chains or beads. As a rule, the glandular involvement keeps pace with the development of the membrane, and as the latter diminishes the former usually recedes. If long and severely swelled, the glands may break, giving rise to a sanious discharge. The patient is greatly prostrated; the lips and tongue are dry, the latter often heavily coated, whitish or brown; and the breath often pathognomonically offensive, yet it may be without appreciable fœtor. Frequently the patient's only complaint is of prostration and a dryness of his tongue and lips,

which may be cracked and bleeding, and at which he may pick continually. This dryness is often augmented by the enforced mouth-breathing. Semiconsciousness may follow, and the sleep be restless and delirious. Suppuration of the tympanum is frequent.

If the severe symptoms continue the patient's strength will fail, the pulse grow weak and fluttering, respiration rapid and superficial, the face haggard and ashy, the discharge from the mouth become thin and ichorous, the eyes look sunken and glassy, the fœtor of the breath become more pronounced, the constrictor muscles cease to contract, the urine and fæces pass involuntarily, and the temperature fall,—all indicative of a grave termination. Finally, cyanosis may supervene, collapse follow, and the patient die while in a comatose state. In other cases the temperature falls precipitately; the patient becomes blanched and dies suddenly from paralysis of the heart.

In those cases in which the termination of pharyngeal diphtheria is favorable, the pulse and temperature gradually fall; in from three to six days the prostration, strength, and appetite improve; the membrane exfoliates, leaving a denuded surface and often increased pain on deglutition; the glands subside; the breathing becomes more natural with the decreasing restlessness; and the gradual improvement of the patient is augmented by quiet, refreshing sleep. The throat clears up, and the parts gradually assume a natural appearance, provided the ulceration has not been so extensive as to continue after the subsidence of the more acute symptoms. The tonsils often remain enlarged, but previously hypertrophied tonsils may be left in a comparatively normal condition. It is not unusual, however, to find various sequelæ, especially paralyses. Even when apparently convalescent, the heart may suddenly cease beating, usually owing to some exertion or emotion, and the patient fall lifeless. In mild cases the patient may begin to recover in three or four days; but, if severe, the symptoms may be prolonged many weeks, owing to the various complications, and the mem-

brane may re-form six or eight times. Occasionally, after all deposit has disappeared and hopes of a speedy recovery are entertained, the pseudomembrane may re-form and be worse than at any previous time.

Diphtheria of the pharynx sometimes assumes a gangrenous form, whereby large areas of the affected parts may slough. In this condition the patient is very adynamic and the grade of inflammation is apparently much more severe than in non-gangrenous diphtheria. In this variety the breath and discharges are almost unendurable, the patient loses all appetite, and usually dies in from two to eight days from implication of the heart, carbonic-acid poison, coma, paralysis, or œdema of the lungs. In this form of the disease, the kidneys are nearly always greatly affected; albuminuria is usually present; there are loss of appetite, nausea, and vomiting, with suppression of urine, terminating in uræmia with convulsions, or coma and death. Œdema is rare. The albuminuria may assume the chronic form with the presence of fatty matter and various tube-casts, indicating the existence of an interstitial, parenchymatous nephritis; uræmia may follow this condition and constitute one of the sequelæ of diphtheria.

If the membrane extend to the nose the nasal secretions become ichorous, nasal respiration embarrassed according to the amount of membrane and swelling, and the case only too often proves rapidly fatal. It may recover, however, with temporary paralysis of the soft palate and palato-tubal muscles.

It is not very unusual for the diphtheritic membrane to attack the genitalia or an abraded skin surface; it has also been observed on the healthy skin. If the membrane extend to the œsophagus and stomach, the appetite is lost and the patient is unable to swallow. The entire alimentary tract may suffer and an exceedingly offensive, watery, green, yellow, or bloody diarrhœa supervene, and contain shreds or even casts of membrane.

The larynx is usually involved by extension from the

pharynx, but Schech states that "Extension downward is what usually occurs; but the process may begin in the trachea and larynx and spread upward, as I have myself repeatedly seen." When the membrane extends to the larynx, usually from three to ten days (occasionally earlier) after its appearance in the pharynx, a slight vocal roughness or hoarseness in speaking, crying, or coughing may first call attention to it. This hoarseness may be so slight as to scarcely attract the attendant's notice, but which, to the practiced ear, indicates a future struggle. If it be possible to use the laryngoscope at this stage, the larynx will be found somewhat congested, but there may be no pseudomembrane. In a few hours or a day or two the hoarseness will probably be more evident or even permanent, and the cough distressingly hard and barking. At this stage laryngoscopic examination reveals a deposit, either on the epiglottis or, more usually, on the ventricular bands or interarytenoid fold. It may be in small, thin flakes or be thick, yellow, or brown and cover a large part of the lining membrane.

Respiration soon becomes quick, superficial, and difficult; the patient anxious, the pulse rapid and thin, the voice lost, although croupy cough may continue. If the condition advance still further, the muscles of the neck and chest are violently contracted in the effort to inspire, the epigastrium and supra-sternal notch are greatly depressed, the eyes staring, and the head and body often bathed in cold perspiration. The breathing is noisy, whistling, harsh, rasping, or sawing according to circumstances, and can sometimes be heard all over the house. The sufferer grasps at his throat to loosen all clothing, or he may even try to tear the throat open; he rolls his head from side to side or throws it back; he is restless; wants to sit up, or to be lifted up and immediately laid down again. At times inspiration alone is affected, but, as a rule, both inspiration and expiration are stridulous. Although, after it is once affected, breathing is rarely normal, it is much easier at times, and the hope is only too often entertained that the patient is

recovering. Auscultation will frequently reveal the presence of obstruction in the trachea, and even the bronchial tubes may be the seat of deposits, as evinced by the fine crepitant râles heard all over the upper chest.

If the membrane loosen, large shreds are often expectorated and even partial casts of the trachea and bronchial tubes may be coughed out. If the patient recover, which is not impossible even after the existence of severe dyspnœa, the membrane is dislodged and expelled, the breathing becomes freer, the voice gradually grows less hoarse, and the patient becomes easier and is able to sleep comfortably. Convalescence is usually gradual and may be interrupted by a return of the symptoms, from which the sufferer may succumb. In fatal cases the cough becomes less hoarse and barking, or may be suppressed; the voice is extinct; the breathing exceedingly labored; the pulse weak; the eyes lustreless; the veins in the neck greatly distended; the lips and finger-tips bluish, cyanotic; the surface of the body bathed in cold perspiration; the feet and legs cold; and stupor supervenes. This state passes into somnolence, coma follows, and, unless respiration be mechanically relieved, death is the usual result.

In adults the greater width of the larynx and trachea renders the severe symptoms less frequent than in children, although where there is a large amount of false membrane or a considerable degree of infiltration or œdema, the same symptoms may arise and death follow. Although false membrane is frequently found in the trachea at the time of tracheotomy, the deposit is apt to become more extensive in this passage and in the bronchial tubes after the operation. After tracheotomy an increase in respiratory difficulty is indicative of an obstruction in the tracheotomy-tube or an extension of the membrane to the deeper parts, with a decrease in the amount of the discharge from the cannula, increase in the cough, and a rise of temperature. If the latter complication exist, the patient soon becomes cyanotic and passes through the stages already noted as causing

death. Dr. J. O'Dwyer (*Jour. of the Resp. Organs*, June, 1890) says that in no other acute disease of the larynx is there "excessive tumefaction and rigidity of the epiglottis as conveyed by the sense of touch."

Sequelæ.—Cardiac complications are not rare, and, after recovery seems assured, many patients die from sudden paralysis of the heart, fatty degeneration of the heart-muscles, or thrombosis of the ventricles, assisted by paralysis of the vagus and cardiac ganglion. As a rule, the termination is sudden and unlooked for, but sometimes the patient may survive a number of hours or even a few days, after the first appearance of the cardiac changes. These usually occur as palpitation, very rapid pulse, asthmatic respiration, and gradual collapse. Myocarditis is also a complication of rather frequent occurrence, from which the patient may recover after some weeks or months; but such complications usually prove fatal from dropsy or paralysis of the heart. Perichondritis of the larynx occasionally follows protracted diphtheria.

The sequelæ of tracheotomy are: permanent use of the cannula, on account of paralysis of the posterior crico-arytenoid muscles (abductors); laryngeal or tracheal strictures, following ulceration either of diphtheritic or traumatic origin; or the presence of a tracheal fistula from sloughing of the tissues about the tracheal wound, due to erysipelas or secondary diphtheria of the incision. A speedier and more serious sequel may be pneumonia, as already suggested.

Stenoses of the larynx or trachea need the same care as noted under "Stenosis of the Larynx." Otorrhœa, following a diphtheritic process of the middle ear, is not an unusual complication and sequel.

Paralysis, following acute sore throat, is generally regarded as sufficiently pathognomonic of a recent diphtheria to warrant such a diagnosis, even if the affection have been very mild and without visible deposit both with and without the aid of mirrors. It must not be forgotten, however, that paralysis sometimes follows

other than diphtheritic conditions, especially typhoid fever in which there has been a throat complication. Quite recently, considerable stress has been laid upon the occurrence of paralysis directly following or associated with acute follicular tonsillitis In *The Hahnemannian Monthly*, January, 1891, Dr. Edwin H. Van Deusen calls attention to "An Affection of the Pharyngeal Muscles Following Follicular Tonsillitis, and Resembling Post-Diphtheritic Paralysis." He and others claim paralysis to be a sequence of follicular tonsillitis; while this is probable, it must be remembered that it is often exceedingly difficult to make an unqualified differentiation between these affections. Palsy of the soft palate may follow herpes.

Paralysis usually shows itself in a loss of motion of the soft palate and uvula, whereby speech is defective and nasal regurgitation of food frequent. There may be loss of power in the ocular muscles, giving rise to impairment in the motion of the globes, or the action of the ciliary muscle may be hindered, giving rise to an enlarged pupil and loss of accommodation. Loss of power may occur in some of the muscles of the arms and legs, less frequently the constrictor pharyngeal muscles. Involvement of the superior laryngeal nerves gives rise to difficult deglutition, owing to anæsthesia of the mucous membrane about the upper portion of the larynx and to loss of motion in the epiglottis, whereby it remains in its vertical position during deglutition. Paralysis of the larynx is quite rare, but may appear and render vocalization imperfect or impossible, or, when the abductor muscles are paralyzed, it may so interfere with respiration as to cause severe, or even fatal, dyspnœa. The voice may be impaired from paralysis of the crico-thyroid muscles (superior laryngeal nerves) or from loss of power in the adductors (recurrent laryngeal nerves). Loss of motion on the part of the diaphragm is, fortunately, rare, as it is one of the most distressing conditions, in that the greatest dyspnœa results, owing to its lost action. The respiratory muscles are rarely affected until some weeks after apparent recovery.

Paralyses of other muscles of the body are less frequent, but there may be incontinence of urine, rectal sluggishness, and impotence. The rarest form of post-diphtheritic paralysis is a loss of motion in the muscles of the neck, so that the patient cannot move his head from the pillow.

Most forms of post-diphtheritic paralysis (considered a part of the disease, and not a sequel, by Jacobi and W. H. Thomson, of New York) occur two or three weeks after cessation of the active symptoms, but the loss of motion may not be noticed for five or six weeks; on the other hand, it may occur before the close of the active condition or even the exfoliation of the false membrane. As a rule, these paralyses are self-limiting; the milder forms may pass away in from one to ten weeks, although they generally require medicinal, electrical, or surgical aid. Occasionally the paralysis proves incurable, and death may follow. The medicines which have proved most serviceable are assafœtida, bovista, caust., gels., ignatia, and rhus tox. The classic remedy of the dominant school is a hypodermic injection of one-sixtieth of a grain of strychnine. Electricity may be advantageously applied directly to the affected muscles, selecting preferably the faradic current, the negative pole of which is to be placed over the affected muscle, the positive elsewhere, but usually held in the hand. When within the pharynx, larynx, or œsophagus, the laryngeal electrode may be used (see "Neuroses of the Larynx"). When deglutition is greatly impaired or food enters the larynx from implication of the superior laryngeal nerve, the use of the stomach-tube is usually essential, as sufficient nourishment can rarely be absorbed from rectal enemata or oily inunctions, even were they as desirable as stomach feeding. The œsophageal tube should have a funnel-shaped top, into which, when properly placed, fluid food can be poured. The food should always be warmed, and not given too fast; it is also important to have it very nourishing and concentrated. In most instances, it is better to have it partially predigested. If dyspnœa be threatening, as a result of paralysis

of the posterior crico-arytenoid muscles, it is rarely safe to delay tracheotomy in the hope of a recovery, as death may occur suddenly, especially if the patient be subjected to fright or vigorous physical strain.

Diagnosis.—The diagnosis of diphtheria is usually a very simple matter, but it is sometimes impossible to make a satisfactory differentiation. In mild cases the disease may be confused with parenchymatous or with follicular tonsillitis, herpes, aphtha, membranous pharyngitis or tonsillitis, syphilis, phlegmonous pharyngitis, or scarlet fever; this is especially true early in the affections. In most cases the subsequent history will quickly clear up the diagnosis. The septic and severer forms of diphtheria may be mistaken for typhoid fever.

In acute tonsillitis the tongue is heavily coated white, there is usually a high fever, great difficulty in opening the mouth, and severe pain on deglutition; when the tonsil becomes very large and gives evidence of pus formation, the diagnosis is usually easy. In diphtheria the tongue is usually dry and uncoated, the fever less marked, the mouth easily opened, and deglutition less painful.

Diphtheria may usually be differentiated from follicular tonsillitis (see the latter affection). It is sometimes most difficult to distinguish it from herpes of the pharynx, but the latter affection is rare and the herpes usually isolated; although they may be confluent, in which case they are only to be distinguished by the further development of the condition and the absence of the Klebs-Lœffler bacilli and albuminuria. Further, there is less constitutional disturbance and the membrane of herpes does not spread to neighboring organs. It is distinguishable from aphtha by the absence of fever, pulse acceleration, prostration, and history. The distinction from scarlet fever is difficult; for both may have a rash and sore throat, but the scarlatina angina is usually more diffuse and redder than that of diphtheria; it is without an areola; the deposit appears thick, irregular, as if excavated, with no apparent tendency to

spread, and is easily detached from the mucous membrane. There is albuminuria in each, but diphtheria does not seem to have hæmaturia; the prostration of diphtheria is usually greater. Finally, the thermometer may register 103° to 105° F. continuously in scarlet fever, while, in the affection under consideration, rarely more than 102° F., and is fluctuating. The bacillus of Klebs and Lœffler is found in true diphtheria, but in the scarlatinous form only the streptococcus of suppuration. According to Tchernaieff (*Bulletin Med.*, No. 28, 1889), the diphtheria of scarlet fever shows itself from the third to the fifth day of the disease. It never attacks the larynx, but always the nasal fossæ. It is never followed by paralysis. Histologically, the false membranes never show the character of those of true diphtheria, consisting only of a granular cell-detritus, and never showing the hyaline net-work. The tissues beneath the false membrane show only inflammatory lesions. True diphtheria is a necrotic process.

From membranous pharyngitis it is sometimes impossible to differentiate it; but, as a rule, there is less prostration in the non-diphtheritic affection; there is not usually any areola surrounding the false membrane, which is whiter in color; its edges are not so apt to be curled up; it is not so liable to adhere very tightly to the underlying tissues, so that its forcible removal is rarely followed by bleeding, although the under side of the dislodged pseudomembrane may be blood-stained.

Syphilis may at times complicate the diagnosis, but the marked dull areola which surrounds the mucous patch, the complete absence of fever, and the history will usually be sufficient to distinguish the affection. Phlegmonous pharyngitis and erysipelas have higher temperatures, greater pharyngeal distress, and marked œdema.

The differentiation between membranous croup and diphtheria of the larynx is, according to Gay, of Boston (*Kans. Med. Jour.*), as follows:—

CROUP.	DIPHTHERITIC CROUP.
A local disease.	A constitutional disease.
Begins in the larynx.	Begins in the fauces.
Pharynx slightly affected.	Pharynx extensively affected.
Not traceable to local causes.	Often traceable to local causes.
Seldom occurs in adults.	Not infrequent in adults.
Neither contagious nor infectious.	Both contagious and infectious.
Not epidemic.	Often epidemic.
No affection of lymphatics.	Lymphatics often affected.

Kolisko and Paltauf (*Wien. klin. Woch.*, No. 8, 1889) say it is not possible to discover any anatomico-pathological difference, as Lœffler's bacillus is found in both diphtheria and croup.

From typhoid fever it may be diagnosed by repeated examinations of the throat, but the general symptoms may be so purely typhoid in nature that it is possible for the physician to be thrown off his guard, especially when false membrane has not formed at the time of the first examination; later, the general symptoms may so far outweigh the local that a subsequent examination of the throat may be neglected.

Whenever diphtheria is suspected, with uncertain diagnosis, it is advisable to use both laryngeal and rhinal mirrors, as it is not unusual for a false membrane to form out of sight of the unaided eye. Repeated examinations of the throat should not be neglected in any acute pharyngeal difficulty, as at any time an apparently simple disease may develop into a true diphtheria.

Prognosis.—The prognosis depends upon many circumstances, and, no matter how mild the beginning, the gravest complications may arise. It is never safe to promise much until the stage of sequelæ has passed. The patient may die in twelve hours from the first appearance of the membrane, or death may be delayed three or more weeks. Infancy and early childhood are unfavorable to recovery; other things being equal, the older the patient, the greater the prospect of a cure. The nature of the epidemic has great influence on the termination, as malignancy is the rule in some, while in others most cases recover. Family peculiarities have an apparent influence on the

result. Gangrenous diphtheria is very generally fatal. The condition most feared is the extension of the disease to the larynx, trachea, and bronchi, so frequent in certain epidemics and in the so-called "croupous" individual. Early nasal involvement is unfavorable, as are hæmorrhages, ecchymoses, purpura, asthenia, septicæmia, marked albuminuria with scanty urine, uræmia, and typhoid conditions. Deposit on the hard palate, cheeks, tongue, and lips indicates serious consequences. Rapid decline of fever, suppression of urine, and cardiac failure are too often fatal signs. It is, therefore, very difficult to make an exact estimate of the fatality of the disease. In one epidemic in Oldenberg, in 1822 (*Arch. für Kinderheilkunde*, 1886), it was fatal in 55 per cent of the cases, and Mackenzie says "It may, perhaps, be laid down as a rule that, of the cases in which a definite false membrane is present, one-third, at least, will probably prove fatal." Some have gone further and said that when the patient recovered the disease was not diphtheria. It may be stated that, the more rapid the development of the membrane and the greater its extension, the graver the case; also, the thicker and darker the false membrane, the greater the danger; yet a thin, light-colored membrane not infrequently becomes gradually thick and dark,—and this when the patient is apparently improving.

Under homœopathic treatment the prognosis is not usually so bad, yet, in certain epidemics death occurs in, perhaps, one-third of the cases, and when the larynx is attacked secondarily about one-third of the cases recover. Raue, in the third edition of his "Special Pathology and Therapeutic Hints," says: "The prognosis of diphtheria, generally speaking, under homœopathic treatment, is not bad. Of course we meet difficult cases, even fatal ones; but the percentage of loss is small. Its danger lies principally in the possibility of its extension to the larynx, and its septic poisoning."

Treatment.—As soon as diphtheria is discovered the patient should be isolated; all children and those not actually needed

in the care of the case should be absolutely excluded, and it is better that the attendants do not come in contact with other persons. The sick-room should be light, warm (70° to 75° F.), and airy, without draughts. The atmosphere should be kept moist, and all unnecessary drapery immediately removed, as it may conduce to a later spread of the disease. Disinfectants, especially Platt's chlorides and eucalyptus, should be constantly exposed in the sick-room and throughout the house. All discharges should be disinfected, and handkerchiefs and cloths upon which the patient expectorates burned; wearing apparel should be thoroughly fumigated before it is washed. It is possible for an uninfected person to carry the disease to others, and it also seems possible that the patient may have a second attack from too close relationship to drapery, clothing, etc., which was infected during the primary disease. It is not certain that particles of the diphtheritic virus may not remain dormant in the crypts of the tonsils, or in the nasal passages, to spring into activity when the system again presents susceptibility to the disease. Inoculations for the purpose of rendering animals immune have succeeded, but I know of no such results in man. Cultures have been used successfully by Kitasato and Behring; C. Fränkel has shown that these cultures should be heated to 131° to 140° F. (*Berliner klin. Wochenschrift*, No. 49, 1890). Subcutaneous injections of a 10-per-cent solution of peroxide of hydrogen are said to act prophylactically.

The treatment of diphtheria is chiefly internal, based upon carefully-secured indications, but this should be aided by strict dietetic and hygienic measures; and there seems little doubt that mild local treatment is sometimes of great value. Occasions arise when mechanical measures are necessary to save the patient.

The one mode of treatment which is indicated in all cases, but especially in the severe forms, is systematic feeding. Upon this, in a large number of instances, depends the ultimate result. The food should be easily assimilable, so that it will require

little digestive action, and yet be nutritious. The second great desideratum is the regularity with which nourishment is taken, night as well as day; in fact, it is often more important to insist upon this regularity at night than by day, as during the former period the debilitated system requires more to sustain it. Owing to a loss of appetite, it is not always possible to induce patients to take nourishment; it may then become imperative to resort to some mode of artificial feeding, particularly rectal enemata. At times the pain is so great that the patient refuses to swallow; it is then well to make an application of a 4-per-cent solution of cocaine or calendula preceding deglutition, that the inflamed areas may be rendered less sensitive. In other cases food is immediately ejected, when it will be necessary to advise some other form of nourishment, especially predigested meat-juice, bovinine, peptonized milk, matzoon, etc. Milk is praised by most physicians, but condemned by some, who either think it difficult to digest during diphtheria, or that its ingestion increases the pseudomembrane. A little lime-water or pepsin appears not only to render this most valuable food assimilable, but by its local action aids the solution of the false membrane. Ice-cream is often both acceptable and advantageous. Raw eggs are among the best forms of diet. Lemonade and lime-juice are frequently grateful. Finally, oily inunctions may be required.

Although many advise the use of alcoholics, they do not seem to be of special advantage in the majority of cases. Their seeming efficacy in "tiding" the patient over a period of collapse or heart-failure may be counter-balanced by a pernicious secondary effect upon the heart. If, however, alcoholics, preferably brandy, be used, the special indications are irregular, flagging pulse (heart-failure), and syncope.

When indications of heart-failure appear, it is important that the patient's head be low, and that he make little or no voluntary exertion. This precaution will sometimes prevent a fatal syncope.

The local treatment has varied so much that it is not necessary to follow its history, but those remedies and means will be given which seem to harmonize with the use of the internal drugs and lead to the comfort and improvement of the sufferer. These adjuvants are employed for the purpose of limiting the formation of the membrane, of dissolving that which already exists, of acting as disinfectants, and of affording relief to the obstruction to respiration and deglutition. One point favoring the use of local measures is the belief that the bacilli are present only in the most superficial part of the membrane. The only excuse for forcibly dislodging the false lining is in those cases where the deposit impedes respiration, or where so gangrenous as to prove an undoubted source of auto-infection. When the membrane extends to the larynx or trachea, mechanical treatment will often be required. Different means may be tried as solvents of the membrane. Of these the most valuable are: lime-water (locally and internally), saccharate of lime (Lanné), lactic acid (30- to 50-per-cent aqueous solution), trypsin (pure or diluted with 20 per cent of bicarbonate of soda), papayotin (pure or dissolved in water), and pepsin and sugar of milk (in equal parts). The powders are to be insufflated and the solutions either sprayed or painted upon the false membrane every hour or two.

Dr. A. Seibert, of New York, has made various favorable reports (the first, *New York Medical Journal*, December 6, 1890) of his method of early submucous injections of chlorine-water (U. S. P.), "made directly through and under the diphtheritic pseudomembrane (submembranous) and into the inflamed mucosa below." He uses a fine puncture syringe of special pattern. Two or three drops of 0.2-per-cent solution may be injected at two or three points. One injection usually suffices if used before the deposit becomes profuse; otherwise, Seibert does not recommend the treatment.

Alcohol as a gargle (1 to 4 or even 1 to 2) is a preparation of great utility, and should be tried in all cases; if used

as a spray, 1 to 6 will be sufficiently strong. As antiseptics and disinfectants, permanganate of potassium (2 grains to the ounce of water), eucalyptus (20 per cent), and peroxide of hydrogen (25 per cent) act well. Liquor calcis chlorinati, as recommended by Dr. C. Neidhard, is of undoubted merit. This remedy and peroxide of hydrogen answer both as disinfectants and dissolvents. Some patients derive great satisfaction from the use of little pieces of ice held in the mouth; others prefer inhalations of steam; the latter not only relieve the dryness of the throat, but assist in loosening the membrane, when exfoliation has begun. When young patients will not inhale steam from the kettle or atomizer, it is advisable to moisten the atmosphere near the bed. Occasionally a tent may be needed; this can be formed by throwing a sheet over a portion of the bed, or, more conveniently, over a crib; the sheet should be kept some distance above the child, either by the post or headboard of the crib, or a high-backed chair. Poultices and cold applications over the surface of the neck are doubtful aids. Lime may be used to great advantage when slacked in the room. The minute particles often give relief to pharyngeal irritation, and appear to have the power of dissolving or, more properly, loosening the false membrane. The best methods of generating steam are the steam-atomizer, the croup kettle, and hot water kept constantly boiling on a stove, or an alcohol or gas flame. As these are not always possible, the following device will answer: A bucket of cold water is placed in the room, into it a heated iron or brick is plunged and quickly removed; in this way the room is soon filled with a moisture, both agreeable and beneficial.

When the tonsils are so large as to greatly hinder respiration, they should be removed. Dr. Babchinski, of Kieff (London *Lancet*, April 26, 1890), has treated a number of cases by inoculation of Fehleisen's coccus of erysipelas. The inoculation was performed by means of punctures in the submaxillary region. Of the fourteen cases so treated, two died before the erysipelas developed, the rest recovered, as well as those which developed

erysipelas spontaneously. Yet Roux and Yersin have noted a pseudo-bacillus very like that of the Klebs-Lœffler, but without virulence unless associated with Fehleisen's coccus. In 1880, Dr. G. J. W. Kirk, then of Bristol, Pa., was successfully treating malignant diphtheria with hypodermic injections of permanganate of potassium, 2 grains to the ounce of warm water, in addition to the internal use of the drug. When

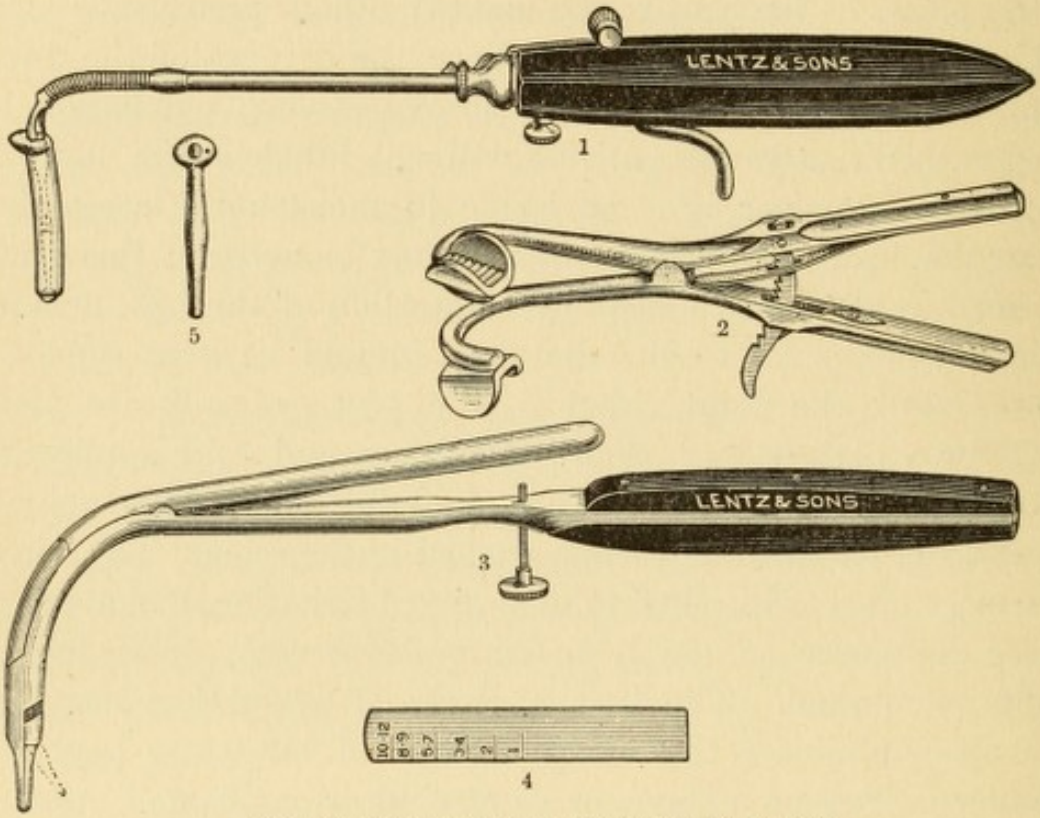


Fig. 65.—O'Dwyer's Intubation Apparatus.

the membrane appears in the nose, the treatment enumerated under "Primary Diphtheria of the Nose" should be employed.

When the pseudomembrane extends from the pharynx to the larynx the affection becomes grave, and in the majority of instances some operative procedure will be required in order to relieve laryngeal stenosis. Retrocession of the supra-sternal notch and chest-walls and slight cyanosis are indications for tracheotomy or intubation, and, as a rule, the sooner it is done the better; yet some cases recover, after the onset of these symptoms, without such interference. Where cyanosis is marked, however,

one or the other operation is urgent, unless the lungs be much involved from extension of the membrane, pulmonary collapse, or pneumonia. In these latter cases mechanical measures not only fail to relieve, but sometimes even aggravate the symptoms. If laryngeal dyspnœa be very marked and but little hope can be extended, operation is often advisable, even though its only prospect is to favor euthanasia.

I cannot subscribe to the advice given by many surgeons, to operate as soon as false membrane appears in the larynx; I have seen such cases recover without operation.

In the light of recent statistics, it seems to make little difference whether the trachea be opened or a tube be inserted through the natural passage; on that account the choice of the operation usually devolves upon other points to be considered. After deciding upon the necessity for operation, the consent of parents, guardians, or friends must be obtained. Tracheotomy is considered by them a serious operation, and one upon which they often look with disfavor; while intubation is scarcely an operation, as no cutting is done and no blood is lost. The choice is then but a natural one, even when they are told that "there are very occasional instances in which a hasty tracheotomy is required, when the membrane is pushed loose in front of the tube and obstructs respiration." This predicament, though, must be very rare; I have never met such a case, although I always have the tracheotomy instruments in readiness. In some rare cases it may be necessary to open the trachea, where after a day or two the intubation-tube fails to give free respiration. Care should be taken not to overfill the stomach with fluid, lest the heart be mechanically interfered with. When the tonsils are very large they may greatly hinder, or even prevent, the introduction of an O'Dwyer tube, thus necessitating tracheotomy or previous tonsillotomy.

Dr. Betz (*Centralb. f. die ges. Ther.*) has succeeded in averting death, where an operation seemed inevitable, by having the patient inhale three or four drops of the following solution

every half-hour: Sulphuric ether, 3 parts; acetic ether and menthol, each, 1 part. Dr. Hirsch, of Prague (*Pop. Hom. Zeitschr.*), has had like results from a plaster of resin of euphorbium, spread upon waxed tafeta and placed over the neck; and Schech has succeeded by removing the membrane from the larynx by endo-laryngeal manipulation. The inhalation of chlorine-gas has frequently caused the immediate expulsion of laryngeal and tracheal casts.

During the entire course of the disease it is well to keep the patient as quiet as possible, lest overaction of the weakened heart occur, and result in sudden syncope or heart-failure. The pulse should be carefully watched, and if it be very weak, irregular, or fluttering, food should be given regularly and often; and the extremities warmed with bags or bottles of hot water, hot bricks, stove-lids, or friction. Brandy may be administered. The head should be lowered, and cactus grand., cocaine, or digitalis given internally. As the patient improves, the greatest caution should be exercised to continue the recumbent posture, even after the acute symptoms are apparently relieved, lest heart-failure suddenly terminate an otherwise favorable case.

Internal remedies are of the utmost importance, but space forbids reference to all thus indicated, or used. An effort will be made, however, to give a practical *résumé* of this division of the subject.

Prophylactics are of such value that they should always be employed, giving semi-daily doses to those who are exposed. Apis has the greatest reputation as a preventive, but it is better, usually, to give the remedy which seems to be best adapted to the special epidemic, or, if sporadic, to the case or cases treated.

Therapeutics.

Ailanthus.—Great stupor; nasal discharge makes the upper lip sore; throat and tonsils livid, swelled, and deeply ulcerated. Torpor and stupor.

Ammon. carb.—When the membrane is chiefly confined to

the nose, with an extension to the lips; the pharynx is almost free, but often gangrenous; great prostration.

Apis.—Prophylactic. Patches first appear on the uvula and faucial arches; much swelling; œdema of the face and neck; deglutition very painful; scanty urine; prostration from the start; not much fever; pulse rapid, but not strong. Throat bright-red and as though coated with red varnish. Membrane dirty gray, thick like chamois-skin, worse on the right tonsil, which is often studded with deep, gray, angry-looking ulcers. Uvula œdematous, interfering with deglutition. Glottis encroached upon by œdema and swelling, producing dyspnœa; some rash; much swelling of cellular tissue outside and in, with erysipelatous appearance, but without abscess formation. I look upon apis as one of the most useful remedies for diphtheria.

Ars. alb.—Advanced sepsis; membrane dark, dry-looking, and wrinkled; great fœtor; internal and external swelling; nasal discharge thin and excoriating; œdema of the throat, great pain; prostration; albuminuria.

Arum tri.—Discharge from the nose and throat very acrid and excoriating; lips sore and swelled; throat burns; deposit in the larynx. Dr. A. Korndœrfer says it has less bleeding from the nose than has nitr. acid, less soreness, lips less black, less rash on the body, and it has more hoarseness, restlessness, and tossing about.

Bap.—Prostration intense; half stupid, almost besotted look; typhoid condition. Absence of pain; gangrenous odor from the nose and mouth; pseudomembrane is dark and has a tendency to become gangrenous; œdema of the fauces and uvula.

Bell.—Much dryness and severe dysphagia from the beginning; glands swelled; neck stiff. Throat bright-red; fever high. Bell. and merc. cyan., in alternation, are lauded by Marc Jousset for diphtheritic croup.

Canth.—Post-diphtheritic albuminuria, the urine contains tube-casts; extreme prostration; attacks of syncope. Dr. Neid-

hard, in writing of the laryngeal involvement ("Diphtheria," p. 153), states: "From seventy to eighty cases of the mild as well as the most aggravated form were treated by me with *cantharides* in the first and second dilutions, with decided benefit. The disease seemed to be arrested by this remedy, although rather slowly." Severe burning pains with rawness and constriction of the throat and larynx, sometimes almost amounting to suffocation on attempting to swallow water. Marked debility.

Carbol. ac.—"No high local inflammation; no severe pain. Great accumulation of deposits, spreading a most offensive odor. Grayish, bluish membranes, with a tendency to putrefaction; with a cadaveric stink and swelling of the cervical glands. Exudation extending into the larynx." (A. McNeil, "A Treatise on Diphtheria.")

Caust., curare, gels., oleander.—Post-diphtheritic paralysis.

Cocaine 1 x and **kali cyan.** 3 x are recommended by Dr. W. C. Goodno for a pulse which is rapid, feeble, and perhaps rhythmically disturbed; impending heart-failure.

Crotalus.—Especially for the persistent epistaxis: general grave blood-poison and great prostration.

Helonias.—For the prostration—broken-down condition—which remains for weeks after the cure seems otherwise complete. A condition amounting almost to chlorosis in some cases.

Ignatia.—Much swelling of the anterior cervical glands; delirious sleep, crying out for help; stitches from the throat to the ears. Ignatia was first advised by Dr. Boskowitz, of Brooklyn, and since used by many practitioners almost empirically, but with good results in many instances. My first acquaintance with this remedy and this disease was during my early study with Dr. George J. W. Kirk, who was then using ign. in alternation with apis, with very gratifying results, as he scarcely lost a case in an epidemic which proved generally fatal among the patients treated by other physicians.

Kali bi.—Worse after sleep (lach.); tough, ropy, yellow,

discolored, bloody mucus; pharynx, fauces, and even hard palate covered with a grayish-yellow exudate; uncovered portions purple; deep ulcers of the fauces; nose and larynx invaded; marked glandular involvement, nervous prostration.

Kali permang.—Swelling within and without; œdema of the soft palate and uvula; thin, sanious, nasal discharge; excoriating upper lip; horribly offensive odor. Black, gangrenous exudate; great prostration. Dr. I. W. Heysinger (*Jour. Oph., Otol., and Lar.*, January, 1892) highly recommends 1 grain of the crystals in about 3 ounces of pure water. One teaspoonful is given, alternately with mother-tincture of bell., every hour or less. He also uses the permanganate of potassium as a prophylactic. Dr. W. B. Van Lennep considers it "almost a specific," and I have had very gratifying results from its use.

Kali phos.—"In the well-marked malignant, gangrenous condition; patient exhausted, prostrated. Also for the after-effects of diphtheria, such as weakness of sight, nasal speech, or paralysis in any part of the body, squinting, etc. The *putrid character* is well marked, as seen by the bone and putrid-smelling odor from mouth." (Boericke and Dewey's "Tissue Remedies.")

Lac can.—This remedy has been used to a limited extent, but with apparently good results in many instances. Great restlessness, turning and shifting; throat feels dry, husky, as if scalded. According to the late Dr. Lippe, ulcers go from side to side and have a glistening, shining appearance; the glands swell, are painful to touch, and have the same changeable character; the nasal discharge excoriates the nostrils and upper lip. Diphtheria beginning in the larynx and passing upward; partial suppression of urine; œdema of pharynx.

Lach.—Asthenia throughout; the false membrane goes from left to right; neck stiff and tender to contact; worse after sleep; hoarseness; nasal discharge thin, sanious, excoriating; neck very sensitive to contact; subjective symptoms more pronounced than the objective; deep redness of mucous membrane;

a tendency to attack the larynx; swelling of the glands and cellular tissue, in which suppuration may occur; urine scanty and albuminous; offensive diarrhœa. The patient drowsy, the extremities cool, and the pulse feeble.

Liquor calcis chlorinatæ.—Dr. C. Neidhard recommends from 5 to 15 drops in ½ tumblerful of water, a teaspoonful, according to urgency of the symptoms, at intervals of from one-fourth hour to six hours; alone, or in alternation with other remedies. On the 17th of September, 1891, the doctor said to me: "There are many very valuable remedies for the treatment of diphtheria, but I have found none so prompt or so efficient as the liquor calcis chlorinatæ." In a number of instances the remedy has served very faithfully. Bell. acts as its antidote.

Merc. cor.—According to the late Dr. J. G. Houard, it is especially useful if there be nasal hæmorrhage; great prostration; offensive and dark or yellowish-white false membrane on the nasal passages and pharynx; ulcers on the inside of the cheeks; salivation, and secondary stomach trouble.

Merc. cyan. has great prostration as its chief characteristic; laryngeal involvement and marked swelling of the glands. Stringy, thick expectoration (kali bi. has less prostration). Dr. von Villers gives the following indications: "An exudate which may be white, yellow, gray, or of an intervening shade; adynamic fever and collapse even at the commencement. The pseudomembrane, owing to its situation, may not be visible."

Merc. dulc.—If there be grass-green and very offensive diarrhœa this remedy is strongly indicated and should be given at once. This and kali bi. are Dr. Isaac G. Smedley's favorites.

Mur. ac.—Intense prostration; mucous membrane of the mouth and throat denuded and dark red or bluish red; the ulcers in the mouth are black or have a dark base, with a tendency to perforate; yellowish-gray deposit and fetid odor. Œdema of the uvula (ars., caps., hydroc. ac., kali per., merc. cyan., natr. ars.). Acrid nasal discharge, excoriating nostrils and upper lip; epistaxis of dark blood; drowsy, stupid, typhoid condition.

Naja tri.—"In impending paralysis of the heart. The patient is blue. He awakens from sleep gasping. The pulse intermittent and thready." (Farrington.) (Compare cocaine.) The cough is deep and hoarse; dyspnœa; retention of urine.

Pine-apple juice has found much favor with the laity.

Rhus tox.—Pseudomembrane dark and bloody; saliva (sometimes bloody) flows from the mouth during sleep. Glandular and cellular involvement, with pus formation in some cases. Restless; the child wants to be carried about. Post-diphtheritic paralysis.

Sulph. has been used most frequently, especially by the laity, as an insufflation of the powder made from the flowers. It acts favorably in some instances, but the claim of its specific nature has brought disrepute upon it. Internally, it is indicated for a false membrane confined to the pharynx, not attacking the fauces or tonsils, which are dark red and painful; slowly progressing cases in psoric persons.

Sulph. ac.—When there is a large amount of thick, gray, or yellowish discharge. Deathly pallor of the surface; drowsy; somnolence. This is one of the best local applications or gargles, using a 2 x alcoholic preparation diluted with an equal quantity of water.

Tarentula.—Dr. Samuel Freedley compared it to the action of acon. in acute inflammatory fevers; and added: "Tarentula cubensis, I have found, will cure diphtheritic fever in its highest forms with delirium, in about the same time that the former remedy cures acute fever, and if given at the proper time rarely wants any other medicine to perfect the cure." W. J. Martin (*Trans. Hom. Med. Soc. of Pa.*, 1884) made the preceding quotation, followed by the histories of a number of cases cured by the remedy in the 3 x dilution in water. It seemed to have no important influence when the larynx was involved, but frequently acted in promptly reducing the fever and curing the patient. In concluding his paper, Dr. Martin says: "If you get a case where none of the old and oft-tried remedies are

indicated, where it seems as though the symptoms call for bell. and mercury both at the same time, there you have a case for tarentula; and I do believe, as a rule, if we get the case within about twelve hours of its start, we can check the progress of the disease at once."

Terebinth-oil.—When a croupy cough or husky voice denotes the involvement of the larynx, a drink of milk, immediately followed by a teaspoonful of spirits of turpentine or of tar, sometimes proves prompt and pleasing. This remedy is often used as a prophylactic, and for the prostration and lack of appetite following the attack. Its inhalation in the form of vapor often adds greatly to the comfort of the patient.

Zinc.—Dr. Woodward (*Medical Era*, March, 1890) writes: "In diphtheritis where there seemed no hope, I have found zinc to act like magic. It is indicated when the disease, starting in the pharynx, goes down to the larynx, with much infiltration of glands; great pallor, with very feeble and irregular pulse, hands and feet cold; and, still more definitely indicated if, in addition, there is delirium or coma, with severe prostration."

CHAPTER XVIII.

Various Conditions.

HÆMORRHAGES OF THE PHARYNX.

Etiology.—In a mild degree, hæmorrhage of the pharynx is quite frequent, but severe bleeding is rare. The former is usually the result of coughing, gagging, retching, vomiting, or ulceration; the latter, of injury to a blood-vessel, severe ulceration, new growths, gangrene, or cancer, when it may prove dangerous or even fatal. Vicarious hæmorrhage of the pharynx is infrequent.

Symptoms.—In the mild form, the bleeding is usually capillary and has generally ceased when the patient is seen; if not, it is probably noticed to trickle from the naso-pharynx (often epistaxis), although it may be from the pharynx itself. The soft palate and uvula are sometimes the seat of a submucous hæmorrhage, when they usually present the appearance of a sheet of blood; but in rare instances they are dotted with numerous bright-red spots.

The retro-pharyngeal tissues may be the seat of a profuse bleeding (hæmatoma), the accumulation giving rise to symptoms not unlike those of retro-pharyngeal abscess. In one case operated by Stoerk, bright-red blood spurted out, giving the idea that he had opened an aneurism.

Prognosis.—The prognosis is good in most cases, but it is not always possible either to arrest the bleeding or to prevent the resultant gangrene.

Treatment.—If slight bleeding persist after the patient is seen, acon., hamamel., lach., phos., etc., may immediately control it; but it is usually well to prescribe a gargle of gallic acid, tannin, alum, or some other astringent. If, in a reasonable time, the preceding treatment fail to relieve the bleeding, digital com-

pression should be used. In profuse hæmorrhage, if the bleeding-point be found, it should be grasped with tenaculum or forceps and twisted or compressed: usually, however, it is easier to touch the point of bleeding with chromic acid or the galvano-cautery. If the carotid be injured, its main trunk must be ligated, as compression is rarely effectual. If the soft palate be infiltrated, little treatment is usually required, unless the mucous lining seem to be stripped from the underlying structures, when the former should be punctured. If the uvula be very much infiltrated it is best to incise it, either with a pair of scissors or a sharp-pointed knife; care should be exercised not to injure the half-arches or posterior wall of the pharynx. When the tonsils, arches, or peritonsillar tissues are involved, gangrene may follow, and in the great effort to swallow the tissue may be torn in shreds or the deeper parts completely denuded.

After the cessation of any hæmorrhage, the patient should be careful in swallowing hard or sharp food, lest the bleeding recur; and after a considerable loss of blood the patient should be kept quiet in the recumbent posture and given china.

If a hæmatoma exist, it should be treated as similar extravasations elsewhere.

For therapeutics, see "Epistaxis."

RHEUMATIC AND GOUTY PHARYNGITIS.

Etiology.—These diseases are not only associated with the same affections occurring elsewhere, but they often alternate with them. The local pharyngeal manifestations are not often characteristic, but show themselves in severe pain or aching in the throat, and sometimes in acute inflammation.

Symptoms.—The attack is usually precipitated by exposure to cold, gastric irritation, or metastasis. Acute pain soon follows, accompanied by difficult and painful deglutition. There may be no change in the appearance of the throat, but there is often some redness of the soft palate or pharynx; the uvula may be œdematous. The pains may come and go several times during

the attack, they may alternate with more general symptoms, or they may precede a general attack. The duration is short,—from one to three or four days.

Diagnosis.—The diagnosis depends upon the collateral symptoms, and must be distinguished from neuralgia, enlarged lingual glands or veins, chronic follicular tonsillitis, glossitis, tobacco-throat, cancer, and from a similar throat trouble in lithæmic patients. The changes in the last-named trouble are thus described by A. W. Hinkle: "There is a patchy congestion of the laryngeal face of the epiglottis, extending along the ary-epiglottic folds and over the posterior aspect of the ventricular bands; this same patchy condition may exist in the pharynx, extending in streaks along the postero-lateral walls, with a sense of uneasiness or pain on swallowing. The pain darts into one or both ears, and seems to come out of the ear. There is a harsh, dry cough, with a sense of extreme irritation about the larynx. One point in the diagnosis is the extreme sensitiveness of the affected parts to astringent and stimulant applications, which likewise aggravate."

The internal use of colch., natr. sal., or rhus tox. will relieve most cases promptly.

THROAT AFFECTIONS OF THE EXANTHEMATA.

Measles.—This is chiefly a catarrhal process contemporaneous with a similar affection of the nose, Eustachian tubes, ears, and eyes. Sometimes small, dark-red patches occur on the pharynx, palate, or tonsils, even before the appearance of a cutaneous invasion. The pharynx may appear livid or even membranous, in severe or malignant cases.

Small-pox.—The chief appearance is that of pustules in the mouth and pharynx, similar to those seen upon the surface, and which they may precede. Between the pustules the mucous membrane is decidedly inflamed; or there may be inflammation without pustule formation. The secretion is usually very profuse and viscid. Dysphagia is severe, especially after rupture

of the pustules. The larynx may become œdematous, and the naso-pharynx may inflame, swell, ulcerate, and be covered by a layer of pseudomembrane. The diagnosis depends upon the cutaneous affection or the prevalence of small-pox. The throat complication usually appears from the fifth to the seventh day of the attack.

Scarlet Fever.—The throat usually becomes vividly red, hot, and tender soon after the appearance of the rigors and the pyrexia. The tonsils swell at an early date and exude a tenacious mucus, which may, later, form a pseudomembrane, in which process the fauces may partake; thus simulating diphtheria, from which it is sometimes difficult to distinguish (see "Diphtheria of the Pharynx and Larynx"). After separation of the false membrane, ulcers, often quite large and deep, exist for a time; they are especially pronounced upon the tonsils. Gangrene is a rare complication. The nose and pharynx usually suffer, and the ears and larynx are not always exempt.

TUBERCULOSIS (PHTHISIS) OF THE PHARYNX.

Although it is possible to have a primary phthisical pharyngitis, the condition is usually secondary to tubercular changes in the lungs or larynx. It may show itself in grayish, shallow, lenticular ulcerations or granulations distributed over the pharynx, faucial region, and palate; or in a deposit of miliary tubercles, which may degenerate, if the patient survive so long. The usual manifestations are reflex, if such a term may be used; that is, the phthisical condition existing elsewhere shows itself in the pharynx in the form of a partial anæmia. By this is meant that anæmia in which the greater part of the soft palate is pale, but at the same time there are spots of congestion over the surface of which run dilated vessels. I have already referred to this condition (*Trans. Hom. Med. Soc. State of Pa.*, 1883) as anæmio-hyperæmia of the pharynx, characteristic of the early stage of phthisis. In addition to this, there is often a tremulousness of the soft palate and uvula and a very spacious

pharynx, the soft palate and uvula seeming to be very thin and well thrown forward (see "Phthisis of the Larynx").

Etiology.—The causes of phthisis of the pharynx do not seem to differ from those which induce the disease elsewhere, except that a catarrhal or other affection of the pharynx seems to act as an exciting cause.

Pathology.—The pathological changes are similar to those occurring in phthisis elsewhere. In phthisis florida there is acute miliary tuberculosis of other organs as well. In the more chronic form there is a deposit of tubercles in which tubercle bacilli may often be discovered; or, still others in which tubercles do not complicate the waste of tissue.

Symptoms.—The symptom of the *acute* form which may first attract attention is the functional loss of voice; but Sticker, of Munich, calls attention to a bright-red line of demarcation between the teeth and the tongue as an early symptom. It is bright-red in acute and bluish in chronic phthisis, and white in pronounced scrofula. If there be a deposit of miliary tubercles the same general symptoms exist as in acute miliary tuberculosis of other organs, in addition to which are burning and smarting in the throat and ears and extreme painfulness on deglutition. The pharynx, soft palate, and appendages are often congested; occasionally they are studded with minute elevations, perhaps enlarged follicles or tubercles; or a grayish, lenticular-shaped, superficial ulceration may appear and extend to the post-nasal region or to the larynx. There seems to be no disposition for the ulceration to extend to the deeper parts, not even between the muscular fibres, but the ulcers usually become confluent and are transformed into cheesy, pus-covered nodules. The temperature often rises to 104° or 105° F., the pulse frequently to 140 or over, the cervical glands swell, and the face shows the peculiar phthisical cachexia. With all of these the appetite is frequently good, the bowels regular, and the functions apparently normal. Death usually occurs from three to ten weeks after the apparent onset.

Prognosis.—The prognosis is unfavorable in all cases of acute pharyngeal phthisis, and when the stage of ulceration is established the patient usually soon succumbs to the disease; if the tongue be ulcerated, secondarily, the patient often dies suddenly.

If the pharyngeal affection be *secondary* to pulmonary phthisis the condition may be similar to the foregoing, but the fatal termination is delayed for from three months to two years. Recorded cases of undoubted cures are more numerous than formerly. In this form the ulcerative process usually follows the deposit of tuberculous material. The characteristics are: rather slow ulceration, with severe pain; worm-eaten ulcers, with faint hyperæmic areolæ and slightly elevated and gradually receding edges; the surrounding mucous membrane is often studded with small, pale nodules, which doubtless nourish the ulcerative process; and the base of the ulcer is covered with yellowish, glutinous, muco-purulent *débris.* There is little granulation structure and, usually, no tendency to heal. The breath is, generally, very offensive. When the stage of ulceration supervenes, the fever and pulse range high, the appetite is soon affected, and deglutition rendered impossible owing to pain and to the passage of food through the nose or into the larynx. Sometimes the tongue is ulcerated before the pharynx, or the former alone may be attacked. Ulcers of the tongue are generally clean, very sluggish, and irregularly oval, with deep or overhanging edges and a yellowish-white base. The patient rarely complains of pain in the tongue, and is often unaware of the presence of the ulcer. The cases that have come under my notice have died within six weeks, usually quite suddenly, and with little warning of immediate danger.

Diagnosis.—It is not always easy to discriminate between phthisical, syphilitic, and scrofulous ulceration of the pharynx, but the following points will serve as guides: In phthisis there are usually high fever, rapid pulse, emaciation, cough, profuse purulent expectoration, and severe pain. In syphilis there are, occa-

sionally, moderate emaciation and slight cough, attended by a watery, gluey, or ropy secretion; there is rarely pain, except occasionally during deglutition, when it may be very severe. In scrofula there is little pain; constitutional symptoms are almost wanting, save those referable to the strumous diathesis; and there may be cough and yellow expectoration. In phthisis the anterior cervical, the submaxillary, and the parotid glands may be swelled and tender; in syphilis, the posterior cervical; in scrofula, both, but especially the anterior. In phthisis the ulcers are not visibly excavated, they appear to increase by lateral invasion, their edges are irregular, the line of demarcation is indistinct with a faint areola, the granulations are indolent, and there is little tendency to heal. In syphilis the ulcers are deep, extend by attacking the deeper tissues; their edges are sharply cut, the line of demarcation distinct; there is a deep-red areola, and the granulations are active with a decided tendency to heal. In scrofula the ulcers are excavated and sluggish in healing. If the tubercule bacilli be present, the diagnosis is certain.

Treatment.—In the management of these cases the diet should be carefully regulated, and only such articles given as will prove soothing to the diseased parts. The food is more easily taken if only moderately warm and semi-solid. Gruels, broths, soups, raw eggs, raw oysters, jellies, custards, corn-starch, and Irish moss are usually grateful and nutritious. It may be necessary to feed the patient with the œsophageal tube passed gently into the upper portion of the œsophagus, or, if this be impossible, by rectal alimentation or inunction of oils and fats. The various malt preparations and the hypophosphites of lime and soda are of great utility. If local treatment be required, the ulcers should be cleansed and dusted with powdered iodol or boric acid, or sprayed with a 40-per-cent solution of lactic acid, a 15-per-cent solution of peroxide of hydrogen, a 20-per-cent solution of calendula, or a 10-per-cent solution of resorcin or menthol. If the dysphagia be so severe as to impair nutrition,

the ulcer should be sprayed with a 2-per-cent solution of hydrochlorate of cocaine or the calendula solution, fifteen minutes before each meal. The powders named sometimes appear to arrest the ulcerative process, but lactic acid and peroxide of hydrogen are the most efficient local adjuvants. Morphine is rarely necessary, if the remedies be selected with care; but should the latter fail to relieve the pain, and cocaine and calendula be used without effect, $\frac{1}{16}$ grain of acetate of morphine may be mixed with 3 grains of powdered starch and either dusted or insufflated upon the ulcer, about thirty minutes before a meal. Curettement of the ulcer, as in laryngeal phthisis, is a rational measure. Hygiene, diet, change of air, and exercise are to be carefully considered.

For therapeutics, see "Phthisis of the Larynx."

CHAPTER XIX.

Syphilis, Scrofula, Lupus, Leprosy.

SYPHILIS OF THE PHARYNX.

Syphilis usually appears as a secondary or tertiary pharyngeal disorder, less frequently as an inheritance, and exceptionally as a primary disease of, generally, the right tonsil. Comparatively few persons pass through the second and third stages without some pharyngeal implication; for example, mucous patch, gumma, ulcer, periostitis with exfoliation of portions of the cervical vertebræ or hard palate, relaxation and congestion of a dusky hue (erythema), swelling, œdema, or excoriation.

The **secondary** form usually appears about one year, often less, after the inception of the chancre, and manifests itself in the form of erosions of the mucous membrane; papules; broad condylomata; symmetrical, dusky-red, congestive patches; submucous infiltration; mucous tubercles; and mucous patches. The tonsils, pillars of the fauces, buccal cavity, and tongue are usually attacked, in frequency, in the order named; the posterior pharyngeal wall generally escapes. Cloudy epithelium must be looked upon with suspicion.

Symptoms.—Symptomatically, syphilis is usually well differentiated from other diseases by its history and objective appearances. The chief subjective symptoms are stringy and gluey discharge, fullness in the pharynx, inability to swallow with comfort, loss of taste or smell, and usually absence of pain except during functional activity. If relaxation and congestion alone be present, a dryness or slight rawness may be the only symptom. Objectively, thick, nasal intonation is to be noted.

If erythema alone be present, inspection does not always complete the diagnosis; but if the membrane be slightly irritated with a smooth probe, the specific dusky, mottled appearance

often prominently manifests itself. When, in addition, it is possible to get some general history of syphilis, either from the patient's admission or from some cutaneous or other manifestation, the diagnosis may be made fairly sure. One of the characteristics of secondary syphilis of the pharynx is its symmetrical, bilateral arrangement, the sides frequently appearing quite similar. The ulcers are often kidney-shaped, grayish white, and, as suggested by Procter S. Hutchinson ("Diseases of the Nose and Throat"), they have "the appearance of snail-tracks on the tonsils." When the mucous patch occurs on the lips, tongue, soft palate, or pharynx, its circular form, slight elevation, and glazed, bluish-white color will at once render positive the nature of the disease.

Prognosis.—The prognosis of the secondary form is usually good, although a chronic pharyngeal catarrh may be induced, or the larynx secondarily affected with a persistent inflammation.

The **tertiary** stage of pharyngeal syphilis occurs at any time from two to forty years after the primary sore; the usual period, however, being from two to five years. Although the erythema, the mucous patch, and the slight abrasion are characteristically found in the second stage, patches are not rare in the tertiary form, and it is in this stage that gummata (syphilitic nodes, syphilomata) occur and deep and phagedenic ulcers appear.

Symptoms.—The symptoms are similar to those of secondary syphilis, with these additions: regurgitation of food through the nose, if there be much ulceration of the soft palate, uvula, and pharynx and thick, profuse, stringy, muco-purulent, or bloody discharge, often containing necrotic tissue. Nasal and pharyngeal respirations are hindered if there be great swelling or œdema of the tissues. Inspection usually clears up the diagnosis at once, if the disease be of a severe nature. The starting-point of the deep ulcer is generally a gummatous growth which, undergoing the process of destruction, ends in the ulcer which

rarely extends beyond the original borders of the gumma, but is usually quite deep. When not the result of a gumma, the tissue loss may extend in all directions, and, owing to its character, perforate the hard palate and destroy large areas of the mucous, submucous, muscular, glandular, or other tissue. Syphilitic papules, condylomata, and other elevations generally heal with subsidence of the destructive process.

Ulceration usually appears on the pillars of the fauces, soft palate, uvula, and tonsils, in the order named. When the soft palate is attacked, it is generally in the median line. Sometimes the first appearance is that of a boggy, dull-looking, oval, or circular spot, proving the existence of an ulceration nearly ready to perforate from the opposite surface, and which can sometimes be seen by the rhinoscopic mirror. The ulcers are always surrounded by a bright zone; their edges are either smooth or ragged. After healing, the surface has a glazed, bluish-white, sclerosed appearance, with cicatricial distortions.

Subjectively, there is often slight complaint, but pain is rather frequent where the Eustachian region is implicated, and food often regurgitates through the nose, especially when the uvula and soft palate are ulcerated, in which case there is nearly always a thick or "nasal" voice. When these regions are affected there is very generally a faintly œdematous appearance of the parts, apparently associated with some hypertrophy of the surrounding structures. The uvula and a large part of the soft palate may be destroyed, and extensive areas of the pharynx may suffer. Cicatricial contractions, adhesions, and distortions frequently result.

Prognosis.—The prognosis is not usually grave, if the patient place himself under treatment before the ulcerative changes are well established. If, on the contrary, the processes of ulceration and necrosis have long existed, the loss of tissue is sometimes very great and interferes with deglutition, vocalization, respiration, and hearing, and, indirectly, the usefulness or even the life of the patient may be sacrificed. Deformity is

not infrequent, owing to caries or necrosis of the bones of the palate and nose. The bands of cicatricial tissue which so often stretch from the soft palate to the posterior wall of the pharynx may impede respiration, vocalization, and deglutition. Œdema may so complicate pharyngeal syphilis as to result in severe stenosis. The larynx is occasionally implicated, but this usually occurs at a later date than does the pharyngeal disease.

Treatment.—It must be borne in mind that syphilis of the pharynx is a local manifestation of a constitutional malady, and on that account its treatment should be chiefly constitutional; at the same time, it is not well to neglect the local applications so useful in curbing, and later in healing, the destructive process.

The employment of mineral caustics for the purpose of limiting the ulceration is not to be encouraged, as it is unnecessarily severe and rarely serves the purpose intended; but the galvano-cautery often answers well and is less painful. The following application has stood the test of long experience: iodine (metallic), gr. xv; alcohol, q. s.; and glycerin, ℥j; to be applied two or three times a day, after thorough cleansing with the spray, gargle, or post-nasal syringe. As a cleanser, a spray of a weak aqueous solution of permanganate of potassium or boric acid answers well. While the medicated application should not generally be used oftener than three times a day, the throat should be cleansed more frequently. In the hands of some, insufflated iodoform holds the first rank; but I have rarely seen it check the ulceration, and, as it is so unpleasant to the patient and his friends, iodol is to be preferred; or, still better, powdered boric acid. Even though the tonsils be very large, it is better not to operate upon them during the active syphilitic invasion, as the raw surface often ulcerates.

During the progress of syphilis it is important that alcohol in its various forms and all irritating food be discarded. If perforation of the soft palate exist, food should be either solid or semi-solid, as liquids unthickened with corn-starch, arrowroot,

etc., are apt to pass into the nose. If deglutition cause pain, food should be very bland and soft. The hygiene of the patient should be guarded; to this end plenty of fresh air, exercise, sleep, and good, non-irritating food are requisites. Frequent bathing is important, and the night and morning friction with a coarse towel, flesh-brush, or horse-hair gloves should not be neglected. The Turkish bath often proves an excellent adjunct to other treatment, and a course at a mineral spring aids materially. The patient should have one point indelibly fixed upon his mind, namely, that the treatment of syphilis must extend over a number of years. Finally, he must be impressed with the danger of transmitting the affection to others.

In controlling the progress of the œdema and ulceration, nothing acts so well internally as kali iod., although some prefer sod. iod. To judge from clinical experience, kali iod. is best used in the crystals, or in the first decimal trituration; in either event, it is advisable to dissolve two or three grains in a tablespoonful of water and order that amount to be taken three times daily. A decided improvement often follows the first few doses, but this relief frequently ceases after a couple of weeks, when, if other indications be absent, it is well to make use of merc. iod. ruber, 2 x or 3 x trituration.

Therapeutics.

Calc. fluor.—Ulceration of mouth and throat; caries and necrosis, with burning, boring pains and thin, acrid, ichorous discharge. Congenital syphilis of infants.

Fluor. ac.—Syphilitic ulceration of fauces, uvula, and tongue; throat extremely sensitive to cold. Soft palate intensely red and tumefied.

Kali bi.—Fauces dark-red or coppery. Deep ulceration with tendency to perforate, and with a coppery-red areola. Nasal bones affected; soft or hard palate perforated; ozæna; hard, green lumps are expelled from the posterior nares.

Kali iod.—Gumma; œdema; thin, excoriating discharge; deep ulcers; and great distortion of tissue.

Kali mur.—Ulceration, with red and tumid mucous membrane. I have recently used the chloride of potassium successfully where before I had thought the iodide the only remedy for the case.

Merc. cor.—Phagedenic ulcers of mouth and pharynx, fœtid breath; uvula ulcerated.

Merc. cyan.—Ulceration of the centre of the palate, with hard, everted, irregular edges.

Merc. dulc.—Ulcers flat and superficial; small, and due to bursting of vesicles.

Merc. sol.—Painful tumefaction of the tongue; large, flat, pale ulcers, with dark-red areolæ.

Nitric ac.—After the abuse of mercury. Ulcers irregular in outline; deep; exuberant, easily bleeding granulations; pains burning, sticking, like splinters; angles of mouth fissured.

Phyto.—Secondary syphilitic ulcers having a punched-out appearance; ulceration of uvula, velum, and tonsils; very offensive odor; ptyalism; loose teeth. Used as a gargle in water and given internally in the 3 x.

Psorin.—Especially in the congenital form, with ozæna, offensive otorrhœa, etc.

Sulphurous ac.—For ulceration; locally, as a spray of a 5-per-cent solution of the dilute acid, and internally in the 6 x. (Compare "Syphilis of the Nose" and "Syphilis of the Larynx.")

CONGENITAL HEREDITARY SYPHILIS.

This affection nearly always manifests itself before the age of puberty, and, in about half the cases, within the first year of life. It is believed that the secondary stage very generally appears during uterine life. The pharyngeal ulcerations are often quite deep and may attack any part, although the soft palate is a frequent site, between which and the pharynx adhesions very often occur. There is a special tendency for the ulceration of congenital syphilis to attack the median line and to involve the bone. The appearance of the ulcers is not unlike

that of the tertiary stage of acquired syphilis. Congenital syphilis rarely attacks the œsophagus, but the nose is often ulcerated. The larynx suffers less frequently than in the acquired affection.

Infants affected with hereditary syphilis usually have some nasal disorder, chiefly the so-called "sniffles"; excoriation and ulceration of the alæ or lip; perhaps pegged teeth; the peculiar triangular frontal prominence; the withered, pinched appearance, etc.

Prognosis.—The prognosis is usually good after the first year of life, but ulceration occurring prior to that age may prove fatal, and the probability of various contortions, stenoses, and disfigurements must be borne in mind. The voice may be permanently destroyed.

For treatment, see the preceding subject, as well as "Syphilis of the Nose."

SCROFULOUS PHARYNGITIS.

Although some authors deny the existence of a scrofulous pharyngitis, there is sufficient proof of such an affection to justify its consideration. It seems rarely to be ulcerative in nature, unless complicated by phthisis, syphilis, or lupus. It might be added that it is sometimes extremely difficult to distinguish phthisical, syphilitic, or lupoid ulcerations when complicated by a strumous diathesis; and yet there are some well-outlined characteristics, upon which the diagnosis of a strumous complication can be based.

The cause is constitutional.

Pathology.—Pathologically, it is characterized by a low grade of inflammation of the pharyngeal or cervical glands; the former often undergoing ulceration,—at first, superficial and indolent; later, deep and perforating. Often the follicles of the pharynx, the tonsils (pharyngeal and faucial), and pharyngeal mucous membrane participate in the thickening. The cervical glands may undergo ulceration or cheesy degeneration.

Scrofulous ulceration of the pharynx has peculiarities which, though they serve to differentiate the condition from the preceding forms of ulceration, usually go hand-in-hand with one of them. It is not impossible, however, to have distinct strumous ulcers, which are so very like those found in well-determined congenital syphilis that the old question will arise: "Are the two conditions one and the same, or are they distinct?" The ulceration is usually slow, and, although apparently cured, often persistently returns, until the soft tissues, or even the hard palate, may be nearly destroyed. The ulcer starts as a small point of thickening, frequently near the base of the uvula, and spreads slowly. While there is no well-marked areola, as in syphilis, the mucous membrane surrounding the ulcerating portions is often much indurated and the pharyngeal follicles are very prominent. The surface of the pharynx is covered with a dirty, mottled coating, and tenacious mucus often completely covers the ulcer. As there is but little granulation tissue, there is little or no tendency to heal; contractile tissue is rarely developed, but adhesions occasionally occur between the soft palate and the pharyngeal wall, effectually obstructing the naso-pharyngeal opening. In its ravages the ulceration may not only destroy the soft tissue, but bone and cartilage as well; thus, the hard palate, nasal septum, and turbinated bones are sometimes sacrificed.

Symptoms.—The chief symptoms of scrofulous pharyngitis are a sense of thickness in the pharynx, tenacious discharge, and painful and enlarged (chiefly anterior) cervical glands. The voice is often affected from implication of the nose and larynx. If ulceration be present, these symptoms are aggravated. When the nose and palate are ulcerated, food will regurgitate through the posterior nares and the senses of smell and taste will be impaired. Should the larynx suffer, vocal defects will follow; and when the Eustachian tubes are affected, pain is usual and the hearing generally impaired.

Prognosis.—The prognosis is usually good, although at

times there is much destruction of tissue, greatly impairing vocalization, deglutition, respiration, smell, taste, and hearing.

Treatment.—One of the first rules in the treatment of scrofulous ulceration is cleanliness; beyond this, the case must be treated upon purely constitutional grounds. In addition to the internal remedy, great benefit is often derived from attention to hygiene and diet and from the use of codliver-oil and terraline. It is unwise, as a rule, to apply caustics with the hope of limiting the ulcerative process, but the galvano-cautery is occasionally successful. Should bands of cicatricial tissue obstruct nasal respiration, they are to be dealt with as suggested under "Stenosis of the Pharynx."

Therapeutics.

Bromine.—Scrofulous ulceration, with threatened gangrene.

Ignat.—In conjunction with enlarged tonsils and right external cervicals, especially in very nervous persons.

Iodine.—Glands large, much hardened, and torpid. The ulcers have spongy edges; discharge bloody and ichorous or purulent. In spite of a good appetite, the patient grows thin. I look upon this last symptom as almost unfailing.

Compare calc. c., fer. iod., psor., silica. (See "Scrofula of the Nose.")

LUPUS OF THE PHARYNX.

There seems to be a certain but undefined association between this affection and scrofula, for lupus is most frequent in scrofulous subjects, especially in young females. The relationship between lupus and phthisis is undoubted. Lupus of the pharynx may be either primary or secondary; the latter is usually found in connection with lupus of the skin about the face, but it not infrequently complicates lupus of the nose or larynx.

Symptoms.—According to Schech, its favorite localities are the tonsils and soft palate; the former appear rough, enlarged, and covered with excrescences, with ulceration of the intervening

tissue. When the soft palate is affected, Krause notes the presence of confluent, hard, dark-red nodes on a normal or pale mucous membrane; superficial or perforating ulcers, with hard, everted edges and excavated base, may supplant these nodes; or the latter may shrivel, leaving the surface nearly normal. The disease is usually unattended by pain. Tubercle bacilli are sparingly found.

Its appearance is not unlike that of syphilis, from which it may be distinguished by the history, the slow progress, the nodular appearance, the much less marked areola, the frequent presence of cutaneous lupus, and the absence of other manifestations of syphilis.

It differs from phthisis, in that the lupoid mucosa is not so pale; where ulceration occurs, the depth of the lupoid ulcer is greater and it is surrounded by a slight areola.

The uvula is often solidly infiltrated, club-shaped, and generally congested and nodulated.

Prognosis.—The prognosis is favorable. When the ulcers heal, the resulting scars are sensitive and often occasion marked cicatricial contractions. The disease is chronic, often lasting many years.

Treatment.—Since scrofula is its most frequent ally, the antiscrofulide remedies should be used in conjunction with fresh air, exercise, good nourishing diet, regular hours for sleeping and eating, cold sponge-baths, vigorous rubbings, and the internal use of codliver-oil, malt, or terraline. When syphilis complicates the affection, similar treatment may be needed, with the addition of kali iod., merc., etc. Locally, thuja occid. may be used in the tincture; but if ulceration steadily progress in spite of these remedies, the diseased tissue should be thoroughly removed with the curette or galvano-cautery. If the uvula alone be involved, it should be amputated. Following these operations the parts are to be thoroughly coated with a 50-per-cent solution of lactic acid.

LEPROSY OF THE PHARYNX.

The pharynx is rarely invaded by leprosy, which, according to de la Sota, occurs in this organ only in the tubercular form, and is always secondary to the skin affection. The pharyngeal eruption starts as a bright-red spot, which soon becomes tuberculous; it is quite insensitive, white, and soft. The nodes which form are smaller than those of lupus, and the ulcers, like the eruption, are soft and insensitive.

The affection is exceedingly rare, but, when it occurs, a hopeless prognosis must be given.

The treatment is little more than palliative; hygienic and dietetic measures should be employed, but all operations are to be avoided as likely to augment the destructive process.

(See "Leprosy of the Larynx.")

CHAPTER XX.

Tumors and Foreign Bodies.

TUMORS OF THE PHARYNX.

Pharyngeal tumors are rare, and, as a rule, are not recognized very early, as their presence, if benign, seldom creates marked symptoms. Fibromata, osteomata, enchondromata, papillomata, and cysts are the benign forms: the malignant tumors are encephaloid, epitheliomata, and lympho- and fibro- sarcomata. Benign pharyngeal growths are always primary, but malignant neoplasms may start in some neighboring part and extend to the pharynx, or they may appear in the pharynx as a secondary manifestation. Both benign and malignant growths are usually situated in the tonsillar region, on the soft palate, or in the lateral pharyngeal walls; but it is not impossible for them to occur in the posterior wall, where they give rise to symptoms closely corresponding to retro-pharyngeal abscesses. Syphilitic outgrowths sometimes occur. One of the rarest tumors of the pharynx is that which occurs from an overgrowth of the occasional physiological extension of the thyroid gland to the posterior part of the pharynx, nearly on a level with the lower part of the epiglottis. Sarcomata and fibro-sarcomata sometimes invade this thyroid structure. It is well to remember the occasional presence of aneurism of the internal carotid artery and the danger of mistaking it for a new growth. Carcinoma is the most frequent form of ulcerative tumor of the pharynx; sarcoma is very infrequent. Either form may extend to the larynx.

The pathology need not be given.

Symptoms.—The symptoms are often unimportant. In benign tumors the first annoyance, generally, is a sense of fullness in the throat, cough, or dysphagia; difficult respiration

usually appears late. In malignant growths pain is often the first symptom, but at this time it is rarely severe; later, however, during the ulcerative period, it is usually intense, especially during deglutition, although it may not appear at any time.

Early in the history of most pharyngeal growths the swelling is hard, smooth, roundish in outline, and is sometimes indistinguishable from ordinary hypertrophy of the tissues. When the tonsils are involved, it is often impossible to differentiate the condition from an ordinary chronic hypertrophy of these organs, but the subsequent ulceration and pain of cancer facilitate the diagnosis; and epithelioma is often strawberry-like preceding ulceration. (See Fig. 66, page 259.)

It is important to distinguish neoplasms from abscesses and aneurisms: the usual tests are to be applied here as elsewhere; however, it is almost impossible to auscultate for aneurism, but a decided aneurismal throbbing and thrill may be detected in the region of the growth. Cysts and abscesses are so similar that the history or the exploring needle alone draws the line of demarcation. The diagnosis of thyroid gland-tissue is difficult, unless the tumor rise and fall freely during deglutition.

Prognosis.—The prognosis of malignant tumors of the pharynx is grave. Medicines appear to cure some and early extirpation a few, but the majority prove fatal in from a few months to two or three years. Benign neoplasms are not generally fatal, as nearly all can be either reduced in size or removed. Pressure of the tumor upon the superior laryngeal nerve may induce vocal defects or anæsthesia of the mucous membrane.

Treatment.—If large, there is constant danger of suffocation or inanition: for the relief of the former, extirpation, tracheotomy, or laryngotomy will be required; and, for the latter, removal, the stomach-tube, nutritive enemata, inunctions, or gastrotomy. Extirpation may be accomplished with the knife, scissors, forceps, snare, or galvano-cautery. Electrolysis is the best method of gradual reduction: should the latter fail it may

become necessary to remove the growth by subhyoid pharyngotomy. Malignant tumors may occasionally call for resection of the pharynx.

In the early stage of pharyngeal tumors, internal remedies are of prime importance. Later, should the ulceration and odor be pronounced, soothing, cleansing, and disinfectant sprays and washes are indicated as adjuncts.

For therapeutics, see "Tumors of the Nose" and "Tumors of the Larynx."

CANCER OF THE TONSILS AND PALATE.

Symptoms.—This affection is rare and nearly always primary. Lympho-sarcoma, soft scirrhus, and epithelioma are the usual forms. The tonsil is greatly inflamed and swelled, but usually soft; hæmorrhage is frequently severe, even fatal; pain is often excruciating and may render deglutition practically impossible. The voice is always nasal, and nasal and oral respiration may be impaired. When the soft palate is alone involved, the ulceration may destroy the pillars of one or both sides, and, later, invade the tonsil and lateral or posterior pharyngeal wall. At times the uvula and pillars may be ulcerated on one side only; later, the opposite arches may break down, beginning near the tonsil and creeping up, thus giving rise to two independent ulcerating areas. The discharge is thin, sanious, and often copious. If there be no actual hypertrophy of the glands at the angle of the jaw, there is usually tenderness in that region. The tonsil itself does not always seem much enlarged, as infiltration of the surrounding structures may conceal it. The mass usually imparts to the finger, as expressed by McBride ("Diseases of the Throat, Nose, and Ear"), "the characteristic fixed, indurated feeling of malignant disease." Loss of bodily flesh and strength is rapid and progressive.

Sarcomata are usually dusky red, with extensive areolæ; epitheliomata usually appear as paler, warty excrescences, or cauliflower growths.

Diagnosis. — Cancer of the tonsil, though it simulate syphilitic ulceration of this organ, is usually easy to diagnose. The pain of the former is often constant, usually lancinating, and may prevent deglutition ; but the pain of syphilis is generally slight, rather a soreness, except during deglutition, which is sometimes very difficult and painful, but rarely impossible. The

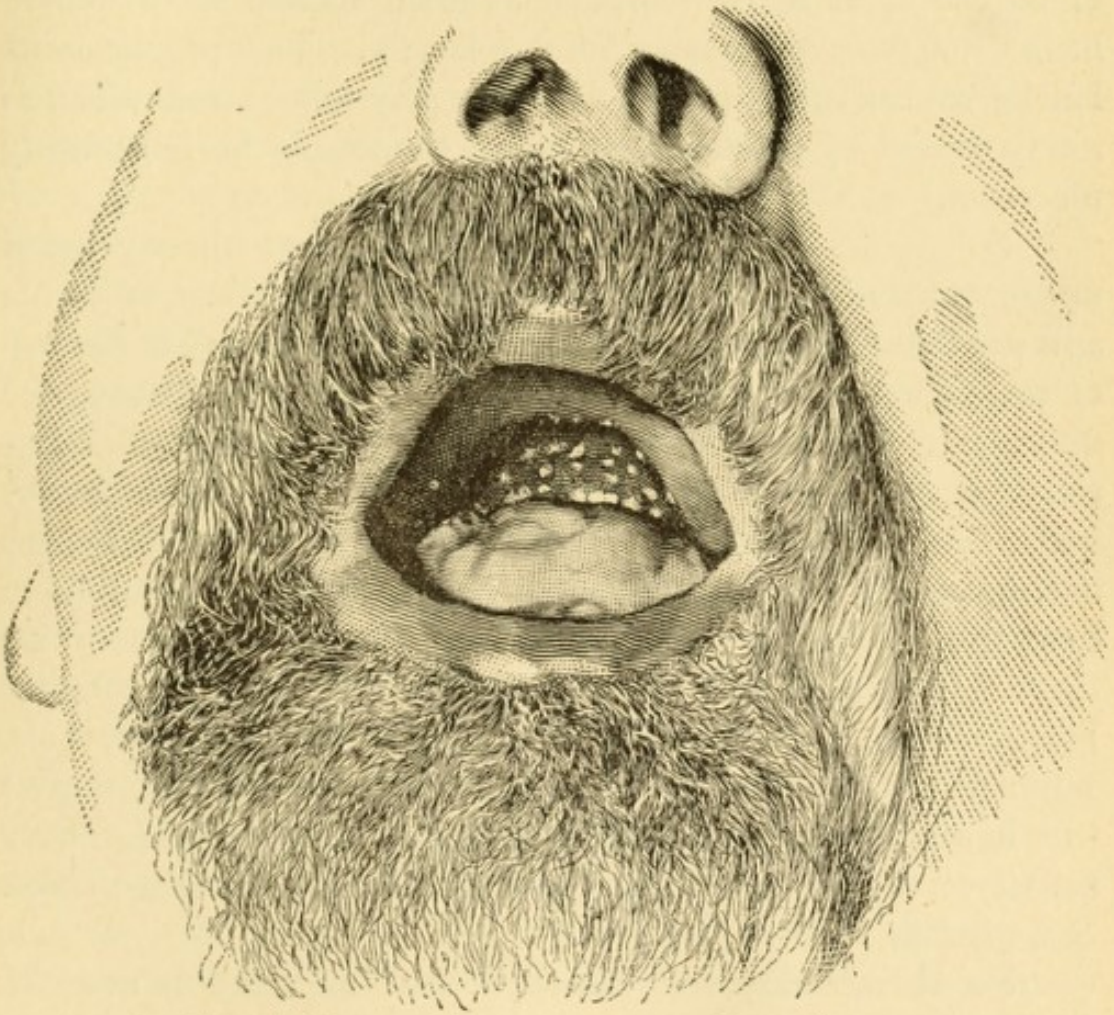


FIG. 66.—PRIMARY EPITHELIOMA OF THE RIGHT TONSIL.
(From a photograph kindly taken by Dr. N. W. Fryer.)

glandular involvement of cancer is quite extensive and tenderness is marked ; whereas syphilis has usually less glandular enlargement, except post-cervically, and the glands are less tender. The ulcer of cancer has a very broad areola ; that of syphilis rarely more than one-third of an inch ; and the former affection has frequent, often profuse, hæmorrhages ; the latter

rarely bleeds. The general emaciation of cancer is out of proportion to the decline in appetite; that of syphilis follows this decline.

Prognosis.—The prognosis is grave in tonsillar cancer, unless the gland be excised early. Hæmorrhage often gives temporary relief. Death may occur in two or three months, or only after as many years; it is often sudden when due to hæmorrhage or to œdema of the larynx. The prognosis of faucial cancer is less grave; recovery may follow, and death is rarely caused by hæmorrhage, unless the tonsils be secondarily ulcerated.

Treatment.—The treatment varies from that already noted under "Cancer of the Pharynx" only in case it be advisable and possible to extirpate the tonsil. I do not advocate the use of the galvano-cautery, as it sometimes appears to hasten the destructive process. Acids are alike to be condemned. Excision of portions of the growth projecting into the faucial space often gives decided relief for a few weeks, and does not appear to act detrimentally. It is, at times, possible to thoroughly extirpate the tonsil and diseased peritonsillar tissue by an incision along the anterior border of the sterno-hyoid muscle. Calendula (20 per cent) may be used both internally and locally, with some degree of confidence that it will lessen the pain and discharge, and possibly the ulcerative activity. (See case by Dr. C. Weaver, *Trans. Homœo. Med. Soc. of Pa.*, 1890.)

For therapeutics, see "Cancer of the Nose" and "Cancer of the Larynx."

FOREIGN BODIES IN THE PHARYNX.

Any substance not too large may lodge in the pharynx, but sharp-pointed or angular objects are apt to occasion most annoyance. Pins, needles, fish-bones, and splinters frequently pierce the tonsil or lie transversely in the pharynx, where muscular contraction forces them into the tissues. Smooth, roundish substances generally fall into the pyriform sinuses or valleculæ,

and if early search be made in these spaces much time will often be saved and great annoyance obviated.

If the foreign body be small, little inconvenience may be occasioned, although a very minute substance may cause great annoyance in the way of sticking, shooting pain, aggravated by swallowing. Pieces of oyster or other shells, wheat-hulls, etc., give rise to similar symptoms, in addition to which there is often the sensation of a scale adherent to the throat. Large bodies occasion fullness and difficult deglutition, and, when impacted above the epiglottis, this cartilage may be forced down upon the laryngeal vestibule, producing difficult or impossible respiration.

It is not unusual either for the foreign body to be expectorated or to pass on to the stomach. It is not always easy, however, to convince the frightened patient that such a result has followed; for the presence of the offender may have occasioned considerable irritation, or even inflammation, thus giving the impression that the object is still in the throat. It must be remembered that there are many hysterical cases in which the patient is "convinced" of the existence of some extraneous substance when none has been present (paræsthesia).

In searching for foreign bodies a head-mirror should be used for the purpose of illumination. In the absence of dyspnœa, leading to the position of the body, the tonsils and fauces should first be examined. The object may be nearly buried and very difficult to see, as only a small portion may project. When found, it can generally be readily removed with ordinary long dressing forceps. Failing to find it, search should be made deeper in the pharynx, especially in the valleculæ and in the pyriform sinuses; next, in the base of the tongue, among the rougæ; and, finally, in the laryngo-pharynx.

It is often easy to remove small bodies from the valleculæ by catching them under the nail of the index finger; but if they lie below this level, forceps will be required for their extraction. When they press upon the epiglottis, the finger

can usually be made to answer the purpose of a hook, but it must pass well below the object, otherwise fatal dyspnœa may be occasioned by impacting the epiglottis or the foreign body into the larynx, usually necessitating a hasty tracheotomy or some other means noted under "Foreign Bodies in the Larynx." If the body be behind the larynx and cannot be extracted, it is advisable to push it into the œsophagus. When in the upper pharynx, care must be exercised not to force the intruder into the deeper air-passage.

It will sometimes require considerable care, patience, or ingenuity, to extract a large or an irregular substance. In the absence of either forceps or a sufficiently-long finger, a piece of smooth wire may be bent into the form of a hook and gently insinuated beyond the mass; both may then be carefully withdrawn. A very simple device, which is occasionally successful, is to excite reflex pharyngeal action by blowing into the ear.

The laryngoscope should be used for examination of the space below the tonsils and back of the half-arches, but in its absence the index finger may be introduced into the throat, using the right finger for examination of the right side of the throat and the left for the opposite side, so that the palmar surface is always directed toward the sides of the passage. In this way inequalities are more readily detected. If the object cannot be found at the first examination, and if the patient still feel the sticking, a second or a third search should be instituted.

When not practicable or possible to extract the body, there is danger of its dislodgment and entrance into the deeper air-passages; but when dislodged, it is usually expectorated. When removed, a few doses of acon. or fer. phos. should be given to allay the irritation. Under foreign bodies in the pharynx should be noted an unusual accident: that of partially swallowing the tongue. It has occurred in children during whooping-cough, and in hysterical adults. It gives rise to pharyngeal dyspnœa, relief from which comes when the tongue is thrust or pulled forward. In one case reported by Ingals, a hysterical

woman had such a condition characterized by spasmodic contraction "of the hyo-glossus and probably also the stylo-glossus muscles, which drew the tongue into the pharynx in such a position as to prevent respiration." ("Diseases of the Chest, Throat, and Nasal Cavities.")

CHAPTER XXI.

Stenosis, Dilatation, Malformation.

STRICTURE OF THE PHARYNX—STENOSIS.

Etiology.—This affection is a sequel of some of the ulcerative diseases. Syphilis (acquired or congenital) stands preeminent; next follow scrofula, lupus, diphtheria, and acute ulcerations due to the exanthemata.

It may manifest itself in the form of stenosis of the upper or lower pharynx or both. The most frequent form is that in which one posterior pillar of the fauces is adherent to the posterior wall of the pharynx; this may be slight or so extensive as to draw the soft palate well back toward the pharynx. Next in order is the attachment of the soft palate to the pharynx; this usually closes the greater part of the space between the naso- and oro- pharynx, but a complete closure of this orifice is the rarest of all forms of pharyngeal stenosis. As a rule, the uvula is destroyed; but where intact it usually stands out in the median line, in front of the remaining naso-pharyngeal passage. The pharynx may be divided, into two lateral portions, by a band of tissue passing from the back of the soft palate and uvula to the pharynx. The Eustachian tubes may be closed.

When the lower pharynx suffers there is usually a band of cicatricial tissue running from the posterior wall of the pharynx to the base of the tongue, generally just above the tip of the epiglottis. In such patients the larynx is sometimes hidden from view.

Symptoms.—The symptoms vary from slight difficulty of deglutition, regurgitation of food, and nasal intonation to obliterated nasal respiration, loss of voice, taste, and smell, and inability to breathe or swallow. Thus, efforts at deglutition may be restricted to small quantities of fluid food, which are

forced down with evident effort; solid food may lodge in the opening and give rise to fatal dyspnœa, unless promptly dislodged. When the action of the epiglottis is hindered, food may pass into the larynx, but, as a rule, the sphincter of the larynx prevents this.

Prognosis.—The prognosis is not always unfavorable: the voice may not be completely restored, deglutition may remain imperfect, and death may result from dyspnœa.

Treatment.—It is usually inadvisable to interfere mechanically unless the functions be markedly impaired, since it is frequently difficult to prevent the re-attachment of the diseased structures. If the soft palate be adherent to the pharynx it can often be dissected off; after which it is necessary repeatedly to cover one side of the incision with flexible collodion until granulation is complete. This, however, often fails, and the stricture becomes as tight as before. The soft palate may be forcibly drawn forward by a silver plate passed through the new opening and held in position by two springs passing to the upper teeth, as recommended by Kuhn; or one end of an elastic band may be passed through one nostril, the second end through the other, the loop coming in contact with the columella in front and the free ends tied by a thread to the upper incisor teeth. Plates and tubes have also been devised, but are not satisfactory. Sometimes the passage from the oro- to the naso- pharynx is completely obliterated by cicatricial changes; in such a case it was formerly advised to cut a small opening through this structure for the easy passage of air; the hole was not to be large, owing to the danger of the regurgitation of food. This opening was then to be enlarged, if possible, by the daily passage of probes, and, later, either of bougies of gradually increasing sizes, dilating tents, elastic bags, or forcible dilators. This can sometimes be accomplished by frequently introducing the finger and drawing the soft parts forward.

The galvano-cautery occasionally succeeds in making a permanent opening, but, as all of the preceding measures are

uncertain, Jas. E. Nichol presented to the New York Academy of Medicine, January 28, 1890, the most rational, scientific method of accomplishing this result. With all methods the tendency is for adhesions to re-form, starting at the incision extremities, and gradually but persistently creeping to the centre. Dr. Nichol's method is as follows: When a central opening does not exist, he makes one by the following method: A metal bougie or catheter is passed through the inferior nasal meatus and made to push the stenotic tissue well down in the median line; upon this, as a guide, he thrusts a narrow knife-blade from the oro-pharynx. A staphylorrhaphy needle, curved to the right or left, as desired, is next threaded with several strands of coarse silk. The point is introduced through the central opening and brought back into the oro-pharynx, as near the lateral wall as possible. As the tissues are very elastic, counter-pressure should be exerted by a heavy probe; care must be exercised not to include the palato-pharyngeus muscle. The silk is now to be pulled from the eye of the needle into the oro-pharynx and the needle removed. The ends of the silk are to be loosely tied so that a loop is formed with the seton passing through both openings. If deemed advisable, the other side is treated in the same manner. A general anæsthetic will rarely be required, but cocaine should be applied before the operation. The loop should be moved daily until healing is effected (ten to fifteen days), when the loop is drawn forcibly toward the median line, and a blunt-pointed bistoury introduced into the lateral opening; great care is necessary not to nick the newly-healed tissue except on its median line; the tissues are then divided from the lateral to the central opening. The raw surfaces are to be kept apart by some of the measures previously suggested.

If the Eustachian tubes be stenosed they can usually be dilated by the careful passage of catgut bougies introduced through a Eustachian catheter (Fig. 35, page 103); if entirely closed, an effort should be made to open a passage with the knife, guided by the mirror; this must be followed by repeated

use of the bougies. If this fail, and hearing be impaired, it is often advisable to exsect a piece of the membrani tympani and perhaps the hammer-handle, with the hope of improving the hearing and tinnitus aurium.

When the lower portion of the pharynx is the part affected, attention must be first directed to the opening to see that it is large enough to admit a good supply of air. When advisable, the passage can be enlarged either by Schrötter's hard-rubber bougies (see "Stenosis of the Larynx") or, more satisfactorily, a form of intubation-tube. It can, however, be speedily enlarged with the bistoury or galvano-cautery, after which the opening should be frequently and forcibly dilated.

DILATATION OF THE PHARYNX—PHARYNGOCELE.

Enlargement of part of the pharynx is not a rare change. It is chiefly confined to the laryngo-pharynx, often in conjunction with dilatation of the œsophagus. The oro-pharynx is sometimes pouched, but the naso-pharynx is never dilated. As a rule, the pouch forms at the back part of the pharynx and finds its way between the posterior wall of the œsophagus and the spinal column. This diverticulum is formed of the mucous and submucous tissues which have been pushed between the muscular fasciculi; on this account the late Sir Morell Mackenzie very aptly termed it a hernia.

Etiology.—Pharyngocele is occasionally congenital; if acquired, it probably arises from weakness of the muscular and submucous coats, either inherent or from disease or injury. Temporary lodgment of food in the pharynx and the habit of "bolting" the food, seem to act as excitants to pharyngeal dilatation. Herniæ may occur above a constricted portion of the pharynx (tumor, aneurism, or cicatricial tissue), if the food be forced downward upon the obstacle by strong action of the constrictor muscles.

Symptoms.—The chief symptoms are difficult or impossible deglutition of solid food and the ejection, from time to time, of

particles of food ingested, portions of which may enter the larynx or deeper parts, giving rise to spasm or dyspnœa, on the one hand, or bronchitis or pneumonia, on the other. As a rule, the patient subsists on liquid food.

Diagnosis.—The diagnosis is not usually a difficult matter. The affection bears a resemblance to stricture of the œsophagus, but is unlike it, in that it is devoid of either nausea or retching, and that food is returned piecemeal, instead of in quantity. When there is a sac the patient feels a fullness after meals, and a reducible tumor is often detected externally; when emptied, immediate ejection of food follows. Such a tumor does not exist in œsophageal stricture, unless accompanied by dilatation, when the location makes the diagnosis clear. If a laryngoscopic mirror be used, the diverticulum can readily be seen, if large or generally dilated; a probe will greatly assist the diagnosis, although the opening may be too small to be detected either with the eye or probe.

Prognosis.—The prognosis is rarely favorable to a cure, although a fatal issue is infrequent, even from suffocation, pneumonia, or abscess formation.

Treatment.—The treatment is chiefly mechanical, but Nature sometimes cures by the establishment of inflammatory adhesions. Where the muscles are weak, the galvanic current may aid the internal remedies, or a brace and collar may be adjusted; but where there is an actual pouch, cutting instruments are needed to cure. If there be no suffocative attacks, and if by pressure the patient can prevent the entrance of food into the pouch, it is better not to operate; but should suffocation occur, the pharynx must be opened and the sac excised. In order to prevent rupture of the wound-edges during the healing process feeding-tubes are necessary, and in order to guard against later stricture bougies should be used.

The remedies best indicated are gels., ignatia, nux vom., and strych.

CONGENITAL MALFORMATIONS OF THE PHARYNX.

The most frequent malformation of the pharynx is prominence of one or more of the cervical vertebræ; as a rule, one side projects more than the other. For such a condition nothing can be done, and generally nothing is required, since it gives rise to no inconvenience. Lennox Browne gives the history of a rather unusual alteration somewhat analogous to the preceding, namely, "angular curvature of the cervical portion of the spinal column." In this case the condition, although it had always existed, had caused no annoyance in early life; but after an attack of "Indian fever" he had noticed difficulty in respiration and deglutition, which was instantly relieved by elevating the chin and occiput, thus straightening the cervical vertebræ. A support was adjusted with happy effect.

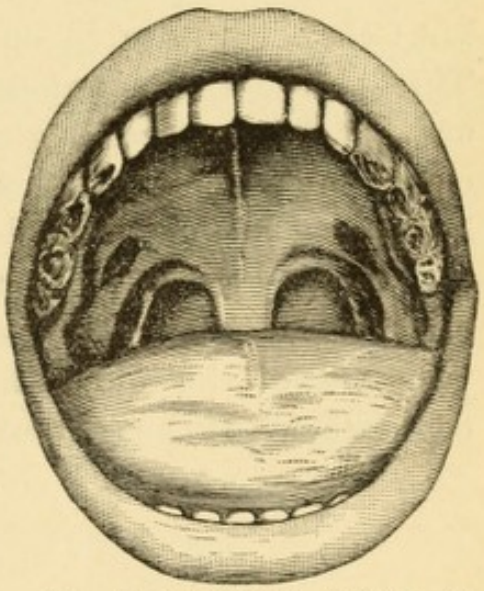


FIG. 67.—SEPARATE MUCOUS INVESTMENT OF THE PALATO-GLOSSUS MUSCLES.

The next most frequent malformation is, perhaps, a division of the uvula. It may be split from tip to base, but, as a rule, only the lower part is bifid; the two portions generally remain in contact, but with true bifid uvula the lower extremities stand out as two diverging horns. For this condition nothing is usually required; it may, however, cause vocal defects in singers, when the opposing edges should be freshened and united by stitches. The condition is sometimes so extensive as to form a cleft pălate. The uvula is at times very large; at others, small or even wanting; or, again, turned to one side, etc. Instances are not wanting in which there is a uvula on each side of the faucial space.

The tonsils are at times either congenitally large, small, absent, or doubled.

The naso-pharynx is sometimes divided vertically by a ridge of bone, the backward continuation of the nasal septum. This may give rise to few if any symptoms, but may often interfere with deglutition and impair vocal tones. Such a septum can be broken down with forceps or cut out with a saw or electric drill. The naso-pharynx may be separated from one or both nasal canals by a bony or fibrous plate, destroying the sense of smell, the natural voice, and nasal respiration. If bony, such a partition should be drilled or broken down with chisel and forceps ; or, if fibrous, cut with a knife or galvano-cautery blade.

The anterior half-arches are rarely congenitally perforated, but Cohen has pictured one such case in his "Diseases of the Throat and Nasal Passages." Four others have been reported, and Fig. 67, on preceding page, represents such a condition in one of my patients. The anomaly is due to a separate mucous investment of the palato-glossus muscles.

Finally, the styloid process is occasionally elongated and passes as far down as the posterior portion of the tonsil, or projects toward the middle line of the pharynx, interfering with deglutition. It can be broken off by forceps.

CHAPTER XXII.

Neuroses of the Pharynx.

SENSORY CHANGES.

Anæsthesia arises from a central change (cerebral anæmia, hæmorrhage, or tumor), injury to the nerve-trunks or twigs, local lesion, general depressing disease, hysteria, or insanity. Diphtheria is the most frequent cause of the loss of sensation in the pharynx. Anæsthesia following the use of various drugs—chloroform, morphine, cocaine—should not be classed under this heading.

Symptoms.—The symptoms are: loss of sensation, determined by the probe or electricity and aided by the patient's statements. Deglutition is frequently difficult, and food often passes into the larynx, owing to loss of sensation in both pharynx and larynx.

Prognosis.—The prognosis is usually good, but, if neglected, anæsthesia of the pharynx may prove fatal either as the result of inanition or of pneumonia, due to the entrance of food into the lower air-tract.

Treatment.—The treatment is chiefly medicinal, but galvanism and faradism play an important rôle in its cure. If the food frequently pass into the larynx, the patient should be fed with the œsophageal tube; neglect of this precaution has led to fatal results, although it is sometimes difficult to convince the patient that the procedure is an absolute necessity.

The remedies best suited to the case are bovista, caust., gels., iodoform, rhus tox., and strych.

Hyperæsthesia is of frequent occurrence; in some persons the pharynx is so irritable that it is almost impossible to introduce a laryngeal mirror to the posterior part of the pharyngeal

cavity; and it is not unusual to meet with cases in which no instrument can be passed beyond the teeth. In the latter condition the hyperæsthesia is chiefly mental, although it may be exaggerated by a local catarrhal or other cause, which superinduces irritability of the terminal nerve-fibres. The usual cause of hyperæsthesia is catarrhal congestion, although it may arise from an elongated uvula, enlarged tonsils, tumors, gouty diathesis, use of alcoholic drinks, tobacco, and condiments.

Symptoms.—The symptoms usually manifest themselves as reflex irritability from contact of a probe, etc.; there is little or no pain, unless a hard or dry substance come in contact with the pharynx. The results are generally favorable.

Treatment.—The treatment is chiefly internal, though various forms of gargles and sprays have been recommended, chiefly those useful in allaying irritability elsewhere; morphine, chlorate of potassium, chloroform, and ether have their advocates. If it be advisable to use a local remedy, cocaine spray is the best for temporary purposes, as in making examinations; but for curato-palliative purposes, bonbons of malt and sugar act favorably.

The remedies most frequently applicable are hyos., ignatia, and nux vom.

Paræsthesia (abnormal sensations) is an affection of rather usual occurrence. It is most frequent in those who are nervous, neurasthenic, or actually hysterical; and is infrequent in catarrhal subjects, follicular and vascular pharyngitis excluded. Varicose veins at the base of the tongue are undoubted excitants. Paræsthesia sometimes arises reflexly from excessive use of the voice, and from alcoholism. Finally, it may be due to cerebral change, occasionally bulbar paralysis.

Symptoms.—The most frequent manifestation of paræsthesia is in the familiar globus hystericus; it not infrequently asserts itself, however, as a foreign body,—ball, stick, bone, hair, etc. In this aberration the eye can detect no change.

This form of neurosis is often most intractable, but occasionally one well-directed prescription will cure; recovery is generally the rule.

Treatment.—The management of paræsthesia is chiefly medicinal, although local measures may be of utility, and physical control is often of inestimable value. Varicose veins may require the use of the galvano-cautery point or acid nitrate of mercury. One of the best local applications is a 20-per-cent glycerin solution of chloride of zinc. Internally, cuprum, ham., hyos., ignatia, and rhus tox. are of frequent use.

Neuralgia of the pharynx shows itself in the form of severe, sharp, darting pains. If the probe be passed over the tonsils and pharyngeal mucous membrane, it is often possible to detect a spot of exquisite sensitiveness; this may be occasionally found by external manipulation. No pathological changes are discernible. Few cases occur in other than very nervous persons, and those who suffer from amenorrhœa or dysmenorrhœa. It may be said of most of the neuroses of sensation, that they are often reflex manifestations of uterine disorders and chlorosis.

Treatment.—Treatment should be directed to the general disorder, of which the neuralgia is usually a part or a sequel. It is both electrical and medicinal. Agar., bell., ignatia, and mag. phos. are the chief internal remedies.

Reflex phenomena sometimes occur, especially from enlarged tonsils; they consist of pain in the ear, spasmodic cough, vomiting, and chorea.

Pharyngeal blushing consists in a temporary reddening of the mucous membrane, the result of vasomotor disturbances. It is often associated with hyperæsthesia of the pharynx and œsophagus, but there is a question as to the association being in the relationship of cause and effect.

No treatment is required.

MOTOR CHANGES.

Spasm of the pharyngeal muscles is quite a rare condition. Although the constrictors are chiefly affected, the palatine, the upper œsophageal, and even the palato-tubal muscles may share and complicate the case. The muscles are sometimes affected simultaneously; sometimes individually. In one recorded case the larynx and floor of the mouth were elevated.

Spasms of the pharynx may occur in the hysterical, in those affected with acute catarrhal and œdematous conditions, or in those in whom there is some brain-lesion. Hydrophobia and tetanus (trismus) are always complicated by these spasms.

The diagnosis is easy, and is assured by the sudden and complete tonic contraction of the muscles implicated.

The prognosis is usually good, unless the spasm be a complication of such maladies as trismus and lissa.

The chief remedies are agar., cuprum, gels., and mag. phos.

Paralysis is the most important of the pharyngeal neuroses. It may be central or peripheral in origin. Its most frequent cause is diphtheria, in which case there is usually associated paralysis of other parts. If the epiglottis be involved, the symptoms will be an exaggeration of those described under "Anæsthesia of the Pharynx," with which it is frequently associated. Food often enters the larynx, and may give rise to severe paroxysms of coughing or dyspnœa, with subsequent implication of the deeper air-passages. If the œsophagus be paralyzed, the local symptoms will be difficult or impossible deglutition and regurgitation of food. These are usually followed by loss of flesh, unless the patient be fed artificially.

When the palatine muscles are paralyzed the voice is nasal and thick; food regurgitates through the nose; the soft palate and uvula cannot be elevated, but hang in the median line and swing backward and forward during phonation. When one side only is affected the corresponding half of the soft palate droops; the other may be in its normal position, but more fre-

quently the soft palate and uvula are drawn to the non-paralyzed side. Sometimes the uvula alone is paralyzed. Relaxation of one side of the soft palate has been associated, by Woakes, with deafness of the corresponding side.

Paralysis of the constrictors alone usually indicates a past diphtheria or a bulbar paralysis. When present, the chief difficulty is in swallowing small, hard particles of food; they usually pass but little beyond the dorsum of the tongue, from which location it is generally necessary to remove them with the finger. Liquids and solids may find their way into the larynx.

Prognosis.—The prognosis is generally good, if occasioned by diphtheria; in fact, Nature mostly restores the lost power unaided by medicaments; but when arising from bulbar paralysis the patient seldom recovers. In paralysis of single muscles the prognosis is usually good.

Treatment.—The mechanical treatment has been fairly outlined when speaking of anæsthesia of the pharynx. Although remedies are usually sufficient to produce the desired change, the use of electricity adds much to the speed and certainty of the cure. The constant current is generally the better; the positive pole may be placed on the front of the neck, the negative on the affected muscles; but if this cannot be done, the negative may be applied to the outside of the neck, over the affected muscles, and the positive pole to the nape.

The remedies for post-diphtheritic paralysis are given under "Diphtheria of the Pharynx and Larynx."

Chorea of the soft palate is a rare neurosis; only a few cases have been reported. It consists in alternate tension and relaxation of the soft palate and uvula. Although this phenomenon is unattended by any external evidence, there is sometimes a decided click as the muscles relax, in some cases so loud as to be heard at a distance of several feet. The contraction and relaxation may manifest themselves in alternate

"nasal" and resonant tones during speech, and in one of my little patients was associated with chorea of the vocal bands and some general twitchings. Relief followed the correction of a decided hypermetropia, but she did not entirely recover until ferrum was prescribed, nearly three months later. Schadle (*Ann. Univ. Med. Sci.*, 1889) notes a case in which "the velum palati was rapidly raised and lowered, without being made entirely tense. At the moment of relaxation of the levatores a singular ticking sound was produced, which in a quiet place could be heard at a distance of twenty feet." The case was cured by the application of the galvano-cautery "to the hypertrophy and hyperæsthesia of the enlarged inferior turbinated bodies, posteriorly."

Agar., bell., cuprum, hyos., ignatia, and mag. phos. are valuable remedies.

CHAPTER XXIII.

Tumors of the Naso-Pharynx.

ADENOID VEGETATIONS OF THE VAULT OF THE PHARYNX.

Adenoid vegetations were not recognized until 1861, although now known to be a frequent hindrance to nasal respiration of childhood, especially in Europe. We are chiefly indebted to Meyer, of Copenhagen, for a knowledge of this affection. Its seat is the vault of the pharynx and adjacent parts. It is due either to hypertrophy of the follicles of this region, or to enlargement of the pharyngeal (Luschka's) tonsil.

Etiology.—Heredity is the chief etiological factor, but many cases can be attributed to the existence of chronic nasal catarrhs, exanthemata, deflected nasal septi, and nasal obstructions. Adenoid vegetations are often associated with enlarged faucial tonsils, thickened half-arches, and a narrow, V-shaped, or cleft hard palate, while, at other times, they are evidently in close accord with the peculiar diathesis so prone to produce hypertrophy of the faucial tonsils. As a rule, retrogression occurs at a much earlier age in the pharyngeal than in the faucial tonsil, and an enlarged lingual tonsil is apt to remain until late in life. It is well known that in the lymphatic temperament the various glandular structures are apt to be diseased, and in this affection, as well, this temperament plays an important part. It is often noticed that those conditions which give rise to inflammation of the faucial tonsils also induce an attack of the same nature in the pharyngeal tonsil.

Children are the most frequent sufferers from adenoid vegetations; in fact, the disease generally undergoes spontaneous cure as the result of advanced years, and at the age of thirty-five the vault of the pharynx is usually smooth, although I have seen it rough at seventy. It is not safe, therefore, to rely upon

this relief by Nature, for the patient may, in the meantime, lose the hearing, facial beauty, purity of the voice, and the natural power of nasal respiration; while the chest may undergo the change known as "pigeon-breast," with consequent disease of the lungs.

Pathology.—The condition consists of a veritable hypertrophy of the glandular elements of the naso-pharynx, which



FIG. 68.—YOUTHFUL PHYSIOGNOMY OF ADENOID VEGETATIONS—MOUTH-BREATHING.
(From a photograph.)

are much increased in number and size and with multiplication and enlargement of the blood-vessels. The mucosa also undergoes catarrhal thickening similar to that found in the nasal fossæ. Adenoid vegetations are of two varieties,—a soft, or papillomatous, and a hard, or smooth. In two of my cases of the latter variety the mass enlarged during every severe acute attack of nasal catarrh. Associated with enlarged pharyngeal

tonsils is nearly always a granular thickening of the pharynx and edges of the posterior pillars, the faucial walls are glistening and wrinkled, and the uvula is often thrown into circular folds.

Symptoms.—There is apt to be a thick, glutinous, yellow, green, muco-purulent, or bloody discharge. The child or young adult has, as in other nasal obstructions, a peculiar nasal intonation, such as is noted with chronic nasal hypertrophies; while nasal respiration, if, indeed, air can be forced through the nose at all, is very loud. The face presents a pinched appearance, lines run from the alæ nasi to the corners of the mouth, the upper incisor teeth project, and the nose is thin, but blunt. The patient snores during sleep, and, if nasal respiration be practically impossible, has contracted chest, with superficial, labored, and hurried breathing. In milder cases the symptoms are less marked, though, as a rule, the same train of complaints exists. Aprosexia is believed, by Mr. William Hill, to result from lymphatic stagnation, which he bases upon the fact that the intra-cranial lymphatics pass out of the skull along the course of the nerve-sheaths (Key and Retzius); enuresis, cephalalgia, headache, and asthma are reported complications.



FIG. 69.—AGED PHYSIOGNOMY OF CONFIRMED MOUTH-BREATHING.

If the person be sufficiently tractable to permit a posterior rhinoscopic examination, the vault of the pharynx will be seen to contain a mass of irregular lobular tissue, which may fill the entire pharyngeal vault and completely obstruct the outlets of the nares posteriorly; or the growth may appear as roundish, elongated masses, similar to a bunch of raisins. The color is generally duller than that of the normal mucous membrane, and the tissues are often covered with a greenish-yellow, dirty, or bloody discharge, which, in some cases, forms in crusts on the vault of the pharynx, completely hiding the vegetations. If

wiped off, bleeding is apt to ensue, although the surface does not appear vascular. The pharynx and nares are usually catarrhally thickened, the pharyngeal follicles large and pale, and, as a rule, hypertrophies of the septum and turbinateds co-exist. When unable to examine with a mirror, the index finger should be passed into the post-nasal region ; if vegetations exist, it will come in contact with a soft, easily bleeding, irregular mass, resembling a bunch of earth-worms. When introducing the finger, force is to be avoided ; on that account insert it directly back of the posterior pillar. As soon as the naso-pharynx is reached the finger can be easily and quickly brought into the

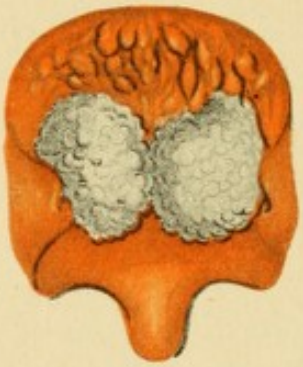


FIG. 70.—ADENOID VEGETATIONS AND HYPERTROPHY OF TURBINATEDS, POSTERIORLY. (From Sajous.)

median line. Semon prefers to inject a little warm water into one nostril ; if it do not stream immediately from the other, but pass into the mouth, it is evident naso-pharyngeal obstruction exists.

Prognosis.—If we exclude the defects already enumerated as likely to arise, the prognosis may be said to be good. It must be admitted that few cases escape the loss of the important functions named, unless the hypertrophied structures be reduced before confirmation of serious changes.

Treatment.—Much can be done with remedies, but their action is slow and should not be long relied upon if the functions noted be not improving. Where there is much discharge,

thorough cleansing will aid the internal medication, and polypi, exostoses, etc., should be removed. Mechanical means, therefore, constitute a considerable part of the treatment. If medicines fail, chromic acid may be applied either in the form of crystals fused on a probe or in a saturated solution by means of a small, guarded applicator (Fig. 27), aided by a rhinoscopic mirror. Three or four applications may be made at each weekly sitting. Little pain follows even without the use of cocaine. When the solution is used, the cottoned applicator is to be dipped into the solution and passed back of the soft palate; when in position, the acidulated cotton is to be forced out and pushed firmly against the growth. Care must be exercised not to have the cotton so saturated that the acid will be squeezed out when pressure is exerted, lest it flow down the throat and cause severe inflammation or laryngeal spasm. Glacial acetic, mono-chloracetic, or trichloracetic acid may also be used with the guarded applicator.

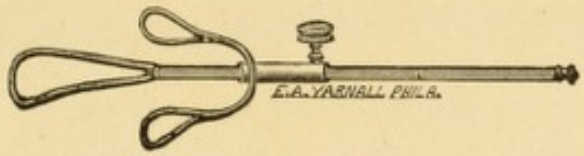


FIG. 71.—WHITE'S PALATE-RETRACTOR.

Electrolysis is slow and usually unsatisfactory, but the galvano-cautery point or loop is among the efficient means of treatment. If the broad point be used it should be inserted cold; and when in position, as determined by the mirror, the current is turned on. When cocaine is used there is little or no pain. Three or four points may be treated at each sitting, at intervals of four or five days. If the snare be used the loop should be passed around part or all of the tumor, if possible, otherwise it may simply be brought in contact with the mass and made to burn itself into the granulations, as recommended by Dr. D. A. Strickler. Too large a growth should not be destroyed at once, as blood-poison and death may ensue. It is also important not to injure surrounding structures, and to this end, if working near the soft palate, it should be held forward with a palato-uvula supporter, retractor, or hook.

In the absence of the galvano-cautery, the mass may be encircled by the cold wire; the loop should then be slowly closed; otherwise the hæmorrhage and pain may be severe. The time required in amputation varies from half an hour to

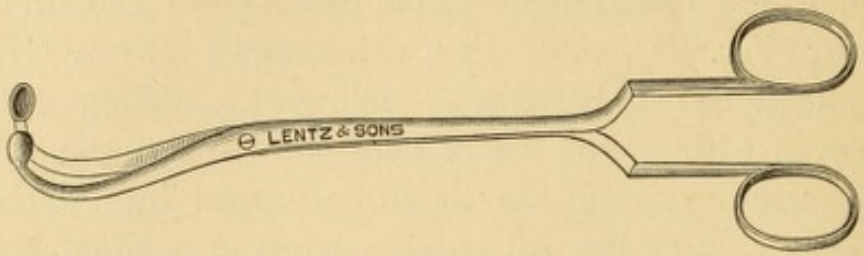


FIG. 72.—LŒWENBERG'S FORCEPS.

two hours. The loop is usually passed through the mouth; but, in event of a free nasal passage, it may be introduced through that channel.

As a rule, the speediest and easiest methods of dealing



FIG. 73.—GOTTSTEIN'S CURETTE.

with adenoid vegetations are the following: Forceps, curette, scoop, curette finger-tip, and sharpened finger-nail. Curved cutting or crushing forceps are most useful if the mass be large and a general anæsthetic be used. The vegetations are grasped

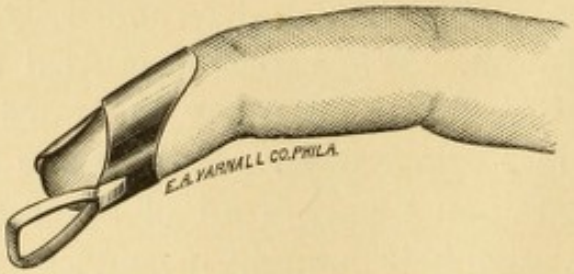


FIG. 74.—CURETTE FINGER-TIP.

and cut or torn away in pieces. The hæmorrhage is quite profuse for a time, but soon subsides. In operating with forceps or curette, it is better to have the head lower than the shoulders, that the blood may flow out of the mouth or nose. Reaction is

sometimes severe; on that account the patient should be placed in bed for one or two days, and acon. or fer. phos. given. As acute otitis media with perforation of the membrani tympani occasionally follows these operations, measures should be instituted looking to the prevention of this: the preceding remedies,

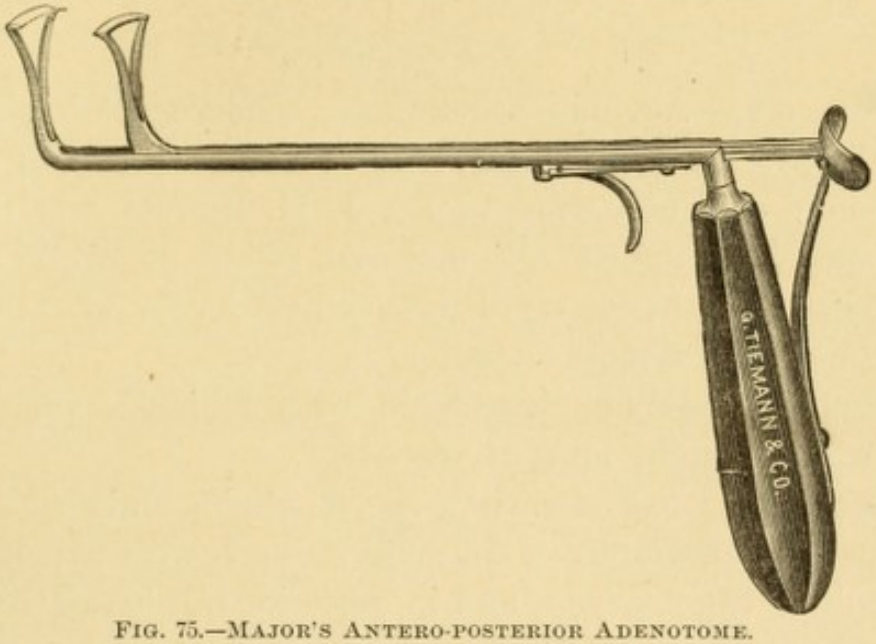


FIG. 75.—MAJOR'S ANTERO-POSTERIOR ADENOTOME.

aided by daily inflation with a Politzer bag (Fig. 34, page 74), usually suffice.

Iodine (20 grains to the ounce of glycerin), kali bi. (30 grains to the ounce), and sang. nit. (3 x trituration) are good local applications.

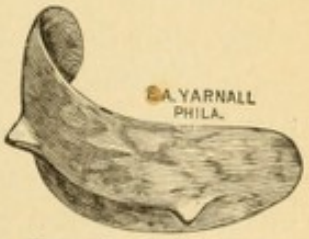


FIG. 76.—INHIBITOR.

Mouth-breathing is frequently either a habit or due to a short upper lip or projecting upper teeth, the nose and naso-pharynx being free. If the patient cannot break himself of this pernicious practice, he had better wear a plate at night. This can be made of metal, but hard rubber, celluloid, or zylonite is better. It is adjusted to fit between the lips and teeth. (See paper by the author, *Hahnemannian Monthly*, Dec., 1889, and *Trans. Homœo. Med. Soc. Pa.*, 1889.) After the inhibitor has caused pressure-recession of the incisor teeth, it should be discarded, lest the

gums be diseased and the teeth lost from pressure of the posterior tips of the instrument. In its place should be worn a soft plate, to fit inside and outside of the teeth, the cutting edges resting on the thin portion of the plate which holds the sides together. This should be made from a dentist's impression of the teeth.

Therapeutics.

Ars. alb.—Adenoid vegetations; pharyngeal hypertrophy extending to the Eustachian mouths; nasal swelling of a dark-red color; and, according to Dr. J. H. Buffum, the "middle turbinated bone tumefied, to occlusion of the nostril."

Calc. phos. has received just credit from Dr. R. T. Cooper, who considers it almost a specific.

Kali mur.—When associated with follicular pharyngitis, with white, tough, mucous discharge.

Sang. nit. "has seemed to be of almost universal benefit in cases of hypertrophy of Luschka's tonsil, with hyperæmia in the vault of the pharynx, and in posterior turbinated hypertrophy with congestion." (Extract from a letter from Dr. Malcolm Leal.) I have had excellent results with this remedy and with calc. phos., the former locally and internally in the 3 x, and the latter in the 30 x or 200 x; thus often avoiding operations.

POST-NASAL FIBROIDS.

Etiology.—Post-nasal fibroids are not usual; their causes are those of fibrous tumors elsewhere; the same may be said of their pathology. They are sometimes associated with sarcomata, enchondromata, etc. They are rare in females, and usually occur between the thirteenth and twenty-third years of life. Post-nasal fibroids are usually thickly pedunculated and spring from either side of the basis cranii, never (?) from the middle, and from the upper cervical vertebræ. Their invading characteristics have been noted under "Fibroid Tumors of the Nose."

Symptoms.—The symptoms depend much upon the size of the growth. At times the only complaint is of difficult nasal

respiration, but usually hæmorrhages are frequent and profuse; the discharge thick, gluey, and ropy, or bloody and fetid from ulceration; headache and neuralgia result from pressure; deglutition and speech defects arise from pharyngeal extension; and even grave mental symptoms, varying from aprosexia to loss of memory, are occasionally observed. The pressure which they exert may be so great as to break down the bones in any direction, giving rise to deformity or brain-lesion and death. Grönbech (*Ann. Univ. Med. Sci.*, 1889) found cases of sudden death, during the course of nasal and post-nasal fibroids, due to fatty degeneration of the heart.

Diagnosis depends upon the preceding symptoms; the hard, fibrous character of the tumor; its smooth, glistening, often lobulated appearance; and the youth of the patient.

Prognosis.—The prognosis is grave, in the main; it was formerly looked upon as universally so, owing chiefly to the radical measures adopted. Even yet patients may die as the result of hæmorrhage, cranial involvement, pyæmia, exhaustion, or neglect of treatment. The growth may be self-limiting or it may degenerate.

Treatment.—The treatment is chiefly mechanical: electrolysis, galvano-cautery, and the cold snare are indicated in the order named. Where possible, the more formidable operations are to be avoided as too dangerous. When using the galvano-cautery, the steel wire, as pointed out by Dr. W. A. Dunn (*The Clinique*, March, 1890), is to be preferred to platinum, as less likely to cause severe hæmorrhage. (See treatment of "Fibroid Tumors of the Nose.")

FIBRO-MUCOUS POLYPI.

Fibro-mucous growths of the naso-pharynx are much more frequent than the preceding, and, unlike them, they occur chiefly (in my experience, only) in females. These polypi occur singly, are pedunculated, attached near the edges of the choanæ, and rarely show a tendency to recur after removal.

Symptoms.—The symptoms are not characteristic, and consist of a sensation of a foreign body; perhaps alternate nasal obstruction, owing to mobility of the polypi; and interference with deglutition and articulation. Inspection reveals a long, teat-like mass extending from above. It is nearly the color of the uvula, but usually somewhat duller. Palpation detects an elastic, movable mass. The prognosis is good.

Treatment.—Relief must be mechanical. Jarvis' or Sajous' curved-tipped snare is usually sufficient, but care must be exercised that the wire do not break; in one case in which this repeatedly occurred, I severed the growth with a pair of curved scissors, not having a galvano-cautery at hand.

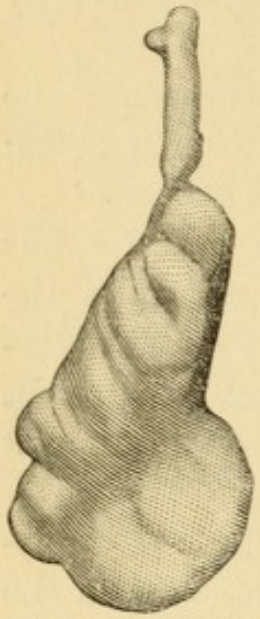


FIG. 77.—ENCHONDROMA. Actual size. (From a photograph.)

At times forceps (see "Adenoid Vegetations of the Vault of the Pharynx") are the best instruments to use.

ENCHONDROMATA.

Five cases of this rare neoplasm have been reported. In some of these external operations were performed; but in my patient (see *Hahnemannian Monthly*, June, 1891) the almost white growth was removed by curved post-nasal forceps, leaving no trace of its pedicle, which was adherent to the upper rim of the right choana. The prognosis is good and the treatment chiefly mechanical.

MALIGNANT TUMORS.

Sarcomata and carcinomata of the naso-pharynx are rare. They occasion obstruction and often pain, hæmorrhage, and fetid discharge. The surrounding tissues are frequently invaded, impairing the function of the affected part. The cervical glands may enlarge in both classes, but this change occurs earlier in carcinoma. Pain usually extends to the ears. A broad-based, easily-bleeding, soft, ulcerating tumor in a person over 30 years

of age is usually malignant; fibromata occur earlier, and are much harder and more defined in outline, yet sarcomata occasionally occur in youth. The prognosis is grave, although sarcomata are sometimes cured by removal. (For other treatment, see "Malignant Tumors of the Pharynx.")

CHAPTER XXIV.

Uvular and Tonsillar Diseases.

Diseases of the Uvula.

As most uvular affections are associated with similar conditions of the pharynx, they need no separate mention; but since there are some diseases which centre in this appendage, the surrounding tissues being but slightly affected, they deserve special consideration.

UVULITIS.

Acute inflammation of the uvula is occasionally met as an independent disease. The uvula is reddened, swelled, and elongated. Although the mucous covering is usually tense and often glistening, it is not transparent, as in œdema. The symptoms and prognosis are so similar to those of œdema of the uvula that they will be found there. Acon., bell., caps., fer. phos., merc. sol., and nux vom. are the chief remedies.

ACUTE INFLAMMATORY ŒDEMA OF THE UVULA

Etiology.—Although comparatively infrequent, this affection is sometimes observed as the result of cold, gastric disorder, rheumatism, erysipelas, syphilis, phthisis, general dropsy, and traumatism.

Symptoms.—There is usually a sense of fullness in the throat, a foreign substance upon the tongue, difficult deglutition on account of food passing through the nose, a frequent desire to swallow saliva, a slight amount of pain, and very thick, indistinct articulation. Cough and irritation, such constant accompaniments of chronically relaxed uvula, are rarely prominent in acute œdema. The uvula is congested, thickened, and dropsical, resembling a bag of water, the effusion often being very pronounced.

The prognosis is good, although chronic relaxation may follow.

Treatment.—The treatment is usually very simple, and the results prompt and satisfactory. It is generally advisable to hold a solution of alcohol (1 part) and water (4 parts) in the mouth for a few minutes several times daily. It is occasionally necessary to puncture, but never to amputate, the uvula. Tannate of glycerin (1 to 30) is grateful.

Therapeutics.

Apis.—Uvula very œdematous, like a bag of water, but little inflammatory redness; right side more involved.

Ars.—General œdematous complication, weakness, thirst.

Caps.—Elongated, relaxed, œdematous, inflamed uvula; enlarged and painful cervical glands. Left side shows the force of the infiltration, with dusky redness of the uvula and adjacent palatine arches, and considerable burning in the affected parts.

Kali bi.—Œdema with syphilis or with pseudo-membranous diseases; characteristic stringy, ropy discharges. Ulceration of uvula.

Kali iod.—Œdema with or without syphilis; thin, acrid expectoration.

Rhus tox.—The tip of the uvula looks like a drop of fluid or jelly; especially in rheumatic subjects or during erysipelas.

RELAXED UVULA.

Etiology.—This condition is generally associated with relaxation of the soft palate. Its causes are similar to those giving rise to chronic pharyngitis, including disordered stomach and liver, overuse or strain of the voice in throaty speech or song, severe coughs, tobacco, and chemicals. Heredity seems to play some part in the production of relaxed uvula. It not infrequently appears without ascertainable cause. The uvula is long ("falling of the palate") and usually quite thin, although

occasionally thick. The patient can frequently elevate the muscular and contiguous parts, while the lower portion of the mucous lining hangs in a "string" and rests upon the base of the tongue; it often happens, however, that there is inability to raise any portion of the appendage, which touches and irritates the pharynx and epiglottis.

Symptoms.—The symptoms are by no means characteristic, but consist of frequent efforts to swallow and clear the throat; irritable or paroxysmal cough, worse when lying; retching and vomiting; and reflex spasm of the larynx, arousing the patient from sleep. As a result of these symptoms, the general health may suffer; the patient become nervous, irritable, sleepless; the

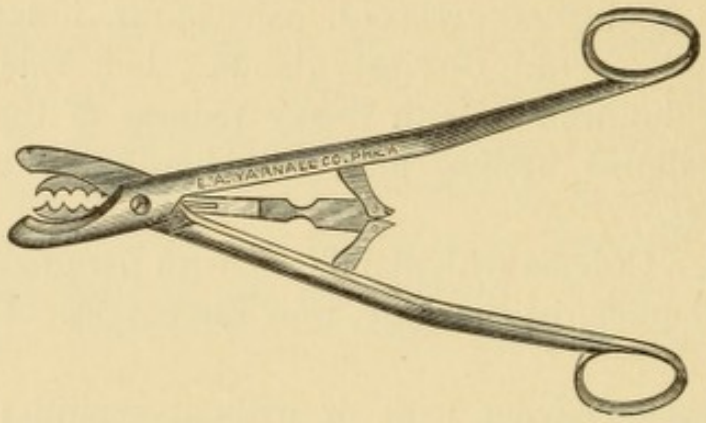


FIG. 78.—SAJOUS' UVULA-SCISSORS.

appetite may fail, and digestion suffer, with resultant loss of flesh,—simulating phthisis. Finally, the singing voice may be greatly impaired, and effort, fatigue, and tremulo accompany vocalization. When vocal defects are prominent, however, the soft palate is generally relaxed as well. If cough be a prominent symptom, the laryngeal mucous membrane is commonly somewhat congested in consequence.

The prognosis is good.

Treatment.—Surgical interference is sometimes required. Locally, a solution of chloride of zinc, alum, or tannin (15 grains to the ounce of glycerin) may be applied or used as a gargle. Faradism and galvanism are of importance. If failure

ensue after a fair trial of internal remedies, together with these adjuvants, the lower end of the uvula should be amputated. Only the mucous membrane is to be removed, unless there be great redundancy of tissue. Although numerous uvula-tomes have been devised, none of them seem more efficient than a pair of uvula-scissors and long, slender forceps, with which the tip of the uvula is grasped and held, but not drawn upon, while the scissors are in use. Very little pain is occasioned, although cocaine may be used if desired. "After-pain" is sometimes considerable, and may require staphisagria internally and pieces of ice or iced water locally. The patient should use his voice gently for a day or two, and for several days should not eat very hard or highly-seasoned food.

Remedies are to be prescribed chiefly upon the constitutional condition; but apis, caps., chlor. zn., and tannic ac. are indicated pathologically.

Therapeutics.

Calc. fluor.—Relaxed uvula, when the tickling is referred to the larynx.

Hyos.—Cough from relaxed and elongated uvula. This is the one remedy upon which I place dependence, in such cases, where there are essentially no other symptoms and when there is no inflammation of the pharynx.

Ignatia is similar to hyos., but the tonsils or cervical glands are generally enlarged.

Pulsation of the uvula and faucial region is sometimes noticed in aortic insufficiency, as pointed out by F. Müller, of Berlin, and P. Merklen.

TUMORS OF THE UVULA.

Warty (syphilitic or non-specific) and angeiomatous growths occasionally spring from the uvula.

The symptoms are similar to those noted under "Relaxation of the Uvula."

The treatment is by abscission, if large enough to occasion marked annoyance, although the galvano-cautery is to be preferred for small or vascular growths. Ars., ham., sang. nit., and thuja are indicated internally.

Diseases of the Tonsils.

ACUTE TONSILLITIS—QUINSY.

Children and young adults are those most frequently attacked by quinsy. It is not very usual before the age of ten or twelve, but from that time to twenty it gradually grows more frequent; at the age of thirty it is unusual, and rarely occurs after fifty. Acute tonsillitis is more frequent in men and boys than in women and girls, chiefly on account of the greater exposure to which the former are subjected. It is a common disease in nearly all climates, though vastly worse in those that are changeable. Recent research favors the idea of its infectious nature.

Etiology.—It has as causes exposure to cold or draughts of air, particularly when the body is overheated and the system at a low ebb, impure air, imperfect drainage, rheumatism, gout, etc. Highly-strung, nervous temperaments, anæmic and delicate persons furnish frequent examples of acute tonsillitis. Shock, fright, mental emotions, heredity, scrofula, and syphilis are undoubted etiological factors. Traumatism (hot water, caustics, etc.) acts as an exciting cause; chronic enlargement of the tonsils and former acute invasions act as predisposing factors. Scarlatina, measles, typhoid fever, small-pox, and malaria may induce secondary tonsillitis. Finally, no assignable cause can be found for many cases.

Varieties.—One tonsil may be alone affected, or one before the other. When they are affected simultaneously, the disease is usually septic in origin. Acute tonsillar inflammation may attack a tonsil when in an apparently healthy condition, or it may involve an already hypertrophied gland. Although the

force of the disease is generally centred in the tonsil, neighboring structures are affected later and often to a considerable degree, or the inflammation may be chiefly confined to the tissues surrounding the tonsil (peritonsillar inflammation), usually the result of septic poison. The superficial portions of the gland may be alone involved (erythematous tonsillitis); the parenchyma may be affected throughout (parenchymatous tonsillitis), often leading to pus formation (quinsy proper); or the lacunæ may be chiefly diseased (follicular, or lacunar, tonsillitis). The inflammatory process ends either in resolution (the usual termination), abscess formation (much less frequent), or imperfect resolution leading to chronic enlargement (intermediate in frequency). Some have described a subacute form, but this seems to correspond to the erythematous variety. Acute follicular tonsillitis is so distinct as to require separate consideration.

Symptoms.—The symptoms depend much upon the stage and severity of the attack. In the milder form as well as in the deeper-seated malady, the first symptoms may be malaise, a slight chill, headache, pain in the neck and back, a soreness, tenderness, fullness or pain in the region of the fauces, stiffness on swallowing, and swelling and tenderness of the glands in the cervical region at the angles of the jaw. In severe cases there is decided chilliness, perhaps a rigor, and a rise of temperature. In mild cases the mercury registers 100° to 101° F.; but in those more severe, 103° to 105° F.; the pulse is correspondingly quickened. In a few hours the pain becomes severe; it is difficult or impossible to open the mouth; deglutition is difficult, painful, or impossible; and fluids, or even food, may regurgitate through the nose or pass into the larynx.

As a result of exudation œdema of the uvula, pharynx, or larynx may supervene. The voice is thick, dull, almost suppressed, and its production is attended by considerable effort; articulation may be greatly affected and speech even be rendered unintelligible. Pain in the region of the tonsil is

often so great as to prevent sleep, and usually shoots to the ears during deglutition; on account of inflammatory extension to the Eustachian tubes, pressure of the enlarged tonsils upon the palato-glossus muscles, or infiltration pressure on the mouths of the Eustachian tubes. Temporary deafness is not an infrequent complication, owing to inflammatory, serous, or purulent involvement of the middle ear; the patient snores; his senses of smell and taste are defective; and his respiration is often greatly hindered. There is a continual secretion of thin mucus, attended by an almost constant desire to swallow, but which is resisted, as it causes agonizing pain, under which the victim cringes. As a consequence, the head is thrown forward and the mouth kept open much of the time, that the saliva may dribble from it. In less severe cases the saliva is expectorated with difficulty. Rotation of the head often occasions intense pain, both in the head and throat, so that the patient moves the entire body rather than the head alone.

General prostration and headache are prominent symptoms. The tongue is nearly always heavily coated with a white deposit, and takes the imprint of the teeth; the breath is very offensive, and, as the mouth is so difficult to open, the diagnosis often has to be made from the symptoms already given. Usually, however, it is possible to peep into the faucial region, when one or both tonsils will be seen greatly enlarged, even meeting in the median line, the uvula œdematous, the half-arches swelled, the mucosa inflamed and bright red or dusky in color. The pharynx is red, perhaps infiltrated, or covered with a whitish mucus, which may be mistaken for a diphtheritic deposit, especially if it appear upon the tonsils. In diphtheria the discharge cannot be wiped off readily and leaves a bleeding surface which is re-coated within twelve hours, but the much less pain, the lower temperature, and the albuminous urine are to be chiefly relied upon as indicating diphtheria. Sometimes the crypts are blocked with a slight secretion.

If pus be present there is a throbbing, lancinating pain,

and the tonsil has a boggy appearance, or even a yellowish pointing. Fluctuation may sometimes be detected by the finger or probe. When it is impossible for the patient to open his mouth sufficiently wide to permit a view, the finger can sometimes be thrust into it in order to feel what cannot be seen; but as this is a very painful procedure, gentleness is important. Although the ordinary symptoms of fever, thirst, heat, nausea, restlessness, constipation, high-colored urine, etc., may characterize the ordinary case, when the temperature reaches 103° F. or more, there may be delirium and albuminuria, but no tube-casts.

Should the disease subside by resolution, all the symptoms gradually abate; when the termination is by abscess, the latter bursts, if not previously opened, giving such prompt relief that the patient often at once falls into a gentle sleep. In the majority of cases the purulent collection is so slight that its evacuation is not attended with any troublesome symptoms, the pus being either expectorated or swallowed during sleep; occasionally, however, it flows into the larynx and results in serious dyspnœa, in rare cases even in death. Erosion of the carotid artery has given rise to rapidly fatal hæmorrhage. Should the condition end in imperfect resolution, the acute symptoms gradually subside, leaving a sensation of fullness in the region of the recently inflamed and still enlarged tonsil. If there be laryngeal dyspnœa, œdema may be suspected.

Diagnosis.—The differential diagnosis is rarely difficult, but quinsy may be confused with diphtheria (as already given), follicular tonsillitis, membranous pharyngitis, phlegmonous pharyngitis, scarlatina, and erysipelas.

Follicular tonsillitis is distinguished by the little dots of whitish deposit which, when wiped or pulled upon by forceps, are seen to be continuous and adherent to such a secretion extending into the lacunæ; there is not so much alteration of voice or difficulty in opening the mouth; and the tongue is less coated.

Membranous pharyngitis rarely has any glandular involve-

ment; the tonsils are seldom acutely enlarged; the membrane is generally found on the pharynx as well as the tonsils; and there is neither the difficulty in opening the mouth nor the characteristically coated tongue.

Phlegmonous pharyngitis is to be distinguished, chiefly, by the more extensive involvement of the pharynx and the greater amount of peritonsillar inflammation; although Cohen looks upon them as one affection.

Haig-Brown considers it important to note the time of the appearance of the albumin. If it "be found for the first time on the second or third day, the temperature being at 103° F. or more, and disappear on the fourth, we are almost surely dealing with a case of simple tonsillitis; if, however, we find albumin in the early days, with a comparatively low temperature (100° to 101° F.), and especially if the albumin persist for two or three weeks, the case is most likely one of diphtheria; while, if there have been no albumin early, and it be found for the first time after the end of two, three, or more weeks, it is most probable that the case has been one of latent scarlatina." Lennox Browne places much reliance upon a glandular enlargement at the angle of the jaw in scarlet fever, and its absence in simple tonsillitis.

Scarlatina without eruption is to be recognized by the higher fever, the flushed face, the dilated pupils, the "strawberry tongue," the urinary change noted, and the enlargement of the gland at the angle of the jaw.

Syphilis, primary cancer of the tonsil, measles, and post-diphtheritic and labio-glosso-laryngeal paralysis, although bearing some resemblance to tonsillitis, are readily distinguished, either by inspection or by the history of the case.

Prognosis.—The prognosis is usually good; the affection rarely lasts longer than from five to ten days, although the second tonsil sometimes suffers after recovery of the first. A chronic abscess or a cyst occasionally persists after subsidence of the acute inflammation. Rare instances are recorded of pus

burrowing into the mediastinum, infiltrating the tissues of the neck, causing erosion of the carotid and maxillary arteries, or fatal œdema of the larynx. The attack may alternate with a rheumatic seizure.

Treatment.—If seen early enough, it is frequently possible to abort the attack. If the pain and dysphagia be very great, steam inhalation is often comforting as well as curative; but as fatigue soon occurs the inhalation should not be continued longer than from five to ten minutes. It is often advisable to impregnate the steam with some soothing drug,—eucalyptus, for example. Pieces of flannel may be wrung out of hot water and laid over the tonsillar region. In the early stage, the patient may find it comforting to hold in his mouth (or gargle) hot milk alone or combined with guaiacum (1 drachm to the ounce), warm water and glycerin (2 to 1), lemonade, lime-juice, etc. On account of dryness of the throat it is well to have the atmosphere of the room moistened, either by means of the atomizer, spray, boiling water, or a hot brick or iron immersed in a bucket of cold water. If at all positive of the presence of pus, the tonsil should generally be incised: (1) to relieve the pain and (2) to obviate any serious danger of flooding the larynx by evacuation of the abscess during sleep. Here, as in opening a retro-pharyngeal abscess, it is better, if the pus be abundant, to have the patient's head thrown forward before incising. The knife should be inserted into the gland with its cutting-edge turned toward the median line, and care must be exercised not to wound the half-arches. If the abscess form on the upper edge of the tonsil it is better to puncture rather than cut, lest the soft palate and posterior pillar of the fauces be injured. It is usually safer to use a pair of rather blunt-pointed scissors. Some advocate early incision in order to relieve pain, swelling, and dysphagia. Internal remedies, however, aid evacuation and often relieve the patient from the fear of the lance. Locally, bicarbonate of soda occasionally relieves, but W. R. King prefers equal parts of the bicarbonate and the biborate,

with the addition of 4 grains of iodoform to the ounce of the former combination. He has seen this result in speedy evacuation.

Prophylactic treatment consists in the administration of good, nutritious, non-stimulating food. Pastry and sweatmeats should be avoided. Fresh air, exercise, and the daily salt-water sponge-bath, with subsequent friction, are important considerations. As constipation adds to the possibility of recurrence, this should be properly cared for; and wet feet, exposure to draughts, and impure air are to be avoided.

The best abortive remedies are baptisia, baryta carb., guaiac., and kali iod.

Therapeutics.

Apis.—Stinging, burning when swallowing; œdema of uvula and half-arches, the left tonsil the worse. The superficial tissues are alone involved (bell. affects the parenchyma).

Baryta carb.—Tendency to suppuration, especially of right side, in tonsillitis from suppressed foot-sweat; muscular paresis. C. Ransford (*Hom. World*, June, 1882) records several cases in which this remedy in the twelfth cured very promptly, even when the patient was scarcely able to swallow and with threatened pus formation; it is useless after pus has formed.

Bell.—Bright-red, especially right, tonsil; swelling and tenderness of neck and anterior cervical glands; deglutition of liquids especially painful.

Calc. sulph.—When suppuration occurs or is threatened, and in place of hepar.

Caps.—Serous infiltration of the faucial tissues; boggy, not œdematous, in appearance; left side worse; pain burning, stinging. When the tongue is heavily coated white, uvula œdematous, especially with a dusky infiltration of the left pillars and some swelling of the lymphatic glands, caps., in the 3 x or 6 x, will usually relieve inside of twenty-four hours.

Colch.—When associated or alternating with rheumatism; throat dry, with free discharge of saliva from the mouth.

Guaiac.—Threatened tonsillitis, violent burning in throat. This remedy in the 1 x frequently repeated often seems to abort the attack.

Hepar.—With the sticking pains, chilliness, and rigors indicative of on-coming suppuration, and later to assist evacuation; according to personal experience, preferably in the 2 x in either case. Pains shoot into the ears. Aggravation from draughts.

Merc. sol.—Parenchymatous form (after bell.); throbbing, stinging pains; thin, pseudodeposit on tonsils and pharynx; flabby and tooth-indented tongue; marked ptyalism; pain on empty swallowing; hastens pus formation and evacuation.

Phytol.—Chills and fever alternate; prostration; pain running to ears on deglutition; affected parts dark-purple, almost blue; rheumatic subjects; uvula enlarged and œdematous.

Silica.—Especially left side, when suppuration seems long pending; also for long-continued suppuration; deep ulcers, even gangrene. Deglutition causes severe pain.

Sulph.—Slow reaction to treatment; slow decline of irritation after discharge of pus.

ACUTE FOLLICULAR, LACUNAR, SIMPLE TONSILLITIS.

Etiology.—The causes of acute follicular tonsillitis are similar to those of the forms just considered. There seems to be little doubt that it is infectious. Entire families occasionally suffer, either as a result of this influence or of insanitary surroundings.

Pathology.—Pathologically, it consists in a fibrinous exudation from the lacunar lining, which makes its appearance at the mouths of the crypts, from which it may extend and cover considerable areas of one or both tonsils and even adjacent structures, thus simulating a false membrane.

Symptoms.—The symptoms are similar to those of the parenchymatous variety, but, though there is less fever, there is usually greater pain in the back, joints (rheumatic ?), and the prostration is more marked; the tongue is not so heavily coated,

and the papillæ stand out more boldly (white-strawberry tongue); deglutition is not so painful; the glandular enlargement is less; and there is little difficulty in opening the mouth.

As complications (C. W. Haig-Brown, Wm. Osler, and others), are to be noted: Endocarditis, valvular disease, rheumatism.

Diagnosis.—The diagnosis (see "Diphtheria of the Pharynx and Larynx") is rarely difficult after the appearance of the exudation; previous to that time, however, the disease should not be named. It seems, occasionally, to precede diphtheria. When the spots first appear, the tonsils are studded with little white points; white patches form later; these can be wiped off, and,



FIG. 79.—ACUTE FOLLICULAR TONSILLITIS.

if carefully watched, will be seen extending into the crypts of the tonsils. If grasped with a pair of forceps and pulled upon, they will be seen to come in a string directly from the mouths of the lacunæ, into which a probe can usually be passed to a considerable depth. The tonsil proper is often little enlarged. Occasionally the pharyngeal follicles participate in a similar process and give rise to a slight deposit. Dr. Jacobi thinks this condition, in reality, pure and simple diphtheria (*Jour. Lar. and Rhin.*, July, 1891).

Prognosis.—The prognosis is good. The duration of the disease is from ten hours to three or four days. It rarely becomes chronic unless complicated by parenchymatous alterations. Its association with diphtheria should be remembered.

Treatment.—The treatment should be chiefly medicinal. Adjuvants should consist of steam inhalations, hot-water gargles, or pieces of ice. In general, it is better to isolate the patient until the exudation has disappeared.

Apis and ignatia, if given early, stand side by side as specifics; but, at a later date, merc. iod. rub. acts better, and benzoate of soda often materially assists.

Therapeutics.

Apis.—Numerous points of beginning follicular secretion; œdema of the uvula and half-arches, deep lacunar ulceration. Follicular secretion resembling pseudomembrane. Clinically, apis is almost a similimum.

Ignatia.—Tonsils studded with small, superficial, yellowish-white ulcers; plug in the throat, worse when not swallowing; swelling of cervical glands.

Lach.—Tonsils swelled and livid-looking when dots appear.

Merc. iod. rub.—This is the favorite remedy with many practitioners, but clinical experience places apis and ignatia far in the lead.

ENLARGED (HYPERTROPHIED) TONSILS.

Etiology.—Enlarged tonsils occur most frequently in children and young adults. As with acute tonsillitis, the chronic change grows less frequent after the age of thirty, and many children lose their tonsillar enlargements at puberty; after the age of forty it is unusual to see much of the tonsils beyond the confines of the half-arches (see Fig. 56, page 152). The condition is generally the result of imperfect resolution of acutely inflamed tonsils, although the enlargement sometimes seems to be chronic from the start, there being no apparent cause for it. It may be stated, however, that an attack of measles, scarlatina, or diphtheria may be so severe as to cause the tonsillar inflammation to be entirely overlooked, thus giving no history of the original cause. The changes at puberty, syphilis, phthisis, rheumatism, indigestion, scrofula, imperfect hygiene, etc., are

occasional causes. As the tonsillar enlargement is sometimes augmented during the menstrual period, there may be a closer association between these glands and the sexual sphere than is generally conceded.

Pathology. — The pathological changes consist of a thickening (1) of the cellular elements of the tonsils (soft enlargement), (2) of the intercellular structures (hard or scirrhous hypertrophy), or (3) a collection of retained secretions in the lacunæ of the glands (hyperplasia or chronic lacunar tonsillitis), in which the mouths of the crypts are often everted and the tonsil very ragged, owing to destruction of portions of the gland. The tonsil proper may appear little enlarged owing to destruction of its parenchyma. Frequently, the hypertrophy is composed of two portions (one above the other), separated by a simple fissure in which concretions or pellets of solid secretion may sometimes be found,—the nidus of a pharyngeal or laryngeal irritation and reflex cough. The tonsillar mass is often firmly adherent to the half-arches or to the lateral pharyngeal wall; such adhesions frequently give rise to much irritation and impair muscular action, especially during vocalization. Directly below the normal tonsils is a number of glands, imperceptible in the normal throat, which sometimes enlarge and give rise to considerable annoyance, chiefly by producing aching, painful deglutition and cough.

The tonsils, if normal, are seldom visible, but as soon as decidedly augmented in volume they come into view. They may project but a short distance beyond their beds, or be so large as to press against the uvula, or even unite in the median line and almost prevent the passage of food and air. They may be smooth or very ragged and with depressions on their surfaces, the result of former ulcerations or abscess formation. In chronic lacunar tonsillitis, a cheesy material exudes from the crypts; if a curette be passed into the openings, an offensive, caseous mass may be dislodged; it may, however, become solid and result in a calcareous concretion. Occasionally, the gland is

very small, when lacunar tonsillitis can only be discovered by drawing the palato-glossal fold forward by means of a bent retractor or probe; more frequently the tonsil is quite large, and, when emptied of its contents, collapses. Irritation of the pharynx and larynx is not a very unusual sequel of enlarged tonsils, especially if they contain marked accumulations. The impairment of digestion, appetite, respiration, and sleep often leads to constitutional disorders.

Symptoms.—Symptomatically, it is necessary to consider both the local and the remote effects. If the gland or glands be much enlarged there will be a sensation of fullness; but when small, the symptoms are not especially noticeable and are often overlooked. The voice is generally "nasal," thick, without the proper timbre, and produced with evident effort. There is no hoarseness unless the vocal bands be affected. Reflex spasmodic cough is not usual, but may occur. Taste, smell, and hearing are frequently impaired; the latter not from direct tonsillar pressure upon the Eustachian orifices, but from an hypertrophic or catarrhal involvement of the tubes and their mouths; although the tonsillar pressure may impair the free action of the palato-tubal muscles. The pharyngeal tonsil is frequently enlarged, and interferes with tympanic aëration. Difficulty in deglutition often causes great inconvenience to the patient, who is usually obliged to drink much during meals in order to aid the passage of solid food. The hindrance to nasal respiration is often augmented by hypertrophy of the Schneiderian membrane and partial collapse of the alæ nasi; as a result, there is often imperfect aëration of the blood, collapse of the air-cells, bronchitis, lack of development in the lung-tissue, and sinking in of the chest-walls, giving rise to the deformity known as "pigeon-breast." The patient snores much during sleep and breathes heavily while awake.

In any form of enlarged tonsils, acute inflammation is apt to occur and be attended by the ordinary symptoms and followed by an increase of tissue.

The detrimental effect of enlarged tonsils upon the voice is chiefly due to interference with the free action of the pharyngeal and palatine muscles, preventing that nice adjustment of muscular power so essential to perfect intonation and the direction of the tone to the proper sounding or resonant point. These conditions are of vital importance to easy tone production and a pure timbre. Add to this the loss of the nasal resonator as a result of obstruction, and some of the vocalist's difficulties may be appreciated.

Prognosis.—The prognosis is good if the tonsil be reduced before marked complications arise. The hindrance to respiration may result in serious changes, lack of development of the chest and lungs in early pulmonary disease, and implication of the nose in permanent deformity, hypertrophy or relaxation of the walls of that organ, post-nasal catarrh, enlarged pharyngeal tonsil, Eustachian catarrh, and deafness. The hypertrophy may suddenly disappear after a severe acute illness, chiefly diphtheria or scarlet fever.

Treatment.—Remedial treatment is to be recommended in every case; unfortunately, it is not usually followed by prompt tonsillar reduction, although the collateral symptoms and general health improve. Careful hygienic and dietetic regulations add much to the force of the remedies. The patient should have good, nourishing food and plenty of fresh air and exercise, such as boating, tennis, cycling, gymnastics, etc. If the neck and chest be bathed, as directed under "Chronic Pharyngitis," and a flesh-brush or English horse-hair gloves and strap be persisted in for a time, the acute invasions will grow less frequent and severe, the local circulation improve, and the neighboring glands decrease in size.

If these means fail, local measures should not be withheld. One of the following methods may be employed, according to the severity of the case, the condition of the tonsil, etc.; if the latter be irregular and the crypts open, it is usually best to use chromic acid or the galvano-cautery. In using the former,

one or two crystals are to be fused on the end of a heated probe and introduced into the little crypts every four or five days for a few weeks. When using the galvano-cautery, the point should be brought near the crypt to be entered, the circuit completed, and the point thrust into the opening; it should be removed while hot, in order to avoid unnecessary pain. Two or three lacunæ are thus treated at a time. A 4-per-cent solution of cocaine may be first brushed over the tonsil in order to prevent the slight pain that otherwise arises. The reaction is slight and the treatment may be repeated in five days. This is

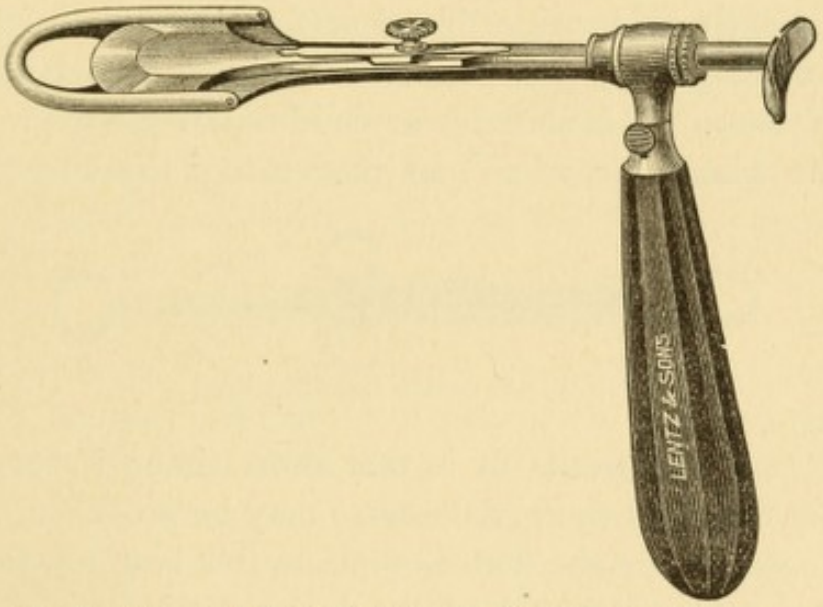


FIG. 80.—MACKENZIE'S TONSILLOTOME, AS MODIFIED BY MANDEVILLE.

usually the most satisfactory method of treating lacunar tonsillitis, but, if there be "bridges" of tissue which prevent the free exit of the caseous mass, they should be divided by the hot blade or torn through with a probe, and all cavities emptied by a small scoop or curette.

The practice of injecting a few drops of glacial acetic or carbolic acid into hypertrophied tonsils is painful and not very satisfactory. Electrolysis needles may be used, but the results appear slow.

When the tonsil is rather smooth and firm, excision with

the tonsillotome is to be advised; even when it is very uneven this method is often best, as time and annoyance are thereby saved; but patients and parents often object to the knife, thus necessitating other measures. Tonsillotomy is almost painless, and is attended with very little risk, although serious consequences have been reported, the sequence of removing too much of the gland, of a "bleeding habit," or of an anomalous position of the artery. It is impossible to wound the internal carotid with a guillotine, as the artery lies back of the tonsil at the side of the pharynx; any serious arterial hæmorrhage, most probably, arises from the tonsillar or ascending pharyngeal artery. Nearly all losses of blood occur in adults, in whom the tonsil is more fibrous and thus less likely to retract about the divided vessels. It is unnecessary and inadvisable to take off the entire gland, for, when cut moderately close to the half-

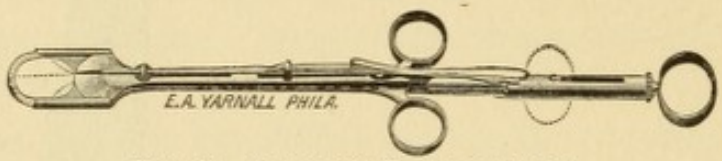


FIG. 81.—AUTHOR'S TONSILLOTOME.

arches, it mostly shrinks in a very short time; if necessary, a second tonsillotomy (amygdalotomy) may be practiced.

In order to use the tonsillotome to the best advantage, an assistant should stand back of the patient and press gently over the external tonsillar region; this serves to force the gland somewhat from its bed, at the same time that the operator passes the fenestrum over the tonsil. If the faucial pillars and uvula be free from the line of incision, the blade is thrust home and the instrument and tonsil immediately withdrawn from the mouth. When the second gland is to be removed, the instrument is quickly re-inserted and the tonsil excised before the child realizes what is being done. As the operation is almost painless, it is rarely necessary to use an anæsthetic, but a little gentle force is sometimes required. The hæmorrhage is usually slight, and subsides spontaneously; it is well, however, to have

the patient hold a solution of cold water and gallic or tannic acid (1 to 50) in the back of the mouth, as it is not only soothing, but aids in controlling the bleeding. In persistent hæmorrhage, gallic and tannic acids should be used in combination, either dry or in saturated solution, and compression may become necessary. Internal remedies should be given early, according to indications. Syncope follows loss of a large quantity of blood, and, as it usually terminates the bleeding, some encourage it. Should an artery spurt, it must be grasped, if possible, and ligated; but as this can rarely be done, a curved needle armed with a strong silk or catgut ligature may be passed into the tissue around the bleeding-point and tied. The late Dr. R. J. Levis arrested a very troublesome hæmorrhage, after failure with the ordinary measures, by passing a tenaculum through the tissues of the base of the tonsil; he then gave it a decided twist and closed the patient's jaws on the handle of the instrument, which he held in position by a roller bandage. Hæmostatic forceps often serve to secure the bleeding-point and arrest the hæmorrhage; but the entire tonsillar stump may need ligating. Styptics are rarely required; of these a saturated solution of chromic acid is best. The common carotid artery has been tied, on account of profuse hæmorrhage, and life thereby conserved, but in a few cases nothing has saved the patient.

Mild, more rarely severe, secondary hæmorrhage occasionally occurs two or three days after amygdalotomy. It is usually occasioned by the contact of a hard or dry morsel of food; on that account, all food should be soft and bland.

If the tonsil be very hard, it is unwise to cut it with a sharp knife, as the vessels are apt to be dilated and their coats thickened; for that reason, a duller blade is preferable, as it crushes the vessels as it cuts, although much more force is required to push such an edge through the tonsil. In such cases, and where the tonsil is too long in a vertical direction to enable the instrument to encircle it, the snare or *écraseur* may answer better; the galvano-cautery loop is quicker, but it is difficult

to prevent contact of the loop with the half-arches. In order to overcome this danger and to facilitate the application of the loop and subsequent manipulations, Dr. Knight (*Trans. Amer. Laryng. Asso'n*, 1889) devised a galvano-cautery snare modeled after Mackenzie's tonsillotome, but the blade of the latter is replaced by a straight, transverse piece of platinum wire. The operation is performed as easily and as painlessly as with the cutting tonsillotome. In this procedure two points should be remembered: (*a*) if the wire be hot enough to ablate the tonsil quickly there is danger of hæmorrhage, which will not occur if the division be rather slow; and (*b*) the destruction of tissue

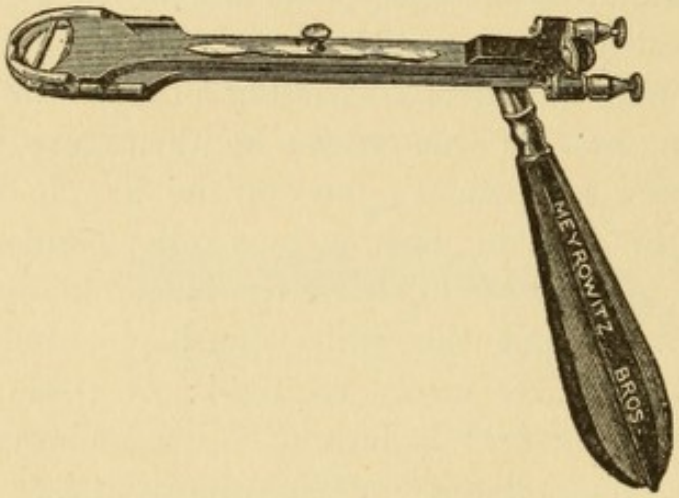


FIG. 82.—KNIGHT'S GALVANO-CAUTERY SNARE.

will be greater than that actually removed; due allowance should therefore be made. In using Jarvis' snare or the wire-loop *écraseur*, the same process is carried out as that recommended in the removal of nasal tumors. It requires from one to two hours, depending upon the size and structure of the tonsil. The bistoury and forceps are now rarely employed.

In all of these operations it is important to avoid wounding the faucial pillars, lest loss of control of the muscles result or annoying hæmorrhage follow. The uvula is occasionally burned with the galvano-cautery, or amputated in a hasty operation with tonsillotome or knife and scissors. This may interfere with the singing voice.

It would not be right to pass unnoticed the once prevalent belief that the removal of the tonsils arrests further sexual development and even destroys the patient's virility. Such a store of evidence, to the contrary, has been accumulated as to at once convince the unbiased that such a result is not only impossible, but that the removal of these enlargements often gives new life to sexual as well as physical development.

When the tonsils and half-arches are adherent and occasion irritation, the points of attachment should be broken down by repeated mild probings. Bicarbonate of soda, locally, has often decreased irregular glands.

The remedies best suited to the case are those selected according to the general condition, the especial dyscrasia present, or the mental state. Pathologically, we are led to calc. carb., baryta mur. and carb., graph., iodine, and kali and natr. mur. Arnica has reduced the tonsils in several instances, when prescribed for its constitutional equivalents.

Therapeutics.

Ars. iod.—Scirrhous tonsils in phlegmatic persons.

Baryta carb. will aid in timid, bashful children, who are small and "backward for their years": perspiration, especially of the feet. I have often been much disappointed in the action of this remedy. For similar indications baryta mur. has proved more useful.

Calc. iod. is of decided use when the tonsils are hard, red, and nodular.

Calc. phos.—Especially in strumous subjects, with hypertrophy of various glands, and when the tonsils are flabby and pale; chronic, follicular complications; difficult deglutition; and impaired hearing. Robert T. Cooper ("Diseases of the Ear") says: "I have never found any agent so satisfactory in its action upon these glands, when enlarged, as the *calcarea phosphorica*."

Fer. phos.—"For chronically enlarged but hyperæmic tonsils, preferably with smooth swelling." (Malcolm Leal.)

Graph.—I have been repeatedly pleased with the action of this remedy, when the tonsils were hard and lobulated.

Ignatia.—Indurated, slightly inflamed tonsils. Clinically, I have found no remedy so often useful, especially in nervous persons, when the right tonsil is the worse, with associated enlargement of the anterior cervical glands.

Iodine.—When associated with lateral pharyngeal hypertrophy, the left side the worse. In persons who grow thin even with good appetites.

Merc. proto.—Much tenacious post-nasal mucus. Right tonsil worse; lobulated, with deep interspaces; pharyngeal hypertrophy.

Sulph.—Harsh, dry, scaly skin; early morning diarrhœa. This remedy—as well as kali mur. and merc.—is especially useful if given soon after enlargement begins.

SUPERNUMERARY FAUCIAL TONSILS.

These are occasionally encountered, either on one or both sides. Unless quite large, they may not attract notice. They are usually attached to some portion of the faucial pillars. Their treatment, if any be required, is similar to that of enlarged tonsils.

ATROPHY OF THE TONSILS.

This cannot be looked upon in an unfavorable light, as it seems never to give any annoyance. Although it has been frequently noted post-mortem, it has not received much attention during life.

ENLARGEMENT OF THE LINGUAL TONSIL.

Etiology.—As the glands at the base of the tongue are so similar in structure to the faucial and pharyngeal tonsils, the former have been dignified by the name "lingual tonsil." Although chronic enlargement (hyperplasia) is its chief pathological deviation, it is not exempt from the acute inflammatory changes to which the faucial tonsils are prone. The causes of the enlargement are similar to those of the faucial tonsils,

although occurring later in life; they are chronic lymphadenitis, overwork and poor nourishment, gout, nasal catarrh, and hepatic engorgement. Lennox Browne suggests that this condition may be symptomatic of mitral disease or cerebral tumors. The larynx is often catarrhal. With enlarged lingual tonsil the tissues in the glosso-epiglottic region are much thickened and varicose veins are present, from rupture of which blood-spitting occurs. The epiglottis acts sluggishly. The affection is more common in adult females. There is a sensation of a foreign body, often resembling globus hystericus; pain frequently radiates to other parts; speech is fatiguing, indistinct; and often there are incessant or spasmodic cough, spasm of the œsophagus, difficult or painful deglutition, aphonia, dyspnœa, slight hæmorrhages, and abscess.

Diagnosis.—If the tongue be well protruded and the laryngoscope used, the diagnosis is very simple; but care must be exercised not to mistake hypertrophy of the circumvallate papillæ at the base of the tongue for the condition under consideration. The space which normally exists between the epiglottis and tongue is filled with irregular or even œdematous tissue.

The prognosis is good.

Treatment.—General hygienic treatment should be carried out as suggested under "Chronic Pharyngitis," and nasal and pharyngeal diseases should be cared for. The galvano-cautery may be needed, but iodide of glycerin locally and ammon. chlor., graph., ham., iodine, merc. iod., and spongia internally, may suffice. Perhaps the most durable and satisfactory cautery battery is the one devised by Dr. Ledru P. Smock, of Philadelphia.

CALCULI AND CONCRETIONS IN THE TONSILS—TONSILLITHS.

Etiology.—The secretions of the tonsils are occasionally so increased or perverted as to result in the formation, within the crypts, of concretions or calculi, sometimes as large as cherries. These foreign bodies usually result from the long-retained lacunar

secretions; although Grœning (*Archives of Lar.*, 1882) believes them to be parasitic in nature, and advances the proposition "*that all tonsillar concretions are composed of leptothrix elements.*"

Pathology.—Pathologically, these foreign bodies are chiefly composed of carbonate and phosphate of lime, with a little iron, soda, and potassa.

Symptoms.—The symptoms are not at all prominent; the patient is often unaware of any annoyance, further than that accompanying ordinary tonsillar enlargement, although there may occasionally be a sensation of sticking or pricking in the throat. The breath is sometimes very offensive. Occasionally, calculi and concretions excite ulceration, suppuration, and, possibly, spontaneous evacuation. Inspection may detect a foreign substance protruding from the tonsil, or palpation locate the hardened mass. Its presence is occasionally revealed during tonsillotomy.

Treatment.—The treatment consists in the removal of the concretion with curette, scoop, or forceps, after which the sac should be treated as suggested under chronic lacunar enlargement.

DISEASES OF THE VALLECULÆ AND PYRIFORM SINUSES.

These cavities are rarely the seats of localized diseases, but they often participate in the affections of neighboring parts. As has been stated, foreign bodies often find lodgment in the little valleys, and the same is true of the pear-shaped cavities. The irritation arising from the presence of such intruders, as well as from various inflammations of the glands, may result in ulceration. Finally, dilated (varicosed) vessels and tumors are occasionally discovered in these spaces.

Symptoms.—Ulceration causes a pricking sensation; painful, smarting deglutition; and, often, cough and hoarseness. Tumors may produce similar symptoms, and, usually, interfere with deglutition. The sensation of a foreign body is rarely wanting.

Diagnosis.—The diagnosis is usually easy if the laryngo-

scope be employed; but, as mucus usually covers the ulcerated surface, the true condition may be overlooked unless the coating be first wiped or sprayed away.

Treatment.—The treatment of ulceration is usually very simple, as it generally subsides after removal of the exciting cause, if it be a foreign body; but if it be due to glandular degeneration it may require, besides the internal remedy, an occasional application of iodol powder, peroxide of hydrogen, or a 1-per-cent solution of bichromate of potassium. The treatment of tumors will be found elsewhere.

Internally, fluor. ac., kali bi., kali mur., and nitric ac. may be demanded, depending upon the symptoms present.

CHAPTER XXV.

Catarrh of the Naso-Pharynx.

ACUTE NASO-PHARYNGEAL CATARRH.

Etiology.—Although this affection is usually associated with inflammation of the nose or pharynx, usually both, there are a few cases (according to Sajous especially the scrofulous) in which the naso-pharyngeal region is alone involved. The causes are similar to those giving rise to pharyngeal and nasal catarrhs.

Symptoms.—Its symptoms are dryness, burning, fullness in the post-nasal region, painful deglutition, and a painful rawness during deep nasal respiration. The discharge is, as a rule, moderately profuse, thin or thick, and exceedingly difficult to dislodge, giving rise to tickling cough, fullness, and, in many cases, nasal speech and hoarseness. Complaint is often made of headache, pain in the ears, and impaired hearing. Inspection reveals a bright redness, often roughened condition of the naso-pharynx, inflammation and swelling of the pharyngeal tonsil, and a thick, even purulent, accumulation in various portions of the naso-pharynx.

Prognosis.—Although the acute affection usually quickly subsides, middle-ear catarrh, otorrhœa, or chronic naso-pharyngeal catarrh may result.

Treatment.—The treatment is similar to that given under "Acute Pharyngitis," and need not be especially dwelt upon here, further than to say that a spray of an oleaginous substance introduced through the nostrils is, as a rule, of decided benefit in relieving the annoying symptoms. Some patients obtain great relief from the post-nasal application of tannate of glycerin, gr. x to ℥j.

There are two or three remedies which deserve special mention in this connection, namely, caps., ferrum iod., and kali mur.

CHRONIC NASO-PHARYNGEAL CATARRH—POST-NASAL CATARRH.

As with the acute affection, chronic naso-pharyngeal catarrh is generally associated with chronic nasal or pharyngeal inflammations; but, to judge from the writings of many medical men and the complaints of the laity, we must conclude that posterior nasal catarrh exists in about eight-tenths of the inhabitants of North America. This proportion, however, includes nasal and pharyngeal catarrhs associated with inflammation of the naso-pharynx.

Etiology.—Its causes are those of acute post-nasal catarrh, adenoid vegetations, and chronic rhinitis; obstructive nasal disorders, including septal deflections, are of less etiological importance.

Symptoms.—The symptoms are: fullness in the post-nasal region; trickling of a mucous, muco-purulent, or bloody discharge into the oro-pharynx, where it generally appears in streaks or lumps of various colors. It may, however, be so confined to the naso-pharynx as to come away in lumps or crusts,—the result of coughing, or, more especially, hawking,—which, if long-continued, not only gives rise to marked irritation of the throat, but even results in extracting a portion of the air from the middle ear, thus producing pressure from without and diminution of hearing. The voice is often thick, nasal, perhaps hoarse from secondary laryngeal involvement. After one or two years the discharge often becomes very thick, yellow or green, profuse, and especially annoying soon after waking and while eating. At first inodorous, it may, later, become offensive, and the hawking necessary to its dislodgment so frequent as to render the afflicted one an unenviable companion; while the frequent repetition of the act results in congestion of the faucial region, and, later, thickening or relaxation of the uvula and soft palate. (For additional symptoms, see "Chronic Rhinitis" and "Chronic Pharyngitis.")

Prognosis.—The prognosis is very good in so far as life is concerned, but the disease is a persistent one; all cases can be

relieved, and many cured. It must be borne in mind, however, that the ears, pharynx, and larynx may have undergone such change as to be beyond relief. It is well known that the general system often suffers from the drain, anæmia follows, and the patient is rendered more susceptible to other diseases.

Treatment.—Treatment is both local and internal. Of the former, little can be added to that noted under "Chronic Rhinitis," except that local applications of a similar character (chiefly iod. and glycerin, 10 grains to 1 ounce; chloride of zinc, same proportion; and hydr., aqueous tincture), conducted through the mouth, and the use of the post-nasal syringe (Fig. 23, page

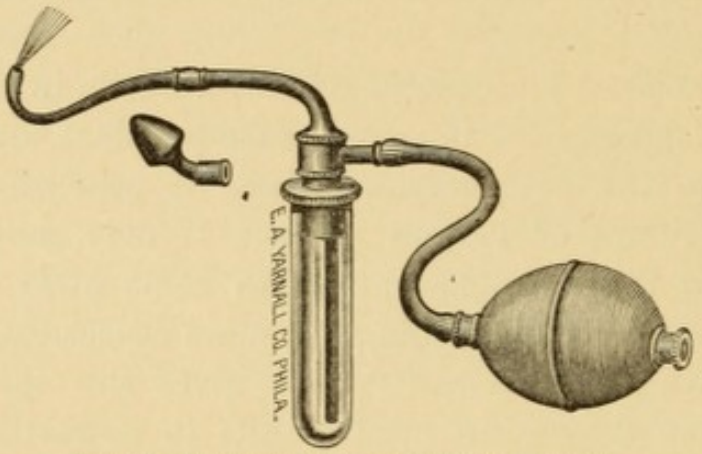


FIG. 83.—LEFFERTS' BULBED INSUFFLATOR.

37), in case the discharge be very thick and difficult to dislodge, are generally of undoubted benefit. After cleansing with a 10-grain aqueous solution of bicarbonate of soda, I know of no application so grateful or beneficial as an insufflation of powdered gallic acid (1 grain) and gum acacia (2 grains). All nasal and pharyngeal disorders liable to induce or perpetuate the disease should be remedied.

Therapeutics.

Alumina.—"Dryness of the throat, especially on waking from sleep; voice is husky, thick; mucus accumulates in posterior nares, which annoys by dropping into throat (Hydrastis). Sensation of tightly adhering phlegm, which cannot be raised

by hawking (Iod. mer., Rumex). Talking or singing makes one cough (Bry., Phos., Merc.). Scurfy, sore nostrils, or where there are plugs of mucus blocking the Eustachian tubes, with snapping in ears on chewing or swallowing, and dullness of hearing associated with atony of bowels." (G. N. Brigham, "Catarrhal Diseases of the Nasal and Respiratory Organs.")

Argent. nit.—Soreness and rawness of retro-nasal region; thick, tenacious, mucous expectoration, resembling boiled starch, and easy to dislodge; rapid accumulation and frequent expulsion.

Cepa is characterized by the dropping, of a watery character, from the naso-pharynx; laryngeal tickling and cough.

Hydrast. has profuse, yellow, lumpy, tenacious discharge, with frontal headache, constipation, and sensation of goneness in the gastric region; smarting, soreness, and rawness in the naso-pharynx.

Kali bi. has, of all remedies, the peculiar stringy, ropy, discharge, which often extends down the pharynx, and even into the œsophagus. There is always an associated nasal catarrh with similar discharges, and, usually, turgid membrane. Following the use of this remedy, the patient's first relief appears in the easier expectoration.

Kali carb.—Anæmic persons; morning accumulation of mucus, which it is very difficult to dislodge.

Merc. cor. is one of the best remedies where there is associated tinnitus aurium and impaired hearing, with complaint of obstruction, fullness, and tingling in the Eustachian tubes; kali mur. has more the sensation of weight and pressure in the middle ears; with both remedies the naso-pharyngeal tissue is hypertrophied.

Sepia.—Thick, yellow, yellowish-green, offensive lumps or crusts are drawn from the posterior nares; attended by gagging, occasionally vomiting. Nasal catarrh, with similar discharge and with a pressive, gnawing pain in the bridge of the nose.

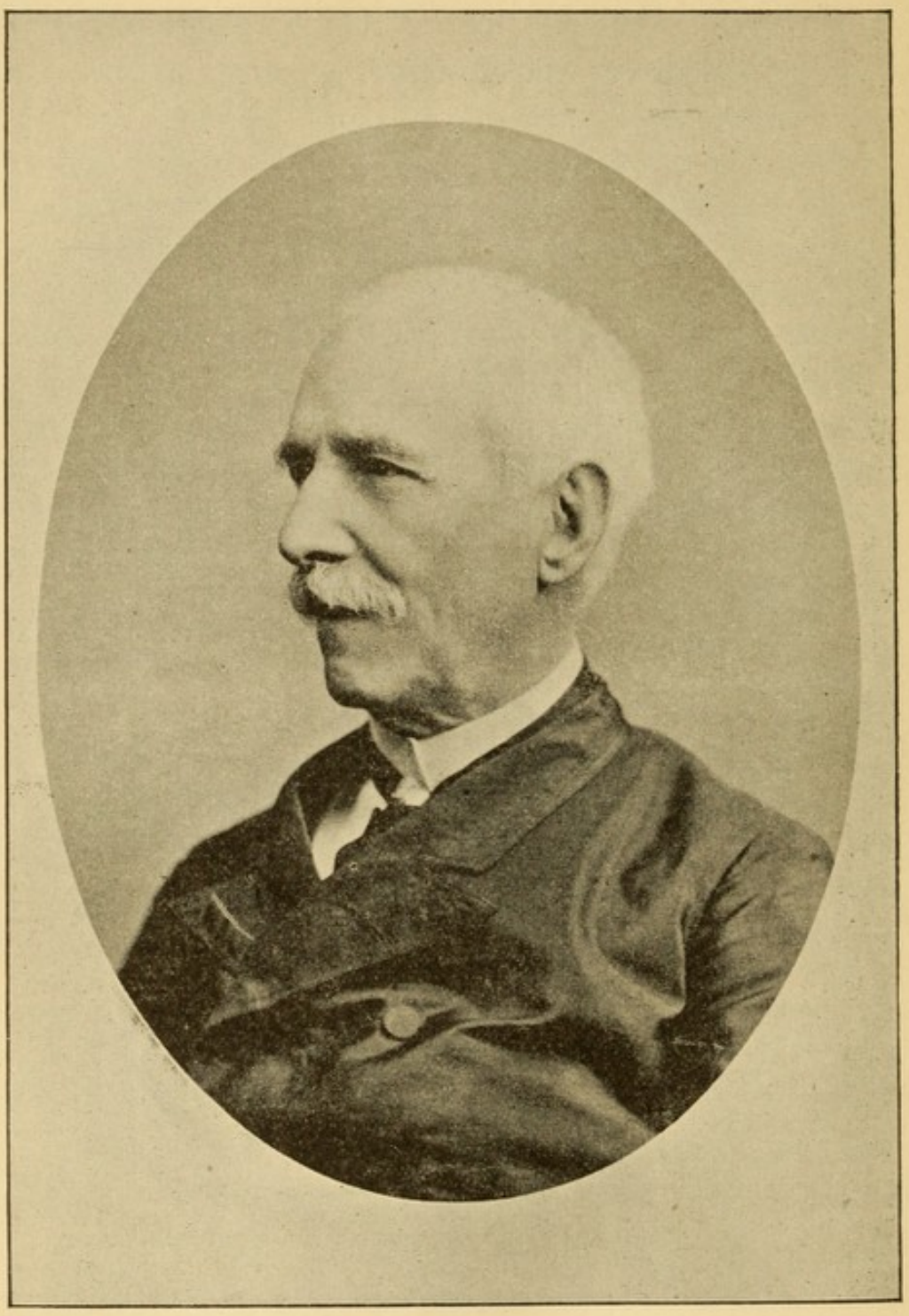
Therid.—"Especially in cases marked by an offensive-smell-

ing, thick, yellow, yellowish-green discharge; though I have also used it in the earlier stages, while the discharge was still watery and light in color. A symptom often observed in the chronic as well as in the acute form is 'a heavy feeling or pressure over the bridge of the nose.' This is sometimes expressed as 'pressure deep in the upper part of the nose.' I find it necessary to repeat the theridion every few hours, sometimes for a number of weeks, before any positive signs of improvement are observed,—one of the earliest being a diminution in the degree of offensiveness of odor. I usually employ the 30th potency with the best results." (Dr. A. Korndœrfer.) Acting upon the doctor's advice, I have relieved the preceding symptoms in a number of patients.

Compare therapeutics of "Chronic Rhinitis," "Chronic Pharyngitis," and "Chronic Follicular Pharyngitis."

PART III.

The Larynx and its Diseases.



Very truly yours
Manuel Garcia

Horace J. Ivins, M.D.

CHAPTER XXVI.

Anatomy and Physiology of the Larynx.

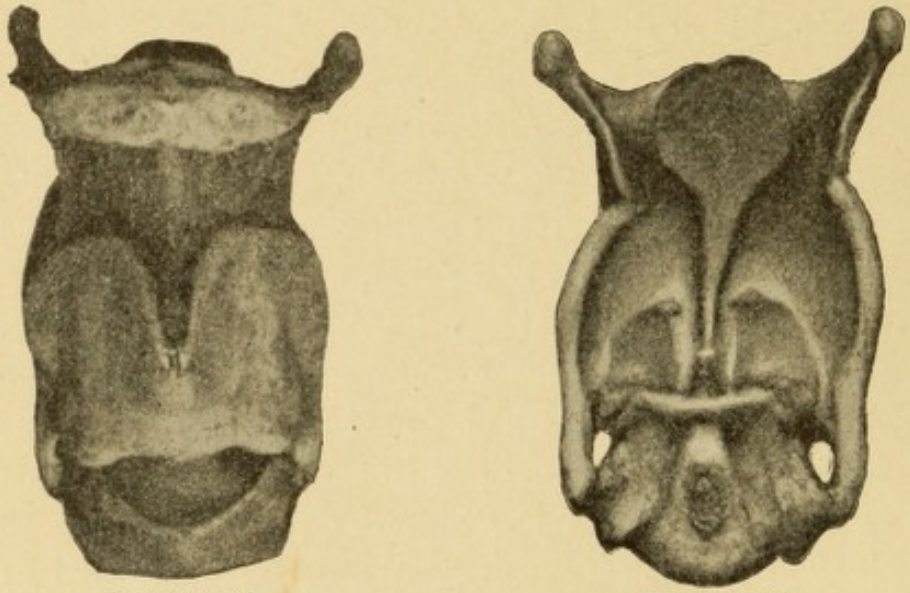
The larynx is the organ of voice, and as such deserves a somewhat extended anatomical consideration. It is situated between the base of the tongue above and the first ring of the trachea below; to the former it is attached, in part, by ligaments and muscles through the intervention of the hyoid bone, and to the latter by the crico-tracheal ligament.

On each side of it are found the large blood-vessels, nerves, and some of the muscles of the neck. The vocal organ is freely movable, laterally and vertically, its antero-posterior motion being somewhat limited. These various movements occur, as a natural process, during respiration, deglutition, vocalization, etc., but greater mobility is evident upon manipulation.

The larynx is composed of a frame-work of cartilages, held together by means of ligaments, and moved by the contraction of muscles. The interior is lined, or padded, with a continuous coating of fibro-elastic tissue, inclosed in a mucous vestment, which is continuous with that of the pharynx above and the trachea below. The larynx is very superficial anteriorly, covered by little more than its cutaneous coating; posteriorly, it forms the anterior wall of the laryngo-pharynx. It opens above into the pharynx, from which it is sometimes closed by the contraction of the sphincter muscles and the descent of the epiglottis; below, it opens into the trachea, from which it is never separated.

The cartilages which enter into the laryngeal frame-work are the epiglottis, thyroid, cricoid, two arytenoid, two Santorinian, two Wrisbergian, and occasional sesamoid cartilages; the thyroid, cricoid, and two arytenoids are true (hyaline) cartilages; the rest are fibro-cartilages. The former are liable to ossify in the adult, or as the result of disease, but the fibro-cartilages are not so affected.

The *epiglottis* (Fig. 86) is the thin, leaf-like valve which covers the larynx during deglutition, although some observers now claim that it remains upright during this act. The stem of the leaf is directed downward and is attached to the thyroid cartilage, at its lower receding angle, by means of the thyro-epiglottic ligament. It is covered by mucous membrane, which is very pale on its posterior (laryngeal) surface,—the seat of the openings of numerous glands. Its leaf portion stands nearly upright in the majority of adults, though in others it is so dependent as to prevent a clear view of the interior of the



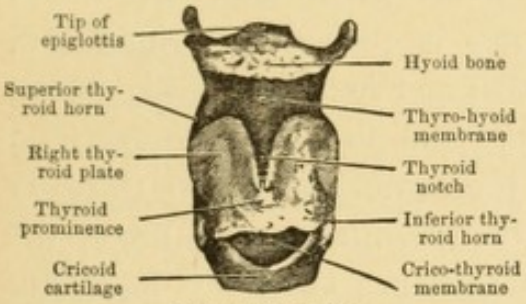
(Anterior view.) (Posterior view.)

FIGS. 85 AND 86.—LARYNGEAL FRAME-WORK. (From photographs.)

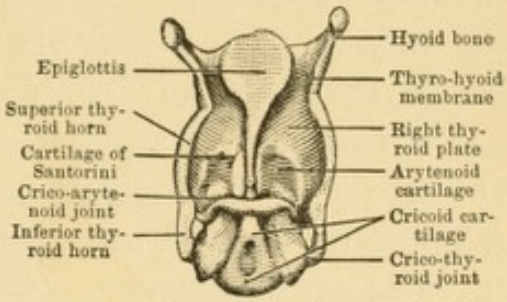
larynx; in childhood it is usually almost horizontal. Its upper (free) margin is very inconstant in shape, and varies from its usual double curve to an acute angle. Anteriorly, it is connected with the tongue by three folds (glosso-epiglottic) of mucous membrane inclosing ligamentous bands. The arytenoepiglottidean (ary-epiglottic) folds attach it to the arytenoid cartilages, while it is attached to the hyoid bone by the hyo-epiglottic ligament. In descending, the tip passes backward, sweeping the posterior wall of the pharynx. Besides its aid to deglutition, it has an influence upon the quality of the voice,

giving to it much of that character (timbre) which serves to distinguish one voice from another; besides, its flexibility and control render vocalizing easier or more difficult (see "Physiology of the Epiglottis," by the author, *Trans. Amer. Inst. Homœop.*, 1890). According to Michelson, this cartilage has a taste-function on its posterior face. For a long time it has been known that taste-bulbs were so situated, but it has been but recently proved experimentally.

The *thyroid* (shield-shaped) cartilage is the largest in the laryngeal frame-work. It is composed of two lateral plates, which are united, at an acute angle, by an intermediate piece of fibro-cartilage, forming the promontory known as Adam's apple (pomum Adami). At the anterior upper edge of the



KEY TO FIG. 85.



KEY TO FIG. 86.

thyroid cartilage is a deep notch (superior thyroid), which can be felt externally. To the upper ridge of the cartilage is attached the thyro-hyoid ligament, which unites this cartilage with the hyoid bone, although Mayo Collier (*Ann. Univ. Med. Sci.*, 1889) denies the existence of a true thyro-hyoid membrane: "All that he finds is a thin fascia lining the inferior aspect of the thyro-hyoid muscle, and covering a quantity of areolar tissue and fat." The upper edge of the cartilage is irregular in outline and terminates, posteriorly, in the superior horns (one on each side), which are attached to the hyoid bone by means of the lateral thyro-hyoid ligaments. Its lower border is also irregular, and has cornua projecting from its posterior extremities; on their lower ends are facets for articulation with the postero-lateral surfaces of the cricoid cartilage, by means of

a capsular ligament and synovial membrane. The motion is a tilting one during the contraction and relaxation of the tensor (crico-thyroid) muscles. To the lower border of the thyroid is attached the crico-thyroid membrane, which unites the thyroid and cricoid cartilages. The posterior portions of the thyroid plates terminate in vertical, parallel edges, some distance apart, thus resembling a shield. Within and attached to this cartilage are the vocal ligaments,—the most important vocal structures. They pass from the median fibro-cartilage anteriorly, to the vocal processes of the arytenoid cartilages posteriorly, and, together with the thyro-arytenoid muscles, unite the thyroid and arytenoid cartilages.

The *cricoid* (ring-shaped) cartilage is often spoken of as the basis cartilage, as it is the one which gives chief support to the larynx. The band of the ring is placed anteriorly and below Adam's apple; the broad, seal portion posteriorly, forming a part of the anterior boundary of the laryngo-pharynx: On the postero-lateral surfaces of the signet are facets (already referred to) for the articulation of the inferior cornua of the thyroid; on the upper posterior surface are two very important facets for articulation with the arytenoid cartilages; the joints here formed (crico-arytenoid) are the most perfect in the larynx. The movements are very general, and admit a rotary, rocking, tilting of the arytenoids upon the cricoid. To the anterior and lateral portions of the upper rim of the cartilage is attached the crico-thyroid membrane. On the posterior surface is a vertical median ridge, upon each side of which is a smooth depression; muscles are attached to both the ridge and cups. From the lower border of the cricoid cartilage, which is placed in a horizontal position, descends the crico-tracheal ligament uniting the larynx and trachea.

The *arytenoids*, the most movable cartilages in the larynx, are two pitcher-shaped, pyramidal bodies, which articulate with the cricoid, as already stated. The anterior angle of the base of each arytenoid ends in a marked projection—the vocal process.

To this is attached the posterior end of the corresponding vocal band, into which the process extends. The postero-external angle of each arytenoid is known as the muscular process, to which important muscles are attached in such a way as to rotate, tilt, or even slide the arytenoid.

The two cartilages of *Santorini* surmount the arytenoids. Their object seems to be, as suggested by Elsberg ("The Throat and its Functions"), to act as buffers in preventing the sharp contact of the arytenoids during vocalization, in preventing injury to the arytenoids from impact of the epiglottis or bolus of food during deglutition, and for the purpose of more effectually closing the larynx during this latter function, at which time the cartilages of Santorini incline forward.

The cartilages of *Wrisberg* are two wedge-shaped plates, frequently found in the ary-epiglottic folds, between the arytenoids and the epiglottis. They seem to perform the duty of giving support to this fold of membrane, but can be of little importance, however, as they are frequently wanting.

The posterior *sesamoid* cartilages are occasionally found attached to the sides of the arytenoids by bands of fibro-elastic tissue. The anterior are the size of pins' heads, and act as partial bonds of union between the thyroid cartilage and the vocal bands; they are sometimes called the anterior vocal processes. The anterior ends of the thyro-arytenoid muscles pass to these cartilages, when present. The inter-arytenoid or Luschka's cartilage is very inconstant, and may appear as a yellow prominence in the fold of tissue between the arytenoid cartilages (inter-arytenoid fold) and, laryngoscopically, must not be mistaken for an abscess.

The *ligaments* which unite the various cartilages of the larynx are the intrinsic, those which unite the larynx to other parts are the extrinsic, and those which combine these functions are designated mixed. The extrinsic ligaments, already mentioned, are the two lateral glosso-epiglottic, the three thyro-hyoid, and the crico-tracheal. The epiglottic is the only mixed

ligament. Its purely extrinsic portions pass from the centre of the tongue to the middle of the epiglottis (glosso-epiglottic) and from the middle of the epiglottis, anteriorly, to the extremities of the hyoid bone, one on each side (hyo-epiglottic); its intrinsic division unites the lower portion of the epiglottis to the thyroid cartilage, immediately below the superior thyroid (thyro-epiglottic) notch.

The most important laryngeal ligaments are the intrinsic; of these the crico-arytenoid and the crico-thyroid have been noted. The superior thyro-arytenoid ligaments are composed of a few scattered fibres, and go to make up the ligamentous structure of the *ventricular* (false vocal, or pocket) *bands.* They pass backward from the anterior edge of the internal surface of each thyroid plate; most of the fibres are attached to the anterior surface of the corresponding arytenoid cartilage, above the vocal process, the remaining fibres being lost in the tissues anterior to the arytenoids.

The *inferior thyro-arytenoid* ligaments (*vocal bands* or *cords*) are the most important vocal structures, without which the larynx loses its peculiar characteristic, namely, its vocal function; for, although the ventricular bands are at times called into use after destruction of the vocal bands, they do not produce a clear, ringing voice. These vocal ligaments are composed of very strong bands of yellow elastic tissue. They pass from the anterior vocal processes, at the receding angle of the thyroid cartilage, to the vocal process of the corresponding arytenoid cartilage posteriorly. Each vocal band is slightly triangular, or prismatic, with its upper surface almost flat, its lower almost straight and placed at an angle of nearly 20 degrees, so that its straight surface looks slightly toward the opposite side of the trachea; the external portion, directed toward the surface of the neck, is nearly vertical. Anteriorly, the fibres of each vocal ligament are collected into a band and attached to the re-entrant angle of the thyroid cartilage below the epiglottic attachment; posteriorly, these fibres separate and are attached

to different parts of the arytenoid cartilage, the greater number going to the upper surface of the vocal process.

It has already been stated that there is a fibrous covering, or padding, over the laryngeal cartilages and ligaments, which serves to separate them from the muscles and mucous membrane. This layer of elastic tissue is disposed in such a manner as to afford protection to some parts and greater roundness and symmetry to others.

Proceeding from the cartilages toward the laryngeal cavity, the next form of tissue to be considered is the *muscular*. Although there are both intrinsic and extrinsic muscles, it is only necessary to describe the former, as to them belong, chiefly, the duties of controlling voice and respiration, in so far as the larynx has to do with these functions. There are eleven of these intrinsic muscles, ten of which are in pairs: the crico-thyroidei, the crico-arytenoidei postici, the crico-arytenoidei laterali, the thyro-ary-epiglottici, and the thyro-arytenoidei; the eleventh is



FIG. 87.—LEFT SIDE OF LARYNX, SHOWING EPIGLOTTIS, LEFT THYROID PLATE (RIGHT HALF OF THYROID REMOVED), CRICO-THYROID MUSCLE, POSTERIOR EDGE OF CRICOID CARTILAGE, AND TRACHEA. (From a photograph.)

a single muscle, the arytenoideus. The sterno-thyroid, the thyro-hyoid, and the inferior constrictor of the pharynx are the chief extrinsic muscles, and act upon the entire larynx either to elevate or depress it, or to fix it in any desired position.

The *crico-thyroid* (tensor) muscles (Fig. 87) arise from the antero-lateral portion of the cricoid cartilage and are inserted into the lower and inner borders of the thyroid; some fibres pass to the outer surface. These are the only intrinsic laryngeal muscles that are placed in front of the larynx; in certain subjects they can be felt under the skin during their contraction. Their action is to tilt the anterior portion of the thyroid downward, thus bringing the thyroid and cricoid cartilages closer together anteriorly; the tilting motion serving to increase the distance between the vocal processes of the arytenoid cartilages and the anterior receding angle of the thyroid cartilage, thus stretching the vocal bands antero-posteriorly. According to some authorities, notably Majendie (1813) and Hooper (1882), the cricoid is looked upon as the movable cartilage; the thyroid, the fixed. If this be true, the cricoid is drawn up to the thyroid. In either case, the result is the same as regards the action of the muscles, which are tensors of the vocal bands.

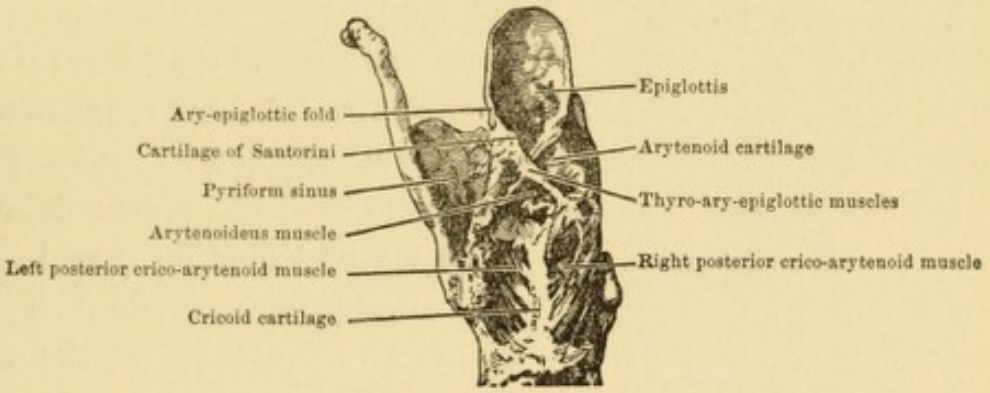


FIG. 88.—POSTERIOR CRICO-ARYTENOID MUSCLES. (From a photograph.)

The *posterior crico-arytenoids* (abductors) are two triangular muscles which arise from the posterior surface of the cricoid cartilage, as stated; the fibres converge as they pass upward and outward, each muscle going to the muscular process

of the corresponding arytenoid cartilage. Contraction of these muscles rotates the arytenoids in such a way that the muscular processes are approximated and the vocal processes and bands separated. In rare cases there is an extra muscle, very small and often unilateral—the *kerato-cricoid*. It arises near the origin of the posterior crico-arytenoid, and passes upward and outward to the posterior margin of the inferior thyroid horn. Its function is doubtful, but may aid in fixing the inferior cornu, opposing, to a slight degree, the fibres of the crico-thyroid which pass to the anterior margin of the horn.

The *lateral crico-arytenoid* (adductor) muscles pass (Fig. 89) from the upper margin and outer face of the sides of the cricoid



KEY TO FIG. 88.

cartilage, upward and backward to the anterior portion of the muscular process of the corresponding arytenoid cartilage. Their action is directly antagonistic to that of the posterior crico-arytenoids; after the latter muscles open the glottis (the space between the vocal bands) to allow the passage of air, the lateral muscles are those which chiefly narrow that space preparatory to voice production.

The *arytenoideus*, or *transverse* (adductor), is a broad, flat muscle (Fig. 88) attached to the posterior surfaces of the arytenoids. It passes transversely from one cartilage to the other; it closes the posterior (cartilaginous) portion of the rima glottidis. In this way it assists the lateral crico-arytenoid muscles, for, while the latter close the vocal bands from the anterior tips of

the vocal processes to their anterior attachments, the former is called into action in the approximation of the vocal processes, and, consequently, that portion of the vocal bands into which these processes enter. The combined and concerted action of these three muscles is necessary to the proper approximation of the bands. Moura, of Paris, thinks the arytenoideus assists in separating the vocal bands.

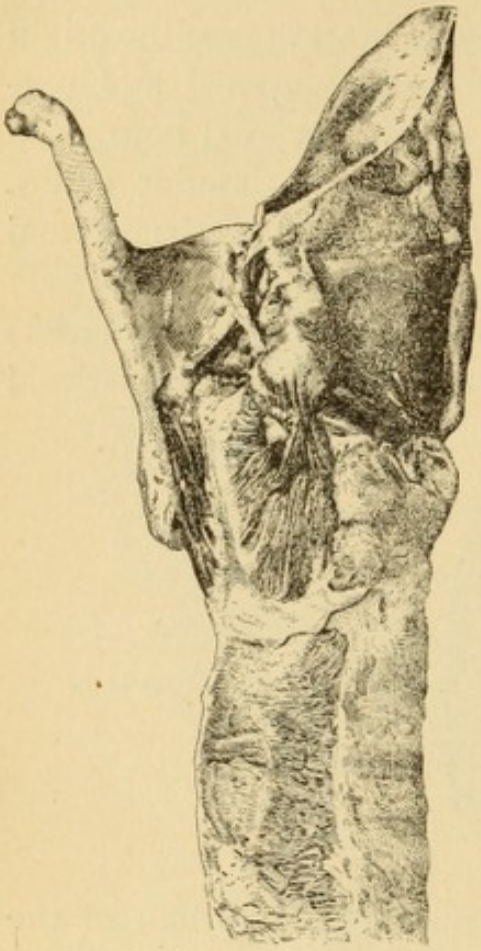
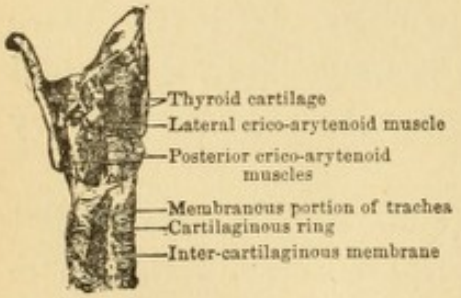


FIG. 89.—RIGHT LATERAL CRICO-ARYTENOID MUSCLE. RIGHT THYROID PLATE REMOVED. (From a photograph.)



KEY TO FIG. 89.

The *thyro-ary-epiglottic* (sphincter or constrictor) muscles are the two narrow, flat bands of muscular tissue that arise from the outer, posterior angles of the arytenoid cartilages; they pass from the base of one cartilage to the apex of the other, just below the cartilage of Santorini. Their manner of crossing, on the posterior surface of the arytenoid muscle, is similar to that in which braces, or suspenders, cross, thus forming an **X** (see Fig. 88). From the apex of the arytenoid cartilage some fibres pass on into the ary-epiglottic fold, encircle the cartilage of Wrisberg, when present, and on to the sides and free edges of the epiglottis. Their function is that of a sphincter, by which the upper part of the laryngeal aperture is closed. Other fibres go to the laryngeal pouch and act as compressors of the sac, emptying the latter when it is desired to especially lubricate the laryngeal cavity; some of

these fibres continue to the receding angle of the thyroid, and aid in drawing the arytenoids and cushion of the epiglottis toward each other during deglutition, etc., thus aiding the sphincter action.

The *thyro-arytenoid* (vocal) muscles practically form a part of the vocal bands, to the under surface of which they are adherent. They arise from the receding angle of the thyroid, just below the insertion of the vocal bands, and, passing backward, are inserted into the vocal processes, bases, and anterior surfaces of the arytenoids, some fibres even going to the laryngeal pouch. This is a very complicated muscle, perhaps the most intricate in the human frame. It has a number of divisions, all of which have one common origin in the thyroid, but their attachments are numerous. The principal divisions are the external (lower) and internal (upper). Contraction of the former fasciculus draws the arytenoid and thyroid cartilages slightly toward each other, thus opposing the action of the crico-thyroids, or tensors of the vocal bands; the external thyro-arytenoid fasciculi thus acting as relaxors of the vocal ligaments; in addition to which, when antagonized by the crico-thyroids, they participate in the closure of the glottis by straightening the free edges of the vocal bands, giving them firmness and support. It is supposed that the action of the internal fasciculus of the vocal muscle is to regulate the finer adjustment of the free edges of the bands during vocalization. There are still other thyro-arytenoid fibres which act in the approximation of the ventricular (false) bands, and are highly developed in ventriloquists, who make great use of these bands in the production of their tones. Some persons can, at will, adduct the ventricular bands, independent of voice production.

Many authorities claim for this much-studied, but too little understood, thyro-arytenoid muscle the power of relaxing the vocal bands; others as warmly contend for its tensor powers; but there seems little doubt of the existence of separate fibres for the fulfillment of each of these separate functions It is

probable that its action as a tensor is less than its action as a relaxor, since its paralysis results in loss of the voice.

The *thyro-epiglottic* (depressor of the epiglottis) muscle arises from the posterior surface of the thyroid cartilage, below the insertion of the stem of the epiglottis; from this point most of its fibres pass upward to the sides of the epiglottis, though some pass to the laryngeal sinus. The principal fasciculi depress the epiglottis and assist the sphincter muscles; the others aid the compressor of the sac. The middle constrictor of the pharynx, in the opinion of Meyer, of Zurich, should be considered one of the vocal muscles, and not a muscle of deglutition. In the production of certain vocal tones the middle fibres of this muscle push forward toward the palate.

The entire laryngeal cavity is lined with *mucous membrane* continuous with that of the pharynx above and trachea below. It is of the ciliated variety, except in the inter-arytenoid space and on the upper surface of the vocal bands. From the base of the tongue the membrane passes up the anterior surface of the epiglottis, over its tip, down on its posterior or laryngeal surface to the interior of the larynx, where it incloses the superior thyro-arytenoid ligaments, thus forming the ventricular bands. From their under surfaces the mucosa passes into *culs-de-sac*, which run up by the sides of the thyroid cartilage, sometimes above its upper edge, directly under the visible mucous covering. Leaving these sacs, the membrane emerges at the upper edges of the vocal bands. The pouches thus formed are known as the laryngeal sinuses, or sacs, or as the ventricles of Morgagni. Their upper boundaries are the ventricular, their lower the vocal, bands. These cavities aid in the production of tone, especially by giving support to the vocal bands during vocalization. The upper surfaces and free edges of the vocal bands are very thinly covered with a continuation of the mucous lining, from which it passes to the under surface of the vocal ligaments and vocal muscles, thence to the cricoid cartilage, and finally to the walls of the trachea. Starting posteriorly at the

pharynx, the mucous membrane passes over the thyroid cartilage; after dipping down almost to its lower border, forming the pyriform sinuses, it rises to cover the muscles, cartilages, and other tissues which form the basis of the aryteno-epiglottidean folds, the Santorinian and arytenoid cartilages, and the inter-arytenoid space; it there becomes continuous with the mucous covering of the interior of the larynx, already noted.

The ary-epiglottic folds extend from the sides of the epiglottis, anteriorly, to the arytenoid and Santorinian cartilages, posteriorly. Between the arytenoid cartilages a fold of membrane incloses the muscles, thus forming the inter-aytenoid space, or commissure, at which place is a marked depression. With the high tip of the epiglottis in front, the ary-epiglottic folds at the sides, and the arytenoids and inter-arytenoid commissure behind, it will be seen that the upper portion of the larynx is bounded by sharply-defined walls. (See Figs. 55 and 88.)

The muscles, ligaments, and cartilages of the larynx are destitute of mucous *glands*, but the mucous membrane is richly supplied with them, except at that portion which covers the greater part of the upper surface of the vocal bands, where they are sparingly distributed. In the posterior portion of each ary-epiglottic fold is a collection of racemose glands, from which a minute duct extends to the ventricle, the ventricular filter, through which the mucus is emptied and from which it is poured, when the vocal bands and surrounding structures require lubrication. In addition to these, there are about sixty small racemose glands situated within the tissues of the ventricle, which, when properly stimulated, are capable of pouring out a large amount of mucus, but which may act the part of retention cysts and give rise to much annoyance and difficulty of diagnosis. A third aggregation of glands is found at the cushion of the epiglottis—the glandulo-fatty mass at the lower point of the epiglottis. Poirier has recently demonstrated the presence of a lymphatic ganglion over the crico-thyroid membrane, which is directly connected with the system within the larynx.

The *arterial* supply of the larynx is derived from the superior thyroid, occasionally from the external carotid through the medium of the superior laryngeal, the crico-thyroid, and from a branch of the inferior thyroid through the intervention of the inferior or posterior laryngeal artery.

The *veins* of the larynx have a similar arrangement and empty into the internal jugulars.

The *nervous* supply of the larynx is derived from the superior and inferior laryngeal (recurrent) nerves, branches of the pneumogastric. The superior supplies sensation to the entire larynx and motion to the crico-thyroid muscles, perhaps to the thyro-epiglottic and aryteno-epiglottic as well; the rest of the larynx derives its motor supply from the recurrent nerve. The arytenoideus muscle receives its innervation from both recurrents, and, according to Mandlestamm, the superior laryngeal and, perhaps, the internal thyro-arytenoid nerves as well.

Exner's discovery of the existence, in dogs and rabbits, of a third or median laryngeal nerve leads to the possibility of such a condition in man; it is, no doubt, of much motor value, and may explain that which has heretofore been an unsolved problem, namely, that injury of the recurrent nerve seems to affect the abductor fibres sooner than those which pass to the adductor muscles. It is usually taught that this is due to the superficial arrangement of the abductor nerve-filaments; but Gowers has pointed out that the adductor muscles are stronger, owing to their right-angled attachment to the base of the arytenoid cartilage, rather than the acute angle of the abductors; and others have demonstrated that stimulation of the cut ends of the recurrent nerves results in adductor contraction. It is now well proved that the divisions of the two superior laryngeal nerves cross. Some claim to have demonstrated the existence of laryngeal fibres of the spinal accessory and sympathetic nerves. Although the foregoing is the usually accepted theory, the next few years will doubtless add much to our knowledge of laryngeal enervation, perhaps revolutionizing the subject.

In order to aid in explaining some forms of laryngeal paralysis, the origin and course of the inferior laryngeal nerves will be briefly noted. The right one arises near the apex of the lung, in front of the subclavian artery, around which it winds, then passes behind the carotid artery, and ascends between the trachea and œsophagus. On account of this course, the nerve may be compressed by tuberculous infiltrations in the apex of the right lung, resulting in paralysis of the corresponding side of the larynx; aneurism of the subclavian, innominate, or carotid artery at any point near this nerve may have a similar effect, and the same may be said of enlarged glands or other tumors along its course. The left recurrent arises from the pneumogastric, in front of the arch of the aorta and on a level with its lower border; after winding around its transverse portion, the nerve ascends to supply motion to the left half of the larynx. Aneurism of the arch is usually followed by paralysis of the muscles of the left side of the larynx.

In order to complete the anatomical description of the vocal organ, it seems only proper to follow the consideration of the individual parts by a description of the organ as a whole, and this from the stand-point of laryngoscopic investigation. For the purpose of study, it has been found convenient to divide the laryngeal cavity into three parts, namely: a superior portion, or vestibule; a middle, or supra-glottic portion; and an inferior, or sub-glottic portion.

The *vestibule*, very irregular in outline, is bounded in front by the epiglottis, on the sides by the ary-epiglottic folds and ventricular bands, and posteriorly by the arytenoid cartilages and inter-arytenoid space. Its upper boundary is the superior boundary of the larynx; its lower corresponds to an imaginary plane drawn directly across the larynx, between the edges of the ventricular bands. This division of the larynx is very changeable; during vocalization the sides approach each other slightly, particularly the arytenoids, and the inter-arytenoid space is nearly obliterated. During deglutition the epiglottis descends

to cover the laryngeal aperture (denied by some), and contraction of the sphincter muscles brings the laryngeal boundary-lines in contact, thus obliterating the vestibule.

The *supra-glottic* portion is bounded above by the imaginary plane already mentioned; below, by the vocal bands, when approximated, and by an imaginary plane occupying their place, when separated. Laterally, the boundary-lines are the ventricles of the larynx; anteriorly, the receding angle of the thyroid cartilage; and posteriorly, the inter-arytenoid commissure and arytenoid cartilages. This portion of the larynx changes much less, though more frequently, than does the vestibule; yet closure of the ventricular bands confines it from above and adduction of the vocal bands causes the same change below. Coaptation of the arytenoid cartilages changes the posterior boundary by obliterating the inter-arytenoid fold, and adduction of both sets of bands isolates the middle space from the other two.

The *sub-glottic* or *infra-glottic* space extends from the line of the vocal bands to the level of the lower border of the cricoid, which cartilage confines it laterally. It is practically unalterable, except in its upper portion, the boundary of which changes with the action of the vocal ligaments. The only internal alteration is from contraction and relaxation of the thyro-arytenoid muscles, which swing with the vocal ligaments, and either enlarge the cavity or encroach upon it, according to their position. These muscles are rather triangular, with the base of the triangle directed outward and the apex toward the median line, so that the upper part of the sub-glottic space is narrower above than below; in other words, beveled from above downward and laterally. This formation has a great influence upon the expiratory current, and allows the exhaled air to force the bands apart when the laryngeal muscles are at rest; the expiratory act is, therefore, passive. During inspiration, however, the approximated vocal bands present a firm resistance to the entrance of air; hence, it is necessary that the bands be sepa-

rated by contraction of the abductors, the function of inspiration being active.

From the preceding it will be seen that the interior of the larynx has more or less the shape of an hour-glass. It is usually larger in the male than in the female, but it varies in different individuals of the same sex. Before puberty it is nearly the same size in each sex; but, when this change supervenes, the boy's larynx develops very rapidly, the girl's much more slowly.

Vocalization.—Since the vocal bands are the most important laryngeal structures, as regards the production of the voice, it will be well to see in what way they serve to bring about the phenomenon of vocalization. It can be briefly stated that voice is produced by the *vibration of the approximated vocal bands.* In order that the bands be approximated at the proper time and to the required degree, it is necessary that the intrinsic laryngeal muscles be in good working-order; that the bands be in a comparatively healthy condition, and not impeded in action by any mechanical obstruction. It is, further, necessary that there be a fair supply of air in the lungs, in order that the expiratory blast, when impinging on the edges of the closely approximated bands, be sufficient to cause them to vibrate; the air thus acts as the necessary motor power. Fnally, for the production of pure tones, it is necessary that the resonant cavities be in a fair condition.

In producing tone, the action is about as follows: The vocal bands are approximated by means of the lateral crico-arytenoids, the arytenoideus, and the vocal muscles; they are made tense by contraction of the crico-thyroids, assisted by the thyro-arytenoid muscles, the posterior crico-arytenoids acting as the proper antagonists and balancers of the muscular action. The vocal bands are thus approximated at the time that the out-going current of air is forced against them, by the usual expiratory forces slightly augmented to meet the extra demand needed to set the ligaments in vibration. If, then, the resonant

cavities (trachea, pharynx, mouth, nose, and accessory sinuses) be in their normal condition, the result will be the normal human voice.

In order to produce tones of different pitch, it is necessary that the bands vibrate at different rates of speed, and be correspondingly tensed or relaxed. Thus, the deeper (graver) the tone, the slower the rate of vibration, provided the length and thickness of the vibrating band be the same. A scientist (whose name I have forgotten) makes the following astounding statement in connection with voice production: there are "fourteen direct muscles which can make 16,000 different sounds, and thirty indirect muscles which can make, it is estimated, more than 170,000,000 of sounds."

Ventriloquists vocalize during inspiration. The glottis is in the position for producing falsetto tones and, as a rule, the larynx is forced down.

Having thus briefly considered the action of the vocal bands during vocalization, it is now to be noted that they are rarely quiet, but are in almost constant motion from birth to death, whether waking or sleeping. During ordinary inspiration, as stated, the bands are forcibly separated by the posterior crico-arytenoid muscles to allow the entrance of air, the function being an active one; during expiration the bands approach each other somewhat, owing to relaxation of these muscles, so that expiration is a passive function, the expiratory current serving to dilate the glottis as a result of the infra-glottic bevel from below upward. It is almost universally taught that, during forced inspiration, the glottis is widely opened to admit a large quantity of air, relaxation at once following the completion of this act; but to this I have noted a great many exceptions. In nearly 30 per cent of the cases in which this function has been carefully studied, the effort at deep inspiration is followed by only moderate dilatation of the glottis, less than during ordinary inspiration in the same individual. In order to be certain of this, the subject has been requested to alternate the deep

and ordinary inspirations; in such cases the bands were more abducted during expiration than during deep inspiration. This is due, no doubt, to reflex action; the effort to inspire deeply is transmitted to the lateral crico-arytenoid and the arytenoideus muscles, which contract slightly and impede the action of the posterior crico-arytenoids.

During coughing, sneezing, laughing, hawking, etc., the bands are brought tightly in contact for an instant, and are then suddenly relaxed. During the acts of deglutition, retching, vomiting, and holding the breath, the vocal bands are tightly coapted. In spasm of the larynx (glottis) this closure continues until relaxation of the muscular contraction ensues; this may not be till well-marked carbonization of the blood has resulted, or death from asphyxia has closed the struggle.

The moment a foreign body enters the larynx the vocal bands close tightly against it; a sharp cough usually follows, for the purpose of expelling the intruder; but it often happens that a spasm of the adductor muscles occurs, and only relaxes after a number of seconds. The spasm may or may not end in a cough. When holding the breath for the purpose of making an unusual effort, the ventricular and vocal bands are usually coapted and the ventricles fully dilated, thus relieving the strain which otherwise would fall upon the vocal ligaments alone.

The ventricular bands often close during the production of the ventriloquist's tones, but never during normal speech or song. Dr. T. R. French (*Archives of Laryngology*, vol. iii) reports "A Case of Choked Voice, due to Contraction of the Ventricular Bands," in which inspiratory speech was possible, but expiratory vocalization was prevented, after the first tone was produced.

ANATOMY AND PHYSIOLOGY OF THE TRACHEA.

As the trachea is so evidently a passive organ, and for the most part designed for the conduction of air (a pneumatic tube), it will not require more than a passing note. It is from four to four and one-half inches long, with a transverse diameter of

about three-quarters of an inch, and an antero-posterior diameter of a little less. It is not strictly oval in form, but circular in all except its posterior portion, where it is decidedly flattened, thus resembling a horseshoe. The curved portion is composed of from sixteen to twenty incomplete cartilaginous rings (see Fig. 87), the posterior portions of which are ligamentous in structure, and form the "party-wall" between the trachea and œsophagus. Thus, the posterior wall of the trachea is the anterior wall of the food-passage, and as the bolus is carried down to the stomach the trachea is somewhat compressed posteriorly, temporarily diminishing the lumen of the air-passage; and since muscular tissue stretches across the posterior wall of the trachea, its contraction lessens the calibre of the tube and at the same time, no doubt, assists œsophageal deglutition. The various tracheal rings are united by fibrous tissue.

The trachea extends from the lower portion of the cricoid cartilage to the upper part of the chest, where it bifurcates into the right and left bronchi. The right bronchus is larger than the left, and is in a line more nearly corresponding to that of the trachea; so that it is not only possible for foreign substances to enter it more readily, but it is much easier to obtain a bronchoscopic view of the right than of the left.

The trachea is lined with mucous membrane continuous with that of the larynx; it is covered with columnar, ciliated epithelium, and contains adenoid and glandular tissue. Its chief function is to conduct air to and from the lungs, but it is also important in that it permits exit to the impurities and discharges from the lungs and from its own surface, and aids in re-inforcing vocal tones.

CHAPTER XXVII.

The Laryngoscope and Laryngoscopy.

Having considered the anatomy and physiology of the larynx and trachea, the desire naturally arises to see these organs during life and while performing their various functions. This leads to a description of the laryngoscope, the little instrument that has done so much to revolutionize the study of medicine. That it has revolutionized the study of the larynx is evident, but it has done more: it has gone far to furnish an invaluable aid in the diagnosis of many affections quite removed from the vocal organs. It is well-known that the condition of the lungs is often suggested by aid of the laryngoscope, long

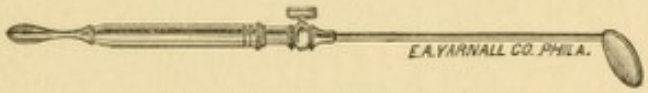


Fig. 90.—Laryngoscope.

before physical exploration gives the least evidence of any pulmonary defect; and it is a familiar fact that the laryngoscope has called attention to the presence of aneurism of the arch of the aorta, etc. Thus, it will be seen that the little instrument is by no means to be considered unworthy the earnest study of the physician in any branch of his profession. That we have not, even yet, arrived at the full knowledge of its usefulness is evident, for every year adds some new laurel to its former achievements; and who can tell what its future will be?

More than a century ago attempts were made to examine the interior of the larynx during life, but with no decided results, and it was not until 1854 that the efforts of Signor Manuel Garcia (see page 320) were crowned with success. His investigations were so fruitful and so perfect that he gave us the instrument in almost its present form; but to Czermak and

Türck belong the honor of applying Garcia's discovery in the diagnosis and treatment of laryngeal disorders.

Formerly, the laryngeal mirror was made in various shapes, but at present it is nearly always circular. The mirrors are made of silvered glass, and vary in diameter from nine-sixteenths of an inch, the smallest, to one inch, the largest size often practicable. It is a good rule to use as large a mirror as is convenient, on account of the larger image obtainable, but size should generally be sacrificed to the comfort of the patient.

In addition to the various apparatus described under nasal and pharyngeal examinations, an electric light is made for

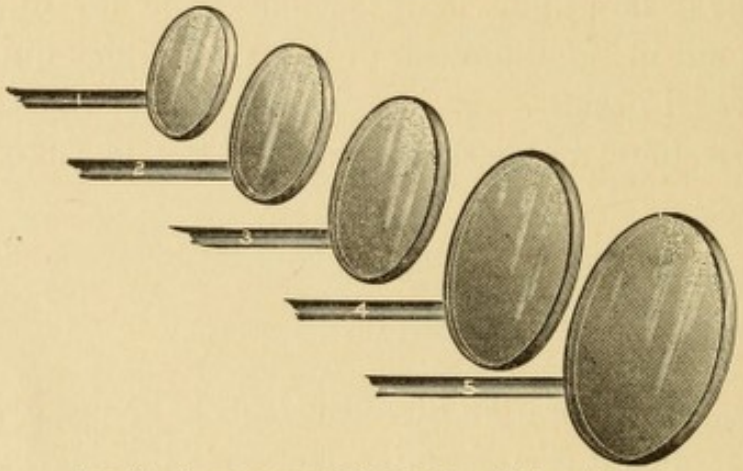


FIG. 91.—LARYNGEAL MIRRORS. (Natural size.)

examining the larynx; it consists of a combination throat-mirror and lamp, so constructed that the light is thrown from the lamp on to the mirror, a distance of from one-half to three-fourths of an inch. The connection with the battery is made through an insulated mirror-handle. In this way the head-mirror is obviated, but the heat of the incandescent lamp is often uncomfortable, and its presence in the axis of vision is apt to obstruct the laryngoscopic view. Fig. 93 illustrates a more convenient method of controlling lime-light than does the more cumbersome apparatus of Fauvel or Mackenzie.

Essentially the same position and illumination are employed for laryngoscopy as for posterior rhinoscopy; the reflector should

throw the light into the mouth so that the point of greatest illumination shall be near the base of the uvula. This is to be done by turning the head-mirror in different directions, always remembering that the angles of reflection and incidence are equal.

When the light has been thrown in the proper direction, with the examiner's head in a comfortable position, the laryngeal mirror is taken in the hand, as in writing with a pen (see

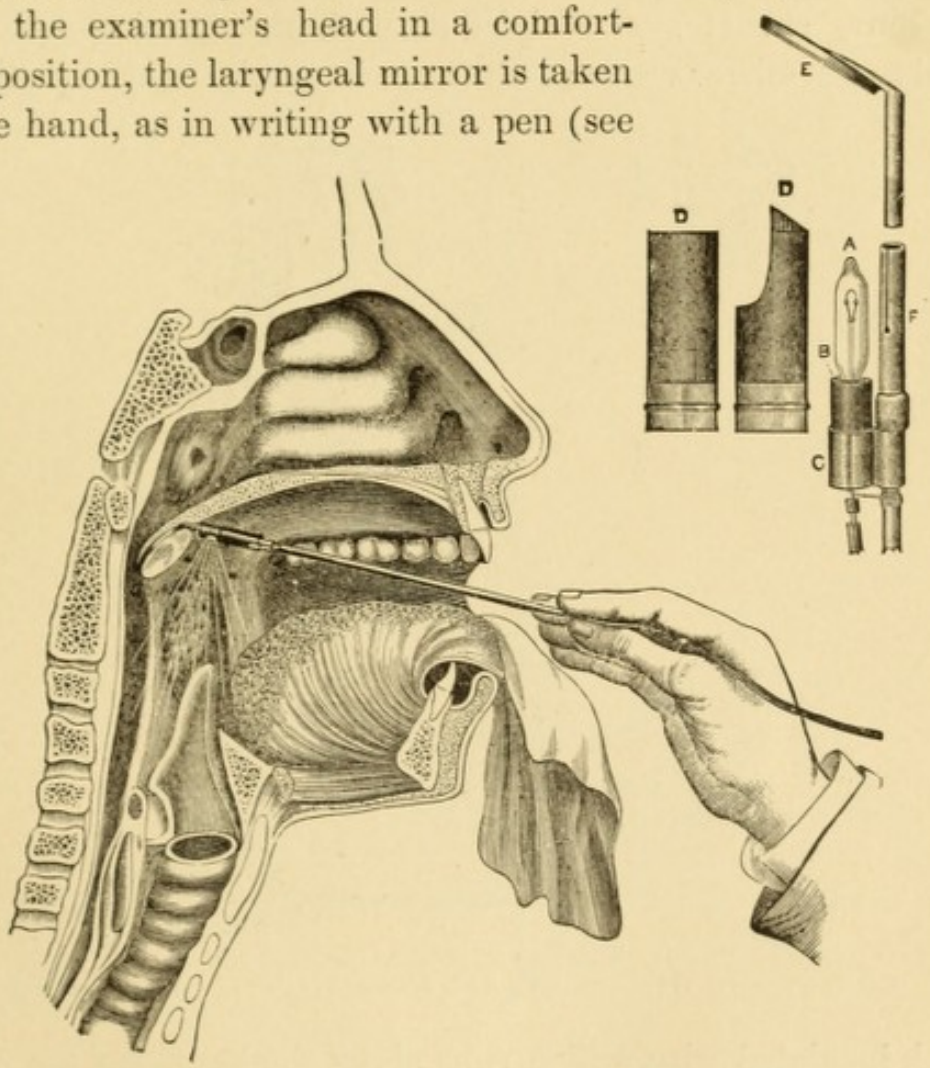


FIG. 92.—THE S. S. WHITE DENTAL MFG. CO.'S ELECTRIC LARYNGOSCOPE.

Figs. 92, 94), and the glass surface held directly over the light for a few seconds, or until the surface is so warm as to prevent the exhaled moisture from condensing upon it. Before introducing the mirror into the mouth, the metal back should be placed against the palm of the hand, to determine its temperature; it should be warm enough to prevent condensation of the exhaled

moisture upon its surface, but not sufficiently hot to do violence to the delicate mucous membrane of the mouth and throat. Some prefer to dip the mirror into hot water and then wipe it dry. In order to prolong the examination the surface of the mirror may be coated with glycerin; condensation is thus prevented, but the image loses in distinctness. In order to obviate this blur, Dr. Henry Wright devised an ingenious plan for keeping the mirror warm; to its back is attached a thin platinum,

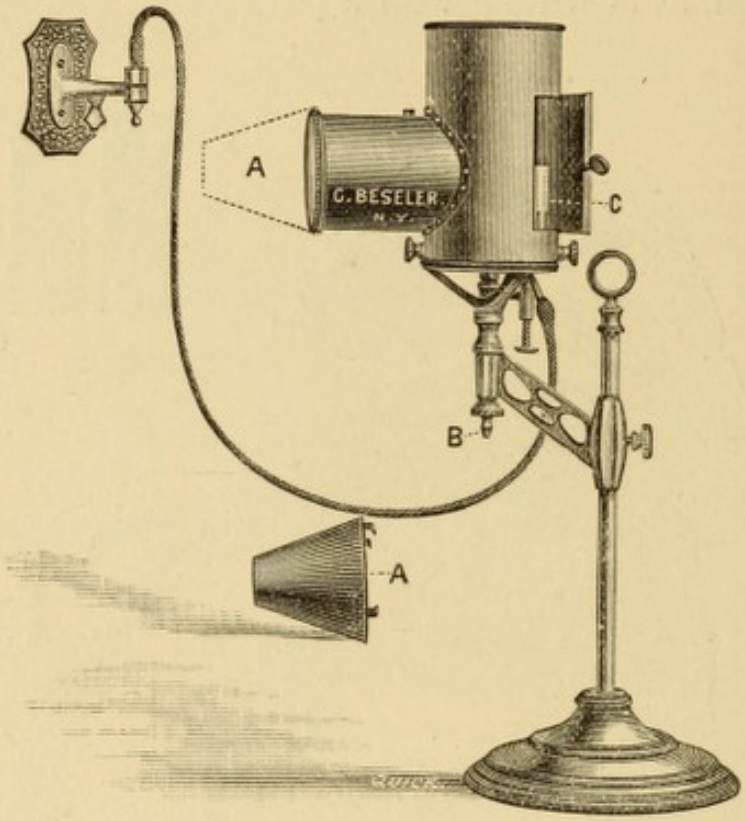


FIG. 93.—BESELER'S LIME-LIGHT APPARATUS.
A, shade to protect the eye from the rays of light; B, to connect with oxygen-gas; C, lime-pencil.

spiral, insulated wire, which runs along the handle of the mirror from a small battery.

A recent, and often efficient, device for illumination is a well-polished glass rod, one end of which is placed against the neck over the laryngeal region; to the other end is attached a candle or small incandescent electric glow-lamp. As the light is transmitted along the rod, the interior of the larynx is illuminated, and can then be examined by the aid of the laryngeal mirror, warmed and introduced as described.

With the mouth open, the mirror is to be introduced with the reflecting surface downward, and in such a way as not to touch the tongue; primarily, because the surface of the glass

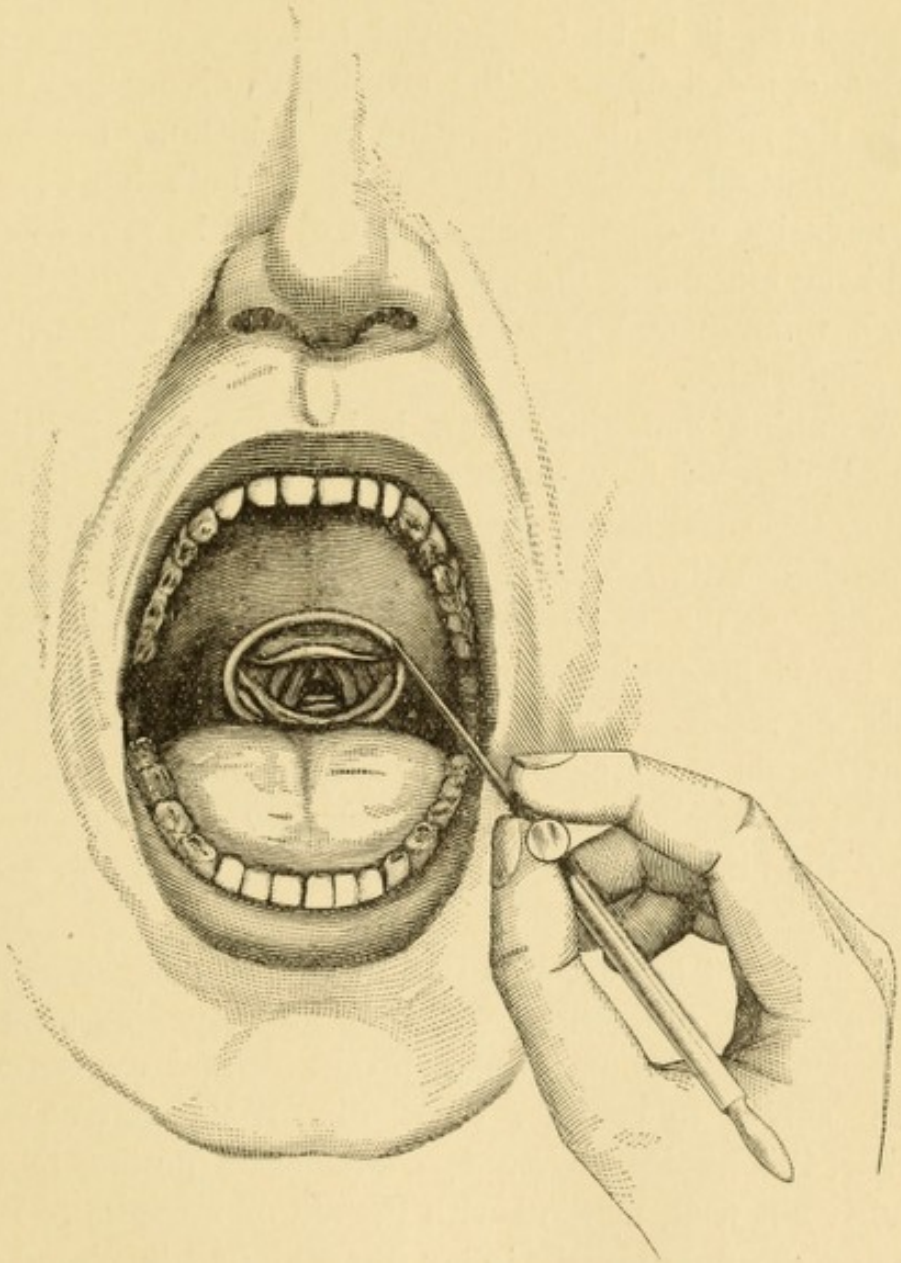


FIG. 94.—LARYNGOSCOPE IN POSITION.

would be clouded, thus impairing its reflecting power, and, secondarily, as such contact might cause the patient to gag, and so seriously interfere with the examination. The back of the mirror should be placed gently but firmly against the base of

the uvula, if the patient will submit to its presence without annoyance; otherwise, it should be held in the mouth in such a way as to bring it near the uvula, without, however, touching it. In some cases it is necessary that the patient protrude the tongue, when it is to be grasped between the linen-covered thumb and index finger of the physician's disengaged hand or held by the patient himself; in the latter instance the examiner has the great advantage of the free use of both hands. In the large majority of cases, however, it will not be found necessary to hold the tongue, as the patient will better control its movements if unhampered by its protrusion; besides, he will be far more comfortable.

Assuming that the mirror is in its proper position, the patient is directed to vocalize and articulate, for the purpose of bringing the vocal bands together and elevating the epiglottis; the vowels usually selected are ä, ā, e, as they better serve these purposes. At the same time that the epiglottis is raised the vocal bands approximate, and a good view of the larynx is usually the result. If it be desired to see below the glottis, the patient should be requested to breathe deeply, thus separating the vocal ligaments and permitting a view of the deeper parts, often to the bifurcation of the trachea, in some cases even into the right bronchus.

It must not be supposed that laryngoscopic examination is unattended by difficulties, for they are sometimes numerous and not easily overcome; but a little care and experience will usually suffice to conquer them all. If the tongue obstruct the view, this hindrance may be overcome by pulling that organ carefully, but well, forward with the aid of a napkin. In order to protect the frænum, the index finger should be placed against the upper edge of the lower incisor teeth in such a manner as to slightly elevate the tongue. If holding the tongue fail, its base may, at the same time, be held down by a tongue-depressor or the back of a second laryngeal mirror; usually, however, it is better not to have the tongue simultaneously protruded and

depressed. Should the tonsils be too large to admit the easy introduction of the usual mirror, a small one may be inserted; and where the irritability of the fauces interferes with the position of the laryngoscope, this can usually be overcome by placing the mirror well in the roof of the mouth, first assuring the patient that he will not be touched if he hold the head well back and still. If this fail, the patient can usually soon overcome the sensitiveness by frequently introducing his finger or a piece of polished hard-wood into the back of his mouth. If, however, it be advisable or necessary to examine a sensitive throat at once, a 4-per-cent solution of cocaine may be sprayed upon the fauces and pharynx; in its absence, much can be accomplished if the patient hold pieces of ice well back in his mouth. With some, the mind has such an influence that they begin retching or even vomiting before the mirror has entered the mouth; such persons should close their eyes before the introduction of the mirror.

Should the epiglottis be so dependent as to obstruct the view, the examiner should stand, the patient's head thrown well back, and ē sounded. In rare instances this will fail, when it will be advisable to elevate the tip of the epiglottis with a soft probe; this causes but little irritation, which is quickly allayed by cocaine. C. M. Blackford, of Lynchburg, accomplishes the same object by pressing upon the glosso-epiglottic ligament with a bent probe. When this complication is encountered in children, it may usually be overcome by causing the patient to gag by an extra pressure of the mirror against the pharynx. Children, unless obstinate or frightened, are usually very tractable. Where stubborn resistance is encountered, the gag and strait-jacket may be required. In my experience, failure is the exception after five years of age, and success is frequent at two. It is rarely necessary to resort to general anæsthesia.

In examining a little child, he should be seated on the lap of the parent or nurse, who is to place her hand on the child's forehead and gently hold his head against her chest; but after

the sixth or seventh year the patient may be seated on a high chair or stood on the floor by the side of the light.

Inspection of the posterior wall of the larynx is a very difficult feat, as a rule, but Gustav Killian, in his monograph, "Die Untersuchung der hinteren Larynxwand," suggests two methods by which this may be accomplished: (1) The head is "thrown backward, and a mirror (holding the epiglottis out of the way)" reflects "the posterior surface of the larynx on a second mirror held against the velum palati"; (2) the patient stands with his face downward, and the physician kneels while he reflects the light and obtains the image of the posterior wall of the larynx upon a mirror held against the mouth and soft palate.

Tumors, abscesses, hæmorrhages, or an ankylosed jaw may defeat a laryngoscopic examination. Before examining the larynx of a child or a very nervous adult, it is advisable to take the reflector in one's hand, perhaps polish its surface, and let the patient see himself in it; the same is true of the laryngeal mirror.

THE LARYNGEAL IMAGE.

It is important to pause a moment before considering this in detail. It will be remembered that the only method of observation is by reflection and that there will be some foreshortening of the image, which is, however, of little moment compared with the transposition which occurs, and which can be best explained by a diagram (Fig. 95). The V will represent the abducted vocal bands; its apex the anterior commissure; therefore, nearer to the examiner than the free ends, which will indicate the arytenoid cartilages. A laryngeal mirror placed above this will picture the V reversed upon its surface. It will thus be seen that the image of the larynx is transposed anteroposteriorly, but not laterally, as shown by the heavy side of the V. The epiglottis and anterior commissure are thus represented as situated posteriorly to the arytenoids; but the sides of the larynx retain their proper positions,—an important point to remember when treating the larynx mechanically.

If the beginner see beyond the base of the tongue, the first object which usually greets his eye is the epiglottis. This appears in the mirror as a vari-formed lip, usually presenting the curves of the line of beauty, but it may be indented, notched, irregular, horseshoe-shaped, etc. (see page 350). It usually changes position during the production of tones, on forced respiration, during retching, etc.; in color it is much like the gums. Its curled lip and posterior surface are often marked by capillary vessels. While the entire laryngeal surface of the epiglottis may come into view during vocalization, it is sometimes possible to see the anterior face and tip only. Occasionally in children, rarely in adults, the lingual surface of the epiglottis can be seen by direct vision when the tongue is forcibly depressed.

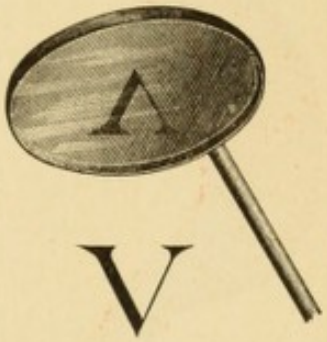


FIG. 95.—REFLECTION OF V-SHAPED FIGURE ON A LARYNGEAL MIRROR.

Extending from the centre of the anterior surface of the epiglottis to the tongue is the central glosso-epiglottic fold, which appears as a vertical line, presenting much the same character as the frænum of the tongue. On each side of this fold are noticed depressions, the valleculæ (little valleys), in which food and foreign substances sometimes lodge. Extending from each side of the epiglottis are the aryteno-epiglottidean folds. They terminate, posteriorily, in the cartilages of Santorini (supra-arytenoids), which appear as two knobs, below which is seen the covering of the arytenoid cartilages; between these is the inter-arytenoid or posterior commissure, on a lower level than the cartilages of Santorini. In some cases the only portions of the larynx visible beyond the epiglottis are the two prominences of the arytenoid cartilages,—the Santorinian knobs; in which case the mobility of the vocal bands can be assumed by the approximation and separation of these indices. By their appearance alone it is sometimes possible to fairly well diagnose



Fig. 96.—Arched and Vertical.



Fig. 97.—Arched and Inclined Forward.

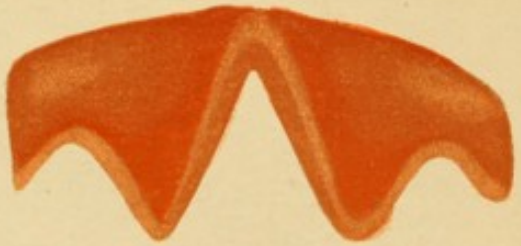


Fig. 98.—Angular.

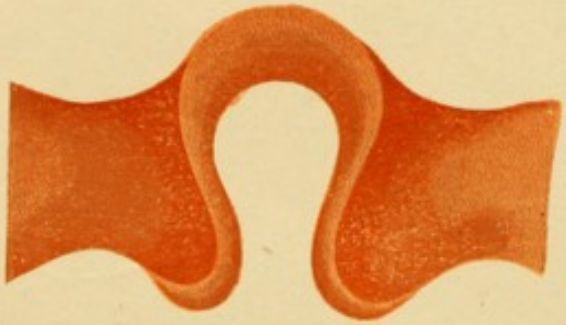


Fig. 99.—Omega-shaped.

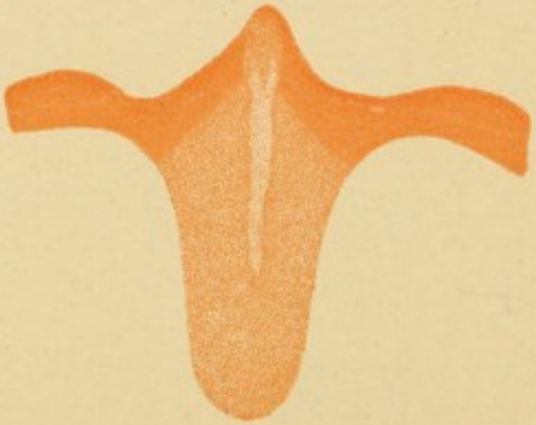


Fig. 100.—Pointed and Depressed, of Children.



Fig. 101.—Horseshoe-shaped.

EPIGLOTTIS, NORMAL FORMS.

phthisical and other diseases situated within the laryngeal cavity. In the ary-epiglottic folds are often seen roundish prominences,—the cartilages of Wrisberg. Just without and at the sides of this prominent entrance-circle are seen the deep cavities known as the pyriform sinuses (hyoid fossæ), while within this crater-like mouth is the interior of the larynx (the

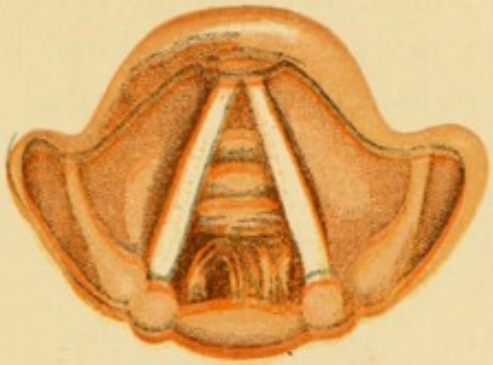
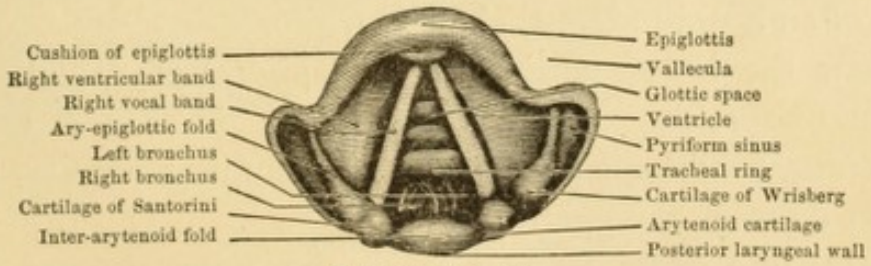


FIG. 102.—NORMAL LARYNX DURING RESPIRATION.

vestibule), at the sides of which are the ventricular bands. At the first glance they are not different in appearance from the sides of the larynx; for this reason the novice is very apt not to recognize them; but it will be noticed that their edges, directed toward the median line, are quite sharp, overhang, and nearly



KEY TO FIG. 102.

hide from view the openings to the ventricles of Morgagni. These ventricles appear as shadows or little caverns in most instances, but when the mirror is held diagonally they often look quite large; below these are seen the vocal bands proper, which should be pearly white and glistening. They extend from below the cushion of the epiglottis, where they unite, at a

very acute angle, to the arytenoids, at which point they are either close together (phonatory position) or far apart (respiratory position), depending upon the location of the arytenoids and their vocal processes. It will thus be seen that the respiratory glottis is often triangular, with its apex anterior and its rounded base (the inter-arytenoid space) posterior. The glottis is divided into an anterior (ligamentous) and posterior (cartilaginous) portion; the anterior is formed by the ligamentous portion of the vocal bands, while the posterior is formed by the vocal processes of the arytenoids. At the junction of these portions is often seen a yellow, white, or pink spot which indicates the tip of the vocal process. In health the ligamentous

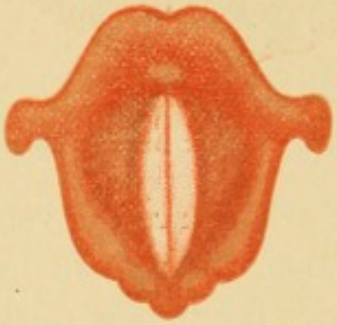


FIG. 103.—NORMAL LARYNX DURING PHONATION.

portion of the bands is always pearly white, but the cartilaginous part is often a dull, almost chalky, white.

Near the lower portion of the epiglottis, just above the anterior extremities of the vocal bands, is seen a roundish prominence, brighter red than the surrounding mucous lining, —the cushion of the epiglottis.

When the white vocal ligaments are approximated, only a shadow-line is seen between them; but, when separated, it is usual to see below the cricoid cartilage, and, on a still lower level, the crico-tracheal membrane and some rings of the trachea, with the intervening membranous tissue. In some cases the bifurcation of the trachea and two or three rings of the right bronchus are easily visible; the left bronchus is too much to the side and too small to be illuminated, although one

can sometimes see a short distance into it. The tracheal rings are grayish, the intervening spaces presenting a color not unlike that of the ventricular bands.

In making a thorough examination of the larynx and trachea, much care should be given to the position of the patient's head and to the angle at which the mirror is held; the

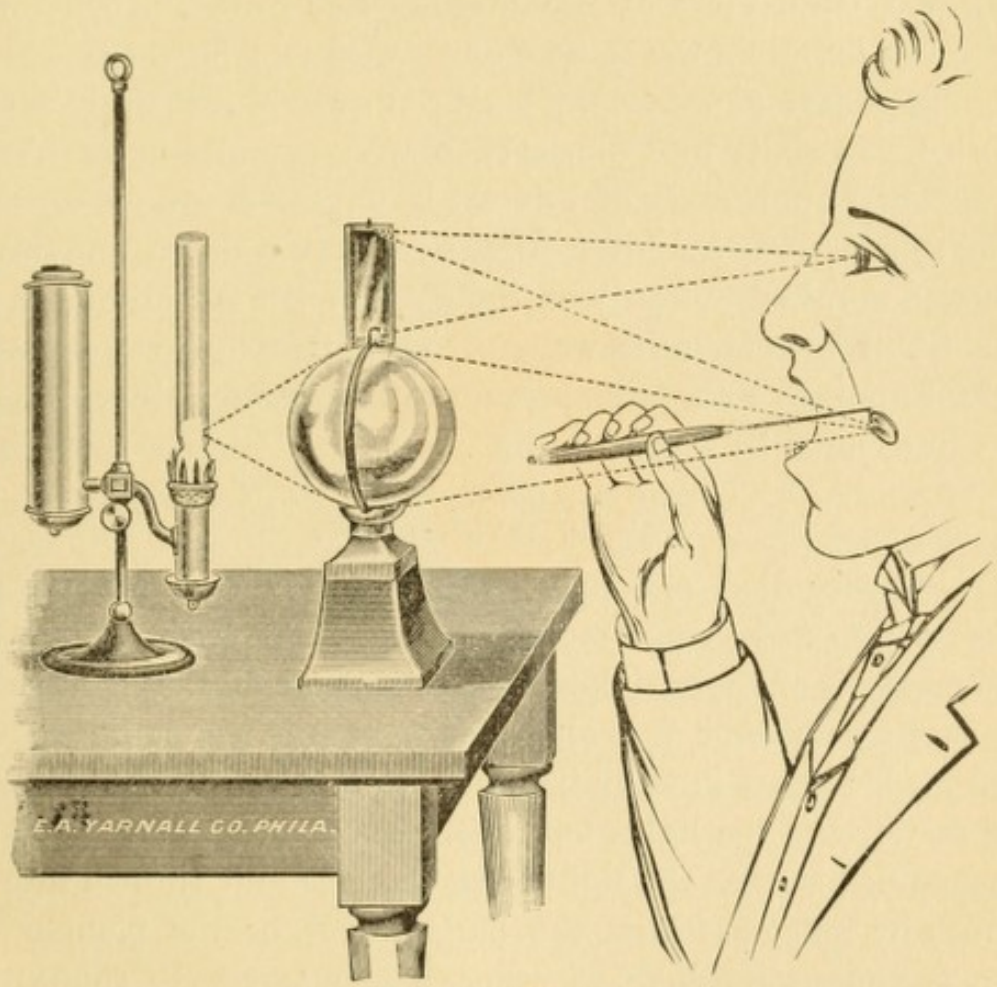


FIG. 104.—AUTO-LARYNGOSCOPE.

latter can only be acquired by a fair amount of practice, while the former is to be regulated by the dependence of the epiglottis and the desire to see the deeper parts. In examining the trachea it is often necessary to have the patient sit very erect, the head not thrown back, but rather inclined forward, the examiner's eye below the patient's mouth, and the light thrown slightly from below upward into the laryngeal mirror. The

patient should breathe deeply in order to separate the vocal bands as much as possible.

In the absence of a laryngoscopic mirror, Voltolini advised the following manipulation for examining the epiglottis and, in many cases, the arytenoid region: The tongue is protruded and held between the patient's thumb and finger; the physician, with one hand, elevates the larynx from without, while with the other he forces the tongue downward and forward.

Laryngeal photography has been quite successfully accomplished, especially by French, of Brooklyn, and others. As yet the general application of this art is not practical, as considerable special preparation is necessary and a large amount of practice required not only on the part of the operator, but frequently of the patient as well. It may, therefore, at present, be looked upon as a scientific procedure of limited utility, although its future must be a brilliant one.

AUTO-LARYNGOSCOPY.

In order that one may examine one's own larynx, it is necessary to make some modification in the preceding apparatus and methods of application. For this purpose all that is necessary is a laryngeal mirror, as in altero-laryngoscopy, a good light placed in front for direct illumination, and a plane-mirror held between the mouth and the light, but a little above the latter. This can be modified so that the light is at the side and thrown into the mouth by reflection from the hand-mirror, or the plane-mirror may surmount a globe of water, which serves to concentrate the light of a candle, lamp, or gas-flame, situated beyond it, as suggested by Foulis. While it is often possible to make satisfactory auto-laryngoscopic examinations, the beginner must be prepared for repeated failures.

CHAPTER XXVIII.

Neuroses of the Larynx.

Neuroses of the larynx are divided into those of sensation and those of motion. Among the former it is usual to consider anæsthesia, hyperæsthesia, paræsthesia, and neuralgia. Neuroses of motion are divided into defective or absent muscular action, functional paralysis, and spasm.

The normal laryngeal sensibility varies greatly in different persons, and even in the same individual at different times; but when this deviation passes beyond certain limits, it is looked upon as abnormal. It is not always easy to draw this line, but one must be guided by experience and by comparison of a large number of cases.

Anæsthesia (lack of sensation) is scarcely to be considered a distinct and independent affection, as it depends upon a general physical state, more than upon a direct nervous deviation from the normal; hence it is not thought best to discuss it here, further than to enumerate the maladies which may give rise to it. The diseases which cause, accompany, or complicate it are: diphtheria, syphilis, typhus, variola, erysipelas, long-standing chronic catarrhs, epilepsy, chorea, hysteria, insanity, bulbar paralysis, apoplexy, tumors at the base of the skull, locomotor ataxia, progressive muscular atrophy, and railroad spine. In many diseases, anæsthesia occurs a few hours preceding death.

Hyperæsthesia (increased sensation) is reflex, as a rule. Among its frequent causes are gastric derangements, especially in those who indulge to excess in alcoholics and condiments. Hysteria, improper use of the voice, rheumatism, and gout are doubtful etiological factors. Its chief manifestation is a loud, barking cough, the so-called "nervous cough," which is not an unusual accompaniment to hysteria, follicular pharyngitis and laryngitis, and laryngeal phthisis.

Paræsthesia (perverted sensation) often exists without appreciable cause (hysterical), but it frequently has a discoverable origin, such as a glandular enlargement or a varicose condition at the base of the tongue and lateral pharyngeal walls. A perverted sensation of heat, cold, swelling, hair, etc., occasionally precedes laryngeal phthisis. Should a varicose condition be present, the failure of æsch., bry., hamam., ignatia, and lach. to accomplish a cure should at once lead to the use of iodide of glycerin or the galvano-cautery. The almost white-hot point of the latter should be applied, if possible, to the base of the afferent vessel; the application to be sufficient to interrupt the circulation in but one vessel at a sitting. The cure is often difficult unless the cause be ascertained.

Neuralgia of the larynx is exceedingly rare, and is generally found in the anæmic, malarial, rheumatic, or gouty; or associated with some more general neuralgia. This condition must not be confused with beginning laryngeal changes, more especially with senile perichondritis; in the latter the laryngoscope will aid in revealing the condition, as no laryngeal change is visible in neuralgia.

The prognosis is usually good. The treatment is chiefly symptomatic, though manipulation, electricity, and a change of air are often indicated.

Paralyses are due (1) to a central cause (rare); (2) to disease at the root of the nerve (rare); (3) to a change somewhere in the course of the affected nerve (frequent); or (4) to a local affection of a few nerve-filaments or of the muscles (frequent).

In the first division, in which there is paralysis of muscles in other parts of the body, search should be made for hæmorrhage, tumor, encephalitis, disseminated sclerosis, syphilitic deposit in the pons or medulla oblongata, tabes dorsalis, or lead poisoning; in the second, for a change in the medulla or its vicinity; in the third, for injury, nerve-pressure by a tumor, enlarged gland, or aneurism; and in the fourth, for nerve trau-

matism, atrophy, degeneration, or a syphilitic or tuberculous deposit.

If purely local in origin, special filaments may become affected by accident or disease; or the muscular fibres themselves may be impaired by pressure of foreign bodies, injury, ulceration, inflammation, infiltration, fatty degeneration, atrophy, or pressure from surrounding pathological changes. If the nerve be long inactive the muscle will be impaired, and fatty degeneration or atrophy may follow.

When the lesion is central, the paralysis is either unilateral or bilateral, and affects either the inferior or superior laryngeal nerve, or both, and other muscles of the body will usually be found paralyzed as well.

If the superior laryngeal nerves be affected, laryngeal sensation will be destroyed and the crico-thyroid and thyro-ary-epiglottic muscles will be paralyzed, the voice very defective, and the epiglottis upright. The latter, in conjunction with anæsthesia of the laryngeal mucous membrane, will permit the passage of food into the larynx or deeper parts. In paralysis of one superior laryngeal nerve, the epiglottis will be anæsthetic on one side and irregularly active, the result of paralysis of one thyro-aryteno-epiglottic muscle; tension of the vocal band will, also, be defective, on account of paralysis of the corresponding crico-thyroid muscle. If the inferior laryngeal be the nerves involved, the remaining laryngeal muscles will be palsied and tracheal sensation abolished.

Paralysis of all the muscles supplied by one recurrent often gives very meagre subjective symptoms. The voice may be only weak and uncertain; sometimes, however, it is lost. The laryngoscopic appearances are characteristic; the band on the affected side remains immobile in the mid, or cadaveric, position, as found after death. During inspiration the unaffected band is widely abducted; and, although, on attempted phonation, it may only reach the median line, as a rule, it passes beyond it in the effort to assist the vocal function, by assuming a share of the

work of its disabled companion. Although the paralyzed ligament be in the cadaveric position, far from that of phonation, it is possible for the voice to be quite good, owing to the passage of its fellow beyond the middle line. If the arytenoid and San-

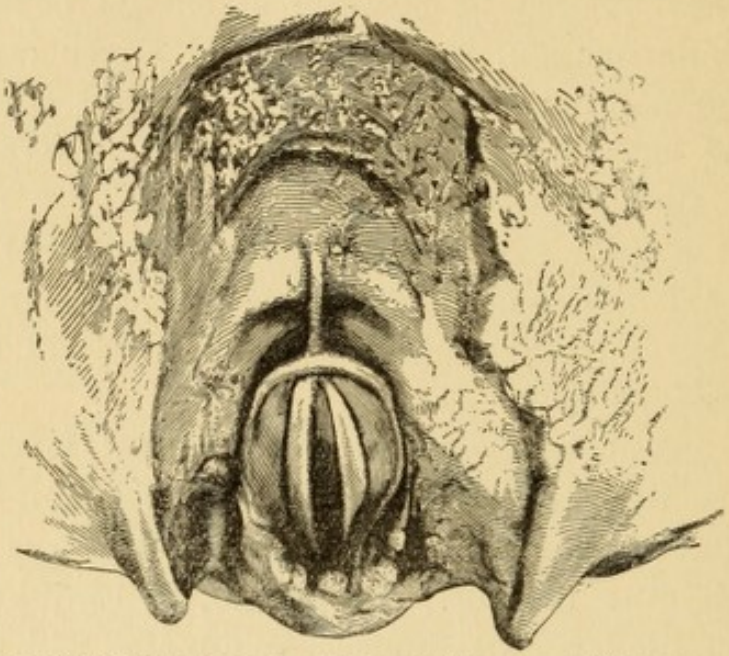
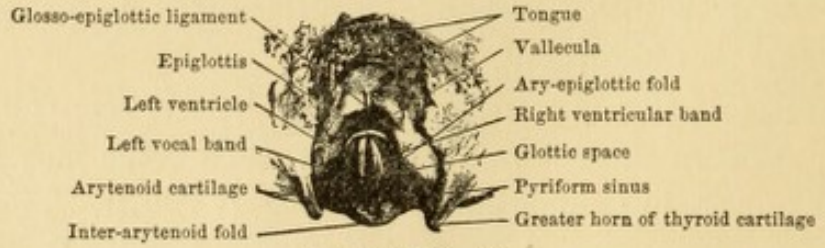


FIG. 105.—FRESHLY-DISSECTED LARYNX, SHOWING CADAVERIC POSITION OF BOTH BANDS. (From a photograph.)

torinian cartilages of the normal side be carefully watched, they will be seen to occupy the usually normal position of the inter-arytenoid space, but often in front of their companions.

Differentiation between general unilateral recurrent paraly-



KEY TO FIG. 105.

sis and paralysis of one lateral crico-arytenoid is not always easy; but, in the latter affection, the palsied band lies well to one side of the larynx, far from the mid-position, and the voice is much more affected than with unilateral recurrent paralysis.

If both bands be paralyzed as the result of involvement of both recurrents, with total paralysis of all the muscles supplied, the voice will be lost and both bands in the cadaveric position. (See Fig. 105.)

A word of caution is here called for in the way of examination. If the head of the patient be turned to one side, it is easy to mistake a right-sided paralysis for one existing on the left, and *vice versâ*, as the twisting of the head may give the impression that the paralyzed band is the one which is in the position for phonation. If, however, the bands be watched while the head is upright, it is easy to determine which is the active one. Again, the mirror should be held in a position to receive the image of the larynx in a vertical manner; a disregard of this precaution may give rise to the same error.

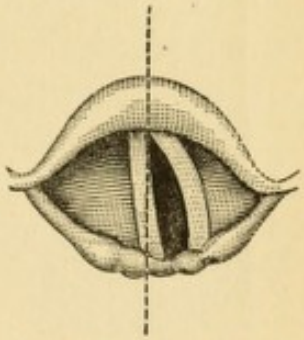


FIG. 106.—LEFT RECURRENT PARALYSIS, DURING ATTEMPTED PHONATION.

It is important, in all forms of paralysis, to exclude the possibility of direct mechanical impediment to the motion of the bands; those most frequently encountered are infiltration, tumors, foreign bodies, perichondritis, œdema, and ankylosis of the crico-arytenoid joints.

PARALYSIS OF INDIVIDUAL MUSCLES.

Loss of power in one **crico-thyroid** muscle gives rise to lack of tension of the vocal band on the side paralyzed, and a weak, unsteady, easily-fatigued voice. According to Mackenzie, the laryngeal appearances are characteristic, the band is wavy and very relaxed during attempted phonation; at the same time the normal band comes promptly to its median position. To this "wavy" condition I (with some others) am unable to subscribe, never having seen it occur; the band being simply relaxed even during strong efforts at vocalization. Should both muscles be involved, the picture is double and the voice nearly abolished.

If there be defective action on the part of one **thyro-arytenoid** (vocal) muscle (thought improbable by some writers), it will be manifested by a weak and uncertain tone, which grows worse from use. The band is thinned and arched, consequently it does not come in contact with its fellow. Paralysis of both these muscles is the usual condition and leads to marked hoarseness, especially during production of the middle and higher tones. Lennox Browne says: "Paralysis of the internal fibres only leads to loss of falsetto notes." Gottstein has called attention to the marked approximation of the ventricular bands during paralysis of the thyro-arytenoid, and cautions the examiner against the error of mistaking the condition for one of ventricular thickening.

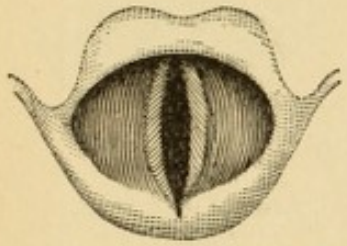


FIG. 107. — BILATERAL THYRO-ARYTENOID PARALYSIS, DURING VOCALIZATION.

Thyro-arytenoid paralysis is generally associated with catarrh of the vocal bands, generally acute or subacute, but sometimes chronic. It is usually the result of inflammatory infiltration, and generally subsides with the catarrh upon which it depends. Severe and improper use of the voice may occasion this form of paralysis, either by straining or rupturing some of the muscular fibres. It is important to distinguish this condition from that which is found in the normal larynx, during the production of the lower as well as the very high tones. By neglect of this distinction, some observers have seemingly discovered paralysis when the condition was normal. If the person sound a note in the middle (upper thick) register, it will be seen that the elliptical opening disappears if due to the mechanism, but if the result of a pathological defect it will remain unchanged.

The prognosis is usually good.

The treatment is to be symptomatic, directed toward the removal of the cause, and supplemented by the use of the faradic current, as later noted. As a rule, it is well to enjoin temporary rest for the voice.

Paralysis of one **lateral crico-arytenoid** muscle is unusual; as already stated, there is generally aphonia; the affected band is widely abducted and almost or quite immobile, depending upon the extent of the paralysis. When both muscles are involved (the usual form) the picture is still more characteristic; the bands are abducted to the fullest degree, the voice is abolished, and the effort to speak attended by great fatigue of the abdominal muscles. The air rushes in through the open glottis with little hindrance and without making any sound (von Ziemssen's "phonetic waste of breath"), causing a rapid emptying of the air-cells at the expense of the diaphragm and abdominal muscles.

It has for its general causes diphtheria, lead or arsenical poisoning, anæmia, hysteria (?), uterine derangements (especially amenorrhœa), severe illnesses, syphilis, etc.; and strain, cold, or trauma as local influences.

The prognosis is good.

Treatment directed toward the cause will usually prove curative.

Posterior crico-arytenoid paralysis of one side may not be attended by any symptoms calling attention to the condition if the person affected be very sedentary in his habits; but if he use any violent exercise, or go up-stairs quickly, he may suffer from slight dyspnœa. When the larynx is examined, the affected band will be seen near the median line and immovable. It is possible that the arytenoid cartilage may move a little toward the opposite one when a phonatory effort is made, but it is so slight that it causes no appreciable movement of the band, which is nearly in its normal vocalizing position. It is not surprising, therefore, that the voice is often natural, and that the condition is frequently overlooked.

When both bands are paralyzed the condition is very different; it is not only serious, but immediately threatens life. The voice may be normal; but if the paralysis be pronounced, the dyspnœa will be intense and alarming. Any exertion or

excitement greatly aggravates the dyspnœa and renders the condition distressing in the extreme. At night the breathing is often so noisy as to be heard some distance, owing to the accumulation of mucus and to spasm, as a result of which the patient may suddenly expire. Tracheotomy is the one measure called for in these cases, and, although in some instances the symptoms are not so aggravated as to be at once dangerous to life, yet, where there exists a veritable paralysis of the posterior crico-arytenoid muscles, there is no real safety to the patient unless he wear a tracheotomy-tube, as a mild condition may at any time suddenly become very serious. Repeated forced chest expansion with almost closed glottis sucks the blood into the pulmonary vessels and, as it does not return freely to the heart, gives rise to severe pulmonary congestion, still further complicating the case.

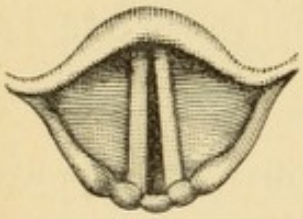


FIG. 108.—BILATERAL POSTERIOR CRICO-ARYTENOID PARALYSIS, DURING INSPIRATION.

Etiology.—The chief causes of abductor paralysis reside in impairment of the nerve, due to pressure, stretching, or other injury; or impairment of muscular contraction, due to direct injury to the muscles through lodgment of a foreign substance at the pharyngo-œsophageal junction, directly over them. One of the chief causes of nerve-pressure is aneurism; therefore, remembering that the left recurrent partially encircles the arch of the aorta, it is not strange that this is the one most frequently paralyzed; but aneurism of the subclavian or innominate artery may affect the right nerve. Other pressure factors are benign or malignant tumors, enlarged bronchial or other glands, tuberculous deposits in the apex of the right lung, syphilitic cicatricial stricture of the œsophagus, and pericardial effusions. Abductor paralysis sometimes follows severe illness, especially typhoid and typhus fevers; in a small percentage of cases the etiology is obscure.

It differs from spasm in the slowness of its onset and in its persistent and unchangeable character. It is to be distinguished from ankylosis of the crico-arytenoid joints by the absence of

the history of previous ulceration or perichondritis; but rheumatic and gouty arthrites are possible.

Prognosis.—The prognosis is grave except in cases due to syphilis. After tracheotomy the patient may live for years in comparative comfort so long as he wears the tube; a few cases are cured. (See author's report of such a result eight months after tracheotomy, *Hahnemannian Monthly*, January, 1884.) Fortunately, bilateral paralysis of the posterior crico-arytenoids is rare; the unilateral form is more frequent.

Paralysis of the **transverse** (arytenoideus) muscle must be bilateral. The voice is somewhat affected, but not lost, and there is phonetic waste of breath.

During vocalization, with arytenoideus paralysis, the laryngoscope shows the bands adducted except at their posterior extremities, where there is a triangular separation, owing to failure of the arytenoideus to coapt the vocal processes of the arytenoid cartilages or to tilt the cartilages toward each other. The cause is chiefly catarrhal, the result usually good, and the treatment medicinal.

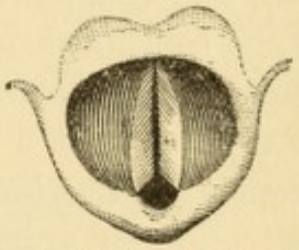


FIG. 109.—ARYTENOID PARALYSIS, DURING VOCALIZATION.

It is not only possible to have the various muscles separately involved, as already described, but to have a combined paralysis of two or more of them, in which event the laryngoscope presents a combined picture of paralysis.

Prognosis.—The result of laryngeal paralysis depends upon the cause, the duration of the affection, the condition of the patient, and the treatment employed. If of central origin, it is not likely that the patient will recover; he may do so if the alteration giving rise to the palsy be removed before any serious structural lesion has taken place; more especially is this true when syphilis is the cause. When the condition causing the paralysis is situated in the course of the nerve itself, the same prognosis will apply. If the paralysis be of an individual

muscle, it can often be cured if no fatty changes have occurred; but after such degeneration it is rare for the defect to be remedied, and atrophy of the muscle precludes the possibility of a restoration of function. Functional paralysis (to be later considered) must not be confounded with the organic disease.

Treatment.—Treatment is usually to be considered from the stand-point of the cause; any other method is apt to meet with signal failure. If the original impulse be syphilitic, the systemic disorder should be dealt with as suggested under "Syphilis," in Parts I, II, and III. Intercurrent remedies are not to be neglected in any event; chief of these are calc. c., nitr. ac., nux vom., and sulph. It is necessary to caution against too long continued use of the lower preparations, as it may result in an aggravation of the condition. Should the cause be the pressure of a tumor on a nerve, either at its origin or in its course to the larynx, the tumor needs the surgeon's prompt attention in order to relieve the pressure before lasting harm results, provided no remedy be found to speedily cure. In the meantime, it is usually advisable to stimulate the muscles by the electrical current, as this acts in delaying fatty degeneration and atrophy. It is necessary, in this connection, to speak of one danger which may follow the use of electricity within the larynx: If there be paralysis of the abductors, it is quite possible to overstimulate the action of their antagonists, and, by suddenly and completely closing the glottis, induce fatal dyspnœa. It must be remembered that the patient who is suffering from this form of paralysis is not receiving the proper amount of oxygen at any time, and to have air excluded even for an instant is much more dangerous than in one whose blood is thoroughly oxygenated at the time; on the other hand, it is surprising how slight an amount of air is required to sustain the life of these poor sufferers.

When applying electricity to the larynx of one suffering from abductor paralysis, it is well to use a very weak current, and to place the electrode on the muscle itself, namely, directly

to the back of the larynx, in the lower part of the pharynx. This can be done with a negative laryngeal electrode, guided by a laryngeal mirror. The positive pole may be held in the hand, or placed on the neck over the course of the recurrent nerve. The tip of the insulated laryngeal electrode is of metal, either unguarded or covered with a little piece of chamois-skin; if the former, it should be heated in the hand or dipped into hot water before introducing it into the larynx; if the latter, it should first be moistened in warm salt water.

As a rule, the application should not be continued longer than two or three seconds; at least, not until the larynx has become quite tolerant of the contact of the instrument. J. Mount Bleyer (*N. Y. Med. Jour.*, November 7, 1891) advises that electricity be applied to the larynx by means of specially

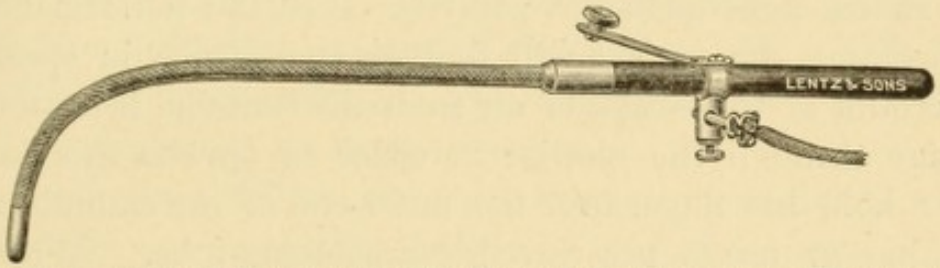


FIG. 110.—AUTHOR'S MODIFICATION OF MACKENZIE'S LARYNGEAL ELECTRODE.

insulated tubes, made after the pattern of O'Dwyer's, and introduced in the same way. The chief advantages claimed are: no continual spasm, steady flow of current, ample time for application, free respiration, easy technique, and no illumination needed during application.

In some cases the external application assists in restoring muscular tone. One pole should be placed on each side of the larynx, as nearly as possible over the region of the affected muscles, reversing the direction of the current from time to time. Semon recommends the application of the electrodes to the sides of the head, thus acting upon the phonatory centres. Either the faradic or galvanic current may be employed, although the former is usually selected.

In post-diphtheritic and other paralyses of the superior

laryngeal nerve, with upright epiglottis and loss of laryngeal sensation, electricity, manipulation, exercise, good food, and fresh air will go far toward a cure, but some remedy should be given internally; those most useful are caust., gels., nux vom., and strych. If there be much trouble in deglutition, it may be necessary to feed the patient through an œsophageal tube, that food may not pass into the larynx. Care is required that the feeding-tube be not passed through the insensitive larynx and augment the original danger; this can be obviated by pressing the tip of the tube well against the postero-lateral wall of the pharynx, with the index finger introduced over the tip of the epiglottis.

Paralysis resulting from cold or rheumatism may be treated as suggested under the various forms of catarrhal laryngitis.

In cases of abductor paralysis after the performance of tracheotomy, the patient will find great difficulty in speaking, on account of the escape of air from the cannula, instead of its passage through the glottis; in order to obviate this he may either hold his finger over the outer end of the cannula while speaking or use a pea-valved tracheotomy-tube. With the latter the air will pass in through the opening valve and out through the glottis, as the exhaled air forces the pea into the open valve. In this way the tensely approximated bands may be set into vibration: during ordinary respiration the bands are not tensely drawn and the air passes out freely. If a cure be effected, the tube may be discarded: such a favorable result has sometimes followed even after division of the nerve.

The remedies will be found under "Neuroses of the Pharynx" or "Diphtheria of the Pharynx and Larynx."

FUNCTIONAL, NERVOUS, OR HYSTERICAL LARYNGEAL PARALYSIS (APHONIA).

This is a non-organic phenomenon which usually occurs in those who are nervous or hysterical, although it occasionally attacks persons who seem devoid of such symptoms. Females

from fifteen to forty-five years of age, chiefly at puberty and at the menopause, are most frequently affected; yet persons of all ages and of both sexes may become the victims of functional aphonia. There is usually no detectable pathological change, and if the patient can be made to believe that she can speak aloud, the aphonia will often pass away instantly.

Etiology.—Functional paralyses are usually due to nervous influences, fright, grief, disappointment, etc.; yet some are the result of a weak, lowered general vitality, consequent upon severe or long-lasting illness, vocal strain, loss of animal fluids, anæmia, amenorrhœa, or other uterine disorder. Of the maladies coming within the etiological category, none hold a more constant relation to the affection than do the early stages of phthisis; therefore, when a case of functional aphonia comes under the physician's notice, he should always consider the possibility of future phthisical developments. Dr. G. W. Major (*Archives of Laryngology*, January, 1882) believes that phonation on inspiration is a frequent cause.

Symptoms.—When the voice is suddenly lost without previous warning or even the advent of cold, the condition under consideration should be suspected. If, in addition, the patient laugh and cough in a fairly normal manner, and give a history of fright, grief, or previous attacks, functional paralysis of the vocal bands is very probably present. Instances are not rare in which the patient is able to sing, but will not speak. The aphonia may exist for days, weeks, or months; the voice may return instantly or gradually; relapses are frequent.

Although hysterical paralysis of the vocal bands usually assumes this aphonic and non-dyspnœic form, it seems possible for it to produce a condition in which, though aphonia exist, threatening dyspnœa is also present, simulating paralysis of the posterior crico-arytenoid muscles; in the former the voice is absent; in the latter it is always present, though often hoarse. This is a very rare form of functional paralysis, of which I have seen but one example; its existence, even, is doubted by some

writers. Its causes are those giving rise to the aphonic variety, and, like it, its onset is sudden, thus varying from the gradual development of organic paralysis.

Although the symptoms are occasionally so severe that preparations have been made to perform tracheotomy, relief has occurred without operation. It is to be differentiated from spasm by the absence of complete and sudden closure of the glottis, and from paralysis of the abductors by the use of an anæsthetic, when the functional paralysis will at once disappear. If the laryngeal mirror be used, the bands will be seen close together, both in the functional and organic palsy, but in the former there will not be that absolute loss of motion of the arytenoid cartilages, as occurs with the latter affection; these little indicators move slightly toward the median line during attempted vocalization and from it during inspiration.

The laryngoscopic picture of the usual form of functional paralysis is characteristic; the bands are normal in appearance, but widely separated, and do not often come together during attempted vocalization, although they usually move toward each other; this is an impossibility in organic paralysis of the adductor muscles. During ordinary respiration the bands appear in their normal positions and move during the respiratory act; but on forced inspiration they often move slightly toward the median line. In some cases they come together on attempted vocalization, but with so little force as to be separated by the expiratory current before a tone is produced.

Prognosis.—This is usually good, but the loss of voice may persist for years, or prove a precursor of laryngeal phthisis.

Treatment.—The management of functional aphonia is often mental, or, rather, psychical, and everything is to be done to assure the patient that the voice will return in a short time. It is often restored under conditions similar to those which caused its loss; namely, fright, fear, etc. The most efficient treatment is electricity. The negative pole of a rather strong faradic current is to be applied to the interior of the larynx; the positive

pole to the palm of the hand or to the surface of the neck. It is important that a decided shock be given, as this is often sufficient to restore the voice instantly. If necessary, the electricity may be repeated daily. Dr. W. E. Casselberry, of Chicago, has recently cured two very persistent cases by galvano-cauterization of enlarged turbinateds, basing this action on the existence of the special reflex relationship between the sensory filaments of the nares and the motor nerves of the larynx (*Med. News*, February 22, 1890). In some obstinate cases external manipulation has proved curative; in others, vocal drills, beginning with the vowels, preferably preceded by an *s* or an aspirated *h*; later, simple words or phrases may be sounded. The use of copper and other metal collars has its advocates. Suggestion during the hypnotic state has succeeded after failure of the ordinary means. In recent cases, the introduction of the laryngeal mirror may restore the voice, and equally good results often follow astringent applications to the larynx.

Therapeutics.

Acon.—Aphonia due to fright, fear, anger, etc.

Cocculus, ignatia, nat. mur., phos., stan., functional aphonia from mental emotion or fatigue.

Collin. "tincture promptly cured an obstinate case of one year's duration after resisting the usually approved methods, including galvanism and change of air. The remedy was prescribed on account of rectal symptoms following a severe labor." (J. H. Marsden, *Trans. Homœo. Med. Soc. Pa.*, 1882.)

Gels.—Loss of voice, dryness, and burning caused or aggravated by emotions. "Loss of voice during menstruation." (Meyhoffer.)

Ignatia.—With mental anxiety and spinal symptoms. Nervous, hysterical persons.

Lach.—With tenderness of larynx to touch.

Nux mos.—With gastro-intestinal and cardiac disorders.

Phos.—Aphonia worse during the evening; larynx very

sensitive; anæmia of laryngeal lining; threatened phthisical cases; vocal bands relaxed.

Sepia. — In non-hysterical females; aphonia reflex from uterine disorders.

Stram.—From great mental excitement; hysteria, even mania.

Compare bell., nux vom., platina, puls., and rhus tox.

Spasmodic Affections.

LARYNGEAL VERTIGO (CHARCOT)—LARYNGEAL EPILEPSY (L. C. GRAY)—ICTUS LARYNGE (KRISHABER)—COMPLETE GLOTTIC SPASM OF ADULTS (McBRIDE)—LARYNGEAL SYNCOPE (S. T. ARMSTRONG).

This condition, the origin and pathology of which are still open questions, was first described as a special condition by Charcot, in the year 1876 (*Comptes Rend. Soc. de Biol.*); according to this authority it "is an analogue of Ménière's disease." With one exception,—a widow of 47 years,—it has only been observed in men over 25 years of age.

Judging from the number of reported cases of this disease, one would be led to believe that it is infrequent, but when it is remembered that some of the reported cases have come to light by accident, the patient having given little thought to the occurrences, it is most probable that the condition is not so rare.

Etiology.—The direct causes of this affection are not very well known. It is ascribed by most observers to the neurotic state, but by some to an epileptic condition, while others are of the opinion that it is reflex from the vagus. It is well proved that a similar condition is occasioned by forcible efforts to expel air from the overinflated lungs while the glottis is closed, as described by Weber in "Müller's Archives," 1851. Surprise, anger, probable neurosis, overindulgence in stimulants or food, and foreign body in the pharynx are among the apparently direct causes. Remotely, the affection has been attributed to gout, rheumatism, snuff, tobacco-smoking, emphysema, various chest affections, syphilis, and bullet wound on the head without apparent pressure. Whatever the cause, nearly every

recorded case has had pharyngitis, usually follicular in form, and generally associated with congestion or hyperæmia of the larynx. Nasal reflexes and varix at the base of the tongue and upper part of the larynx may act as excitants.

Symptoms.—The first symptom immediately preceding the seizure is a tickling in the larynx, followed by cough; at the same time there is usually a sensation of burning in the same region; but in one case these two symptoms were replaced by a feeling as if the throat were "squeezed together." Preceding the attack there is sometimes an irresistible impulse to seize the larynx with the hands. Although the other symptoms be absent, cough never fails to make its appearance, and it would seem that the sudden prevention of the impulse to cough is the precipitating cause of the seizure. In very mild cases stridulous cough may be the sole manifestation of the affection; or, after two or three such coughs, the seizure may occur at once, followed by a sensation of suffocation or of slight laryngeal spasm. Some patients complained that "all the muscles of respiration were arrested." The cough may be severe and paroxysmal, but is usually slight; in the second or third attempt the glottis refuses to open, and the patient immediately feels giddy. As a rule, he falls, and loses consciousness for a few seconds or minutes, although he may be conscious throughout, even though he fall. During the attack there is no biting of the tongue, rarely muscular twitchings, no urine is voided, and only in a few instances have there been slight convulsive movements. There is no cry preceding the loss of consciousness. Loss of memory has been noted in some cases.

In one case (McBride) there was exaggerated tendon-reflex, ankle-clonus, spasmodic action of the palatine muscles, and occasional spasmodic stricture of the œsophagus. The face is either pale, suffused, or swelled during the attack. The seizures may occur every few months, or as often as three or four times during the day. I have not seen any recorded case in homœopathic literature, but I have treated one man of 30 years, in

whom the attack came on without any known cause. Tickling in the larynx, cough, and a sense of impending suffocation were speedily followed by a sensation of dizziness and partial unconsciousness, but he did not know that it was ever complete. Under the use of hyos. 30 x he recovered in about four months. Although there was slight follicular pharyngitis, it was not specially treated.

Prognosis.—The prognosis is good, as no case reported has failed to be relieved in a very short time, and all save two of the recorded cases were cured. In the first of these, the man died as the result of concurrent asthma; in the second, the patient did not remain under observation sufficiently long to give an opportunity for cure. As the symptoms, however, may be mistaken for cardiac failure, or even apoplexy, it is not improbable that fatal results may have thus been overlooked.

Treatment of the pharynx alone, or of the larynx as well, is attended with good results. In the majority of recorded cases bromides were employed, and in some counter-irritation was applied over the larynx. Measures should be directed to any nasal or pharyngeal alteration, including elongated uvula and lingual varix, which might act as a predisponent to laryngeal vertigo.

Symptomatically, one would be led to expect relief from the use of bell., bromine, chlorine, cuprum, iodine, moschus, or verat. vir., but the prompt action of hyos. in the case noted should prove the efficacy of this remedy. Moschus has one very strong characteristic, namely, sudden sensation as though the upper portion of the larynx closed upon the breath.

Tobacco and alcoholic stimulants should be avoided.

PHONATORY SPASM—SPASM OF THE TENSORS OF THE VOCAL BANDS (MACKENZIE)—STAMMERING OF THE VOCAL BANDS (PROSSER JAMES)—CHOREA OF THE LARYNX—APHONIA AND DYSPHONIA SPASTICA.

Etiology.—This rather rare condition arises as the result of overuse, abuse, or, more correctly, improper use of the voice, and is often found in habitual drinkers of alcoholics. It is due

to some disturbed co-ordination of the vocalizing muscles, and usually occurs in those who use the speaking voice in public. I have never seen such a condition in a singer. From the etiology it will be seen that men are the chief sufferers, and no class is so liable to the affection as clergymen, who are frequently at fault in their methods of voice production.

Symptoms.—The condition manifests itself in irregular, jerky tones, often very weak and almost inaudible. The tones may be nearly normal for a time, but the defect soon recurs. The patient sometimes complains that the words will not come; the lips move, but no sound is heard. In other instances the glottis is closed to the exit of air and relaxation does not occur until the effort at vocalization is discontinued. In the meantime cyanosis may occur, accompanied by pain in the larynx and chest. The phenomenon is rarely present during whispering. Articulation is seldom affected.

Inspection.—The laryngoscope may show little or no pathological change, but the laryngeal mucous membrane is occasionally congested as a result of the faulty vocalization. The more intense the spasm, the closer the bands are coapted. If the lateral crico-arytenoids be the only muscles involved, there is a slit of considerable size nearly representing the normal vocalizing glottis; but if, in addition, the arytenoideus be contracted, the glottis is closed throughout. Prosser James, who described this phenomenon in 1879 ("Sore Throat"), gives the following: "The vocal cords hesitate or tremble for an instant at a point not sufficiently approximated for vocalization, where they move as with a series of ineffectual efforts to obey the will, or display the paroxysmal, spasmodic, or irregular actions seen in the mouths of confirmed stammerers, or the less distinct interferences with utterance called 'hesitation of speech.'"

Prognosis.—The prognosis is not absolutely bad, as I had one case recover. The late Sir Morell Mackenzie wrote: "The disease is nearly incurable;" and Schech is of a similar opinion.

Treatment.—The treatment consists in the use of cuprum,

hyos., ignatia, or mag. phos. internally, and in local bathing with cold salt water, followed by brisk rubbing night and morning, massage of the laryngeal region, a good supply of fresh air, free exercise, nasal respiration, hypnotic suggestion, and galvanism; but, above all, in a careful training under the guidance of some intelligent, judicious, capable "voice builder."

Mogiphonia (B. Fränkel) is a condition not unlike that just described, and is analogous to writers' cramp. The ordinary speaking voice is unaffected, but professional speaking or singing is at first difficult and painful, and later impossible. During the attack the vocal bands seem to lack regular tension.

The prognosis and treatment are practically those of phonic spasm.

SPASM OF THE LARYNX.

This title covers all the names which have been given to the condition for centuries. They include: Spasmus glottidis, Spasm of the Glottis, Laryngismus Stridulus, Child Crowing, Asthma Millari, Asthma Koppii, Asthma Thymicum, etc. This phenomenon is without any laryngeal inflammation or febrile action; hence it must not be confused with spasmodic or false croup (stridulus laryngitis, subacute laryngitis).

It consists of the sudden, complete, and more or less protracted paroxysmal closure of the glottis, due to stimulation of the recurrent or vagus, either directly or reflexly. The condition may arise at any time from birth to extreme old age, but as its manifestations are not identical in persons of all ages it is deemed advisable to consider it under two headings, namely, "Laryngeal Spasms of Children" and "Laryngeal Spasms of Adults."

LARYNGEAL SPASMS OF CHILDREN.

Etiology.—These spasms usually occur in poorly-nourished children under two years of age. They generally appear in connection with cerebral and gastric irritation, microcephalus, hydrocephalus, rickets, and enlarged glands, particularly the

post-nasal, cervical, bronchial, thymus, and thyroid. Flesch, of Frankford (*Inter. klin. Rundsch.*), has always found, post-mortem, two hard glands on the left recurrent nerve. Goodhart considers as a cause excessive recurving of the epiglottis in its vertical axis, as if bent in half down the middle, thus bringing the ary-epiglottic folds nearly into apposition. Ringer suggests an elongated and thickened uvula. Phimosis, paraphimosis, and rectal, aural, and nasal irritation are occasional causes. Hereditary influence is doubtful. Among the general exciting causes, malnutrition stands most prominent; next in frequency comes intestinal irritation, either in the form of irritating, non-digested food, constipation, or parasites. Fright, fear, and the accidental entrance of food and other foreign substances into the larynx are not unusual excitants. Laryngeal spasms occur more frequently in hand-fed children than in those who are nursed by the mother. Boys are more frequently affected than girls, perhaps on account of the greater exposure of the former. Laryngeal spasms are most frequent in winter and spring; first dentition is the time of life most liable to the affection; it rarely occurs after the eighth year. Illy-ventilated and insanitary houses favor the affection, as do lack of proper exercise and fresh air.

Pathology.—Pathologically there is little to note, as the condition is a nervous reflex, the lesion usually existing in some remote part of the body, as has already been stated. In some fatal cases there have been found congestion, hyperæmia, œdema, and exudation of the brain. In a few post-mortems solitary glands of Peyer's patches and the mesenteric glands have been found enlarged; in others, the autopsy has shown slight emphysema, œdema, chronic pneumonia, or perhaps tuberculosis of the lungs. As previously stated, the larynx shows little or, more frequently, no pathological change, and there are no indications of an impending laryngeal spasm.

Symptoms.—The symptoms of the attack are so tersely and graphically described by Gottstein, in his "Die Krankheiten

des Kehlkopfes," that it will be well to quote them: "Suddenly, after one or two short, whistling inspirations, respiration ceases, owing to closure of the glottis. The anxious countenance, the staring eyes with contracted pupils, the pale skin, blue lips, dilated nostrils, the head bent backward, while the neck is extended and the brow covered with cold perspiration, show how sharp has been the struggle for breath. After a short time, lasting from a few seconds to two minutes, which, however, seems an eternity to the on-lookers, if death by suffocation do not occur during the paroxysm, the painful scene is ended by several deep crowing inspirations. The respiration, at first rapid and deep, soon resumes its regular rhythm, and gradually the child returns to its normal condition." Following severe paroxysms the patient is much fatigued.

It must not be supposed that all seizures are so severe, for many times they are little more than "breath catchings," so transient as to attract but little attention, until a severer attack denotes the danger. On the other hand, the condition may never show itself in the milder form, even the first paroxysm proving fatal.

In addition to the respiratory symptoms noted, it is quite usual for other parts of the body to share in the spasm; thus, the fingers and hands may be contracted, the fingers stiffly extended, the thumbs, wrists, and feet turned inward, the toes tightly contracted, and the lower extremities flexed with opisthotonous or tonic convulsions of the entire body. Carpo-pedal convulsions have rarely been noted after the fifth year. Consciousness is usually lost in severe cases, but not in the milder attacks. The heart's action is much disturbed; at first strong and quick, it becomes weaker and very irregular until it ceases altogether. The temperature, in the few cases in which it has been recorded, varied from 98.5° to 98° F., and in severe cases even to 96.5° F.

Dr. Cheyne considers as pathognomonic of this malady, "a crowing inspiration, with purple complexion, *not followed by*

cough." The spasm may be a single one with no recurrence; it may be repeated many times a day and recur on many consecutive days, or it may assume a chronic form and persist, with intermissions, for weeks or months, or until the removal of the morbid cause, which at once restores the lost nervous balance.

Diagnosis.—It is important to distinguish spasm of the larynx from membranous croup; if, however, the history of the case be considered, there can be but little possibility of confusing the affections. False croup is devoid of expiratory difficulty, and there is sudden and complete relief as soon as the spasm relaxes; hoarseness usually persists, fever may be present, and there is a laryngeal catarrh; further, spasmodic croup is a nightly visitor, while laryngismus stridulus occurs only during waking hours. It differs in its history from bilateral paralysis of the abductors of the vocal bands; the latter condition is usually found in middle-aged or elderly persons; it makes its appearance slowly, the breathing is impaired at all times, but is aggravated by any exercise or excitement, and is often increased and noisy during sleep; neither is there complete closure of the glottis without previous warning, as occurs in the spasmodic affection. Acute laryngitis and œdema of the larynx appear slowly in comparison with spasm, and there are severe cough, fever, and local disturbances for some hours or even days before the onset of the dyspnœa. If the laryngoscope can be used, there is no difficulty in differentiating it from membranous laryngitis by the absence of membrane; from subacute laryngitis by the absence of inflammation; from acute laryngitis by the absence of inflammation, swelling, or œdema; from acute œdema of the larynx by the absence of dropsy; and from paralysis of the glottis-openers by the absence of constant partial closure of the glottis. Whooping-cough has spasms after the first week of the attack; spasms of the larynx at the onset.

Prognosis.—Although the spasm sometimes results in death from apnœa during the attack; from coma, due to effusion, the result of obstruction to the return circulation in the brain; or

from exhaustion following the paroxysm; the prognosis cannot be considered very grave, in that most cases recover even after severe seizures. Where there are general spasms, however, when very frequent, or where the brain is implicated, the prognosis is to be more guarded. It is said that the results are more favorable in girls than boys. The younger the child, the lower the temperature during the attack, and the more marked the general convulsions, the worse the prognosis. It is likewise worse in the poorly nourished, the rachitic, and the scrofulous; and better the older the child and the greater the interval between the attacks.

Treatment.—The physician is rarely present during the attack, but directions should be left in anticipation of other seizures; the windows should be opened to secure a bountiful supply of fresh air; the child placed in a sitting posture with the body bent forward, the large toes and thumbs flexed, sensitive regions of the body pinched, especially the inside of the thighs and arms; the back should be struck with the palm, and the surface of the body thoroughly rubbed, either with the bare hand or with mustard or alcohol. Some advise the inhalation of ammonia, but it is possible that its effect may be contrary to that intended. Ether and chloroform act well, and, if carefully employed, nitrite of amyl is a valuable adjuvant. Rival reflexes, as retching and vomiting, may break the spasm; these may be excited by tickling the fauces with the finger or a feather: the tip of the epiglottis may be elevated with the finger (see report of a case by E. R. Gregg, *Hahnemannian Monthly*, September, 1892) or the nasal mucous membrane may be excited by snuff or a feather. Any tight or constricting bands of clothing should be loosened at once. When these measures fail to resuscitate the patient, cold water may be forcibly syringed against the ensiform cartilage in order to stimulate the phrenic or pneumogastric nerve, and electricity may be applied for the same purpose. The positive pole should be placed over the spine and the negative on the hypogastrium. If these

means fail and death seem imminent, an intubation tube or English catheter should be passed through the glottis. In the absence of these instruments the surgeon may perform a hasty tracheotomy even with his pen-knife. If after any of these operations the patient do not breathe at once, it will be necessary to resort to artificial respiration, or to the ordinarily employed resuscitative measures.

In the interval of the attacks the child should be placed in the very best hygienic condition, both mental and physical; tight clothing should be discarded; fright, fear, startling, sudden waking from sleep, excitement, worry, severe exercise, and constipation should be guarded against. Good, nourishing diet and plenty of mild exercise in the pure, fresh air are important elements in successful treatment. The child should be fed in small quantities at frequent and regular hours, as overdistension of the abdomen, resulting from large and infrequent meals, with consequent pressure on the pneumogastric terminals, is apt to excite an attack; the food, too, should be of a non-irritating, readily digestible nature. Codliver-oil or terraline often acts well by affording condensed nourishment.

Mild sponge-baths followed by brisk rubbings are useful in promoting good circulation; the water must not be dashed upon the child, neither should he be put into a tub of water, lest a paroxysm be excited. The treatment of the exciting cause is of the greatest importance; it is not necessary, however, to detail it here, as it will be found in works on general medicine and surgery.

LARYNGEAL SPASMS OF ADULTS.

Etiology.—These are rare, if we exclude pressure from enlarged glands, tumors, or foreign bodies within the larynx. The most frequent element in the etiology of this neurosis is hysteria, but epilepsy, tetanus, hydrophobia, chorea, laryngeal vertigo, locomotor ataxia, sexual excesses, and uterine derangements are not unknown incitors to laryngeal spasms of adults. In some instances no cause can be ascribed, when, perhaps, the

attacks are to be partially attributed to the peculiarly nervous, morbid irritability of the individual.

Symptoms.—Spasms of the larynx in the adult differ somewhat from the same affection when occurring in children, in that in the former the closure of the glottis is not so decided nor so frequent as in the latter. The adult glottis often presents partial closure; the attempts at inspiration are very noisy, deep, and whistling, while expiration is short and loud. The paroxysm is attended with the greatest anxiety. It is probable that the general convulsions which accompany these manifestations are secondary to some systemic disorder rather than to the effect of the laryngeal spasm, as they occur chiefly in hysterical individuals. Gottstein had the unusual good fortune to examine the larynx in one case during the attack. He thus describes the appearance: "We found the cartilaginous portion of the glottis firmly closed, the points of the vocal processes somewhat prominent, and the ligamentous portion of the glottis closed, with the exception of a narrow cleft; contact of the ventricular bands did not take place."

The affection may be confused with the graver one of abductor paralysis, but the laryngoscope will reveal the free motion of the vocal bands during the intervals of the paroxysms; and the dyspnœa due to spasm is intermittent.

Prognosis.—The prognosis is good, as a rule, but fatal cases are on record, the result either of asphyxia or exhaustion. The condition may pass away at once or persist for weeks, the paroxysms recurring frequently.

Treatment is essentially the same as that described under "Laryngeal Spasms of Children," but intubation and tracheotomy are rarely necessary. The remedial treatment of the two conditions is given below.

Therapeutics.

Ars. iod. does excellent service when the child is restless and uneasy, has sore mouth, a disposition to looseness of the bowels, skin easily chafed, and the food often vomited.

Bell.—Even a sip of water induces spasm; larynx painfully dry; cerebral excitation; face red, eyes injected, skin hot and dry; and reflex irritations.

Bromine.—At first the voice is deep and rough; later aphonic. Rasping, whistling breathing, or rattling of mucus in the larynx. Reflex from stomach, teeth, or enlarged thymus gland.

Calc. carb., "doubtless, occupies the most prominent place, and is especially indicated by the early symptoms, such as late teething, broad fontanelles, perspiration about the head, light stools, curdy movements, and restless nights. Should the child be of a scrofulous diathesis, with a tendency to accumulate fat, and yet with the ordinary expression of health, this remedy would be more strongly demanded." (Dr. Sheldon Leavitt, *The Clinique*, September 15, 1890.)

Chlorine seems, according to Dunham, Searle, and Nichol, to be chiefly indicated when expiration is more difficult than inspiration; with overfilled air-cells, livid lips, and unconsciousness.

Chlor. water 3 x and naphthalin act, according to J. P. Cobb, as palliatives. He further finds calc. iod. to give satisfaction where laryngismus stridulus is associated with enlarged glands (*The Clinique*, September 15, 1890).

Cuprum.—General as well as local spasms; clenched thumb, vomiting after the attack (Bæhr); cold perspiration at night (W. S. Searle); or when the spasm is incidental to other diseases; for example, croup or whooping-cough; and inspiration more difficult than expiration (Nichol). Attack produced by fright (C. P. Hart).

Gels. is best used as a palliative in drop doses of the tincture every five minutes until relief is assured; or, it may be used curatively in the 6 x dilution (10 drops in as many teaspoonfuls of water; a teaspoonful every two hours) where there are acute nasal catarrh and laryngeal and tracheal tenderness. Long, crowing inspiration, followed by a sudden, forcible expiration. There is often profuse perspiration with a darkly-flushed face.

Hyos.—Hysterical spasm; severe dyspnœa, worse lying; aphonia; dry, nervous cough.

Ignatia.—If the attack can be traced to hysteria, excitement, or a scolding.

Iodide of lime, calc. carb., and **calc. phos.** are to be carefully considered in those cases where malnutrition, rickets, tabes mesenterica, and similar conditions act as the foundation-stone upon which rest the various phenomena of laryngismus stridulus.

Iodine.—For the acute attacks and in the intervals when there are rickets, scrofula, and enlarged and indurated tonsils, cervical, thymus, and bronchial glands; tendency to marasmus with good appetite. Tightness and constriction about the larynx; hoarseness and soreness.

Ipecac is rarely useful except when the result of asthma [nasal] or catarrh (Bæhr), or when associated with whooping-cough. Face blue and extremities cold.

Lach. is to be used according to its throat symptoms; the sensitiveness to contact, the aggravation on awaking or following sleep, etc.

Sambucus.—"The child suddenly awakened, nearly suffocated; sits up in bed and turns blue; gasps for breath, which it finally gets; the spell passes off; it lies down again in bed, but to be aroused, sooner or later, in the same manner." ("Guernsey's Obstetrics.") "Is able to inhale, but not to exhale; becomes livid in the face." (C. Wesselhœft.) Burning, dry heat of surface during sleep; perspiration while awake.

Compare acon., ars. alb., bell., calc. phos., coral rub., mephitis, plumbum, and verat. alb.

NERVOUS LARYNGEAL COUGH.

Etiology.—This affection is characterized by a spasmodic, paroxysmal, sharp, metallic, and ringing cough. It is caused by various reflexes; nasal, tonsillar, pharyngeal, and thyroid irritation; pharyngeal varix and catarrh; gastric and intestinal derangements; uterine and ovarian disorders; hysteria; chorea; and so-called neurasthenia.

Symptoms.—As a rule, the laryngoscopic picture is normal, cough being the only symptom of any prominence. This phenomenon makes its appearance in paroxysms of two, three, or more coughs; or the attack may last for many minutes, or even hours, with little cessation, terminating only with the utter exhaustion of the individual, who often falls asleep directly after. The cough may occur at night only, and keep the patient awake for a long time. It is observed in persons of both sexes and of all ages, but is more frequent in hysterical females, and is very rare before the eighth year. The periods of puberty and the menopause furnish many examples.

Prognosis.—The prognosis is good, but a cure is often very difficult, as the cough may persist for many months or even years, disappearing for a time and again returning. It sometimes creates intense laryngeal spasm, and, in one case recorded by Mackenzie, it was necessary to resort to tracheotomy.

Treatment.—The treatment of nervous laryngeal cough depends upon the presumed cause. The various nasal reflexes should be tested, the nasal passages thoroughly searched for polypi, and the general condition carefully noted,—all of which, if possible, should be corrected. At times it is found advisable to use tonics, but in all cases careful search should be made for the similimum.

Of the internal remedies, dros., hyos., and mag. phos. are most frequently useful. A solution of chloride of zinc (gr. x) and glycerin (℥j) is often efficient when applied to the nasopharynx. An ocean voyage is a universal palliative. There are many points of resemblance between pertussis and nervous laryngeal cough, which need scarcely be considered here.

REMEDIES FOR THE VOCAL DEFECTS OF SINGERS.

Antim. crud.—Loss of voice when overheated by exertion (fatigue), but returning with rest.

Argent. met.—"Alteration in the timbre of voice of singers, speakers, and preachers, with feeling of constriction and rawness in the larynx." (Lilienthal.)

Arn.—Hoarseness from fatiguing use of the voice. "Hoarseness of preachers and military officers, from long preaching and commanding; also of conductors from calling out the railway stations." (Hering.)

Arum tri.—Hoarseness from overuse or abuse of the voice, especially from speaking in a high key; lack of control over the vocal bands; the pitch suddenly changes. In attempting loud speech the voice ends in a squeak. The late Dr. Lippe recommended arum tri. for opera-singers who are hoarse and who must sing within four or five hours.

Caust.—Hoarseness or aphonia from singing or public speaking. This acts as a toner of the vocal muscles when given a few hours before singing or public speaking.

Coca.—As an instantaneous toner-up (fer. phos. and populus can.), to be given in 5-drop doses of the tincture or of the Mariani wine a half-hour before singing or speaking.

Fer. phos.—Painful hoarseness from overuse, or, more especially, abuse or strain in speaking or singing (arn.).

Gels.—Hoarseness and aphonia from paresis of laryngeal muscles; cannot produce a loud tone (caust.).

Graph.—Very similar to arum tri. "It is an excellent remedy to give singers when they cannot control their vocal cords; when they get hoarse as soon as they begin to sing and the voice cracks." (Farrington.)

Hepar.—Overuse or strain produces hoarseness or aphonia and resultant laryngeal pain, soreness, congestion, and inflammation. This remedy often restores the lost timbre.

Kali phos.—Fatigue and hoarseness from overuse or abuse of the voice, particularly in debilitated and rheumatic patients (arum tri. and rhus tox.).

Populus can.—Acute hoarseness preventing song; pharynx and larynx feel dry. The voice is weak, toneless.

Rhus tox.—Tired, aching in larynx, with hoarseness or aphonia from prolonged or severe use of the voice; also, more hoarse after long rest, especially on waking; better after short use.

Selenium.—The voice becomes hoarse as soon as singing or speaking begins; expectoration of transparent mucus from the larynx in the morning. "Very valuable for the hoarseness of singers, especially when it is frequently necessary to clear the throat of clear, starchy mucus (compare stann.)." (T. F. Allen.)

Senega.—Sudden aphonia from vocalizing; throat very dry; feels like a feather, or as though it had been pricked, which induces a single dry cough and often causes momentary lachrymation (clinical).

CHAPTER XXIX.

Inflammatory Affections.

SUBACUTE LARYNGITIS.

Subacute laryngitis, as here considered, is an affection in which the mucous membrane alone is involved; the underlying structures not being affected, as in acute laryngitis.

Etiology.—The chief causes of subacute laryngitis are chilling; rapid surface-evaporation; exposure to draughts of air, either warm or cold, especially when the body is overheated; a damp, chilly, or a dry, cold, dust-laden atmosphere; chemical fumes; tobacco-smoke; lack of fresh air and exercise; alcoholism; gastric derangements; overuse, abuse, or misuse of the voice, including singing in the open air; damp feet and clothing; and muffling the neck. Previous attacks often predispose to subsequent inflammation, and the presence of chronic catarrh of the nose, pharynx, or larynx may, upon a slight exposure, determine a subacute laryngitis. A weakened vitality, either as the result of disease, loss of sleep, or hunger, predisposes the patient to an attack. It is more frequent in males than females, and in adults than children, in whom it often declares itself in the form of false croup. The changeable weather of autumn and spring is more pernicious than the more uniform seasons of winter and summer. The various exanthemata, more especially measles, scarlatina, chicken-pox, variola, and typhoid and typhus fevers act as predisposing and exciting causes; it must be remembered, however, that all of these, save measles, may give rise to a laryngeal affection much more severe than a subacute catarrh. Finally, traumatic causes (inhalation of flame, steam, scalding water, etc.) may induce subacute laryngitis.

Pathology.—Hyperæmia is the first morbid alteration, and, if at all marked, may lead to swelling and secretion. The entire mucous lining is not usually hyperæmic; so that it is more pronounced in one part than another. On this account, some authors have described the inflammation as a disease of the especial portion involved. The vocal bands are not usually uniformly congested, or may escape entirely; they may remain unaffected after other portions of the laryngeal structure are involved, or suffer to the exclusion of other regions. There is rarely any swelling of the tissues, although the mucosa may appear puffy and the sharper outlines a little blurred. It is not rare to find a slight abrasion of the epithelium, which is some-

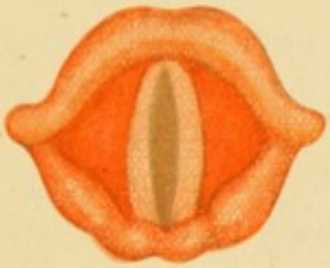


FIG. 111.—SUBACUTE LARYNGITIS.

times called an ulcer, but it is doubtful if a true catarrhal ulcer is ever found. Stoerk has described and pictured a vertical fissure of the inter-arytenoid space, but few others have been able to discover such a change. One case which I saw at Professor Stoerk's clinic, in Vienna, resembled a folding of the mucous membrane, as frequently seen, and which almost disappeared during deep inspiration.

Symptoms.—The symptom which usually first attracts attention is a sensation of dryness, tickling, or burning; soon a deep, weak, or shrill voice develops, accompanied, perhaps, by a dry cough and aphonia. At first there is no secretion, but later a glairy mucous discharge, which, becoming more profuse, is laden with broken-down epithelium. Respiration is not

interfered with, unless reflex spasm occur or the secretions dry in such a position as to encroach upon the glottic space. A slight paralysis will occasionally be seen, chiefly of the thyro-arytenoid muscles. As a result, the bands are bowed, leaving an elliptical space; but there may be paralysis of the arytenoideus and slight separation posteriorly, while a combination of these forms is not unusual. A slight catarrhal thickening of the mucous membrane in the inter-arytenoid region may interfere with the voice by preventing complete closure of the cartilaginous glottis. Irritation of the superior laryngeal nerve may give rise to aphonia, but, as a rule, this is due to congestion of the vocal bands or inter-arytenoid commissure. Subacute laryngitis of children often occasions spasmodic attacks (false or spasmodic croup). The child is suddenly aroused from sleep with cough and difficult inspiration; these soon subside, and he sleeps again, perhaps until morning, or it may be only for a short time, when he is again aroused.

Prognosis.—If the treatment be at all prompt and careful, it is unusual for a case to do otherwise than well. On the other hand, if not seen early or not properly cared for, the condition may relapse, giving the sufferer much annoyance. Repeated attacks are apt to end in chronic catarrh.

Treatment.—In the treatment of this disease the patient should be advised to speak but little and in a whisper. It is better that he remain indoors and in one room, the temperature of which should be kept as near 70° F. as possible. The atmosphere should be moistened as suggested under diphtheria. Although many persons recover promptly, even when obliged to continue their vocation, there is risk of incomplete cure and of relapse. Fer. phos. is one of the best remedies for the early symptoms and for acute exacerbations, while acon. often serves a very good purpose in cutting short the attack; but, if well established when first seen, some of the following remedies will be found to promptly cure most cases:—

Therapeutics.

Acon.—In the beginning, particularly in children; fever; chilly; dry skin; hoarseness; expectoration, if there be any, is slight, thin, and frothy. Is awakened at night with croupy cough, pain in the larynx, and anxiety (compare fer. phos.).

Bell.—Vocal bands bright-red; fullness, dryness, constriction, and soreness in the larynx; attempted vocalization painful; voice husky, hoarse, or aphonic; respiration hindered at times, or whistling and oppressed.

Bromine.—Croupy cough; husky, hoarse voice; raw, scraped feeling in the larynx.

Calc. iod.—"General hyperæmia involving the vocal cords." (Leal.)

Fer. phos. is usually the first remedy of which I think, and, if given early, it is often the only one required. It seems to control the inflammatory condition and hold in check the further progress of the disease. Dr. H. C. Houghton (*Trans. Hom. Med. Soc. State of N. Y.*, 1886) says: "It enables singers to control the voice in its entire compass, by holding a disc in the mouth for a few minutes previous to any unusual effort, when suffering from hoarseness." I have frequently verified this statement, and have seen similar results follow the use of populus can., one of the greatest of temporary voice-toners.

Guaiac.—"When, in laryngitis and laryngeal irritation without other indications, the bands are boggy, there is loss of tone and lustre, I use, with confidence, the tincture of guaiac. internally and the ammoniated tincture, 1 drachm to 1 ounce of water, as a spray, first suggested to me by Prof. Chas. M. Thomas." (Dr. Wm. R. King.)

Hepar.—Especially in children, after exposure to dry, cold winds, for croupy cough and hoarseness; throws the head back, worse in the morning; very sensitive to the slightest draught.

Nux vom.—The catarrhal attack begins in the pharynx, soon followed by slight fullness and tickling in the larynx; the

patient swallows frequently to prevent cough. The vocal bands are not congested at this stage, but have a dull, lustreless appearance, which, if not checked by a few doses of nux vom., soon show redness (clinical only). Indigestion and constipation play no small part in the etiology of such an attack.

Phos.—Constant, tickling cough; slight hoarseness, or even aphonia; pain and roughness in the larynx, aggravated by cough, which results from speaking, laughing, eating, or drinking. Vocal bands congested, thick, heavy-looking.

Spongia.—Burning and stinging in the pharynx and larynx; sensation of a plug in the larynx, which is sensitive to touch. Cough, hoarseness, dyspnœa, spasm.

ALCOHOLIC LARYNGITIS.

This is either a subacute or a chronic affection, and can usually be traced directly to the habit of "moderate drinking." I quote from Mr. Lennox Browne, "Voice Use and Stimulants:" "We find that, in a certain definite proportion of singers and actors, whose habits are known to us to be lax with regard to alcohol, there is a constant disposition to congestion of the mucous membrane and to more or less acute inflammation, which often extends down the windpipe to the bronchial tubes, and gives rise to a constant hoarseness or huskiness in the speaking voice, not always perceptible in early stages in the singing voice; later, we see chronic inflammation and thickening of the tissues, especially of the lid [epiglottis], as recorded by Gottstein and by myself. And in a few advanced cases I have observed a nodular condition indicative of intrinsic degeneration of the vocal ligaments themselves. These last structures are often seen to act tremulously and uncertainly as the patient phonates with the mirror in position, and the same symptom is observed in their singing in the ordinary way. I have also witnessed examples of complete loss of voice (aphonia), as reported by Dr. Morgan, due to paralysis of the vocal muscles, without previous congestion or inflammation. In such cases the

alcohol has acted on the nerves and muscles of the larynx as a direct poison, producing a palsy precisely similar in character to that of lead, arsenic, phosphorus, or other toxic agents."

There is a congestion of the soft palate and uvula, of a brick-dust color, with a rather dry, slightly wrinkled appearance.

The treatment is to reduce the quantity of stimulants, after which little is usually needed. (Compare "Chronic Laryngitis.")

ACUTE (SUBMUCOUS) LARYNGITIS.

This affection differs from subacute laryngitis, in that it involves the deeper structures of the larynx (including submucous tissue and muscles) in a severe inflammation, which results in a serous or bloody infiltration of the tissues, with encroachment upon the laryngeal cavity.

Etiology.—The etiology is similar to that of the milder type of inflammation. Traumatic laryngitis more frequently assumes the acute than the subacute form.

Symptoms.—The objective symptoms are very characteristic, but the subjective are often misleading; thus, it is sometimes very difficult to make an accurate diagnosis without the aid of the mirror. Usually the first indication is chilliness and a sensation of tickling, dryness, or rawness in the larynx; this is soon followed by a sense of fullness. A harsh cough is early an annoying condition; the voice becomes husky, and is soon lost. Although great effort is made, no mucus is expelled; impairment of the respiratory function soon follows, and deglutition becomes painful and difficult, or almost impossible. Pressure over the larynx is often painful, especially in children; and compression, even though slight, increases or even induces difficult respiration. Pain is a prominent symptom, and is aggravated by cough, deglutition, speech, and sometimes by breathing. The chilly sensation is speedily replaced by a temperature of 102° to 104° F. If dyspnœa increase, the patient will be bathed in a cold perspiration; he will struggle for breath, and the chest and throat-muscles will be thrown into

violent action. If improvement occur at this stage dyspnœa will decrease, expectoration increase and be thick and glairy, the temperature fall, the pulse-beats decrease, and resolution occur. On the other hand, if not soon relieved, dyspnœa increases, the anxiety grows more intense, the perspiration more clammy, and the cyanotic stage precedes suffocation or coma. The patient succumbs either as the result of blood deterioration or asphyxia.

A finger passed into the throat, in the absence of a throat-mirror, may detect an infiltration of the mucous lining and swelling and bogginess of the epiglottis. These parts, however, are often unaffected. In no case should the finger be used if the mirror can be employed, as the former serves to temporarily



FIG. 112.—ACUTE (SUBMUCOUS) LARYNGITIS.

increase the difficulty of respiration, and is always very annoying to the patient. The laryngoscopic mirror will disclose the exact condition. In the early stage the entire interior of the larynx will be found evenly congested, some of the parts swelled and œdematous, and the vocal bands pink or even deep-red. If the condition be well advanced, the swelling and œdema may be so great as to mask the normal shape of the parts, or the ventricular bands so enlarged as to obscure the vocal bands. The epiglottis may resemble a turban, in shape, and the arytenoid cartilages be so infiltrated as to look like two bags of fluid; they are not pale, however, as in œdema. In the severer cases the glottic opening will be reduced to a mere slit, or even obliterated. Milder cases present a modified picture of the preceding.

Diagnosis.—The diagnosis can only be made with certainty by the aid of the laryngeal mirror; hence, in very young children it may be impossible to distinguish the affection. It may be differentiated from membranous laryngitis by the absence of a pseudomembrane, and from acute œdema of the larynx by the presence of acute inflammation of that organ. The history will serve to separate acute laryngitis from spasm, abscess, or neoplasm.

Prognosis.—The prognosis is grave, unless promptly and judiciously treated. Fortunately, the disease is rare, as it sometimes proves fatal in less than twenty-four hours.

Treatment.—The treatment must be prompt and decisive. The patient is to be kept in bed, and attempts at speaking

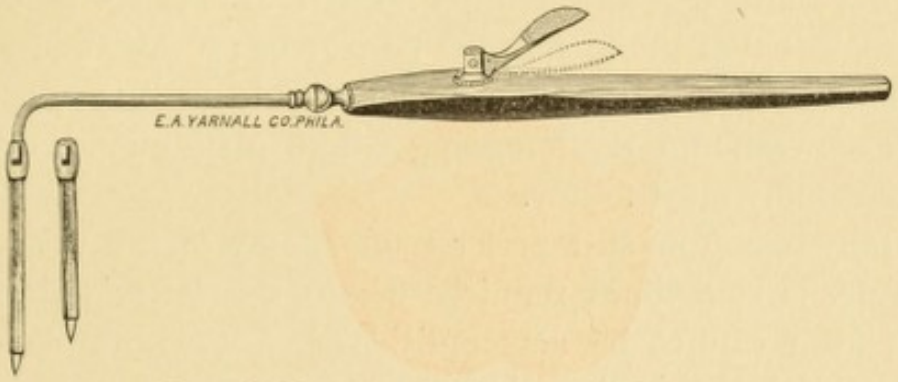


FIG. 113.—MACKENZIE'S LARYNGEAL BISTOURY.

prohibited; the temperature of the room should be from 70° to 75° F.; air should be admitted, but no draughts allowed to blow over the bed, and the atmosphere kept constantly moistened with steam or an atomized fluid (see "Diphtheria of the Pharynx and Larynx"). Locally, some means should be employed that will serve to reduce the infiltration. For this purpose tannic acid may be used as an inhalation of tannin-impregnated steam; but menthol, eucalyptus globulus, or lime-water may be used in the same way, and to better advantage. Where deglutition is very painful and difficult a 4-per-cent cocaine or menthol spray is often advisable, and if applied directly to the infiltrated tissue will reduce it temporarily. The external application of hot poultices or hot flannels may alleviate suffering. When the

preceding measures fail to give prompt relief to the respiratory difficulty, the physician should resort at once to scarification, intubation, or tracheotomy. As scarification is attended by the least after-care, it may be tried first. For this purpose a guarded laryngeal bistoury is carried, by the aid of a laryngoscope, directly to the affected area, and plunged into the overlying membrane. In its absence, a curved knife-blade should be wrapped with string or plaster to within a short distance of its point, so that the cutting edge cannot harm the base of the tongue. If a laryngeal mirror be wanting, the index finger, acting as a guide, is to be carefully passed to the œdematous region, if it can be reached. If there be no other means at hand, the sharpened and pointed finger-nail may be used. It is not sufficient that the membrane be pierced; a rather free opening should be made, that the accumulated contents can find a ready exit. Should the foregoing fail to give relief, intubation or tracheotomy must follow.

Many operators still prefer tracheotomy to intubation, and the former is sometimes required where the latter fails, or for some reason cannot be accomplished (see "Diphtheria of the Pharynx and Larynx"). Although tracheotomy, like intubation, is not always successful, it nearly always gives the desired relief to the dyspnœa, which permits the application of remedies under greatly improved conditions. The tracheal opening should be low, that the cannula may reach below the infiltration.

After the patient is convalescent, great care should be exercised that a relapse does not occur from draughts or early exposure to damp or night air. A chronic larygitis may result or the condition prove a stepping-stone to a tubercular affection. The prophylactic treatment depends much upon the habits of the individual; if he be too sedentary or too careful of exposure, this should be gradually regulated and he should be systematically accustomed to endure greater atmospheric changes. Too great exposure and voice abuse should be corrected.

Therapeutics.

Apis.—Especially if there be constriction of the pharynx with œdema of the uvula and half-arches, giving rise to the sensation of a foreign body. Hoarseness or aphonia; difficult or almost impossible breathing; or feeling of suffocation.

Crotalus.—Acute laryngitis from scalds, stings of insects, etc.

Fer. phos.—The laryngeal lining is red, œdematous, and painful, almost from the beginning of the attack.

Sang. can.—Aphonia, with a sensation of swelling or even of suffocation. Dry, burning in the throat.

Compare "Subacute Laryngitis" and "Œdema of the Larynx."

CHRONIC CATARRHAL LARYNGITIS.

Etiology.—Post-nasal catarrh is the chief factor in the production of chronic laryngitis, the inflammatory condition extending to the vocal organ either by continuity of tissue or as a result of the entrance of the discharges from the naso-pharynx. The next most important cause lies in the improper use of the voice in speaking or singing; follicular pharyngitis established, the larynx is soon invaded by the catarrhal process. Too free use of the voice during convalescence from acute or subacute laryngitis or measles, use of the voice when in poor health, during menstruation, in boys during the "change of voice," and overuse in public speaking are sometimes responsible for the affection. Further causes are: incomplete recovery from acute or subacute catarrh, a depressed or weakened general system, muffling the neck, speaking or singing in the cold or damp air (especially after the use of the voice in-doors), drinking cold water during or after voice use, inhaling irritating chemicals, dust, fumes, filings, grindings, repeatedly clearing the throat, and relaxed uvula; but, most important, habitual mouth-breathing. The gouty and rheumatic diatheses and interference with the portal circulation are possible excitants.

I dare not pass this part of the subject without referring to

the pernicious habits of tobacco-smoking and alcoholic imbibition. With tobacco, it is not always the one using it who alone suffers, for sometimes those confined in an atmosphere vitiated by its fumes sustain the most harm. The influence of alcohol upon the voice has been noted under "Alcoholic Laryngitis."

Pathology.—Pathologically there is often an hypertrophy of the mucous membrane, with increased and perverted secretion; when this hypertrophy is considerable, and implicates the ventricular bands, these structures may completely hide the entrances to the ventricles of Morgagni, or even overhang, rest upon, or hide the vocal ligaments. The ventricular outlets are often slightly purplish, indicating a catarrhal condition. In the inter-arytenoid region the mucous membrane is often so thickened as to be thrown into vertical folds, as the vocal processes are rotated toward the median line. In some cases the glands are so implicated as to give rise to follicular laryngitis, somewhat similar to the condition found in the pharynx. Such a state is often accorded the special title: "follicular," or "glandular," laryngitis. This may lead to a tuberculosis of the organ.

Abrasions of the mucous membrane (erosions) sometimes occur upon the vocal bands and inter-arytenoid surface, but true catarrhal ulcers are not found. As a result of the general catarrhal process or of the erosions, polypi and papillomata may occur. The presence of abrasions, glandular enlargements, and swellings is sufficient to cause a careful thoracic examination. Vicarious hæmorrhages sometimes result in pregnant women, or shortly after confinement, and in those who menstruate vicariously. As a rule, it will be noticed that the mucous membrane is thickened, congested, and undergoes other catarrhal changes, as a result of the various causes enumerated, until the condition becomes a chronic pathological alteration in the tissues.

Symptoms.—Hoarseness is not constant in the milder cases, the voice being frequently good during summer and

winter; but the symptom usually returns with the changeable spring and autumn weather. In the worst cases there may be constant hoarseness or even aphonia, the vocal defect often being exaggerated in the morning directly after rising and in the evening after dusk. Although frequently hoarse, when beginning to speak, the voice, after a short time, may become clear, to again deteriorate from dislodgment of mucus, muscular fatigue, spasm, or congestion due to faulty vocalization. Fatigue, either mental or physical, may increase the hoarseness; but eating often temporarily improves speech. The singing voice may be husky, hoarse, or lost, depending upon the condition present; the tones are often temporarily stopped by the partial dislodgment of pieces of mucus, which drop between the bands, preventing their close coaptation.

Expectoration is usually slight, but occasionally quite profuse. It may be thin or thick, lumpy or ropy, and easily dislodged or tenacious; in the latter instance it is attended with much coughing and clearing,—two pernicious habits, as they lead to an increase in the congestion. The color of the discharge may be white, yellow, green, brown, or a gradation of these; but it is rarely bloody. When strings or bands of mucus are found stretching across the open glottis from one band to the other, a diagnosis of chronic laryngitis may be made without further search.

Sometimes the secretions dry very rapidly and become discolored, thus constituting a true laryngitis sicca. The crusts usually form about the rima glottidis and cause aphonia, cough, sensation of a foreign body, and occasionally difficult respiration. On the other hand, the chief symptom may consist of a profuse discharge (laryngorrhœa), especially marked during vocalization. Acute pain is not complained of in chronic laryngitis, but there is usually a dryness, burning, or tickling in the larynx, and a sense of fullness or constriction in the laryngeal region. Systemic disturbance or difficulty of respiration is rare in uncomplicated cases, though associated nasal and bronchial asthma are not

infrequent. Cough is usually simply sufficient to dislodge the mucus, unless the trachea or deeper parts be also involved. Difficulty is occasionally found in the production of certain tones, as a rule the higher notes of the compass; this is usually due to a slight catarrhal change, but occasionally, no doubt, to faulty methods of voice production, with their resultant muscular strain and fatigue.

The laryngoscopic appearances are quite characteristic. While the entire laryngeal lining may be congested, only small areas, as a rule, are so altered; thus, one or both bands or portions thereof may be slightly reddened. These ligaments are occasionally uniformly discolored, a dirty or ashy hue obtaining. The capillary vessels of the epiglottis are sometimes slightly dilated and the cartilaginous mucous covering thickened, especially as the result of alcoholic abuse. The folding of the inter-arytenoid mucous membrane may prevent the complete coaptation of the posterior ends of the bands, which, added to their congestion and the presence of mucus, may give rise to the altered voice. In many cases, however, there probably is also a slight rheumatism of the vocal muscles.

Prognosis.—It is safe to say that in uncomplicated cases there is no danger to life, but chronic laryngeal catarrh may lead to phthisis or extend to the deeper parts, just as a post-nasal catarrh may lead to laryngeal complications. A chronic catarrh of the larynx, furthermore, is very difficult to cure, but, if the exciting cause be removed before great mischief has been done, a majority of the cases will recover; if, on the other hand, there be much thickening of the mucosa, the cure is doubtful, or, if accomplished, the next catarrhal attack may cause a relapse.

Treatment.—In the treatment of every case two points are to be carefully questioned, namely: 1. Is there a nasal catarrh? 2. Is there a false method of vocalizing? If the cause be nasal catarrh, no attempt need be made to correct the laryngeal trouble without, at the same time, treating the nose; otherwise

failure will generally result. If false vocalizing methods be the cause, the physician should be aided in his work by a competent vocal teacher. The following rules, if put into practice, will generally result in decided relief: 1. Sing or speak as little as possible when hoarse. 2. Always pitch the voice low in conversation. 3. Always sing with as little exertion as possible. 4. Never sing higher than the easy compass of the voice, as nothing will be gained and much harm may result. 5. Avoid straining the muscles of the pharynx in speaking or singing. 6. Always breathe through the nose.

Internal medication will often cure, but it is not always possible to attain this end speedily without the use of adjuvants; of these, oily sprays of eucalyptol, iodine, or hydrastin, each 5 per cent, are efficient. Usually, it is not well to introduce aqueous solutions unless effectual and speedy cleansing be desired, as such fluids are apt to flood the larynx and set up reflex spasm, or to pass into the deeper parts and give rise to acute inflammation. It is often advisable to medicate glycerin or petroleum products with the lower preparations of the remedy used internally. Vapors and nebulæ are of undoubted utility; but steam inhalations are of questionable value, as they may occasion extra irritation, relaxation, or even inflammation, especially if the inhalations be used very hot and the patient go into the open air soon afterward.

Mild astringents (chloride of zinc, tannic acid, or gallic acid, each 5 grains to the ounce of glycerin) are indicated, especially where the mucous membrane is sluggish; these remedies may be used as sprays or on a cotton-covered laryngeal probe. In making the applications a small piece of absorbent cotton is carefully wound around the roughened end of a laryngeal probe and dipped into the solution; any superabundant liquid should be squeezed out against the inside of the neck of the bottle. A laryngeal mirror is to be held in the left hand and, with the right, the medicated probe passed into the larynx, aided by the reflection in the laryngeal mirror. Care must be exercised not

to touch the tongue, palate, fauces, or epiglottis, lest retching or spasm be excited. With the swab directly above the epiglottis, ask the patient to sound ā, and, when the cartilage is raised, quickly but gently elevate the hand, carry the cotton into the larynx, and draw it lightly along the bands before removing it. Some spasm will follow, but quickly subsides; should it cause much annoyance, gently slap the patient, in the interscapular region, with the palm of the hand; this is an exceedingly rare necessity, and one which will scarcely arise if care be exercised with the first application. The use of the laryngeal brush is not advisable, as it is less efficient than cotton or sponge, and its hard frame is apt to bruise the delicate membrane. The oily sprays recommended in "Chronic Pharyngitis" are usually better than the preceding, unless it be desired to

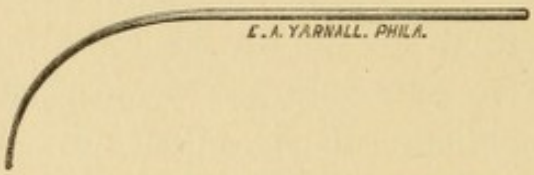


Fig. 114.—Laryngeal Applicator to be Attached to a Universal Laryngoscopic Handle.

remove mucus. If there be thickening of the laryngeal lining, iodine gr. x to glycerin ʒj is best. If hoarseness remain after the inflammation has been overcome, electricity and vocal exercise will go far to restore the lost tone.

The patient who suffers from chronic laryngitis is nearly always advised not to use the voice for singing, or even for loud speaking, and silence is often enjoined for weeks or months. This does not accord with my own experience, and, unless very severe hoarseness exist or the patient speak improperly, he should be requested to use moderate tones, and to sing gently and well within easy vocal compass; in no instance is he to transgress this, which is often but about one octave in persons affected with chronic laryngitis. The patient should never attempt conversation in a noisy or dusty place, and nasal respiration must be rigorously enforced. If there be a decided

hæmorrhagic tendency, an acute exacerbation of the chronic affection, or if the use of the voice cause fatigue, rest is to be insisted upon. As a preventive measure, the morning, cold, salt-water bath to the neck and chest, if followed by brisk rubbings, takes precedence on account of its invigorating influence, its aid to circulation, and its tendency to prevent "cold-catching." All such pernicious habits as smoking, tippling, and loud talking and screaming in the open air are to be interdicted. Dusty or otherwise irritating occupations should be avoided if possible, else some form of respirator should be worn.

For some persons a change of climate will be necessary. Care should be exercised that such a change be to a region which is rather dry and with few sudden fluctuations in the temperature.

Therapeutics.

Ammon. caust.—Catarrhal and paretic aphonia; general muscular weakness; burning, rawness in pharynx and larynx.

Argent. met.—Expulsion of lumps of clear mucus resembling boiled starch.

Argent. nit.—"Inflammation and swelling of the posterior wall and lining of the larynx, attended by a sensation of a clog in the vocal organ, with hoarseness or loss of voice, continual and vain efforts to swallow, with pain and soreness in deglutition, much hawking, considerable muco-purulent expectoration or titillation in the larynx, with dry, spasmodic cough." (Meyhoffer.)

Ars.—Laryngeal lining dirty-red or anæmic, puffy; with bluish-red patches; burning in the larynx; voice husky, toneless; fatigue from speaking; abrasion or superficial ulceration of follicular origin; follicles enlarged and exude a gray mucus.

Calc. carb.—Very weak voice; dilated veins on the soft palate and pharynx, giving rise to a bluish tinge. Cold hands and feet. Raw feeling in the larynx, with thick, jelly-like, or tough discharge from the larynx and naso-pharynx.

Carbo veg.—Chronic laryngitis of elderly persons or those who are poorly nourished. "This drug is principally indicated

by a considerable hoarseness with dryness of the larynx, without pain; this increases, at night, to aphonia. This loss of voice, without remission, is comparable with that produced by paralysis of the vocal bands, and is a sure indication for the remedy. Talking is not accompanied by pain in the larynx, but cough, when present, occasions burning pain." (P. Jousset.) Lining of the larynx, especially of the ventricular bands, ashy, purplish; vocal bands appear thick. Hoarseness or aphonia; moderate, easy, lumpy expectoration. Venous capillary dilatation of the pharynx and larynx. "Considerable swelling of the vocal ligaments; the lining of the larynx, and particularly of the ventricular bands, of a dingy, purplish tint." (Meyhoffer.) Indurated and tender glands. The condition is often caused by a warm, moist atmosphere.

Caust.—Great fatigue from talking; voice reduced to a whisper; larynx feels tired and sore; cough produces pain. When attempting to sound a high tone, the voice gives out or ends in a squeak. Lack of co-ordination (co-operation) of the vocal bands; a frequent symptom after the subsidence of acute or subacute catarrh. Hoarseness of singers, worse in the mornings, and in dry, cold weather. Mucous lining anæmic; vocal bands gray or dingy in appearance, and are seen to come in contact, but separate before a tone is produced, the muscles being so weak that the expiratory current forces the ligaments asunder. Here causticum is the true "toner-up." For paretic hoarseness or a hoarseness without visible laryngeal change no remedy is comparable to caust., 12 x to 30 x. Dr. W. W. Van Baun says (*Hahnemannian Monthly*, February, 1891): "There are rawness and soreness down the throat and trachea, with an unsatisfactory cough. Loud and painful as it may be, it is not sufficient to bring up the phlegm that is apparently lodged somewhere in the respiratory tract."

Hepar.—Especially when the catarrh is aggravated by overuse or strain of the vocal apparatus; difficult expulsion of scanty, tenacious, muco-purulent secretion; larynx sore and

painful during cough or speech; hoarseness or aphonia; larynx feels dry and is sensitive to cold air. Follicular pharyngitis and laryngitis; laryngeal catarrh grafted on a tuberculous constitution. "This remedy," says Dr. J. S. Mitchell (Arndt's "System of Med."), "has done so much for me that I consider it the most effective of all remedies. Its use in cases occurring in professional singers has been attended with such success that I do not hesitate, on taking the case, to express the belief that not only the laryngeal inflammation will be relieved, but that a manifest improvement will be apparent in the quality of the voice."

Iodine.—Hoarseness, soreness, constriction, aching in the larynx; one spot is painful to pressure, with spasmodic cough, followed by the expulsion of scanty, sticky, lumpy mucus; follicular enlargements; perhaps ulceration. Constriction about the larynx and trachea. One of the strong indications for the drug is that, although the patient eats heartily, he grows thinner.

Kali bi.—Varicose veins in larynx; vocal bands and post-laryngeal wall puffy; larynx feels dry; voice rough and hollow; scanty, stringy expectoration, which can sometimes be seen stretching across the glottis from band to band. I have rarely seen failure from kali bi. when this last (clinical) symptom was present. In addition to the 12 x internally, I usually employ a 3-per-cent spray of the crude remedy. The late Dr. Jno. Meyhoffer, of Nice ("Chronic Diseases of the Organs of Respiration," vol. i), gave the following: "The ary-epiglottic ligaments, the ventricular bands, and lining of the posterior part of the larynx dark-red, puffy, and partly covered with a grayish mucus; the vocal cords slightly injected, and some varicose veins in the pharynx."

Kali iod.—"It gives good results in pain, contraction, and heat in the larynx; in morning, hoarseness; intolerable tickling in the larynx, with dry, teasing cough, etc. It has a special relation to cases depending on syphilis, scrofula, and rheumatism." (Dr. George Moore.) The arytenoids are purplish. Follicular ulceration; voice hoarse and inaudible above the middle of the compass.

Manganese is very efficacious "in laryngeal catarrh, in weak, anæmic individuals, or in such as exhibit tubercular deposits in the lungs, with voice hoarse in the morning, but becoming gradually clear after the expulsion of lumps of consistent mucus; moderate, partial injection of the ventricular bands and venous dilatation in the throat and pharynx. We use the first and second potencies." (Meyhoffer.)

Merc. sol.—Hoarseness in strumous or hereditarily syphilitic patients; mucous lining swelled and livid in color (merc. iod.).

Phos.—Larynx feels sore and dry; inspired air gives to the parts a sensation of rawness; cough hoarse; expectoration scanty; hoarseness or aphonia worse in the evening; voice tires easily. The vocal bands are usually highly injected or a dirty yellow; abrasions are occasional complications; the arytenoid and inter-arytenoid and soft tissues dark-red and swelled or thickened.

Selen.—Hoarseness from long speaking or singing; frequently clears the throat on account of colorless, starchy mucus. Chronic follicular enlargements, both in the pharynx and larynx, especially in tuberculous patients, or even in the early stage of laryngeal phthisis.

Sulph.—As recommended by Hahnemann, when chronic laryngitis follows suppression of superficial eruptions. The symptoms calling for this remedy are: voice hoarse ,rough, deep, or aphonic; worse in the morning; talking fatigues. After failure of caust.

Congestion of the laryngeal lining, either as a cause or a result of hysterical (?) clonic spasm of some of the vocal muscles, is met by hepar, ignatia, kali brom., lach., phos., and sepia. (Compare "Remedies for the Vocal Defects of Singers.")

CHAPTER XXX.

Hypertrophy, Atrophy, Œdema.

SUBGLOTTIC CHRONIC LARYNGITIS.

This is an exceedingly rare form of laryngitis, especially in this country. It is a localized inflammation and hyperplasia, catarrhal in origin. It appears as a dull, pink, or dusky swelling of the under surface of the vocal bands, apparently a projection of the vocal (internal thyro-arytenoid) muscle. Gerhardt named it "chorditis inferior hypertrophica." It gives rise to hoarseness or aphonia, and may even cause severe dyspnœa, requiring intubation or tracheotomy. If a tube be inserted, it should be left in position until irritation necessitates its removal; the constant pressure exerted usually serves to reduce the hyperplasia. The repeated introduction of the tube may be necessitated. If tracheotomy be performed, the case is to be treated mechanically, as recommended under "Stenosis of the Larynx." The remedies indicated are ferrum iod., iodine, kali mur., and spongia.

CHRONIC HYPERTROPHY OF THE LARYNX—CHRONIC SUBMUCOUS LARYNGITIS.

Etiology.—Although a rather frequent form of laryngitis in Europe, this country furnishes few examples. Chronic catarrhal laryngitis is its most frequent cause; acute affections rarely induce it, and it is sometimes the result of laryngeal perichondritis. Typhoid fever is the only one of the more general acute conditions giving rise to it. Syphilis, scrofula, and phthisis may produce it. Alcoholic beverages and gout are active causes of hypertrophy of the epiglottis. As a rule, the subglottic portion of the larynx participates to the greatest degree, and often solely, although other portions may be hypertrophied. The new structure often becomes so hard that it is difficult to cut it with a knife.

Symptoms.—If the epiglottis alone be thickened, the sensation is that of a foreign body, with dragging in the pharynx as though the base of the tongue were too heavy. If there be a general hyperplasia of the mucous and submucous tissues, hoarseness, aphonia, or dyspnœa will exist, according to the degree and situation of the thickening.

The vocal bands are frequently hypertrophied and their edges rounded. The ventricular bands may be so enlarged as to obstruct the openings to the laryngeal sinuses, overhang and rest upon the vocal bands; thus hiding the latter and preventing their vibration. When the epiglottis is involved, it is thick, sluggish in action, and often projects over the laryngeal opening.

The lining of the larynx is deep-red, often with an appearance of tension of the dry and glazed mucous membrane; the vocal bands occasionally present a very deceptive appearance, due to the longitudinal, irregular thickening, so that they seem to be split along their edges as though there were two in close contact, one above the other. The position of the vocal bands, when immobile from muscular involvement or mechanical hindrance, is in the median line, thus interfering with respiration and augmenting the already noisy, stridulous breathing.

So-called chorditis tuberosa might be considered with this affection, as they are often associated, although I have preferred to class it among tumors.

Prognosis.—The prognosis of the general disease is grave if the hypertrophy be at all marked, for, even though the amount of permanent dyspnœa be moderate, the accumulation of mucus during sleep may be sufficient, when added to the subsequent spasm, to produce death in a few moments. According to Schrötter, spontaneous resolution may take place. It is possible, as a rule, to reduce a moderate hypertrophy of the hypoglottic portions of the larynx.

Treatment. — The galvano-cautery may be used very cautiously for the graver conditions, but the vocal bands and muscles must be avoided. If dyspnœa be increasingly severe,

intubation had better be performed, but Schrötter's hard-rubber tubes may be employed (see "Stenosis of the Larynx"). If the condition grow worse in defiance of this treatment, the trachea should be opened and the larynx subsequently dilated.

The remedies best suited to the condition are argent. nit., fer. iod., iodine, kali iod., merc. iod. ruber, nitrate of sang., rhus tox., and thuja. If the change be of syphilitic origin, the various forms of iodine are to be preferred; if of rheumatic origin, rhus will do the most good; while, if scrofula complicate the condition, calc. carb., calc. fluor., and iodine must receive attention. Lastly, if there be associated hypertrophy of the pharyngeal and laryngeal follicles, fer. iod. and nitrate of sang. should be considered.

ATROPHY OF THE VOCAL BANDS.

Of this degeneration little has been written, and I have seen but two well-marked cases: one, that of a patient in Prof. Schnitzler's clinic, in Vienna; the other, a private patient. A number of cases of apparent thinning or narrowing of the bands have come under my notice, but I have not deemed them sufficiently characteristic to be called typical. One case personally communicated by Dr. W. R. King was practically cured by faradism, both externally and internally; during the application of the former the patient made use of "slight vocal exercise." A cleansing spray was used, followed by the local application of the ammoniated tincture of guaiac. of the strength of ʒj to ʒj of water. Caust. 6 x and gels. 3 x were the only internal remedies used.

ATROPHY OF THE LARYNX.

This condition is, perhaps, always associated with atrophy of the nose and pharynx, in which ozæna of the nose and trachea plays the leading causative rôle, on which account I have preferred to consider it with "Tracheal Ozæna." Its treatment is practically that of the latter disease. Dr. Malcolm Leal writes: "Psorinum has certainly proved beneficial in one case of atrophic laryngitis with formation of crusts."

ACUTE ŒDEMA OF THE LARYNX (ŒDEMA GLOTTIDIS).

Etiology.—This is often an indication of some profound systemic change, notably scarlet, typhoid, and typhus fevers; small-pox, phthisis, syphilis; cardiac, hepatic, pulmonary, and renal affections; erysipelas, and pyæmia. Pressure upon the laryngeal, thyroid, facial, internal jugular, or innominate veins, and pharyngitis, or retro-pharyngeal abscess, may cause œdematous laryngitis. Acute pharyngitis and malignant tumors of that cavity may, by continuity, induce laryngeal dropsy. Traumatic causes are: foreign bodies, suicidal attempts, inhalations of scalding steam, contact of scalding water, some form of chemicals, and operations upon the throat. Strubing describes an angeiomatic œdema which reaches its acme in three hours, and which may result from cold or be without traceable cause.

Acute laryngeal dropsy occurs most frequently in middle life, less frequently in early youth, and least in advanced years. Should it occur later in life it is usually the result of cardiac, renal, or circulatory disturbances.

Pathology.—It is a transudation or infiltration into the submucous tissue of a serous, sero-purulent, or rarely a sanguineous fluid. This accumulates in those portions of the larynx in which the tissues are least closely adherent to the cartilaginous frame-work; thus the ary-epiglottic folds, ventricular bands, and arytenoid mucous membrane suffer most frequently. As the infiltration increases, the tissues stretch, become pale, waxy, and translucent, with apparent tissue tension; after death the parts are shrunken and wrinkled. The microscope generally reveals the presence of leucocytes in the connective-tissue meshes of the submucous structures.

Symptoms.—In mild cases these are generally of little moment; they usually consist of a sensation of fullness in the laryngeal region, with slight dry cough. In some fatal cases, a sudden paroxysm of dyspnœa is the first indication of a laryngeal alteration; the voice may be impaired, even to aphonia,

the result of mechanical interference. The laryngoscopic appearances are characteristic: the swelling is smooth, pale, and waxen; the glottis is usually encroached upon to a high degree; and the ary-epiglottic folds are often so infiltrated as to meet in the median line. The ventricular bands may be sufficiently swelled to completely close the vestibule and the swelled epiglottis completely hide the larynx. If complicated by other laryngeal alterations it presents the œdema in addition to the original defect, in which case the dropsy is not of that peculiar waxen color, and is thus often overlooked or considered a product of inflammation.

In the severer forms respiratory difficulty is very great and death may occur in a few hours, unless prompt relief be afforded. At first the symptoms are not unlike those of the milder forms; later, however, labored breathing appears and may increase so rapidly as to soon produce severe dyspnœa. The patient makes frantic, but only partially successful, efforts to inhale, owing to encroachment of the infiltration upon the glottic space. At first inspiration alone may be affected, but later expiration suffers as well. The temperature rises, the voice is lost, cough is croupous and incomplete, deglutition painful or difficult; the patient breaks out in a profuse, cold perspiration, his head is thrown back, he grasps at the throat, and, in his efforts to gain a little air, tears off any clothing that may be about it. These symptoms are not constant at first; there are short periods of respite, during which the sufferer is able to inspire more freely; but never with ease, unless the condition subside, in which event the breathing becomes freer and the pulse and temperature decline. Expectoration, which up to this stage is almost wanting, appears, and the patient gradually falls into a peaceful and refreshing sleep, from which he arouses greatly improved. If the attack prove fatal, the symptoms increase in severity, the temperature falls below normal, the patient becomes cyanotic, the pulse fails, the respirations become feebler from minute to minute, unconsciousness supervenes, and the patient dies from

apnœa after a most terrible struggle for existence. The disappearance of the œdema and the subsidence of the dyspnœa do not always denote recovery, however, as death may occur even then, either from the primary disease or prolonged deoxidation of the blood. Fortunately, acute dropsy of the larynx is rare.

In infra-glottic œdema, the upper portion of the larynx may escape, but generally, in such cases, the infiltration begins above and passes downward. The chief symptom is dyspnœa. The laryngoscope reveals a marked whitish infiltration below the vocal bands; the latter are often sluggish in action, owing to pressure upon the vocal muscles, which are, also, sometimes infiltrated.

Prognosis.—In the supra-glottic disease the outlook is generally favorable if the condition be promptly recognized and properly treated; but in the subglottic form the prognosis is nearly always unfavorable, even though means for relief be promptly applied, as the whole length of the trachea may be infiltrated. Primary acute œdema of the larynx is less favorable than the secondary form, but the latter is apt to become chronic. The duration of the active stage is rarely more than from three to four days, but complete recovery may be delayed some weeks. Relapses may occur or complications arise and bring on a suddenly fatal issue, even after recovery seems assured. Death results either from slow carbonic-acid poisoning or stenosis, often aided by laryngeal spasm. Complications are: severe inflammation, suppuration, perichondritis, paralysis, and membranous laryngitis.

Diagnosis.—The diagnosis can sometimes be made with the finger passed gently into the laryngeal region, though this is not to be recommended, as it is apt to increase the dyspnœa. The distinction between this affection and a deeply situated retro-pharyngeal abscess may be made—in the absence of the laryngoscope—by gently raising the larynx by external manipulation; if œdema exist, respiration will not be relieved as in case of abscess.

Treatment.—As the condition may so rapidly prove fatal, it is necessary that treatment be prompt and decisive. The patient should remain in one room, the temperature of which should be above 70° F., and the air kept humid as recommended in membranous laryngitis. At the outset there are no better remedies than apis, ars., kali iod., and sang. can.: with these many cases have been aborted or saved the necessity of mechanical procedure.

If, after a few hours, it be found advisable to use local measures, the inhalation of steam, plain or impregnated with tannic acid or alum, will act both gratefully and beneficially. It is best inhaled from the spout of a croup- or tea- kettle, care being exercised that the steam do not scald. A short paper cone or rubber tube may pass from the spout of the kettle to the mouth. Inhalations should be continued for a few minutes only; otherwise they are apt to prove exhausting. A 4-per-cent solution of cocaine, carefully sprayed upon the œdematous tissue, will generally give temporary relief and perhaps obviate an operation; and the same is often true of menthol (4-per-cent) in albolene.

Powders should not be used if there be much dyspnœa; but an insufflation of alum or tannin in the early part of the attack often acts with effect. Medicines should not be applied with the brush or cotton-carrier even in the early stage, lest they induce fatal spasm. A few drops of oil of mustard rubbed over the larynx, externally, have sometimes afforded relief. Mendoza (*La Semaine Méd.*, May 6, 1891) reports the cure of a desperate case by the subcutaneous administration of pilocarpine; one-third of a grain in three divided doses in the course of twenty minutes.

If the dyspnœa increase after a fair trial of the means suggested, some mechanical measure should be employed at once. First in the list of these stands scarification. In an emergency a penknife-blade may be closed to a right angle with the handle and passed over the tongue to the œdematous tissue

(see " Acute Laryngitis "). Usually, as soon as the sac has been ruptured the contents flow out, giving prompt and delightful relief, but such a result cannot be secured when the infiltration is very glutinous. Again, even though relieved, the œdema may recur and require a second evacuation. If scarification fail, an intubation tube should be inserted. The relief which follows is usually prompt and entirely satisfactory; the dyspnœa at once ceases. After subsidence of the slight cough occasioned by the introduction of the instrument, the patient falls into a quiet sleep. The tube can usually be removed after one or two days, but must be re-inserted should dyspnœa recur.

In the absence of O'Dwyer's apparatus, or, according to many, in preference to it, a bronchotomy should be performed—preferably a low tracheotomy, lest there be subglottic œdema, which may extend below the end of a tube placed high in the trachea. If an abscess occur, it should be opened as suggested under the head of " Abscess of the Larynx."

Following relief of œdema of the larynx, the posterior crico-arytenoid muscles may be paralyzed, necessitating tracheotomy.

Therapeutics.

Apis.—When the œdema occurs suddenly as a complication or a sequence of burns or an acute disease,—for example, erysipelas and the eruptive fevers.

Ars. alb.—When there is a predisposition to anasarca, due to chronic diseases or to a broken-down constitution; and especially when the laryngeal dropsy is the result of cardiac, aortic, or renal trouble. Burning in the larynx, worse from deglutition.

Arum tri.—If due to diphtheria or scarlet fever.

Bell.—" Sudden attack; fauces deep-purple; all the parts of the larynx œdematously swollen, pain deep in the throat; stiff neck; wild expression of eye; great prostration. One drop of tincture in pint of water, by teaspoonful." (P. J. Valentine.)

Chin. ars.—Œdema of the larynx, especially if the result of continuity.

Crotalus.—From scalds, irritating vapors, stings of insects, etc.

Digitalis.—Œdema of the larynx when occasioned by disorders of the heart or liver.

Kali iod.—I have seen œdema occur during the use of the crude iodide of potassium, and have repeatedly seen syphilitic œdema disappear during its administration.

Lach.—In connection with albuminuria; dark, almost black, urine, like coffee-grounds.

Sang. can.—When secondary to acute pharyngitis, I know of no remedy to take its place. Dryness and burning in the pharynx and larynx, with expulsion of thick mucus.

CHRONIC ŒDEMA—CHRONIC SEROUS INFILTRATION OF THE SUBMUCOUS TISSUE.

Chronic œdema of the larynx is always secondary. It often follows the acute form, but it is usually secondary to perichondritis, phthisis, syphilis, malignant tumors of the larynx, or some systemic condition, as stated under the acute affection.

Symptoms.—The symptoms are similar to those found in the acute variety, but the onset is gradual and dyspnœa never becomes threatening, unless an acute exacerbation occur. As it is often associated with some other laryngeal condition, it may be partially masked by the original affection. When secondary to a change in the kidneys, liver, heart, lungs, circulation, or brain the laryngoscopic appearances are characteristic and resemble mild cases of uncomplicated acute œdema, but the mucous membrane over the swelling is even paler than in the acute variety.

Prognosis.—The prognosis depends upon the primary disease; it is usually unfavorable except in syphilitic and perichondrial œdema.

Treatment.—Active treatment is not required unless an exacerbation occur. Œdema of the epiglottis may so interfere with deglutition as to require scarification for its relief. This operation, however, is not as successful as in acute dropsy,

because the effusion is less fluid. When below the vocal bands, intubation or tracheotomy may be called for as a last resort. After tracheotomy the patient is often obliged to wear the cannula for a long time. Since the adoption of intubation, bronchotomy is much less frequently required and the final results are more satisfactory. As a rule, treatment should be directed to the original condition, but apis and ars. find a wide sphere of usefulness.

CHAPTER XXXI.

Abscess, Erysipelas, Lupus, Leprosy.

ABSCESS OF THE LARYNX.

Although usually a complication of another condition, abscess is sometimes the sole detectable expression of the pathological process. Its most frequent location is at the base of the epiglottis; it occurs less frequently in the ary-epiglottic folds and ventricular bands, and very rarely in other portions of the larynx.

Etiology.—Occasionally laryngeal abscess is apparently primary, but it is usually the result of some injury or acute affection of the larynx, or of a systemic malady.

Symptoms.—The symptoms of laryngeal abscess are characteristic of pus formation generally,—malaise, chills, increased temperature, headache, etc.,—in addition to the local and special symptoms. These consist of hoarseness; pain of a lancinating character, worse on deglutition; cough, dry and rasping; stringy mucus; and often dyspnœa. External manipulation may cause considerable pain or increased dyspnœa, and, if the pus lie outside the laryngeal cartilages, it may be detected by palpation. The abscess may burst internally or externally.

Prognosis.—This is usually good, but death may result from obstruction or flooding; necrosis or exfoliation of cartilage may follow, or an external sinus result.

Treatment.—The abscess may require incision with the laryngeal bistoury; if the purulent collection be extensive, a safety tracheotomy and tampon cannula may be necessary, in order to prevent suffocation from purulent flooding of the larynx and trachea. Subcutaneous abscess usually requires external dissection.

The remedies are noted under "Abscess of the Nose" and "Retro-Pharyngeal Abscess."

ERYSIPELAS.

Primary erysipelas of the larynx is of rather infrequent occurrence, it usually being an extension of the pharyngeal affection. The disease does not always invade the cutaneous surface and, like primary pharyngeal erysipelas, it may reach the surface later. The larynx is more or less congested in most severe cases of erysipelas of the head and face, but this is usually overlooked unless special search be instituted.

Etiology.—According to Massei ("Ueber das Primäre Erysipel des Kehlkopfes," Berlin, 1886) erysipelas of the larynx is a primary, *sui generis* disease. He further states that many cases which are considered phlegmonous laryngitis are, in fact, primary erysipelas. According to the same authority the disease is an infectious one, caused by the presence of micro-organisms, namely, the streptococci of Fehleisen, and that lesion of the epithelium favors the entrance of these micro-organisms.

Pathologically the same may be said here as under "Erysipelas of the Pharynx."

Symptoms.—Even when primary there is usually a rise of temperature to 104° F. or more; chilliness and malaise are generally present. Usually, the first symptom that calls attention to the larynx is hoarseness or aphonia. The lymphatics of the laryngeal region are enlarged and the larynx is sensitive to touch; difficult respiration may develop early, the result of œdema, which may extend to the trachea and bronchial tubes, or even result in congestion or œdema of the lungs. According to Peter Ryland ("Diseases of the Larynx") it may lead to "galloping consumption." Difficulty in swallowing is almost always present, and may become so severe as to prevent deglutition, in which case it will be found necessary to resort to artificial feeding.

Laryngoscopically, the appearance may be one of general congestion similar to that found in mild acute laryngitis; more frequently œdema complicates the condition and gives the ap-

pearance of the severer form of the acute affection; bullæ are often present. The differentiation, however, is not always easy, although it is to be noted that with the œdema of erysipelas the infiltration is wandering and changes place, which is not true of either acute œdema of the larynx or of acute œdematous laryngitis. Massei considers this migratory character pathognomonic of erysipelas.

Although it can usually be differentiated from laryngeal œdema by the appearance and by the disturbance of circulation (heart, kidneys, or lungs) in œdema, yet it does not always follow that the disease where these complications are found is not erysipelas; for, in one of my cases there was an erythematous and œdematous alteration of the pharynx, congestion of the larynx, and albuminuria, in which no surface redness manifested itself for seven days, when erysipelas of the scalp and face made its appearance.

Prognosis.—The disease runs a very rapid course, and sometimes proves fatal in a few hours. Although always doubtful, the prognosis is less grave in those cases in which there is a simple congestion of the laryngeal mucous membrane, the force of the poison showing itself elsewhere. Where there is severe œdema prompt treatment is required, and even then death may follow. If sloughing result, the prognosis is still worse. Erysipelas attacking the larynx in very old persons is generally fatal. When recovery occurs it is by resolution, and when death results it is from suffocation, collapse, œdema, or congestion of the lungs.

Treatment.—The management of the affection must be prompt and decisive. The patient may swallow ice, or have it placed over the laryngeal region. The treatment is similar to that of pharyngeal erysipelas (which see), in addition to which it will be necessary to guard against dyspnœa, as in acute laryngitis. Scarification, bronchotomy, or intubation may be demanded. The latter is preferable, as it obviates a cut surface, thus avoiding new foci of infection. With intubation, how-

ever, swelling of the tissues may obstruct the upper opening of the tube, but this is less a danger than that which arises from implication of the tracheotomy wound; for the same reason intubation would seem better than scarification. If, however, the homœopathic remedy be early administered, it is less frequently necessary to resort to these operative procedures. The medicines best serving to control the pathological process are apis, bell., and rhus tox. Dr. de Keghel (*L'Union Hom.*, April, 1891) gives the following indications for tuberculinum: "Inflammatory swelling and ulceration of the larynx. Erysipelatous œdema of the glottis."

LUPUS.

Primary lupus of the larynx is infrequent; it is nearly always associated with external manifestations of the disease; for that reason the diagnosis is generally easy. Although it may occur in either sex and at any age, it is most frequent in females under twenty years (Gottstein). The disease is now known to exist in from 10 to 12 per cent of all cases of the cutaneous affection, but the symptoms are often so mild as to be overlooked unless special effort be directed toward their discovery.

Etiology.—Its causes are obscure in many cases; it seems, however, to attack by preference strumous subjects; less frequently the tuberculous; and very rarely those who are directly syphilitic. True, it seems that there must be a suitable soil for its development; and it is pretty well established that trauma often has an influence in its appearance.

Pathology.—Its pathology is practically that of tuberculosis, as in both diseases there are granular infiltrations, giant cells, and tubercle bacilli, although the latter are far less numerous in lupus than in phthisis. The disease starts as a single papule, which may receive recruits from time to time until a large part of the larynx is invaded by the hypertrophic process; although it may remain circumscribed. The papule may apparently undergo the process of absorption and pass away; or

it may degenerate and result in ulceration, which is slow, but very destructive, and presents a worm-eaten appearance as in phthisis. The cicatrices are hard, resulting in permanent hypertrophy and some contracting cicatricial bands,—stenosis. Perichondritis is comparatively rare, and affects most frequently the epiglottis, next the arytenoids, and later the other cartilages. Necrosis and exfoliation of the cartilages may occur. Cases are reported in which laryngeal phthisis has followed the cure of lupus; the association has not been determined; it is generally believed, however, that the relationship is as "cause to effect."

Symptoms.—As already intimated, the early symptoms are almost wanting, and are, no doubt, often overlooked. Later, the local sensation is one of rawness and scraping. As the disease progresses the symptoms become more marked; cough and hoarseness, or aphonia may follow the advent of hypertrophy or ulceration; pain is rare, even during deglutition and phonation; if the ulceration be great, the epiglottis may be destroyed, resulting in difficult and painful deglutition.

The laryngoscopic appearances are similar, in some respects, to those of syphilis, cancer, and phthisis. The ulcers may be situated on either side of the epiglottis, thus simulating phthisis (posterior) and syphilis (anterior). The destructive process may attack the posterior wall of the larynx (phthisis), one or both vocal bands may ulcerate (syphilis or phthisis), and the ulcer be round (syphilis) or worm-eaten (phthisis), but the edges are not infiltrated as in syphilis, nor is there the circumscribed areola, the dusky color to the membrane, or the symmetrical ulcers as in syphilis. Necrosis of cartilage is rare in lupus, but frequent in syphilis and phthisis. The epiglottis is often pale, but thickened and sometimes nodular. The laryngeal mucous membrane is usually either hyperæmic or congested, but may be somewhat anæmic. Discrete millet-seed-sized tubercles are sometimes detected early. In lupus there are frequently new centres of ulceration, starting upon points which have cicatrized,—an appearance rare in syphilis or phthisis; in the latter there is very

little tendency to cicatrization and the cicatrices, when formed, do not distort the healthy tissues; in syphilis the cicatricial tissue is very marked and the resultant deformity great; in lupus the tendency to heal is greater than in phthisis and the cicatricial contractions are slight, compared with those of syphilis. In lupus there is neither the pain nor the emaciation of tuberculosis, and there is rarely an involvement of the vocal bands or infra-glottic tissues in the ulcerative process, as in tuberculosis and syphilis. In lupus hypertrophy is extensive, as in syphilis, but the process is more apt to develop slowly and is less likely to undergo ulceration.

Cancer often causes pain and usually occurs in elderly persons; lupus in the young. Cancer is usually unilateral and circumscribed, with enlarged vessels running over it, and its apex is often ulcerated; the lupoid ulcer is without this vascular peculiarity and the ulcer is on a broader surface. Dr. Davidson, of Florence, Italy (*Homœo. World*, July, 1880), says: "There are two forms of scars that are of importance, because they have been attributed at one time to scrofula and at another to syphilis. These are the radiating scars of the fundus of the pharynx and the retractile bridles from thence to the posterior columns of the velum. Both varieties are found in lupus."

Prognosis.—The prognosis is good, so far as life is concerned, unless cicatricial tissue give rise to dangerous stenosis, requiring operation; but there is a possibility that any instrumentation of this cicatricial tissue may rekindle the ulceration, which may be so extensive as to result in fatal hæmorrhage, septicæmia, or inanition. Lupus runs a very slow course, and spontaneous cures are not unusual, while treatment is not without its frequent and well-deserved laurels. The voice may be permanently impaired or lost, and respiratory difficulty so great as to necessitate the constant use of the tracheotomy cannula; but, thanks to O'Dwyer, these patients have a brighter future in intubation.

Treatment.—The treatment of lupus requires the use of

local as well as internal remedies. Iodine—preferably iodide of glycerin—acts well for the hypertrophic form; and alum, boric acid, lactic acid, thuja, peroxide of hydrogen, or resorcin, for the ulcerative variety. The curette and galvano-cautery occasionally aid in limiting the spread of the ulceration. Should the process be one of decided hypertrophy, dyspnœa may require tracheotomy or intubation. If the cartilages be exfoliated, suffocation may follow their impaction within the lumen of the larynx, trachea, or bronchi; the cartilage thus becomes a foreign body and may be removed with forceps, or require tracheotomy. When diseased cartilage exists, it may be best to cut down to it from without and curette or remove it.

Internally, ars. alb. and iod., calc. carb. and iod., fer. iod., hepar, and sulphur are indicated. If complicated with syphilis, iodine, kali bi., kali iod., merc. proto-iod., merc. sol., nitric acid, phos., and thuja, particularly for the ulcerative variety. Jousset especially recommends hydrastis 3 x, and E. B. Ivatts calotropis gigantea; the latter causes a discharge of pus and increases the appetite and weight (*Homœo. World*, April, 1880).

Hygienic treatment is of decided value; the patient should be kept in the country, in the fresh air, regular exercise ordered, and good, nourishing diet prescribed.

LEPROSY.

The larynx appears to be affected only after cutaneous leprosy has made its appearance, thus greatly aiding the diagnosis. Centuries ago a peculiar rough voice was considered sufficient to condemn its possessor to the rank of a "leper"; the injustice of such a stigma is now apparent.

Pathology.—Its laryngeal manifestations are similar to those of tuberculosis. At the time of the tuberculous deposit, occasionally before, the mucous membrane hypertrophies; ulceration follows and is sometimes so severe as to destroy large portions of the larynx, pharynx, and surrounding structures. Little papillary excrescences sometimes spring from the surface of the

mucous membrane; they later undergo ulceration. The progress of leprosy of the larynx is very slow. The chief characteristic seems to be thickening, which often results in severe stenosis, demanding tracheotomy; but the result is not always rendered more favorable by this operation, as the tuberculous infiltration may have extended below the end of the tracheotomy cannula.

Symptoms.—Subjectively, there is little on which to build a diagnosis. The first and most constant symptom is the rough voice, which is deep and evidently produced by the vibration of thickened tissue. Cough may be present, pain is usual, and in the late stages dyspnœa is a prominent symptom. The pharynx may be thickened or even ulcerated, the epiglottis is usually either infiltrated or ulcerated, and the larynx undergoes similar changes within its interior. Its upper boundary is nearly always thickened, its aperture narrowed, and the covering of the arytenoids thickened. The mucous membrane is usually dark in color, and often hangs as though detached from the underlying structures.

Prognosis.—The prognosis does not differ from that of the general disease, unless the hypertrophy be severe enough to result in stenosis, or the ulcerative or hypertrophic process interfere with deglutition; in either of these instances death occurs earlier than in the general affection. An occasional case is said to recover.

Treatment.—As yet the treatment has not proved very satisfactory. All attempts to localize the disease by the cautery, spoon, gouge, or curette are futile and only hasten the fatal termination. Any local means that can be found to give comfort should be employed; of these the spray (see "Chronic Laryngitis") is generally the most useful. Iodine applications are best indicated symptomatically, but do not prove more than palliative.

Internally, graphites would seem to be the most similar drug, but bovista, hydrocotyle, iodine, sulph., and thuja offer points for consideration.

LARYNGEAL TUBERCULOSIS—LARYNGEAL PHTHISIS—THROAT CONSUMPTION.

The post-mortem cases of Demme, W. H. B. Aikins, and others, now render certain the previous conjectures that laryngeal tuberculosis might be a primary affection. A few years ago the evidence seemed to be on the other side. It is now possible to trace the progress of the primary symptoms, by which a diagnosis of the condition can frequently be made sufficiently early to abort the dread affection and save the patient from his otherwise almost certain doom. While this is possible, it must be borne in mind that the vast majority of patients do not consult the physician in this early stage, and after the affection is once fully established it seems impossible to cure more than a small percentage of the cases; but it is not unlikely that in the near future phthisis laryngea will be classed with the generally curable maladies. It is characteristically a chronic disease, but there are instances in which it is acute and miliary in nature; the latter are rare, comparatively speaking, and usually affect the mouth and pharynx as well as the larynx. This variety is rapidly fatal, the patient surviving but a few weeks, or, at most, a few months.

Etiology.—Etiologically, tuberculosis of the larynx differs but little from that affection when attacking other organs; there is the same hereditary tendency; the lowered vitality with loss of tone repair, hereditary or acquired; lack of hygienic and dietetic precautions; sedentary, in-door life; and influence of sex and age. In addition to the preceding there is the possibility and frequent reality of a catarrhal condition of the larynx as a stepping-stone to the graver affection. Some have claimed that the vocal function tends toward a development of phthisis of the larynx in those who are weakened; but it is more probable that this function, if properly performed, will benefit rather than endanger the possessor of tuberculous tendencies. Two-thirds of the cases of throat consumption occur in males, mostly between the twentieth and thirtieth years.

Pathology. — The pathology of laryngeal tuberculosis is not markedly different from the same affection when occurring elsewhere, but there is a greater variety of appearances manifest to the eye here than in tuberculosis of the deeper parts; so that the various stages of hyperæmia (acute), anæmia (chronic), infiltration, ulceration, necrosis, and caries, or new formations may be studied laryngoscopically as the disease progresses. The infiltration is in part a serous œdema, but is chiefly due to an invasion of the submucous tissue with tubercles; a true œdema may occur from a tubercular perichondritis. The laryngeal muscles may be infiltrated, giving rise to vocal defects; and ankylosis or dislocation of the crico-arytenoid joint may give rise to a fixed position of the vocal bands. In the ulcerative stage tubercle bacilli are always found in large quantities; they are less constant earlier in the disease. Necrosis or caries may attack any of the laryngeal cartilages; new growths often appear, and are either granular, cauliflower-like masses (granulomata, granuloid hyperplasia) or wart-like (papillomatoid) excrescences; they are sometimes precursors of the affection. Their usual situations are the base of the epiglottis, the interarytenoid commissure, and the subglottic cavity. They are pale-white, yellow, or pink in color; soft and easily knocked off or removed by forceps; grow rapidly; and may cause serious dyspnœa.

Symptoms.—The symptoms of the **acute form** are: sharp pain when speaking or swallowing, and sometimes when breathing. The temperature soon rises, at times reaching 104° F.; malaise is one of the most pronounced symptoms. Emaciation is not the rule, as the patient often succumbs to some meningeal complication before that stage is reached. General tuberculosis sometimes supervenes; this may appear in the retinæ in the form of minute tuberculous points, or a large number of these little dots may be seen studding the mucous membrane of the pharynx and tongue; they frequently coalesce and form one or more masses of deposit, which sooner or later ulcerate. The larynx manifests the same process and the ulceration rapidly

passes through the various stages to be described in the chronic condition. The prognosis is very grave.

Chronic laryngeal phthisis is divided into four or five stages, depending upon the authority, some writers not considering anæmia a distinct division. These stages, although not always strictly separable, have, nevertheless, an existence. Anæmia is a well-known condition of the primary stage of the chronic affection, while in the acute variety congestion almost always takes its place; the stages of deposit or infiltration, ulceration, necrosis or caries, and new formations are often distinguishable, although ulceration, necrosis, and new formations (occasionally the only manifestation) frequently appear in rapid succession.

If a patient complain of a sudden functional loss of voice, the thought should be: "a possible phthisis;" and this thought should become almost conviction if, in addition, a slight anæmia of the greater part of the pharynx exist, together with spots of hyperæmia; in other words, an "anæmio-hyperæmia," as noted by the author in the *Trans. of the Homœo. Med. Soc. Pa.*, 1883. This anæmia is also often associated with fugitive blushing and abnormal sensitiveness. Although this is almost a positive indication, the confirmatory conditions exist in the spacious pharynx, due to the separation of the soft palate and uvula from the posterior pharyngeal wall; the tremulous uvula and soft palate and, as pointed out by Dr. C. E. Beebe, "the entire membrane can be seen moving constantly in different directions on the submucous tissue." The larynx is usually anæmic, with numerous spots of congestion. The vocal bands are often dirty, dingy-looking, and the entrances to the laryngeal sinuses frequently present a dark, purplish tinge. The chest-sounds may be normal, there may be slight sacculated inspiration, or examination may denote well-advanced phthisis. Schrötter looks upon a unilateral laryngeal catarrh as a frequent indication of throat consumption.

I am pleased to agree with Dr. René Sarrand (*El Consultor Homœopatico*, October, 1888), "that in those persons destined to suffer phthisis pulmonalis there always exist pharyngo-laryngeal signs, very positive, very constant, that precede by much the pulmonary signs." To this he adds: "These signs are three: 1. Pharyngeal anæmia; the pharynx is pale, discolored, and blanched. 2. Faulty approximation of the vocal bands, with atony of the constrictors. 3. Congestion of the arytenoid and interarytenoid mucous membrane, changing into an inflammation and a cherry-red coloration of this region." "It is here," he continues, "that *Drosera rotundifolia*, given perseveringly, produces remarkable effects, and where this remedy merits the name of a *preventive of phthisis pulmonalis*."



FIG. 115.—LARYNGEAL PHTHISIS, SHOWING PYRIFORM ARYTENOIDS AND ULCERATION OF LEFT VOCAL BAND.

When the anæmic stage is not arrested, the larynx assumes more a condition of congestion, and in this the pharynx shares. Some portion of the larynx presents evidences of an infiltration or deposit, which sometimes shows itself in the form of little elevations similar to those seen in follicular pharyngitis or laryngitis. If the ary-epiglottic fold present a pyriform swelling, the diagnosis is an assured fact; this swelling of the arytenoids is unmistakable; the body of the pear is represented by the arytenoid itself, while the smaller stem-end gradually tapers off and is lost in the ary-epiglottic fold near the epiglottis: one or both cartilages may be affected. In this stage the lungs are not usually broken down, but when the epiglottis takes on its turban-like swelling the pulmonary structures are usually much soft-

ened. In some cases, however, the lungs show no evidence of the phthisical change for some months later; well-marked laryngeal ulceration may exist when repeated chest examinations, by expert diagnosticians, fail to detect the presence of pulmonary changes. If with the first evidence of laryngeal phthisis (the anæmia, etc.), I find the peculiar wavy (sacculated) respiration over either apex, during several successive inspirations, I feel safe in pronouncing the condition phthisis, even if the laryngeal changes be not entirely characteristic.

In the second stage, the patient often has a partial or complete loss of voice and a decided and annoying cough, with expectoration of thick, yellowish, or greenish mucus. There is usually loss of appetite and, in many instances, loss of flesh as well; sometimes there is complaint of pain in the larynx, but this is not marked unless there be decided deposits in the epiglottis, preventing prompt and painless action of this cartilage, or where the pyriform swelling of the arytenoids is extensive, thereby interfering with the easy passage of food. Cough is one of the most annoying and intractable conditions. In the stage of deposit the sufferer not infrequently complains of pain running up to the ear when swallowing; during the stage of ulceration the pain may be continuous and often changes from ear to ear, seldom affecting both at the same time. This symptom, if long-lasting, belongs prominently to phthisis, but is not infrequent in cancer of the larynx.

In the stage of laryngeal ulceration the symptoms are all aggravated; the voice is peculiarly deep, hollow, or hoarse, if, indeed, it be not entirely suppressed; the latter is usual when the ulceration attacks the parts contiguous to the vocal bands, or when the infiltration occurs in the transverse muscle or region of the arytenoids. The posterior wall of the larynx is not infrequently ulcerated, when spiculæ of loosened tissue often project between the vocal bands. Tuberculo-papillomatous growths may appear in the posterior commissure, at the base of the epiglottis, under the vocal bands, more rarely on

the vocal or ventricular bands, or in the ventricles. They occasionally appear as primary manifestations of phthisis, consisting of true tubercular tumors varying in size from a pea to a chestnut, when they should not be disturbed, mechanically, as operation is said to release the germs of infection previously inclosed in the tumor.

When ulceration attacks the epiglottis, the posterior surface usually suffers first, although the entire cartilage may be destroyed later; even when perforated the contour of the organ may be unaffected, thus excluding syphilis. When destroyed, the patient often complains of dysphagia and of food entering the larynx. Ulceration of the vocal bands may be confined to a superficial, small, circumscribed, oval area with congested borders; the free edge of one or of both bands may be ragged; or a great part of one or both be destroyed. The ulcers of phthisis are usually multiple and at first superficial, with somewhat congested edges; later, they become rather deep and often coalesce to form one large mass with an irregular, worm-eaten appearance; the edges being surrounded, according to Fränkel, by yellow deposits of miliary tubercles. While these ulcers nearly always contain tubercles (difficult to heal), sometimes they are non-tuberculous (easy to heal) and are quite superficial (lenticular, aphthous, corrosive, infective, membranous, or diphtheritic?). The surface is covered with dirty-yellow mucus and the surrounding tissues are pale and ashy in color. The ulcer is, apparently, not below the surface, as the space destroyed is immediately filled with granulation tissue, unless the epiglottis or vocal bands be attacked, when total destruction may follow. The small, multiple, ragged-edged ulcers may appear on a pale, œdematous surface.

All tuberculous ulcers are sluggish, have little tendency to heal, but when healed are rarely, if ever, followed by cicatricial distortions, as in the cicatrization of syphilitic ulcers. When ulceration attacks the vocal bands or their surrounding tissues, the voice is either destroyed or very changeable; a por-

tion of a word or one, two, or more words may be quite clear, with the succeeding sounds whispered; in rare instances there may be double voice (diphthonia). Immobility of the vocal bands is due to infiltration, ulceration, or pressure upon a muscle or nerve. The right recurrent may suffer from pleuritic adhesions and tuberculous deposits in the right upper chest.

In the later stages of laryngeal phthisis the suffering is frequently very great; the larynx is the seat of almost constant pain; deglutition is often impossible; food passes into the larynx or even into the trachea and bronchi, where it usually gives rise to secondary bronchitis, or even fatal pneumonia; cough is frequent, ineffectual, and distressing. The ulceration is nearly always attended by profuse muco-purulent, purulent, or even a sanguineous discharge. It frequently contains broken-down epithelium and pieces of soft or even cartilaginous tissue. Often in the later stages, when, from the swelling, ulceration, and general loss of strength, the patient is unable to expectorate freely, the valleculæ, the pyriform sinuses, and even a part of the cavity of the larynx become filled with these discharges and *débris*, thus preventing a clear view of the vocal organ. In this stage perichondritis and chondritis often result; the voice is usually lost and ankylosis or dislocation may occur at the crico-arytenoid joints; the smaller cartilages may be destroyed and exfoliated, and portions, rarely all, of the larger ones occasionally share a like fate. As a rule, these loosened pieces are expectorated; occasionally they require removal by the aid of laryngeal forceps; and rarely they cause fatal laryngeal stenosis or, passing into the deeper respiratory tract, induce early death. Hæmorrhages, ulcerative in origin, are rare and never immediately fatal.

Diagnosis.—From cancer the distinction is generally easy; there is the single, hard growth; the frequently shooting pains; ulceration occurs usually at one point; the structures involved have an angry, active appearance; and the ulcer is deep and irregular, and not worm-eaten, as in phthisis. In both diseases

pain may extend to the ears; the hæmorrhages of cancer are often characteristic.

Chronic œdema of the larynx is more transparent, clear, and waxen than the dull, translucent, partially solid deposit, with a thin layer of effusion, of tuberculosis.

Chronic laryngeal catarrh is often difficult to differentiate from the early stages of chronic laryngeal phthisis; but the more uniform congestion of the former usually contrasts with the more circumscribed congestion and the anæmic condition of the latter, in which there are, also, usually noted the other early changes described.

It may be said that, in 90 per cent of the cases examined, the laryngoscope furnishes an exact means of diagnosis of laryngeal consumption, and the laryngologist can often diagnose phthisis where the so-called physical signs prove negative. He may thus warn of the prospective dissolution in time to save the patient's life.

Prognosis.—Although a few cases recover from the disease after it is well established, patients usually die in from six months to two or three years, although occasionally throat consumption has proved fatal only after six years. It is never safe to give a favorable prognosis. At the present time, however, the prognosis is not so grave as formerly, and many cases which would have, at one time, been considered incurable are now restored to comparative health. Other things being equal, the earlier the case is seen, the better the prospect of cure; and, the less the interference with deglutition, the greater the chances of relief; or, in other words, the less the ulceration of the epiglottis, arytenoid cartilages, and inter-arytenoid space, the better the prognosis. Perichondritis, caries, and necrosis make the outlook graver. Stenosis may end life if not relieved by tracheotomy.

Treatment.—Internal medication is, undoubtedly, of first importance, but it must not be forgotten that much may often be accomplished by the judicious use of adjuvants, and that surgical interference is sometimes advisable. Many laryngolo-

gists, including Krause (who introduced lactic acid for the cure of laryngeal phthisis) and Heryng, strongly recommend the use of the curette or spoon (as introduced by the latter). More recently, Prof. Krause practices actual excision of the œdematous tissue; his experiences are very encouraging, but the success of many other operators has been less flattering. According to one report, he had treated seventy-one cases by the curette, out of which forty-one were cured, or at least there was a remarkable amelioration, with disappearance of the painful phenomena. The larynx is thoroughly cocainized before these operations: Heryng then scrapes the surface of the ulcer with a sharp, laryngeal curette; as soon as the bleeding ceases lactic acid is applied. Krause removes all œdematous, as well as ulcerative, tissue with a forceps-curette; lactic acid is then applied. Both operators insist not only that the surface of the denuded tissue be thoroughly painted, but actually soaked in the acid, and that the saturated cotton pledget be forcibly rubbed over the surface. The solution varies from 20 to 50 per cent.

The galvano-cautery has been highly extolled by many. Heryng has had some very gratifying results from electrolysis (*Cong. Inter. de Lar.*, Paris, September, 1889). Local remedies may be used in the form of spray, inhalation, insufflation, or be applied by brush or cottoned probe; if a spray be used, benzoinol, fluid albolene, fluid cosmolin, warm vaselin, olive-oil, oil of sweet almonds, or glycerin may be used as a vehicle. The best spray medicaments are: eucalyptol, 10 per cent; calendula, 20 per cent in water; carbolic acid, 1 per cent; camphorated naphthol; and menthol, 1 to 5 per cent, the latter acting as an anæsthetic, antiseptic, and stimulant. The best inhalations are: eucalyptus globulus, vapor of menthol, and pine-oil. Insufflations are at times indicated, either to relieve pain or to excite cicatrization; for the former, morphine acetate, one-eighth to one-sixteenth of a grain to three grains of starch, should be insufflated about one-half hour before eating; for the latter, aristol, boric acid, iodoform, and iodol act best.

Morphine is now often supplanted, with advantage, by cocaine hydrochlorate, 4-per-cent solution; but one of the best applications, for relieving pain, is a spray of a watery solution of calendula officinalis, "1 to 20, or weaker, with the addition of two or three drops of carbolic acid to the ounce," as recommended to me by Dr. A. C. Peterson, of San Francisco. In his note (November 20, 1889) the doctor states: "In one case especially, where it was absolutely essential to deaden the excruciating pain caused by the act of swallowing, calendula spray, used once a day, within a week quieted the inflammatory and ulcerative conditions in so marked a manner that the patient was but merely conscious of the throat and larynx; this happy relief remained with the patient until death." Cannabis sat. (10 per cent) often acts similarly.

As direct healing applications, lactic acid stands first; menthol, peroxide of hydrogen, pyoktanin, and calendula following. Menthol acts more slowly than lactic acid, but is less painful, and my short experience with calendula bids fair to place it at the head of the list.

Meyhoffer wrote: "We use *argent. nitric*, in all its preparations; from the second and third potency to the local application of the lunar caustic, and from 1 to 6 grains to an ounce of water for inhalations. Nitrate of silver proves a highly beneficial agent in all the stages of tuberculous laryngitis; in the beginning of the disease, when the throat and larynx are much inflamed, and with titillation in the latter, much hawking or spasmodic cough, and accumulation of phlegm in the throat. At a later period, when the edges of the ulcers are the seat of luxuriant granulations, the inhalations of the stronger solutions of this salt produce excellent effects, as they reduce the morbid growths." Dry, spasmodic cough, hoarseness, aphonia, and perichondritis are indications for the remedy. A few patients have complained of intolerable itching, as though they must scratch the larynx, or as though it were fissured, "as in chapped lips"; for this I have never seen an application of a 10-grain

solution fail to give relief, lasting from twelve to forty-eight hours.

Food should be mild and yet nourishing; semi-fluids are less likely to enter the larynx; fluids should be slightly thickened with rice-flour, corn-starch, arrowroot, or Irish-moss decoction. Wine-whey is much used, and justly so. Raw oysters are often grateful, and raw eggs, the yelks of which are unbroken, answer well in a large number of cases. Rich milk should be taken freely and frequently. Spices, condiments, and acids should be avoided, but the juice of sweet fruits often relieves thirst. The patient should be instructed to swallow quite large mouthfuls rather than to sip his food. If deglutition be practically impossible, owing either to uncontrollable pain or to the entrance of food into the larynx, the patient should be fed with an œsophageal tube or given nutrient rectal enemata.

The advisability of tracheotomy in laryngeal phthisis is a point which has received much discussion; it is usually recommended only where dyspnœa is marked and constant, and to this advice, if scarification be contra-indicated, there can be but doubtful exception. Many go further, however, and urge an early operation for the purpose of giving rest to the larynx, especially where odonphagia exists. Moritz Schmidt advises tracheotomy where there is marked laryngeal disease with comparatively healthy lungs, in rapidly-advancing laryngeal phthisis before the appearance of dyspnœa, and where stenosis exists; but, above all, if dysphagia be present; and he believes that the lungs themselves may heal afterward. It must not be forgotten that a fatal pneumonia occasionally follows tracheotomy. Mackenzie (in 1889) had never seen benefit from tracheotomy unless dyspnœa were present, and thinks the patient is less comfortable after it, on account of the difficulty in expectoration and the irritation caused by the cannula. There is little doubt that a marked engorgement of the lungs may be relieved, but I have never felt it prudent to operate in the absence of dyspnœa; in such cases, however, I have been greatly pleased with the results.

Therapeutics.

Ars.—"The leading symptoms are: a dirty-red or anæmic appearance of the laryngeal lining, with bluish-red patches, or general discoloration of the tissues; indolent, or burning, extensive ulceration, with more or less sero-purulent secretion." (Meyhoffer.) Dr. E. C. Jones (*Trans. Hom. Med. Soc. State of N. Y.*, 1879) recommends it where the laryngeal membrane is anæmic, stained with dirty-looking spots "and marked by the velvety projections which presage coming ulcerations. Cough is absent or entirely out of proportion to the progressive emaciation or picture imaged in the laryngeal mirror." He also recommends this remedy in the latter stage with extensive indolent ulceration, and acrid, sero-purulent discharge. He continues, "It is well, also, to apply this greatest of all nutritive stimulants topically by means of the spray," and makes use of an aqueous solution of the sodæ arsenitis. Frequently there is, also, intense burning in the larynx, especially with flat and purplish ulceration and serous infiltration.

Carbonate of potassium or **sodium** (3 to 10 grains to the ounce) is useful, as a spray, in assisting the expectoration of thick, tenacious, profuse secretions.

Drosera rot.—For children of consumptive parents, Dr. René Sarrand considers this drug prophylactic (*Homœo. Recorder*, January 15, 1889), and adds: "Dr. Curie affirms that in the initial period of phthisis it is nearly always possible to gain a cure through drosera."

Fer. phos., in the early stages, often checks further development and is useful for the loss of control over the tensor muscles of the larynx.

Iodine is of undoubted value in phthisis complicated by scrofula, when the ary-epiglottic and inter-arytenoid folds are chronically thickened, the result of proliferation of connective-tissue elements. Ulceration, muco-purulent or bloody expectoration, and tightness and soreness in the larynx, referable to one spot.

Merc. nit.—Dr. Malcolm Leal advises the use of this remedy "in ulcerative stomatitis and in laryngeal tubercular ulcerations of small size, several of which have disappeared under its use."

Nitric ac.—"Great irritation; redness or anæmia; violent dry cough, spasmodic, choking, and exhausting. It will furnish, in some of the severe laryngeal coughs, brilliant results, relieving the attacks promptly and for a considerable period." (Dr. J. S. Mitchell, "Arndt's System of Med."). I have repeatedly dissipated a sharp, knife-like pain in the left side of the larynx with nitric ac. 30 x.

Phos. is a remedy of great value. The marked symptoms are: hoarseness or aphonia; larynx raw and sore; inspiration wheezing; hectic fever with progressive emaciation; larynx sore when speaking and coughing, and when pressed upon.

Selenium.—Cough and expulsion of small lumps of clear, starchy mucus or blood from the larynx; hoarseness as soon as one begins to sing, or after long singing or speaking. Indicated both in the early stages and after ulceration has occurred, but its action seems to fail in the later stages.

Stan.—Mucous membrane dirty-looking, vocal bands ulcerated; constant, short, irritating cough.

The following extracts are from a letter dated "Nice, December 28, 1889," from the late Dr. John Meyhoffer; he who did such noble work in the early days of the laryngoscope (see "Chronic Diseases of the Organs of Respiration"). It seems but fitting to close this subject by making these quotations from his handwriting, penned just before the close of a life rich in medical experience:—

"Lymphatic dispositions, even strumous diatheses, present fair chances of recovery. This assertion is contrary to all traditions; yet it is nevertheless true, and that for two reasons: 1. The course of the disease, in such individuals, is generally slow and leaves, therefore, more time for medication. 2. We can rely on a positive curative influence of a certain class of medical agents, the *iodides*.

"The iodides of kalium, natrium, and calcium, of use chiefly as modifiers of the constitution and the diathesis. The preparations used are, usually, 1 x, 5 drops twice a day for two consecutive days, followed by a week's rest. Their influence is, however, not less marked on the lining of the larynx; the ulcers assume a better aspect and show a tendency to cicatrize.

"The iodides of mercury are of great service when there is much congestion, swelling, and redness in any part of the laryngeal lining; healing ulceration. I commend to your attention the ars. jodat., 3 x trit., in cases of deficient nutrition, when, notwithstanding a good appetite, the patient loses weight.

"The iodide of baryta is to be preferred in enlargement of the tonsils and general indolent swelling of the glands of the neck.

"The aurum jodat., 3 x trit., I have found very useful in torpid ulcerations of the larynx, which resisted all other remedies, whether topical or internal. From the moment this agent came into action, there appeared almost immediately great vascular activity in the diseased parts, and the torpid ulcers made rapid strides toward healing. In one case which resisted for months the other iodine preparations, the cicatrization of the ulcers on the arytenoid lining was brought about in three weeks. In none of the cases where the iodide of gold did good service could I trace any syphilitic taint.

"In my work you will find (page 148) a case of recovery of phthisis laryngis under the influence of selenium natr. Since then this salt, though very useful in many other respects, has disappointed me in this disease.

"I can only consider as correctives those auxiliaries which co-operate in the direction of the internal remedies. Hence, as long as I can see any chance of restoring the diseased parts of the larynx to a healthy condition, I abstain, as much as possible, from any local remedy which is not in harmony with the internal treatment. Iodurettted vapours, as pulverized liquids, play, therefore, the principal curative rôle of local applications under

the following formulæ: kali jodat., pure, gr. ij; aqua, ʒiv; and natr. jod., gr. iij; aqua, ʒv; to be pulverized and inhaled by the aid of Siegel's steam apparatus.

"As palliatives, I use, when there is distressing cough and difficulty of deglutition, strong solutions of bromide of potash or hydrochlorate of cocaine, applied, *loco dolente*, with the brush before meals: ℞ Bromide of potash, ʒj; glycerin pure and aqua, āā, ʒss. ℞ Cocaine hydrochlorate, gr. xv; glycerin pure, ʒj."

CHAPTER XXXII.

Syphilis and Stenosis.

SYPHILIS OF THE LARYNX.

Etiology.—It is scarcely necessary to state that primary syphilis of the larynx must be a very rare condition—if, indeed, it ever occur. It could only happen through the contact of virus carried to the part with the laryngologist's instruments. It is not rare, however, to find secondary and tertiary laryngeal manifestations; the congenital variety is less frequent.

Pathology.—The characteristic changes in this affection must be studied in connection with the form of the disease present. There may be a mild congestion, resembling roseola; a severe inflammation, with ulcerations either superficial or deep, and involving the muscles, perichondrium, cartilages, and other tissues; mucous patches; condylomata, grayish-white in color; marked œdema and syphilitic deposit; or actual neoplastic formations. After destructive ulceration, cicatrices may distort the larynx beyond recognition, destroy the voice, and hinder of prevent respiration.

Secondary syphilis may affect the larynx at any time from six months to two years after the primary sore; and the tertiary form, from two to forty years after the chancre. A large proportion, perhaps 20 per cent, of syphilitics have a laryngeal complication which may extend from the pharynx by continuity, or more frequently attack the larynx independently.

In mild **secondary syphilis** the symptoms are essentially those of the early stage of subacute laryngitis. As a rule, there are, at this time, no cutaneous evidences of syphilis, and none may have been noted by the patient; in some there is enlargement of the post-cervical glands and involvement of the pharynx, but the latter usually suffers at an earlier date; so that the

diagnosis may be dependent upon the laryngoscope alone. When superficial ulceration occurs, there is a purulent or muco-purulent expectoration. The vocal bands are congested in patches and grayish in color; the lining membrane is of a dull, mottled red. The two sides of the larynx are often symmetrically affected. The hyperæmia is duller in color and more below the surface than in chronic laryngeal catarrh. If carefully watched, mucous patches may be seen to develop at the mottled points, and in a few days be supplanted by multiple superficial ulcers, which are usually oval and covered with a dirty-yellow discharge, which, when sprayed or carefully wiped off, appear bright-red, but do not actually bleed. These superficial ulcers, which are surrounded by a deep-red zone, never degenerate into the deep ulcers of tertiary syphilis; the latter are characteristic from the first. When the epiglottis is ulcerated, there is usually difficult deglutition, and food may enter the larynx. Condylomata occasionally occur in the secondary form, and, although they generally appear on the epiglottis, they are not confined to it; they sometimes become apparently warty growths.

Secondary syphilis of the larynx is characterized by its amenability to treatment and its tendency to relapses. This last-mentioned characteristic caused Whistler to designate a "relapsing, ulcerative laryngitis," which he considers an intermediate stage of syphilis, but which it seems proper to call secondary.

Tertiary syphilis presents œdema, condylomata, gummatous tumors, ulceration, necrosis, caries, stenosis, etc. When deep ulceration occurs, the symptoms are very different from those noted under superficial, secondary ulcers; thus, cough is often annoying; expectoration is very profuse, and consists of mucus, pus, blood, broken-down epithelium, fibres of the firmer and deeper tissues, and sometimes necrosed and caried cartilages. The voice is rarely affected if the epiglottis alone be ulcerated; otherwise it is lost, often irrevocably. Respiration is impaired

when œdema, cicatricial bands, or new growths encroach upon the glottic space, or when there is paralysis of the posterior crico-arytenoid muscles, ankylotic fixation of the vocal bands in the approximated position, or strictures of the trachea. Any of these may cause stridulous cough or asthmatic and suffocative attacks, following exercise, excitement, or spasm. These may prove suddenly fatal, or, growing very frequent, cause death by exhaustion. Laryngeal pain is unusual except during deglutition, when food frequently enters the larynx, perhaps causing severe dyspnœa.

The deep ulcer is usually single, but may be multiple; it appears to develop slowly; generally there seems to be no explainable cause for its development, but it may originate from degeneration of a gummatous growth or mucous patch. It presents an irregular crescentic outline, with raised, ragged edges, and has a slight inflammatory areola; its floor is covered with a dirty, yellowish-white coating. The epiglottis rarely escapes the deep ulcers of syphilis; it may be notched, when the edges of the ulceration are clean-cut, or the cartilage may be entirely destroyed. From the epiglottis the ulceration may extend to the ary-epiglottic folds, and, finally, to the ventricular and vocal bands. The arytenoid cartilages and posterior wall of the larynx are rarely ulcerated, except as the result of extension from other parts; although a gumma may form in the inter-arytenoid tissue and degenerate. As the ulceration extends and the deeper structures are involved, the laryngoscopic picture may become so distorted as to render the larynx almost irrecognizable; sometimes good-sized pieces of the cartilage are destroyed and cast off in the *débris*, but hæmorrhages are rarely severe.

The normal color of the mucous membrane may be exaggerated, but, as a rule, it is rather dull,—almost purple; and is usually deprived of its normal velvety appearance; it may even impart a grayish-yellow appearance, owing to chronic submucous changes; the vocal bands may lose their lustre, be con-

gested, ulcerated, or, in great part, destroyed. Gummata are generally the color of the surrounding mucous membrane, but, when on the epiglottis, are often paler; as they approach the stage of ulceration their centres are apt to assume a yellowish tinge. Generally the pharynx and soft palate show evidences of the syphilitic condition, if, indeed, they be not actually ulcerated.

The cicatricial thickening is the result of excessive growth of the tissue elements directly surrounding the ulcer, the base of which is but slightly active, which is the reverse of the cicatrices of phthisical ulceration; on this account syphilitic ulcers often heal, leaving extensive increase of tissue and marked distortions. One characteristic of this excessive tissue growth is its hard, dense consistency, which renders it most difficult to reduce; when cut or dilated it is prone to return to its former state.

Diagnosis.—The history of the affection and the cutaneous appearances usually aid the diagnosis, and yet it not infrequently happens that there are no general indications of syphilis.

Two of the distinguishing features of syphilitic ulceration are: the usual absence of pain and the inflammatory areola which surrounds the ulcers; in phthisis the pain may be constant, but aggravated by deglutition, and the surrounding tissue is rather anæmic. In syphilis the superficial ulcers are usually multiple and generally oval, with dark-red areolæ; those of phthisis, though frequently multiple, are usually very irregular in outline. The deep ulcers of syphilis are generally single with overhanging edges, and occupy the sides of the organ; in phthisis, on the other hand, the ulcers are not deep, and are prone to attack the posterior portion. In syphilis, the anterior portion of the epiglottis suffers more; in phthisis, the posterior surface. The ulcers of syphilis show a tendency to heal readily and leave marked cicatricial deformities; those of phthisis heal very sluggishly and leave almost no deformity, the ulcer filling with granulation tissue almost as fast as the process of destruction goes

on. Syphilitic ulceration is an acute process; phthisical, usually chronic. The ulcers of syphilis often attack the pharynx; those of phthisis rarely. The syphilitic mucous membrane is purplish; phthisical, anæmic (see "Laryngeal Phthisis").

In phthisis and cancer there is usually lancinating pain, which extends along the Eustachian tubes to the ears; this is rare in syphilis. Deglutition is usually difficult, painful, or impossible in phthisis and cancer; rarely marked in syphilis except in adenitis. Cancerous ulceration requires weeks for its development; tuberculous, months; syphilitic, a few days. The anterior and posterior cervical glands are affected in syphilis; the posterior, rarely in cancer and never in phthisis; the anterior may be involved in either. More characteristic lymphatic enlargements are found, however, at the cornua of the hyoid bone; very early affected in most cases of cancer; late and occasionally in syphilis and phthisis. A fibroid degeneration is an infrequent tertiary syphilitic change; this sometimes undergoes ulceration, from which cancer can best be differentiated by consideration of the previous history and the co-existing syphilitic lesions. Lupus shows some general resemblance to syphilis, but it is very rare and always presents other distinctive manifestations.

Prognosis.—The outlook for secondary syphilis of the larynx is good, with the exception of the occasional loss of the singing voice, chronic hoarseness, and the formation of new growths. The tertiary variety is not so favorable; perichondritis, especially of the cricoid cartilage, marked cicatricial stenosis, or acute œdema, may suddenly prove fatal; hæmorrhages are rarely serious. On the other hand, early and careful treatment will usually carry the patient through this severe condition with some evidence of impaired function only; thus, a lost epiglottis may somewhat interfere with deglutition, but, if the sphincter and adductor muscles be unimpaired, the act may be nearly normal; if the bands be ulcerated or fixed, the voice will be impaired; as a rule, however, the prognosis, under such circumstances, is not otherwise very grave.

Treatment.—Internal and local remedies deserve chief consideration, as upon them devolves the cure of nearly every case. General measures, including plenty of fresh air; a moderate amount of exercise; good, nourishing diet without alcoholics; an occasional Turkish bath; cold sponge-baths each morning, followed by friction with a coarse towel and horse-hair gloves; friction on retiring; absence of all excesses; and plenty of sleep are important adjuncts. Local measures consist of sprays of iodine (gr. v to ʒj) and glycerin or fluid cosmolin; or chloride of zinc and glycerin in the same proportions. The iodine preparation is very useful if there be an increase of tissue, erosions, or actual ulcerations; otherwise the chloride of zinc is better. When the ulceration is deep (tertiary), the iodine may be used in the strength of 15 grains to the ounce. When the ulcer is coated with a thick secretion this should be wiped off with a cotton-covered laryngeal probe before using the spray, or the latter may be replaced by direct applications with such a probe. Dr. W. R. King has relieved and cured both ulceration and œdema by means of the spray or vapor of guaiac, 1 drachm to the ounce. Severe dyspnœa may require intubation or tracheotomy; if the latter, the patient should be warned that it may be necessary for him to wear the cannula for a long time,—perhaps always. The low operation is advisable, as the quasi-growths may pass well down the windpipe. The cannula should not be permanently removed until laryngoscopic examination reveals the absence of stenosis; otherwise it may be necessary to re-insert the tube, even although the patient seem at first to breathe easily. The intubation tube may be left in position for several days; if dyspnœa exist after its removal, it should be re-inserted and retained until it cause considerable irritation; if it fail to relieve, tracheotomy will be demanded. Although a serious syphilitic œdema will usually subside, yet without intubation or tracheotomy the lungs are liable to become œdematous.

Cicatricial contractions will be considered under "Stenosis of the Larynx."

Congenital syphilis of the larynx is rather infrequent, although Dr. John N. Mackenzie believes otherwise. The affection is not as characteristic as is the acquired form; for that reason the diagnosis must be based upon the collateral symptoms, especially those of the pharynx, teeth, forehead, face, and eyes. The patient is usually attacked during the first year of life, although the larynx may escape until puberty; the earlier, usually, the more severe the malady and the graver the prognosis.

The symptoms are: hoarseness or aphonia; paroxysmal cough with little expectoration; often difficult respiration, sometimes paroxysmal, amounting to laryngismus stridulus,—on the other hand, it may be constantly progressive and result in asphyxia. Deglutition is difficult or painful where the pharynx, epiglottis, or posterior laryngeal region is ulcerated or considerably thickened. The laryngoscopic appearances are usually those of chronic laryngitis, but interstitial thickening, superficial or deep ulcerations may occur, or perichondritis or œdema call for intubation or tracheotomy.

Treatment is similar, so far as possible, to that recommended for the acquired affection.

Therapeutics.

Aurum mur. 3 x to 12 x.—Indurated glands; general depression; caries and necrosis of the cartilages of the larynx and of the bones elsewhere.

Badiago, carbo an., carbo veg.—Tertiary syphilis.

Kali bi.—Chiefly for the catarrhal condition so often present in syphilitic patients. Both internally in the 3 x to 12 x, and as a spray of a 2-per-cent solution.

Kali iod.—The œdema, gumma, "mucous tubercles," and destructive tertiary ulcerations are speedily cured, preferably in appreciable doses (see "Syphilis of the Pharynx").

Merc. cor.—Especially indicated for the ulceration, particularly if secondary and with profuse offensive secretion. It is

of considerable value in treating the vocal defects which persist after the relief of the more acute secondary symptoms.

Merc. sol.—Superficial ulcers.

Mezereum.—Husky voice; hoarse cough; sensation of obstruction in pharynx and larynx; blood-streaked expectoration.

Nitric ac.—Hoarseness aggravated by speaking; stinging, sharp, sticking pain in the larynx; barking cough, expectoration of offensive blood-streaked mucus. Mucous patches not only in the larynx, but in the mouth and pharynx as well.

Sulph. is a remedy too much neglected, especially in cases of doubtful diagnosis, where it may arouse a latent syphilis that has produced various constitutional symptoms which resist all other measures. The same is true, but in a higher degree, of sulphur mineral waters.

(See "Syphilis of the Nose" and "Syphilis of the Pharynx.")

STENOSIS OF THE LARYNX.

Etiology. — Although laryngeal stenosis may result from œdema, abscess, foreign bodies, tumors, pseudomembrane, etc., such obstructions are not to be classed under the heading "Stenosis of the Larynx." This title should apply only to purely chronic hindrances to respiration, due to the presence of cicatricial contractions and adhesions, the result of inflammation, ulceration, suppuration, or injury; inflammatory adhesions between the edges of the vocal bands; to well-marked fibrous or fibro-cellular infiltration of the mucous and submucous tissue; or to congenital membranes. Syphilis is the most frequent cause.

Symptoms.—There are but two very characteristic indications, namely, loss of voice and difficult respiration. For the former, usually but little can be done; for the latter much may be accomplished by dilatation or bronchotomy.

Treatment.—If the stenosis be severe and threaten life, the patient should be intubated at once, or the air-passages opened below the point of obstruction, when, if the respiratory difficulty is not very severe, it is often possible to dilate the stricture suffi-

ciently to relieve the symptoms, thus saving the sufferer the frequent annoyance of wearing a tracheotomy cannula the remainder of his life.

Dilatation of the larynx, without preliminary tracheotomy, may be accomplished either by Schrötter's hard-rubber bougies or O'Dwyer's intubation tubes. The former have long been tested and sometimes proved highly useful, but will, doubtless, disappear in favor of the intubation apparatus. When preparing to use bougies it is usually necessary to begin with an English catheter; when this can be tolerated, a very small bougie may be carefully introduced and left in position for a few seconds; if not too irritating it may be re-inserted after a few minutes' rest, and then can be left a longer time, the instrument projecting from the mouth. As soon as the larynx becomes tolerant of the bougies, the largest size that can be borne may be inserted and, perhaps, left in position ten or fifteen minutes, during which time the patient is obliged to keep his mouth open and hold a towel below his chin to catch the saliva, which usually flows freely. In the use of the O'Dwyer tube, the patient is enabled to close the mouth after the tube is well in position; so that it can be left *in situ* several days if necessary, not only rendering the procedure less disagreeable, but greatly hastening dilatation, owing to continued pressure. It is not prudent to use the bougies where there is grave stenosis, but the intubation apparatus can be advantageously employed in threatening cases.

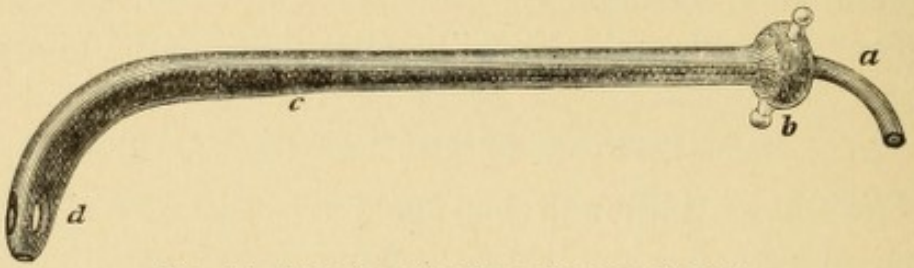


FIG. 116.—SCHRÖTTER'S HARD-RUBBER BOUGIE.

d, beak to fit into glottis; *c*, portion which rests upon the tongue; *b*, guides; *a*, curved tip for directing discharges from operator's face.

The stenosis occasionally assumes the form of a web-like

membrane extending from one band to the other; it is then possible to use either of the preceding methods, but a cutting operation often proves more satisfactory. Owing to the elasticity of the web, it is very difficult to divide it with a laryngeal bistoury; on that account Whistler's cutting dilator answers better, as it can be made to cut the web by protruding a concealed knife at the time of dilatation, but the instrument is objectionable, as it prevents breathing while in position. Lennox Browne has overcome this objection by making the instrument hollow. After the membrane is thoroughly divided, one of the dilating instruments may be inserted for a short time every day, with the intention of keeping the cut edges apart until healing has occurred; but, unfortunately, success is rare, as the edges generally reunite in a short time. If divided with a galvano-cautery blade, this reunion may not occur. More recently Schrötter suggests dissecting out a central portion of

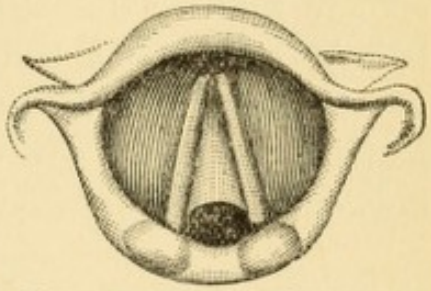


FIG. 117.—WEB-LIKE STENOSIS, DUE TO SYPHILIS.

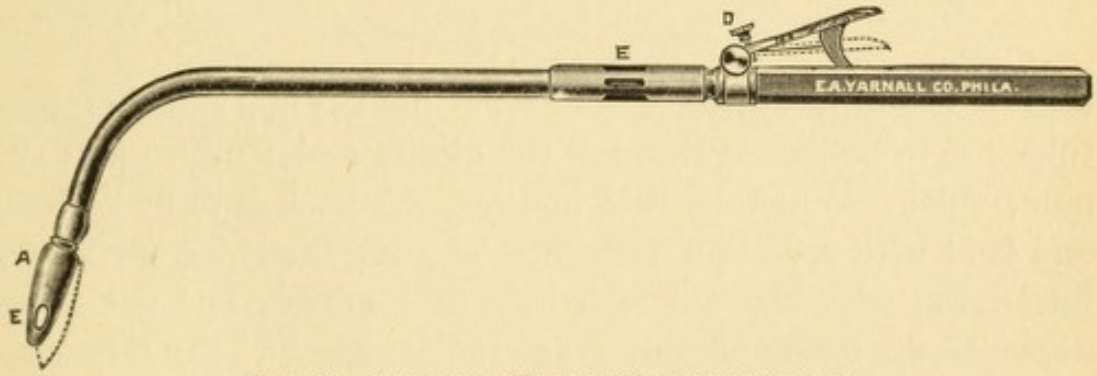


FIG. 118.—BROWNE'S HOLLOW CUTTING DILATOR.

the web. The pain is slight and can generally be prevented by the use of cocaine.

Various rapid dilators have been invented for the relief of laryngeal stenosis, but they are not often satisfactory, for, if they dilate the tissues sufficiently, they often occasion such an inflammatory reaction as to increase rather than diminish the obstruc-

tion. They are made on the principle of forcible urethral dilators.

After the performance of tracheotomy various methods of treatment may be adopted, namely, Schrötter's metal bougies, the introduction of a hard-rubber bougie, an intubation tube, a tupelo or rubber dilator, Stoerk's bivalve dilator introduced into the glottis through the fenestrum in the upper part of the tracheotomy tube, or dissection of the thickened tissues. The tin bougies consist of a body of solid metal, to the upper end of which is soldered a neck for attachment to the introductory handle; the upper part of the neck is perforated for the introduction of a string; from the lower end of the body projects a

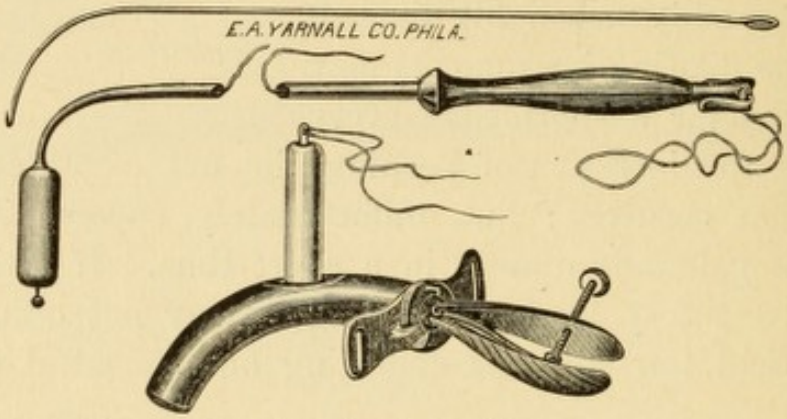


FIG. 119.—SCHRÖTTER'S METAL BOUGIES.

thin neck and head which, after removing the inner tracheotomy tube, are to be passed through the glottis and fenestrum in the outer tube. When in this position the neck is to be grasped and held with retention forceps. The instrument is preferably introduced with the aid of a laryngeal mirror, but the index finger of the left hand may guide the bougie into the larynx as in intubation. It may be left in position for some minutes at first; later, an hour or more, if possible; this should be repeated daily.

In using a hard-rubber bougie or intubation tube, the tracheotomy tube is temporarily removed and the instrument inserted. The tupelo dilators are inserted through the stricture with the cannula in position. The rubber bag is inserted

closed and inflated when in position. Stoerk's dilator is passed, from without, through the fenestrum of the outer cannula and the blades separated by a set-screw. If all of these methods fail to accomplish the desired result, and it is certain that the voice can never be regained, the larynx may be laid open and the stenotic tissue cut out. In this way dyspnœa may be relieved and the tracheotomy tube removed; following this, there is a possibility that the vocal function may be improved by the formation of bands of tissue in such a way as to give a fair voice. Such a dissection is rarely necessary since the practice of intubation. If the stenosis be well within the trachea, intubation or dissection will be indicated.

The remedies that may be tried are cannabis sat., sulph. of zinc, graph., and rhus tox.

CHAPTER XXXIII.

Exudative Diseases.

PRIMARY MEMBRANOUS, OR EXUDATIVE, LARYNGITIS—CROUP.

Whether membranous croup and diphtheria are one and the same disease does not yet appear, but recently the evidence favoring the unity theory is gaining ground, although the profession is pretty evenly divided on the question. There must be, therefore, some good grounds for both sides of the controversy, but, so far as this work is concerned, it is not worth while to enter into a discussion of the subject. As the symptoms of primary membranous laryngitis and secondary diphtheria of the larynx are so similar, they will be classed together, especially after the stage of stenotic respiration has commenced; and as the mechanical treatment is so similar in all practical respects, repetition will be avoided by referring the reader to "Diphtheria of the Pharynx and Larynx."

Etiology.—The causes of membranous croup are essentially those of diphtheria, although contagion and infection are doubtful: nor is it apparent that decaying vegetable and animal matters have any particular causal influence. The causes, again, of membranous laryngitis are those giving rise to catarrhal conditions in general, and to catarrhal laryngitis in particular. Some claim that the one may gradually merge into the other. Heredity here, as in diphtheria, seems to act causatively, as also the repercussion of eczematous eruptions on the face and head. While some argue that one attack gives immunity to others, the greater number of authorities believe that it exerts little influence either for or against a recurrence.

As with diphtheria, the greatest number of cases occurs in childhood. It is unusual during the first year, after the seventh to the tenth year its frequency gradually declines, and it is very

rare in adults. Those who are poorly nourished, fed, and cared for in general are more prone to membranous laryngitis, but too much housing and "wrapping up" are to be discouraged.

Pathology. — Pathologically, the process consists in the production of a congestion, inflammation, and, later, exudation of a fibrinous material, usually upon the surface of the membrane. The exudation occurs in two layers; the superficial consists of thickened epithelium, the cells of which have undergone proliferation and mucoid degeneration; the deep layer is composed of several strata of a fibrinous or membranous substance and leucocytes. In the early stage the entire deposit may be pultaceous.

When the membrane exfoliates it usually leaves a slightly denuded but not a bleeding or ulcerated surface, upon which may be engrafted an apparently true diphtheritic process, thus seeming to explain the occasional co-existence of the two forms of deposit.

Symptoms. — Symptomatically, the disease is not always distinguishable, in the first stage, from other acute laryngeal conditions, but in the second there is less liability to error, and in the third the diagnosis is comparatively certain even without the aid of the laryngoscope. The premonitory stage is often so slight as to scarcely attract attention, although there is usually malaise, loss of appetite, thirst, and a catarrhal attack with hoarseness and cough; which may even be croupy, but at very irregular and inconstant intervals, thus simulating spasmodic croup. The latter affection, however, usually comes like "a thunder-clap from a clear sky." Soon the membranous change shows itself in a more constant hoarseness and croupy cough, with difficult respiration; at first during inspiration only, but later during expiration as well. This condition may be the first noted, or the patient may first be roused from sleep, as with the spasmodic affection. These symptoms are usually worse at night; the amelioration may be so marked during the succeeding day that the false hope is entertained of a speedy recovery

which too often does not come, for by evening the patient is worse than during the preceding night. If the condition increase, fever is noted, the mercury registering 101° to 104° F. or more; the pulse is rapid, perhaps full and bounding, and respiration hurried, loud, and accomplished with evident distress. The laryngeal symptoms then become so like those of secondary diphtheria of the larynx that reference must be made to that malady (page 215).

The mirror may reveal a pseudodeposit on isolated points, or coating a large part of the lining membrane of the larynx. If small areas alone be covered, the ventricular and vocal bands often suffer first, the uncoated parts being somewhat congested. Failure to find membrane does not always mean its entire absence, as the ventricle, the subglottic region, or some equally hidden portion may be involved. In primary exudative laryngitis there is rarely albuminuria, sequelæ are unusual, and the cervical glands are not often enlarged.

Diagnosis.—The diagnosis is not always easy. Spasmodic croup (subacute laryngitis of children) is very similar, especially at the outset; but if the condition be watched for a few hours it will usually be noticed that the respiratory difficulty is more constant in the graver disease, in which there are fever and malaise; soon the dyspnœa becomes quite constant, and is expiratory as well as inspiratory; but it must be remembered that even at a late stage of pseudomembranous laryngitis there may be periods of comparative immunity from dyspnœa. The expectoration of shreds or pieces of membrane, or the discovery of a deposit in the larynx, will at once establish the diagnosis. From acute œdema of the larynx and acute laryngitis with infiltration, the diagnosis is sometimes impossible without laryngoscopic aid, or the appearance of membrane in the expectoration. It may generally be distinguished from secondary exudative laryngitis by the absence of pharyngeal deposit; but in some cases the latter entirely disappears before the larynx is attacked, or the pharyngeal affection may have been so slight as

to be overlooked, when the after-appearance of irregularities or even of ulcerations may be sufficient to insure the diagnosis. There is usually greater prostration in the secondary affection, more probability of heart-failure and paralysis, the latter being very infrequent after primary membranous laryngitis.

Prognosis.—The outlook, in primary membranous laryngitis, is much more favorable than where the membrane extends from the parts above. The duration of the disease is from two or three days to as many weeks; the greater number of fatal cases succumb about the fourth or fifth day; when recovery occurs, the severe symptoms usually begin to decline on the sixth or seventh day; recovery may be long delayed, but relapses are rare. The expulsion of the membrane, with temporary relief to respiration, is not a necessary proof of recovery, as the deposit may form even after the dislodgment of large casts. Without tracheotomy or intubation from 40 to 50 per cent die, and one of these operations might be said to save 30 per cent of otherwise fatal cases. Despite numerous statistics to the contrary, personal experience, coupled with that of a number of friends of both schools of practice, leads me to say that, even with operation, recovery from secondary laryngeal diphtheria is infrequent.

Treatment.—The local treatment is practically the same as that required for secondary membranous laryngitis; stimulation is rarely demanded, neither is it so necessary to keep the patient quiet so long after apparent recovery. The remedies employed are similar, but not identical, in the two varieties; consequently, they will be considered in both connections. The prophylactic treatment consists in eradicating those conditions which have been noted as causing the disease and in avoiding "cold-catching" as much as possible. Eucalyptol, 10 per cent in fluid albolene, has had much praise.

Therapeutics.

Acetic ac.—Locally, as an inhalation or a weak spray, as well as internally. Hissing, rattling, labored breathing. Some consider this remedy almost a specific.

Acon.—As with the spasmodic variety, if due to dry, cold, northwest winds, acon. often acts well if given early, before the membrane has formed, and where the particular aconite fever is present; hard, dry, barking cough, and loud expiration.

Antim. tart. is of undoubted value after the membrane is loosened, but the patient has scarcely strength to expel it; the face is cold, bluish, covered with cold perspiration; rattling of mucus and membrane.

Antipyrin.—A woman, 60 years of age, was cured by Dr. W. M. Decker, after failure of acon. and spongia. The use of antipyrin was followed by the expulsion of "a membranous cast from the trachea." (*N. A. Jour. Homœop.*, March, 1889.)

Bell.—Croupy, barking cough; sawing, whistling respiration; very restless, midnight aggravations; bright-red throat and tonsils. This remedy cured one case in which I saw membrane in the larynx, and for which operation seemed to offer the only hope.

Cham. is Chargé's greatest remedy; when the general characteristics of the drug were present, he has not lost a case.

Iodine.—Wheezing and sawing respiration; dry, barking cough, or, later, when the cough is muffled and indistinct with intense dyspnœa and torpor from membranous obstruction; pain in the larynx, at which the child grasps; the face pale and cold, and the voice deep, hoarse, and gruff.

Kali bi. has a great reputation in the cure of membranous laryngitis, either primary or secondary; and justly so, if the expectoration be stringy, occasionally pseudomembranous, and when the air gives rise to a peculiar metallic sound as it passes through the larynx. Hoarseness or aphonia and moderate dyspnœa. There is a tendency for the membrane to extend to the trachea and bronchi (kaolin). Aggravation about 3 A.M.

Kali mur. "is the principal remedy for the membranous exudation alternately with *ferrum. phos.*" (Boericke and Dewey.)

Liquor calcis chlorinati.—"This remedy seems to exert its influence principally, if not entirely, upon diphtheritic membrane

in the larynx and trachea, loosening and facilitating its expectoration." (Dr. O. S. Haines.)

Sang. can.—Pseudomembrane in the larynx, with a dry, burning, swelled feeling in the larynx and pharynx, and croupy "wheezing-whistling" cough; threatened suffocation.

TRAUMATIC CROUP.

Etiology.—This affection needs but brief mention. It generally occurs in children, is usually occasioned by inhalation or deglutition of irritant poisons, scalding water or steam, flames, chemicals, and caustics. The latter include ammonia, galvanocautery, etc.

Symptoms.—The symptoms differ but little from primary croup, although there is greater pain in the larynx, and usually much more pharyngeal soreness. The laryngoscopic appearances are similar to those in primary membranous laryngitis, but there is often greater intensity of the inflammatory process and œdema is not infrequent, especially in adults.

Prognosis.—The prognosis is exceedingly grave in very young children; the older the patient, the better it becomes. Much depends upon the extent and situation of the lesion.

Treatment.—Emollient sprays, chiefly the various petroleum preparations, are to be used early. Cold external applications are of utility. Scarification, intubation, or tracheotomy may be required.

The internal remedies are of great value, especially acon., apis, bell., and sang. can.

CHAPTER XXXIV.

Laryngeal Tumors.

Laryngeal growths may be either benign or malignant. Fortunately, the benign far outnumber those of the more deadly variety. Whereas a few years ago it was believed that the lines of demarcation between malignant and benign neoplasms were sharply cut, it is now known that these lines are sometimes but imperfectly mapped out, and so-called benign tumors sometimes undergo malignant degeneration. It has been proved, however, that these tumors rarely, if ever, undergo this metamorphosis as the result of instrumental irritation, as once taught; finally, both forms of new growths may co-exist.

The benign tumors found here are papillomata, fibromata, fibro-cellulomata, myxomata, angeiomata, lipomata, adenomata, and cystic tumors; the malign, sarcomata, epitheliomata, and medullary carcinomata.

BENIGN NEOPLASMS.

Etiology.—The most frequent cause of benign tumors seems to be a laryngeal catarrh, in which hyperæmia enters to a promi nent degree; to this universal cause may be added post-nasal adenoids, irritants, use of the voice during its "change" at puberty, imperfect voice production, and the various dyscrasiæ, particularly phthisis and syphilis. Often no cause can be found. It is always wise to look for a tuberculous condition of the lungs or of the neoplasm in every case of laryngeal growth.

These tumors may occur at any age, but are more frequent in middle life; males are oftener attacked owing to their greater catarrhal proclivities, the greater irritation arising from their occupations, and the greater strain often brought upon the vocal organs.

Pathologically, laryngeal growths are not different from the same class of tumors when occurring elsewhere on mucous surfaces.

Papillomata (warts) are the most frequent of all the varieties of laryngeal tumors, and are considered most characteristically benign; but it cannot be denied that they do sometimes recur after removal, even though, apparently, totally extirpated.

Symptoms. — The symptoms of papillomata are rather meagre and are rarely sufficient to insure the diagnosis without the aid of the laryngoscope. If the tumor be small there may be no symptoms, but, if pedunculated, even a small growth may, by change of position, cause irritation, dry cough, and slight expectoration, which may be bloody or contain portions of the growth; should the papilloma fall between the vocal bands, the voice will be momentarily impaired or even lost; sometimes the tumor may divide the vibrating rima glottidis into two portions, when a double voice (diphthonia) may be produced. These vocal changes occur in several forms of tumors, in ulceration of the vocal bands, and in nervo-muscular spasm of the tensors of the bands.

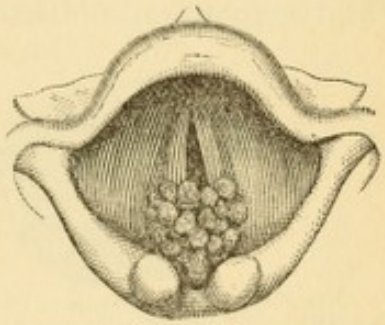


FIG. 120.—PAPILLOMATA FOLLOWING TYPHOID FEVER. (See author's report of case in *Hahnemannian Monthly*, February, 1890.)

When large, the tumor may so fill the glottic space as to cause marked or even fatal dyspnœa, or by its position impair the action of the adductor muscles. Deglutition may be affected if the growth be situated upon the epiglottis or in one of the valleculæ. Pain is unusual, but the sensation of a foreign body is frequent. There is rarely any external manifestation of the tumor, and the general system only suffers when there is difficult deglutition or impaired respiration.

Laryngoscopically, papillomatous growths resemble a wart, cauliflower, raspberry, or mulberry; irregular in outline, granular

and either gray or pinkish in color, they usually spring from the vocal bands and vary in size from a mustard-seed to an English walnut. In some instances they completely fill the laryngeal cavity and invade the parts above or below. Although nearly always sessile, laryngeal papillomata are sometimes pedunculated. It has become customary to speak of a papillomatous growth, but in reality it is generally more correct to speak of a mass of these growths, which usually starts as a single point, often as a spot of granulation tissue. When touched with a probe the neoplasm will be found rather soft, insensitive, and, on rather firm pressure, frequently bleeds.

Treatment.—Medicines internally and locally applied cure many cases, but mechanical interference is frequently necessary. The instruments chiefly used are forceps, scissors, knives, snares,

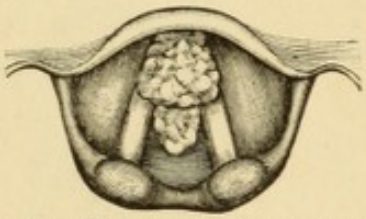


FIG. 121.—PAPILLOMATA IN A BOY, REMOVED BY ENDOLARYNGEAL METHOD, SEVEN YEARS FOLLOWING TRACHEOTOMY. (See *Hahnemannian Monthly*, Nov., 1888.)

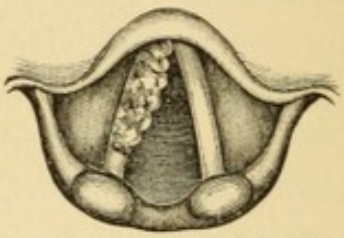


FIG. 122.—PAPILLOMATA IN AN ARMY OFFICER, ÆT. 54.

guillotines, the galvano-cautery, and sponge probang. The best applications are: tannic acid, gr. xx, to glycerin, ℥j; iodine, gr. xv; and thuja tincture.

Therapeutics.

"**Caust.** has seemed to benefit two cases of laryngeal papillomata of small size, where the subjective voice symptoms were present; and one case of papilloma disappeared under arnica where use of voice produced aching in the throat and chest." (Malcolm Leal.)

Sang. nit., especially when associated with follicular pharyngitis and adenoid vegetations.

Thuja is, perhaps, the nearest similar, and has cured numerous cases. Locally and internally.

Compare ars., calc. phos., psor., and rhus tox.

Fibromata (fibrous tumors) are less frequent than papillomata. The former consist of white fibrous tissue. They are pedunculated, smooth in outline, pinkish or red in color, quite hard and resilient to the touch, and in size comparable to the papillomata. These neoplasms do not bleed easily, are somewhat sensitive, but, like the warty growths, generally spring from the vocal bands. According to the present state of clinical experience, remedies have less influence than upon the former variety.

Treatment.—Strong forceps, the knife, and galvano-cautery will be found the best instruments for removing these growths. Instances are not wanting in which bronchotomy has been imperatively demanded, for the relief of dyspnœa, both in fibrous and warty growths of the larynx; in at least one such case reported



FIG. 123.—PAPILLOMATA IN AN INVETERATE DRINKER OF ALCOHOLICS.

by J. F. Baldwin (*New York Med. Record*), the operation was averted and the tumor absorbed by intubation. After the patient has sufficiently recovered from the effects of a tracheotomy, it is best to attempt removal of the tumor by the endo-laryngeal method; if this absolutely fail, the larynx may be divided and the tumor extracted. The dangers of this operation are pneumonia and, more frequently, a permanent hoarseness or loss of voice.

Compare bell., calc. phos., conium, and silica.

Fibro-cellular tumors (true polypi or soft fibromata) are rarer than either of the preceding varieties. They are usually quite small, smooth, rather hard, red, semi-transparent, sessile,

and spring from the vocal bands. The same treatment is to be used here as in the preceding class, although tracheotomy is rarely indicated. Dr. Charles Ozanam reports the cure of a polypus, which was "red, with a sessile base, and formed a projection of three millimetres, with about the same diameter," by the use of berberis.

Myxomata (mucous tumors), though bearing some resemblance to fibromata, are of a deeper pink, more translucent, and much softer to the touch; they are smooth and glisten slightly. A probe may easily be pressed into their substance. They bleed readily and are easily broken down with forceps. The microscope may alone differentiate them from cysts. Their treatment



FIG. 124.—POLYPUS OF RIGHT VOCAL BAND.

is not unlike that to be employed in the cure of papillomata, which they most nearly resemble in consistence.

Adenomata (glandular tumors) are very rare. They generally spring from the epiglottis, and present a solid appearance with a mammillated surface.

Compare badiago, bry., conium, iod., lap. alb., phytol., silica, and sulph.

Angeiomata (vascular tumors) are recognized by their glandular outline and dark, almost black, color, especially after phonation. In appearance they somewhat resemble a bunch of black currants, and bleed easily and profusely. They are best treated by remedies internally or locally applied, but may safely be destroyed with the galvano-cautery.

Carbo veg. should be a good remedy for such tumors, as also æsch., ham., iod., and nux vom.

Lipomata (fatty tumors) are the rarest of the laryngeal tumors, so far as reported. They have a membranous pedicle, and are smooth, rounded, yellowish white, and slightly resilient to contact of the probe.

Compare agar., baryta, calc., crocus, graph., lap. alb., phos., and phytol.

Cystic tumors (cysts) are not so rare as once supposed. They are due to retention of the secretions of the mucous glands and the dilatation either of the *cul-de-sac* or of the excretory ducts. Their favorite seats are the epiglottis and ventricular bands. They are smooth, shining, slightly transparent, and easily indented if filled with a serous, purulent, or bloody fluid, but are quite hard if caseous in consistence. They usually have a rounded, broad, pale attachment, and there is generally an areola of congestion extending some distance on to the surrounding tissue.

Cysts on the vocal bands are rare and cannot be distinguished from them in color; when in this location, they affect the voice materially. In some instances they repeatedly burst and refill, with consequent temporary vocal improvement, but recurrence is not usual after rupture. It is sometimes possible to remove them by internal remedies, but it is better to puncture them with a guarded laryngeal knife; should the contents be too caseous to flow out after incision, a part of the sac-wall had better be torn away with cutting-forceps, and the contents curetted or sac cauterized. Should the cyst be very large, it may be found necessary to do a preliminary tracheotomy, after which a tampon cannula should be inserted, when the cyst may be opened with safety.

Enchondromata (cartilaginous tumors) are exceedingly rare; they are very hard, smooth, and of the color of the mucous

membrane. They may necessitate tracheotomy, although chromic acid will, at times, destroy them or cause their absorption.

Chorditis Tuberosa.—These little vocal nodules are usually found in singers and public voice-users, perhaps due to faulty voice-use. Usually one band is alone affected, but the second may follow late. It is my experience that these patients furnish a rheumatic or gouty history, either family or personal, and that this diathesis has some causative influence. The singing voice is always affected. Although this pathological process may be secondary to a chronic catarrhal laryngitis, I believe it independent of such a cause. The presence of these nodes causes muscular fatigue, especially of the adductors.

Rice says (*N. Y. Med. Jour.*, January 24, 1891): "These nodular enlargements are produced by the friction of the free edge of one band against that of the other where the voice is used a great deal, and where the tension of the bands is unevenly controlled because of a faulty method of using the laryngeal muscles, just as the outer layers of the skin of the foot are hypertrophied by the friction of an ill-fitting shoe." Chorditis tuberosa may occur upon one or both bands; when the latter, the nodules are directly opposite. Their usual position is at the junction of the anterior and middle thirds of the bands, and on the free margin.

Thyroid gland-tissue has occasionally been found in extirpated laryngeal growths, and Eppinger and Semon have described tumors of the larynx as occurring in lymphadenoma, or Hodgkin's disease.

Pachydermia verrucosa laryngis has been carefully considered by Virchow, Jürgens, Massei, and others, and chiefly brought to notice in connection with the historic case of Emperor Frederick III. It is infrequent. In this condition the squamous epithelial lining of the inter-arytenoid space and the

posterior ends of the vocal bands undergo a change which consists of an increase of epithelium. Pachydermia shows itself in two forms, one of which, the circumscribed (warty pachyderm), is characterized by its ever-increasing dermoid character and its resemblance to papillomata; the other embraces changes in the mucous membrane proper, with a diffuse swelling.

The latter usually appears especially near the vocal processes of the arytenoid cartilages. When at this point, a swelling may occur, usually directed downward and forward, with its anterior extremity under the vocal muscle; within this swelling is a superficial groove, which Virchow first ascribed to irritation of old cicatrices. "This change is never found alone, but is associated with a diffuse disease which extends over the entire vocal band. The whole surface is in a condition of epithelial proliferation. The thickened wall surrounding the depression is found to be infiltrated with papillæ, covered with rich layers of epithelium. . . . There is also usually a continuation of the disease into the inter-arytenoidal space, where may sometimes be seen in great extent, even with the unaided eye, thick outgrowths and folds, with epidermoidal coverings which present a very striking appearance in their strength and extent." (*Ann. Univ. Med. Sci.*, 1888.) Pachydermia is essentially a disease of drunkards, is usually bilateral, and of slow advance. Its symptoms are similar to those of chronic laryngeal catarrh.

General Symptoms of Benign Growths.—Some benign tumors may cause difficult deglutition, when the growth is quite large or situated on the epiglottis or arytenoid cartilages. The voice is often characteristic in that it may be good at one minute and gone at the next, owing to tilting of the neoplasm. It is suppressed when a large growth is situated upon the vocal bands, preventing their approximation or vibration. Dyspnœa is present when the tumor partially closes the glottis, and when a pedunculated tumor momentarily changes position and falls into the glottic space. Pain rarely accompanies benign growths,

but cough is often a constant and exceedingly annoying symp tom. Expectoration is inconstant.

The laryngoscopic diagnosis is rarely a difficult matter; the only condition likely to be mistaken for a tumor is eversion of the laryngeal ventricle. In this the fold of membrane can be temporarily replaced by a bent probe, making the diagnosis easy, although the fold of tissue may sometimes necessitate a cutting or cauterizing operation for its permanent relief, owing to its hindrance to vocalization. A small tumor may be hidden from view if the ventricular band be much enlarged.

Prognosis.—The prognosis is usually good so far as life is concerned; the only dangers are the remote possibility of malignant degeneration and the immediate one of suffocation.

Treatment.—One word of caution is here needed, namely, any instrumentation within the larynx, unless under full illumination, may not only injure the healthy tissues of the larynx, but originate a fatal inflammation of that organ. The mere presence of a tumor in the larynx is not sufficient warrant for its removal. Unless time be limited a small growth that gives rise to little annoyance should be first treated with remedies and watched, but if it considerably interfere with vocalization and respiration it is rarely well to delay operative procedures. Tumors, especially if recent, may disappear spontaneously by "slow atrophy and resorption" (Virchow); some will follow a more rapid decline by relief or cure of the congestion; others may be dislodged during cough, etc.; and a fair proportion will disappear rapidly under the influence of appropriate internal medication.

The preparation of the patient for the operation and the methods of procedure are of considerable moment. Formerly the patient was either drilled to the use of the instruments, or locally anæsthetized with applications of chloroform and morphine. The latter method has become obsolete since the introduction of cocaine hydrochlorate. Drilling is less practiced, but, nevertheless, is often the best method, especially when aided by

cocaine. It is practiced by daily instrumentation of the pharynx and larynx, first with probes and later with the instrument to be used in the removal of the growth. When the larynx becomes thoroughly tolerant of the instrument,—always by the aid of the laryngoscope,—the tumor is grasped or encircled and removed; if possible, in one mass, or, if necessary, in fragments. Hæmorrhage is usually insignificant. Should the first attempt fail, the instrument may be re-introduced as soon as the larynx recovers from the spasm or irritation which sometimes follows. It is not well to repeat the attempt more than a few times at each sitting, lest the patient become exhausted or

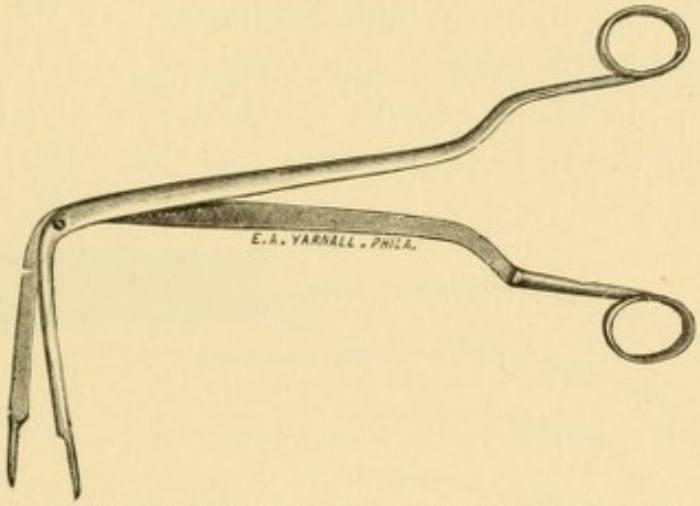


FIG. 125.—MACKENZIE'S ANTERO-POSTERIOR FORCEPS.

severe inflammation, œdema, or perichondritis be induced. These results can be avoided if no attempts be made to remove the tumor without thorough laryngoscopic illumination. Although some operators, notably Stoerk, grasp the growth even when unable to see it, calling to aid the memory of its exact location, such a procedure is not advisable, except in the hands of such experts. Growths are sometimes removed at the first visit, the parts being cocainized by a 4- to 20-per-cent aqueous solution, applied directly to the larynx three or four times at five-minute intervals. Should this fail to answer, a whiff of chloroform will aid the local anæsthesia without causing general insensibility.

The operator takes the mirror in his left hand and, under good illumination, introduces the instrument with his right, directing its movements with the aid of reflection, at the same

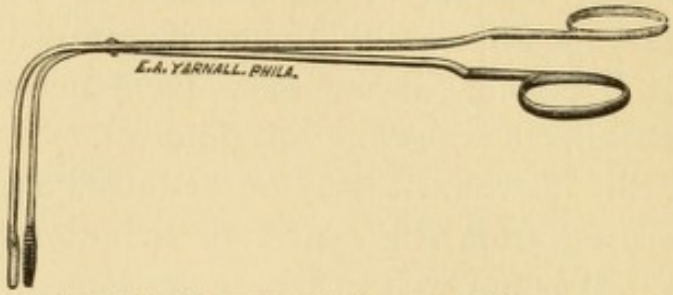


FIG. 126.—MACKENZIE'S LATERAL FORCEPS.

time remembering that an anterior motion of the instrument gives a reflected appearance of a posterior "pass." When in close relationship to the growth the blades of the forceps, previously closed, are to be separated; the tumor is to be firmly

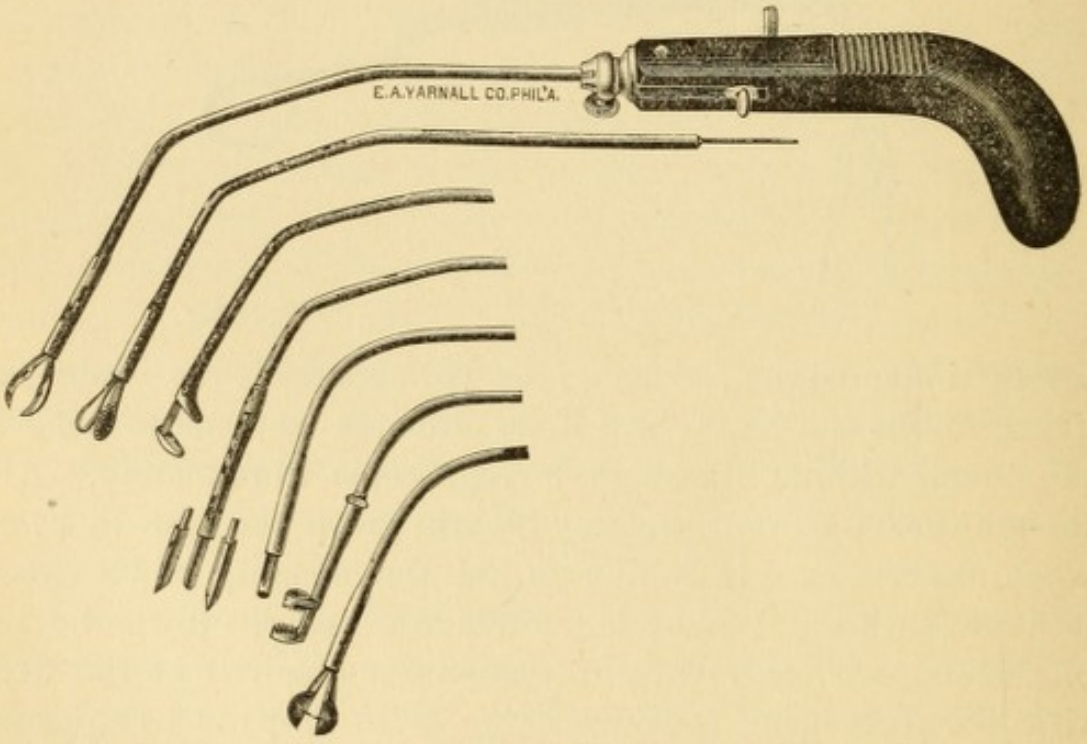


FIG. 127.—SCHRÖTTER'S UNIVERSAL HANDLE WITH VARIOUS TIPS.

grasped and a portion or all removed by gentle traction. If a snare be used, the loop must be passed around the growth and, when in position, tightened and withdrawn. Mackenzie's

guarded wheel-écraseur may be employed in the same manner. A curette can be used for the removal of tumors situated upon the upper surface of the vocal bands. If the growth be small, pedunculated, and situated on the free edge of the vocal band, it can sometimes be brushed off by passing a Voltolini sponge probang through the glottis once or twice.

In severe conditions, where possible, a rubber or metal intubation tube should be inserted, for the purpose of relieving dyspnœa and of causing pressure-absorption of part or all of the tumor. If this fail, a preliminary tracheotomy may be demanded. As soon as the fever and inflammation subside, further

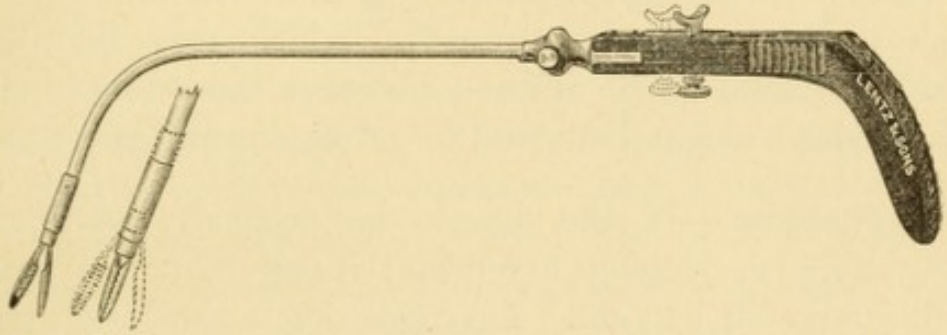


FIG. 128.—AUTHOR'S MODIFICATION OF SCHRÖTTER'S LARYNGEAL TUBE-FORCEPS.

By means of this modification a collar is forced over the joint of the blades, closing the tips on a level with the opened tips, thus avoiding the necessity of drawing the closing jaws away from the neoplasm.

efforts should be made to remove the growth through the natural passages (endo-laryngeal method). Should this not succeed, the tracheotomy cannula is to be removed, and efforts made to extirpate the growth with forceps or snare through the opening in the trachea. If again unsuccessful, the crico-thyroid membrane should be divided and the efforts repeated, or the thyroid cartilage split directly in the median line (laryngotomy or thyrotomy). The thyroid plates are to be separated and every part of the tumor removed with forceps, scissors, snare, knife, or cautery, according to indications. The cartilage is to be re-united as accurately as possible; even then the voice is often impaired.

MALIGNANT TUMORS.

Malignant growths of the larynx are rare before the fortieth year, but Rehn records a case occurring in a child three years of age; they are more frequent in men than in women. Although occasionally primary, laryngeal cancers are usually secondary, and not infrequently appear as the result of extension from neighboring structures, particularly from the pharynx, when they are usually epitheliomatous.

Epitheliomata are the most frequent; encephaloid (medullary) and scirrhous much less common. Hereditary influence, apparently, plays an unimportant rôle in the production of cancer, but there is evidently an underlying proclivity in all who are attacked with malignant growths, which may be akin to heredity. There seems little doubt that the presence of irritants (tobacco, alcohol, etc.) aid in developing primary growths.

Epithelioma.—If the disease be primary, hoarseness is usually the first symptom to appear; it may be accompanied or speedily followed by pain. Laryngoscopic examination renders it quite evident that some severe malady is present, on account of the swelling and often marked redness. When a secondary growth extends from the pharynx or œsophagus, deglutition will be difficult and painful; and sharp, lancinating pain frequently extends to the ears, owing to the neoplastic irritation of sensitive fibres of the superior laryngeal nerve irradiating, as von Ziemssen suggests, upon the auricular branch of the pneumogastric. Pain is less severe when the disease is limited to the interior of the larynx (intrinsic) than when it attacks its outer portion and neighboring structures (extrinsic). If the tumor extend from the thyroid gland, difficult respiration, pain, and hoarseness may first appear. When thoroughly established, cough is often a complicating condition, and respiratory difficulty is great when the breathing space is much encroached upon by the growth, loose cartilage, œdema, or posterior crico-arytenoid paralysis. Ulceration is, later, added to the other

changes; then it is that the true suffering of the patient begins and too often terminates only when death asserts its claim. After the onset of ulceration there is usually a very offensive, often tenacious and bloody discharge, which may contain particles of broken-down tissue; therefore, when the diagnosis is uncertain, the sputum should be submitted to microscopic tests. Painful, difficult, or impossible deglutition occurs only when the ulceration attacks the epiglottis, arytenoid region, or pharyngeal wall. Pain is usually constant, but is occasionally absent throughout. Cough is annoying and often very painful, although not usually constant; it depends upon the sensation of a foreign body in the larynx, compression of the trachea or a nerve, or irritation of the latter. The voice is very rough, hoarse, gruff, or suppressed, depending upon the position of the ulceration, the involvement of the muscles, the degree of infiltration, the amount of nerve-pressure, and the absence or presence of cartilaginous involvement. The picture is often incomplete, however, without the cachexia; the weakness; the loss of sleep; the often insatiable hunger, which the patient cannot appease; and the burning thirst, which no fluid can fully quench. It is not unusual for the cervical, tracheal, and bronchial glands to be implicated.

The *primary laryngoscopic appearances* are often incomplete. When one band is sluggish in action and congested with a pale or pink nodule, malignant tumor should be suspected. The immobility is probably due to infiltration,—a feature of malignancy. When one vocal ligament is concealed from end to end by a papillary growth, cancer is probable, especially if the granules are quite large and in an elderly person. Von Ziemssen has noted hoarseness or aphonia years before the tumor appeared. The nodule or swelling soon becomes well marked and sometimes circumscribed. The surface is irregularly nodular and of a purplish color, unless it attack the vocal bands, when it is very pale or slightly pink. The intrinsic variety generally originates in the lateral laryngeal wall; but when the cancer

proceeds from the pharynx, the first evidences of congestion and thickening usually begin on the free edge of the epiglottis and extend to the interior of the larynx, by the way of the ary-epiglottic folds. Ulceration soon follows upon the advancing congestion and thickening; even at a very early stage the larynx is displaced, thus differing from syphilis and phthisis. When ulceration occurs the condition becomes very characteristic; vegetations often appear around the edges of the ulcer, and, breaking down, add to the general destruction. The ulcer is very ragged, inflamed, and below the surface of the elevated tumor. As the disease progresses the cancerous mass may fill the greater part of the laryngeal cavity and invade the surrounding structures.

Diagnosis.—The diagnosis is not usually difficult after the appearance of ulceration, but in the earlier stages it is not always possible to determine the exact condition. The chief differential points have been noted under "Syphilis of the Larynx." When an apparently papillomatous growth is surrounded by an inflamed and infiltrated "reddened zone," epithelioma should be suspected; and any growth springing from the ventricle should arouse anxiety, eversion of this sac excluded. Transillumination usually reveals a dull, cloudy area circumscribing the growth and corresponding to the amount of collateral inflammation; such a shadow-line is not seen in benign growths. If, after removal of a part or all of the growth, recurrence take place without previous cicatrization, malignancy is the rule; but if after that result, benignity is almost certain.

Sarcoma, when intrinsic, generally starts as a firm, smooth, rather soft, well-defined, and sessile, unilateral tumor. It usually arises from a vocal or ventricular band or ventricle, although the entire larynx may be invaded or the growth appear as a submucous, cauliflower-like infiltration or tumefaction. It is somewhat redder than epithelioma, more vascular, may undergo earlier ulceration, and is more prone to bleed profusely; if ex-

trinsic it originates in the pharynx. The subjective symptoms differ but little from those noted under "Epithelioma." Laryngoscopically, the diseases are well defined. While in both there is great displacement of the larynx and surrounding tissues, epithelioma is pale, nodular, and very slightly vascular; sarcoma is smooth, brighter in color, and extremely vascular. A sarcoma occasionally resembles either a papilloma or a fibroma in appearance.

General Symptoms of Malignant Growths.—In malignant diseases of the larynx there is nearly always some glandular involvement ascertainable by external palpation; the exceptional cases occur in intrinsic sarcomatous growths; even then glandular enlargements are sometimes detected post-mortem.

It was formerly taught that the lymphatic supply of the larynx was isolated, and on that account malignant tumors of the larynx were rarely due to secondary deposit; but Sappey's researches have demonstrated the fallacy of this teaching. It has been proved clinically, as well as by means of post-mortem injection, that there is a direct communication between the lymphatics of the larynx and those of the trachea and bronchi, and it is now known that distant secondary growths are not so rare as was formerly supposed. Enlargement of the glands in the course of the recurrent laryngeal nerves may be accountable for paralysis of the laryngeal muscles supplied by these nerves. It has now become well established that the early symptoms of cancer of the larynx may closely simulate aneurism of the mediastinal region, owing to cancerous enlargement of the bronchial lymphatic glands.

External palpation often reveals the enlargement within, and in rare cases there are external evidences of the internal ulceration. Although the general health is nearly always affected and cachexia is present, the flesh may be up to the standard; and in intrinsic malignant growths the patient may present no external evidence, although post-mortem examination reveals

the malignant anæmic condition of the tissues. In severe ulceration loss of flesh is often chiefly due to dysphagia.

Prognosis.—The prognosis is always unfavorable, although some cases recover spontaneously, or as the result of remedies or surgical interference. The usual duration of life is about two years. Small-celled sarcomata are the least malignant; spindle-celled and alveolar sarcomata more so; and epitheliomata, after ulceration begins, most malignant. The prognosis of keratoid (cornified) carcinomata, however, is better than that of the soft variety. In all forms the prognosis is better when the disease is confined within the larynx proper. Death is usually due, in primary cases, to marasmus, asphyxia, or hæmorrhage; in secondary, to pneumonia, deposit in more vital organs, or to ulcerative perforation of the œsophagus.

Treatment.—In the early stages internal remedies will do much to improve the patient's condition and prevent the progress of the growth; later, it may be necessary to add cleansing sprays. If the pain be very severe and remedies fail, soothing applications may relieve, but in the worst cases anodines may be necessary. When alarming dyspnœa exists, tracheotomy should not be withheld. If it be impossible to give the proper amount of nourishment either by mouth or rectum, the œsophageal feeding-tube should be employed, if practicable; otherwise gastrostomy may be performed.

Although some physicians consider palliatives a confession of ignorance of the proper application of the homœopathic remedy, that confession is sometimes necessary in this usually incurable and intensely painful disease. The best local palliatocuratives are calendula, cannabis sat., hydrastis, and thuja; and the chief palliatives are cocaine, morphine, iodoform, iodol, and aristol; external heat and chloroform often greatly relieve. Where there is much earache, hot water, calendula (30 per cent), bell. 3 x (aqueous solution), or plantain-oil may be dropped into the external auditory canal with good effect. Internal remedies very generally give decided relief and often dull the pain at

once. They should always be prescribed with care and given a fair trial before resorting to palliatives.

Cauterization of laryngeal cancers is to be deprecated, with one exception: if the free portion of the epiglottis alone be invaded, the growth may be totally destroyed by the galvano-cautery point; caustics are never advisable. Tracheotomy may relieve dyspnœa and give respiratory rest to the larynx, checking the rapid progress of the disease; thus the patient may be rendered more comfortable and life prolonged several months at least, unless some bronchial, lung, or blood affection complicate the operation, which, however, is unusual. After repeated contrasts with non-tracheotomized patients, Fauvel considers tracheotomy useful as well as often necessary. For the fulfillment of the objects stated, a low operation is to be advised, else the growth may extend to the cannula and obstruct its outlet. Endo-laryngeal removal is worse than useless unless complete, as surface denudation and the consequent irritation only increase the suffering and the progress of the cancer; the complete operation is rarely possible unless the tumor be somewhat pedunculated.

The patient should be placed on a nutritious but non-stimulating and easily assimilable diet, with favorable hygienic conditions; irritating dust, tobacco, and smoke should be avoided, and, when possible, a residence secured where the air is pure and fresh. When odonphagia becomes severe and remedies fail to relieve, small pieces of ice may be held in the mouth, and cocaine (1 per cent) or calendula (20 per cent) sprayed upon the throat half an hour before eating; these failing, morphine (gr. $\frac{1}{8}$) with starch (gr. iij) may be used as an insufflation. Occasionally, the œsophageal tube may be passed and peptonized food introduced into the stomach; but, should any undue resistance be noted during the introduction of the tube, the attempt should be discontinued; otherwise perforation and severe hæmorrhage may follow. Rectal alimentation is frequently necessary.

The question of complete or partial extirpation must claim a few words. At present there is some doubt as to the strict propriety of the operation; it is at all times a very unsatisfactory procedure, and one that often seems more likely to hasten the fatal termination than add to the length of the sufferer's life. Patients who are in a fairly comfortable condition are not infrequently subjected to the operation, the shock of which, or a secondary pneumonia, may prove fatal; if recovery ensue it is usually for a short period only, on account of secondary manifestations either in the same or in some other part of the body. On the other hand, it must not be forgotten that cases have survived the operation and lived for years, speaking with a more or less satisfactory voice, with or without an artificial larynx. In place of the latter appliance, Mr. Charter Symons, of London, has succeeded in establishing a low, distinct, but gruff voice in a case of total extirpation for epithelioma by passing, through the upper wall of the cannula, a curved tube, which reached to the base of the epiglottis and conducted air when the cannula was closed with the finger or a pea-valve. In this case the vibrating structures appeared to be the mucous membrane of the pharynx running back from the epiglottis.

Even though the patient seem well for a time, he usually dies (from recurrence) sooner than he would most likely have done had tracheotomy been the only operation. To this statement a few brilliant cures form the only contrast, while some operators are classing tracheotomized cancerous patients among the ofttimes curable. It will, therefore, require some years to determine the exact standard for laryngectomy; until that time the operation must be looked upon as one of the possibilities, with reference to which it is best to be conservative.

A few words with reference to partial extirpation will suffice. It is a much safer operation than total extirpation, but it is not always possible to remove all of the cancerous tissue, hence not universally applicable. It is not indicated when the cervical glands are enlarged. In partial extirpation there is less danger of pneumonia, and the risk of exposing the pneumo-

gastric nerve is only half as great. Occasionally, good results have been reported from division of the larynx followed by the removal of the diseased soft parts only.

A great advancement, in operative technique, seems to have followed the employment of Eugene Hahn's sponge-tampon cannula rather than the India-rubber one of Trendelenburg, formerly employed. Hahn's method of operation is less liable to be followed by shock, pneumonia, and early death, while deglutition is little impaired; an artificial larynx is not a necessity, and it is usually possible to remove the tracheotomy tube after a few days. Tauber (*Deutsche Med. Zeit.*, July 20, 1891) has tabulated 163 cases of extirpation; of these, 67, or 41.1 per cent, died as the direct result of the operation; 13, or 7.9 per cent, were cured—that is, were without recurrence three years after extirpation; 47, or 28.8 per cent, died from recurrence within a year; and 32, or 19.6 per cent, lived beyond the year, but disappeared from observation before three years—the time generally accepted as denoting a cure. Therefore, Tauber applies to laryngectomy Stromeyer's classic saying: "Humanity will lose nothing if such operations fall into disuse, and surgery gains no honor by their performance."

Thyrotomy, or the division of the thyroid for the purpose of removing malignant tumors without resection of the cartilage, is usually too limited in its results, but sublingual pharyngotomy (division of the thyro-hyoid membrane) is useful in operations upon the epiglottis.

Therapeutics.

Ars.—Burning pains; dark, offensive, ichorous discharge.

Phytol.—Dr. A. C. Cowperthwaite (*Med. Current*, October, 1891) suggests phytol. as a preventive of carcinoma, and has repeatedly removed the "inflamed glandular nodosities" so often presaging carcinoma.

Compare acetic ac., aur., carbo an., conium, hydrast., kali sulph., kreos., petrol., and silica, and see "Malignant Tumors of the Nose" and "Malignant Tumors of the Pharynx."

CHAPTER XXXV.

Disease of the Perichondrium and Cartilages of the Larynx.

Inflammation of the laryngeal perichondrium is not so rare a disease as might appear, judging from the number of cases reported. The process may be followed by necrosis and loss of a part, or all, of the cartilage, or resolution may occur before the death of any portion of it; generally, however, there is some permanent thickening about the cartilage, adhesions to surrounding tissue, or impaired function. Ankylosis of the crico-arytenoid joint is not rare, and usually occurs with the vocal band fixed near the median line. This same condition may result from rheumatism, gout, typhoid fever, syphilis, tonsillitis, and the exanthemata.

Etiology.—Perichondritis is rarely primary, but, when so, is usually due to exposure, especially when overheated. As a rule, the disease is the result of some inflammatory or ulcerative change passing from the mucous membrane to the deeper structures. It follows syphilis, phthisis, cancer, typhoid and typhus fevers, small-pox, diphtheria, gout, rheumatism, lupus, leprosy, and the deeper-seated acute inflammations of the laryngeal mucous membrane,—namely, traumatic and acute laryngitis, œdema, erysipelas, phlegmonous laryngitis, accidents, operations, the passage of œsophageal bougies in elderly persons (von Ziemssen), and continued pressure of the ossified (?) cricoid upon the spinal column while in the dorsal position.

In the various dyscrasiæ the poisons sometimes attack the cartilage direct and bring about a degeneration of a fibroid nature; or they may affect the perichondrium later and cause death of the cartilage.

Perichondritis occurs mostly in persons of advanced years; children are rarely affected. All of the laryngeal cartilages

seem never to be affected at once. The arytenoids and cricoids suffer more than the thyroid; it is doubtful if the epiglottis ever undergoes such a change.

Pathology.—Perichondritis consists of an inflammatory thickening of the cartilaginous lining, which soon becomes detached from its base, leading to loss of nutrition of the cartilage and usually to its final death and exfoliation. When the perichondrium loosens, the cartilage loses its smoothness, assumes a roughened surface, and becomes yellow or dirty-looking. Calcification favors fibrinous degeneration and death.

Symptoms.—Symptomatically, there is little on which to base an early diagnosis; even secondary perichondritis may be made out with great difficulty, as the primary disease often masks the perichondrial changes. In primary or metastatic cases, the first symptom calling attention to the larynx is pain in it during deglutition or upon pressure over it. There may be hoarseness or aphonia; deep, ineffectual, or suppressed cough, and impaired or suspended respiration dependent upon encroachment. Usually there is no fever in the early stages, and, as the disease is often very slow in its progress, the affection may last some time before the voice or respiration is impaired.

The laryngoscope gives little indication, at first, of the serious nature of the affection, as there may be only slight laryngeal congestion; later, there is more or less swelling of some part of the larynx.

When the **arytenoid** is involved it is enlarged, but its outlines are not necessarily obliterated, as with œdema or general inflammation of the larynx: the mucous membrane may show but little change from the normal until the abscess formation occasions a boggy or yellow appearance. When ulceration is present, the result of some primary laryngeal affection, the diagnosis can only be made by passing a probe to the bottom of the ulcer and noting the presence of roughened cartilage. The detection of this and the exfoliation of portions of cartilage are the only sure diagnostic points. If the cartilage be thrown off, a

corresponding depression will follow and the vocal band be immobile. The cavity usually granulates and heals very rapidly. Should both arytenoids be affected, the lumen of the glottis may be so much encroached upon as to result in dyspnœa from mechanical hindrance. If the perichondritis end in resolution, the crico-arytenoid articulation may become ankylosed, resulting in immobility of the corresponding band and permanent loss of voice, unless ankylosis occur with an adducted band; should both bands be so fixed, tracheotomy will be needed. This ankylotic condition may be distinguished from paralysis by the presence of scars or thickening about the joint. If an abscess form, it may burst into the lower part of the pharynx or upper part of the œsophagus; and if a fistula form large enough to allow the passage of food into the larynx, it will be necessary to feed the patient through an œsophageal tube.

When the **thyroid** is affected, usually only one lateral plate suffers. The laryngoscope reveals swelling of the ventricular band and the lateral wall near it. Swelling and hardness may be detected externally.

When the **cricoid** is attacked, the swelling is usually below the vocal bands and, without especial care, may be overlooked. The cartilage is rarely affected in its entirety; the plate (seal) is diseased more frequently than the ring, and as a result the arytenoid cartilages and posterior crico-arytenoid muscles usually suffer. Cricoid perichondritis closely simulates chorditis inferior hypertrophica; but may usually be differentiated by the duration of the affection, the history, or the subsequent progress of the affection. The vocal bands generally act sluggishly.

When the external surface of the thyroid or cricoid is diseased, the swelling appears externally; and if an abscess form, it will usually burst through the skin, leaving a laryngeal fistula. The external swelling, which may be due to abscess or to emphysema, is to be differentiated from a bursa, gumma, or enlarged gland.

Prognosis.—The prognosis of disease of the perichondrium

and cartilages is generally grave, though less so in the syphilitic form than in the other varieties, except that in syphilis relapses are more frequent. Death often results from swelling of the tissues and encroachment on the glottic space; it may follow paralysis of the glottic openers; impaction of pieces of necrosed cartilage in the larynx, trachea, or bronchi; asphyxia due to the bursting of an abscess; or debility incident to either the general disease or the long-continued ulcerative and suppurative processes. As already stated, a cure may follow with permanent thickening, ankylosis, impairment of functional activity, or stenosis. Even although one or more cartilages be expelled, the case may recover, but always with impaired function; a laryngeal fistula may result, either opening into the œsophagus or on to the surface of the neck. A tracheotomy cannula may be a life-long necessity.

Treatment. — Attention is to be directed to the original disease, the early evacuation of the pus, the exfoliation of the dead cartilage, and the support of the general system, but, above all, to the prevention of the threatening dyspnœa, which may require scarification, intubation, or a hasty tracheotomy. The general condition should be treated as advised under the various headings; if abscess threaten, the remedies so useful in that condition elsewhere are not to be neglected here, and, if pus have formed, the use of fer. iod., hepar, kali mur., or silica, may suffice; but early puncture is generally advisable, although, on account of the danger of suffocation, it is usually unsafe to open a large abscess prior to tracheotomy. The suppurating cavity should be occasionally sprayed with iodine, lactic acid, or menthol. Necrosed cartilage can sometimes be extracted with laryngeal forceps, thus removing the danger of its lodgment in the free air-passage; but it is at times advisable to open the larynx for the purpose of removing or curetting the dead cartilage. If a fistula exist, its edges are to be freshened and united with sutures, provided a counter-opening be found within the larynx through which the secretions may find an exit, and if

no necrosed cartilage or other structure be responsible for the purulent discharge. In the latter instance the foreign substance must be removed.

Therapeutics.

Ars. alb.—Especially if there be much debility, burning or soreness in the larynx, and serous infiltration.

Ars. iod. is indicated in cases such as call for the administration of arsenic, but with less œdema. I have found it more valuable in practice.

Calc. carb.—Necrosis of laryngeal cartilages in rachitic, emaciated persons.

Silica.—When there is evidence of a sinus leading to diseased cartilage, with long-continued discharge which hepar has failed to relieve (kali mur.).

CHAPTER XXXVI.

Secondary Laryngeal Diseases.

LARYNGEAL AFFECTIONS IN TYPHOID AND TYPHUS FEVERS.

Of the two maladies typhoid is the one more likely to invade the larynx. In the early stages of the fever, catarrh of the larynx is frequent; in the middle stages, about the second week, abrasion of the epithelium and superficial or rhodent ulcerations or fissure may occur; and in the latter stage, or even after convalescence seems established, there may appear paralysis, œdema, perichondritis, chondritis, diphtheria, abscess, fatty degeneration of the muscles, or deep ulcers.

Symptoms.—Since it is so difficult to elicit an expression of the symptoms in many cases of typhoid and typhus fevers, the laryngeal condition is often overlooked and only made out post-mortem. Such examinations reveal ulceration, œdema, perichondritis, etc., in 12 to 20 per cent of the cases of typhoid and in about 10 per cent of typhus fever. Were it possible to detect, post-mortem, the presence of a catarrhal change, the number would be much greater. In the majority of cases the change seems to be due to the typhoid virus, and is, as a result, septic. The following is from Meyhoffer: "In the majority of instances the ulcerated follicles in the larynx, as well as the ulcerated aggregated glands in the ileum, undergo repair at the same time after the typhoid poison has been eliminated from the organism." The laryngeal symptoms of typhus fever are less severe than those arising from typhoid, and in the former there is not the special poison of the latter.

As suggested, the symptoms are often of little moment owing to the diminished cerebral impulse; so that only the severe alterations are noted in most instances; even ulceration often gives rise to little complaint. As soon as hoarseness is

noted in the course of either of these fevers, a thorough laryngoscopic examination should be made. The early changes are: hoarseness or aphonia, difficult or impossible deglutition, and difficult respiration, which may lead to threatening or fatal dyspnœa. The first paroxysm of dyspnœa may occur when the patient sits up in bed; it may even prove fatal. Cough is unusual unless bronchitis be also present; expectoration is usually scanty and sometimes tinged with blood.

Laryngoscopic inspection may reveal a simple catarrh, an erosion of the mucous membrane, ulceration, or abductor paralysis. The abrasions, superficial ulcers, and fissures are seen on various parts of the larynx, but Dr. W. W. Keen, in his "Toner Lecture" (No. v, February 17, 1877), says: "The position of the ulcers in the larynx is noteworthy. Wherever they may be, from the arytenoid to the cricoid, they are almost invariably posterior." The œdema is not confined to the epiglottis, although it is more frequent there than in the ary-epiglottic folds and ventricular bands. Abscesses are found near the cartilages, usually the arytenoid or thyroid; and particularly about the articulations, which, if recovery follow, are usually destroyed or ankylosed. Abscesses may burst within the larynx, into the pharynx, or externally, resulting in fistula. A perichondritis may end in abscess formation, or exfoliation of a part or all of one or more of the laryngeal cartilages; the cricoid is most frequently affected. Although the larynx may be insensitive, pain, especially upon external pressure, is usually a marked feature of this affection. The deep ulcers may destroy a part or all of the epiglottis, or attack any of the structures of the larynx, including muscles and perichondrium; they may heal and leave almost no cicatrix, but, as a rule, decided deformity remains, and cicatricial contractions and adhesions sometimes exist. Polypoid granulations (rare) may follow the ulceration and interfere with respiration and vocalization (see the report of a case by the author, *Hahnemannian Monthly*, February, 1890).

Prognosis.—In the milder forms of the affection, the prognosis is good; but when œdema, abscess, paralysis, or perichondritis supervene, the case should be looked upon as serious; if promptly treated, however, recovery may follow, and in some cases the larynx shows little or no deformity even after considerable loss of tissue.

Treatment.—The treatment depends upon the condition present: if there exist simple catarrh with hoarseness, nothing is necessary beyond the care of the original condition; when convalescence is fairly established, the larynx is usually well. For abrasions or fissures, internal measures may be aided by local sprayings with one of the petroleum preparations. Paralysis should be treated with electricity when it does not yield with the fever; but if the posterior crico-arytenoid muscles be paralyzed, tracheotomy is demanded. Perichondritis complicated with serious dyspnœa requires tracheotomy. Œdema may need scarification, intubation, or tracheotomy. Deep ulceration is best treated by the use of internal remedies, if the general symptoms will warrant their use, and peroxide of hydrogen, 2-per-cent menthol-albolene solution, or fluid cosmolin may be atomized into the larynx.

The remedies most suited to the condition will be ars. alb., ars. iod., fer. phos., hepar, kali iod., kali mur., lach., merc. j. rub., nux vom., phos., and sang. can., the special indications for which will be found under the headings most suggestive of the condition present.

LARYNGEAL CHANGES IN MEASLES.

It is not unusual to find a laryngeal catarrh as a prodromic symptom of measles; this, however, usually subsides with the onset of the eruption; but a severe form of catarrh may appear with superficial ulcerations, more strictly abrasions, of the mucous membrane. During the course of the disease, spasmodic or membranous croup or diphtheria of the pharynx, nose, or larynx may appear.

Symptoms.—The catarrhal change in measles manifests itself in a macular or general congestion, which soon undergoes slight modification: the laryngeal lining becomes mottled through the gradual exfoliation of the epithelium, giving rise to an appearance closely simulating pseudomembrane, but which must not be mistaken for diphtheria. Hoarseness or aphonia, cough, and slight expectoration may be noted at an early date; as the eruption appears, profuse expectoration occurs, attended by subsidence of the hoarseness and cough, if there be no abrasion or ulceration, otherwise little or no improvement is then apparent.

Prognosis.—The prognosis of the catarrhal form is good, if treated as soon as the original condition has subsided. If the ulceration be considerable or the inflammation marked, it is best to advise the patient to speak but little for a time. When measles and diphtheria co-exist, the prognosis is better than when the latter affection exists alone, as the poison of measles seems to modify both diphtheria and croup.

Treatment.—Soothing sprays do much to alleviate dryness, hoarseness, and pain. When croup or diphtheria occurs, this should receive entire care.

LARYNGEAL CHANGES IN SCARLET FEVER.

The pharynx is generally affected in scarlatina, but the larynx usually escapes. The change may be catarrhal or ulcerative, but it is more usual to find the grave pseudomembranous complication characteristic of the pharyngeal disorder. Œdema is rare, except in the latter stages of the affection, when it appears as the local manifestation of a general anasarca, usually ending in the death of the patient.

The treatment is to be found under the headings of the various complications named.

LARYNGEAL CHANGES IN CHICKEN-POX.

The laryngeal complications are, as a rule, catarrhal, but occasionally there are appearances on the interior of the larynx

similar to those found on the cutaneous surface. Little vesicles form and burst, leaving a slight abrasion, but no marked ulceration and no scar. No special treatment is required.

LARYNGEAL CHANGES IN SMALL-POX.

The laryngitis of variola is usually in the form of catarrh, which passes away in a short time. It is attended with hoarseness and cough, and is usually ushered in after the disease has been thoroughly established. Almost as frequent as the laryngeal catarrh is the pustular or "pseudopustular" form of Wagner, afterward described as vesicular. The elevation of the mucous membrane from its underlying bed often gives rise to superficial ulcerations, which usually heal kindly with little or no treatment. A slight membranous deposit is not infrequent in small-pox; it rarely ends in death, except in certain epidemics. Infiltration of the muscular structure may give rise to paralysis. Œdema, either primary or as a complication of acute laryngitis, may aggravate the case. The possibility of perichondritis must be remembered.

Prognosis.—The prognosis is usually good, as the œdema and perichondritis are generally mild, though mechanical measures are sometimes demanded.

Treatment.—Abscess formations may necessitate puncture. When the laryngeal complications do not subside as the systemic condition improves, remedies are to be used in accordance with the sequelæ present. The drugs of chief value are gels., hepar, kali mur., silica, and sulph.

LARYNGEAL CHANGES IN WHOOPING-COUGH.

The catarrh of the larynx which always attends whooping-cough will not receive attention; the object of chief importance is an ulceration which occasionally occurs on the posterior laryngeal wall. As a rule, this quickly subsides; should it continue after the cessation of the cough, it is often an indication of on-coming phthisis; the same is true of follicular ulceration

occurring in the course of pertussis. The presence of false membrane is rare. Another and often grave complication of whooping-cough is the presence of œdema, which, doubtless, often ends the lives of some who are supposed to succumb to the paroxysmal asphyxia. The severe paroxysms of coughing, vomiting, etc., occasionally induce laryngeal ecchymoses and hæmorrhages. The treatment of ulcers rests chiefly with fer. phos., iodine, kali bi., kali mur., and seleniate of soda. Relief from œdema is to be sought under the heading "Œdema of the Larynx."

LARYNGEAL CHANGES IN URTICARIA.

Although rarely recorded, laryngeal complications or alterations are not uncommon in urticaria. The usual changes consist of inflammation, papules, and œdema. These occur as antecedents or sequelæ; occasionally, the cutaneous and laryngeal affections alternate.

CHAPTER XXXVII.

Various Conditions.

FOREIGN BODIES IN THE LARYNX.

The most frequent example of this accident is when food "goes the wrong way"; that is, enters the larynx instead of the œsophagus. The resultant spasm is slight, and, as it is usually a simple matter to dislodge the intruder by coughing, further consideration is unnecessary. Objects less soft and smooth, however, cannot be so readily expelled. Thus, a sharp point will penetrate the soft tissues and occasion more or less irritation, pain, inflammation, and swelling.

Symptoms.—The symptoms which arise as a result of the accidental entrance of foreign bodies into the larynx vary from slight, momentary spasm to instant death, depending upon the size and position of the body, the irritability of the parts, and the previous condition of the patient. The secondary laryngeal results may be inflammation, œdema, abscess formation, ulceration, perichondritis, or fatal stenosis. The trachea, bronchi, or lungs may suffer either secondarily or from the direct passage of the foreign body through the glottis to the deeper parts. The objects most likely to lodge in the larynx are pins and needles; fish-bones; splinters; bristles of tooth-brushes; pieces of clam- and oyster- shells; beards of rye, oats, and wheat; small bones; pieces of metal, solder, etc.

Treatment.—The intruder should be removed at once, where possible. For this purpose many devices have been practiced; perhaps the oldest is to strike the patient upon the back with the palm of the hand. This may serve to dislodge the object, and the cough which follows may expel it; the same result may follow if the head be thrown quickly forward. Suddenly reversing the body sometimes has the desired effect.

These manipulations, however, are more apt to fail than to succeed. If the object be within reach, the physician may hook it out with his finger; but, unless great care be exercised, there is danger of pushing it farther down. The best plan of procedure is always to use the laryngoscope. If the object be seen, cocaine should be applied and efforts made to remove it with laryngeal or other long, bent forceps. In attempting to withdraw a sharp-pointed object, it is very important to note the direction from which it entered and to pull it out, if possible, so that it shall not cause more than necessary scarification of the tissues.

Sometimes with the greatest care the physician fails to remove a small foreign body; if it occasion little annoyance, the patient may be given acon. and carefully watched, so that if severe symptoms arise, such as those which accompany œdema or abscess, operation may be resorted to. If the cough be very annoying and not improved by acon., fer. phos. will usually relieve, although some other remedy may be indicated; as an adjuvant a spray of a 2-per-cent solution of cocaine may be used. In a day or two renewed efforts should be made to extract the object. In event of a severe inflammation, bell. or sang. can. may be given internally and a soothing spray applied locally.

It is sometimes impossible to at once remove burrs, etc., from the larynx; in which case they should be crushed with strong forceps; the symptoms are then to be watched. The body either comes away in pieces, or, being loosed by the mucous secretions, is coughed out or easily removed with forceps. Small objects often remain in the vocal organ for weeks or months without producing serious results, finally dislodging themselves; for this reason it is better not to open the larynx or trachea, unless urgent symptoms arise, but it is always important to make an effort to remove the offender through the natural passages. Should the object be sufficiently large to immediately cause marked stenosis, threatening life, some of

the devices already enumerated may dislodge it; but if severe dyspnœa continue, the trachea should be opened without delay. If the foreign body enter the trachea, the latter should be opened early. As soon as this is done, the expiratory blast may expel the object through the incision; for this reason it is advisable to hold the lips of the wound apart as soon as possible after the rings of the trachea have been divided, and not to insert the tube for some minutes, if at all. If an extraneous object remain in the trachea some time after operation, the patient should be left in charge of some one competent to at once remove the cannula, should the body become dislodged, that it may find its way out through the wound. When the natural forces fail to expel it, the extraneous object may sometimes be detected by the aid of a small mirror heated and passed, with reflecting surface downward, through the tracheal opening; if discovered, even though situated in one of the bronchi, an attempt should be made to remove it with small forceps, or an appropriately bent hook. If in the larynx, efforts should be made to remove the object through the natural passages directly following the bronchotomy, or as soon as the laryngeal inflammation has sufficiently subsided.

Finally, in many of the cases in which a foreign body is thought to be in the larynx, none exists at the time the patient applies for relief, since by that time the object may have been coughed out or swallowed. It usually remains sufficiently long, however, to induce decided irritation and leave the impression that it is still in the vocal organ. In such cases it is often difficult to convince the sufferer that nothing is in the larynx; nor should the physician be too sure of his statement when the patient thus persists, as a very small piece of egg-, oyster-, or clam- shell, a minute tack, or a hull of oats may be lodged within a ventricle of the larynx, or, more probably, in a vallecula or the rugæ of the base of the tongue. On this account search should not be abandoned until these parts have been thoroughly investigated.

WOUNDS OF THE LARYNX.

Etiology.—Incised, gunshot, punctured, and lacerated wounds may occur at any part of the larynx. The first are the most frequent, and are usually the result of suicidal attempts; they are nearly always transverse, and in young subjects are apt to be above or through the thyroid cartilage, involving the epiglottis or thyro-hyoid membrane; while in older persons they are lower, owing to the patient's inability to easily raise the chin (Mackenzie). If extensive, these wounds may gape widely, in which case the danger is often less than when the wound is smaller, on account of the difficulty in controlling internal hæmorrhage in the latter and its greater liability to cause emphysema. As a rule, hæmorrhage is not severe, and in gaping wounds can usually be controlled by throwing the head forward and tying it in that position by bandages, etc.

Gunshot wounds may prove immediately fatal or do very little damage to the larynx, as one or two of the shot may pass through the thyroid cartilage without wounding any important structure; on the other hand, the greater part or all of the voice-box may be carried away. In some rare instances, a pistol- or a rifle- ball has fractured the thyroid cartilage without doing further damage.

Punctured wounds are quite rare and are caused by stilettos, daggers, swords, etc. As a rule, these wounds are small, and are apt to produce œdema or emphysema, especially when the internal wound does not correspond with that upon the surface. The œdema may become serious or the emphysema extend to the greater part of the body and cause death.

Lacerated wounds of the larynx are very rare, and are produced by the claws of wild beasts, or by large hooks.

Prognosis and Treatment.—The termination depends upon many conditions. Death may follow at once from hæmorrhage, although, if the patient be seen early, this can usually be controlled by ligation, torsion, position, or compression; but if the

hæmorrhage be within the larynx or trachea, and the external wound small, it will usually be necessary either to enlarge the wound and secure the bleeding vessels or open the trachea and insert a tampon cannula. Should the internal hæmorrhage continue long, a clot may form in the larynx or trachea and cause death by suffocation. Occasionally a piece of the epiglottis or an arytenoid cartilage has been severed from the larynx and fallen into the air-passages, producing asphyxia. Remotely, bands of cicatricial tissue may form during the healing process and cause stenosis. Secondary hæmorrhage, abscess, or pyæmia may complicate the prognosis. Finally, after the case seems to be well, granulation tissue may spring up in the region of the old wound and cause death by obstruction.

It must be borne in mind that many patients who would otherwise die can be saved by the judicious use of acon., ars., calend., fer. phos., ham., hepar, and silica. It may sometimes be necessary to feed the patient through the œsophageal tube; and if the bleeding be liable to recur from a large, gaping wound, he should be placed in a sitting attitude with the head fastened forward. If the throat be cut in frenzy or during insanity, the patient had better be bound, hands and feet; and he should be constantly and carefully watched, lest the wound be forcibly torn open.

FRACTURES AND DISLOCATIONS OF THE LARYNGEAL CARTILAGES.

Etiology.—Direct violence may fracture or displace the laryngeal cartilages, or tear the larynx from the trachea. These accidents usually occur when the larynx is fixed upon the spinal column, as when the larynx is run over by a vehicle, stepped upon, hit with a ball, bat, or a belt from a large fly-wheel, etc. Hanging, garroting, and the use of the strait-jacket may cause similar injuries from compression of the two halves of the thyroid cartilage. Fractures are quite rare.

Symptoms.—Symptomatically, there is usually bloody expectoration, cough, dyspnœa from œdema or an extensive

emphysema, temporary or permanent loss of voice, usually crepitus, and sometimes displacement and free motion of the fragments. The loss of voice is usually sudden and attended with a sensation of choking, constriction, and difficult deglutition. The dyspnœa may come on suddenly and terminate life in a few minutes, or be gradual in its development. Necrosis with exfoliation of the injured cartilage may complicate the case; finally, the larynx may collapse. The thyroid cartilage is the one usually fractured, but the cricoid may be implicated either separately or at the same time. The arytenoids are rarely fractured, but may be dislocated.

Prognosis.—The prognosis is always grave; the simplest fractures, apparently, sometimes prove fatal, the result of œdema or emphysema. Few cases recover after fracture of the cricoid, but fracture of the thyroid is less grave. These accidents are less likely to occur in early youth than after the process of ossification has taken place.

Treatment.—The patient should be constantly watched, lest the presence of œdema or emphysema prove suddenly fatal. When the symptoms are very slight, tracheotomy may be delayed, as some cases recover without it; but the patient who has not been tracheotomized or intubated is in danger of suffocation. The rule is to operate as soon as fracture is found. A hard-rubber O'Dwyer tube, if it can be inserted, is more efficient than a tracheotomy tube, in that collapse of the larynx is prevented. Scarification may relieve the œdema or emphysema so completely as to obviate both intubation and tracheotomy. Ice may be used in the mouth as well as externally. If the trachea be opened, an attempt should be made to replace the fragments either by external manipulation or by the use of instruments passed through the natural passages or the tracheal wound. The larynx has been successfully opened, the cartilages sutured, and the loose fragments removed. In the majority of cases, following tracheotomy, the larynx is chronically closed; so that the tracheotomy tube must be worn for a long time, or even

permanently. (See treatment of "Stenosis of the Larynx.") In order to keep the larynx patulous, Dr. Panas has used a rubber bag which he inflates after introducing it into the larynx.

The remedies most frequently indicated are acon., ars., fer. phos., gels., and sang.

CONGENITAL DEFORMITIES OF THE LARYNX.

Congenital deformities of the larynx are very rare. In monsters they consist of almost or complete absence of the organ; in other cases, the larynx may be abnormally small or remarkably large; the various cartilages may be deformed, bifid, wanting, or decreased in number; but the most frequent congenital defects consist of a web passing across the glottis between the bands and a bifid epiglottis.

The majority of deformities are not relievable, and some require no treatment. The webbing may be overcome as suggested under "Stenosis of the Larynx."

LARYNGO-TRACHEAL OZÆNA.

This rare condition, first described by B. Fränkel, is closely allied to nasal ozæna, with which it is always associated. Here the offensive crusts form chiefly on the under surface of the vocal bands and in the trachea, thus often interfering with respiration. These subglottic crusts are difficult to expel and may become lodged between the vocal bands, interfering with vocalization. The mucous lining is red and swollen in the affected region. The expectoration of these greenish-yellow, offensive (ozænous) plugs rarely occurs except in the morning. When present, they give rise to the offensive odor, notwithstanding the nose may have been kept scrupulously clean.

Dr. Lue (*Jour. of Lar. and Rhin.*, January, 1889) recommends liquid inhalations of thymic acid, 4 to 1000.

CHAPTER XXXVIII.

Diseases of the Trachea.

ACUTE TRACHEITIS.

Although very usually associated with catarrh of the larynx and pharynx, on the one hand, and tracheal inflammation, on the other, acute tracheitis is occasionally independent of these conditions.

Etiology.—Its causes are those giving rise to the disease in the associated organs.

Symptoms.—The symptoms are those of irritation, fullness, burning, pressure, and weight in the tracheal or sternal region. Hoarseness is rare, unless the larynx be simultaneously involved; but, as a rule, there is marked cough, at first of a dry, irritable, tickling character, which later becomes moist and attended with a profuse, muco-purulent, purulent, or even bloody discharge. This keeps pace with the progress of the inflammatory change. The early symptoms often simulate croup, in that they develop suddenly during the night and are often attended by marked spasmodic changes. There may or may not be fever, but the pulse is usually accelerated, owing to the cough. Breathing is never impaired, although inspired air generally gives rise to a sensation of dryness and burning and often induces cough. This is more marked, however, in the early stages.

The laryngoscope shows inflammation of the tracheal lining, with here and there mucous accumulations.

The prognosis is good, except that chronic tracheitis sometimes supervenes.

Treatment.—The treatment differs but little from that of subacute catarrhal laryngitis, especially with reference to the remedies employed, but great benefit often follows the local use of steam inhalations and oily sprays. Of the latter, none give

more satisfaction than does eucalyptol or thymol (10 per cent) in fluid vaselin.

CHRONIC TRACHEITIS.

As stated, this condition may be a sequel of the acute disorder, but is more frequently a result of chronic laryngitis or bronchitis. It is most frequent in elderly persons. The pathological changes are those of chronic laryngitis, the symptoms being tickling, fullness, cough, and thick discharge.

Although difficult to cure, chronic tracheitis is not dangerous. Its treatment is similar to that of chronic laryngitis. Oily sprays of eucalyptol, menthol, thymol, and benzoinol are best. The chief internal remedies are argent. nit., fer. phos., hepar, phos., puls., and verat. vir.

TRACHEAL SYPHILIS.

Fortunately, an extensive syphilitic invasion of the trachea —independent of the laryngeal complications—is rare. It is difficult to diagnose from tracheal phthisis. Its chief manifestations are gumma, ulceration, necrosis of cartilage, syphilitic growths, and cicatricial stenosis. This latter is rarely annular but usually longitudinal, and occupies a large portion of the tube; its chief symptom is dyspnœa. Hereditary syphilis may attack the trachea, but it is usually the acquired form that invades this region. It may show itself in from two months to seven years after infection.

Symptoms.—Cough, tracheal discomfort, and profuse, mucopurulent, or bloody expectoration are usually present after the disease is fairly located. As occasional symptoms may be noted: tracheal or bronchial catarrh; tracheal dryness, burning, or rawness; dysphagia; loss of appetite, flesh, and health; and aphonia, either reflex or due to pressure upon the recurrent nerve. Dyspnœa is occasioned either by infiltration or cicatricial contraction; it may be inspiratory only, or constant; and may improve gradually, with a decrease of deposit, or suddenly, from expulsion of necrosed cartilage. Complications are: hæmorrhage, abscess, pneumonia, etc.

It may be safely said that ulceration or cicatricial stenosis of the trachea, unaccompanied by evident laryngeal or pulmonary alteration, is syphilitic; when so complicated, it is probably a combination of syphilis and phthisis. Cancerous growths may be excluded by the laryngoscope and by the priority of their dyspnœa over the ulceration and cough; and benign growths, by the absence of ulceration at any time, and by the laryngoscope. The greatest difficulty may exist in distinguishing tracheal syphilis in children from enlarged bronchial glands,

The prognosis depends upon the respiratory calibre.

Treatment is mechanical and medicinal, and will be found under "Syphilis of the Larynx" and "Stenosis of the Larynx."



FIG. 129.—AUTHOR'S CASE OF INSTRUMENTS.

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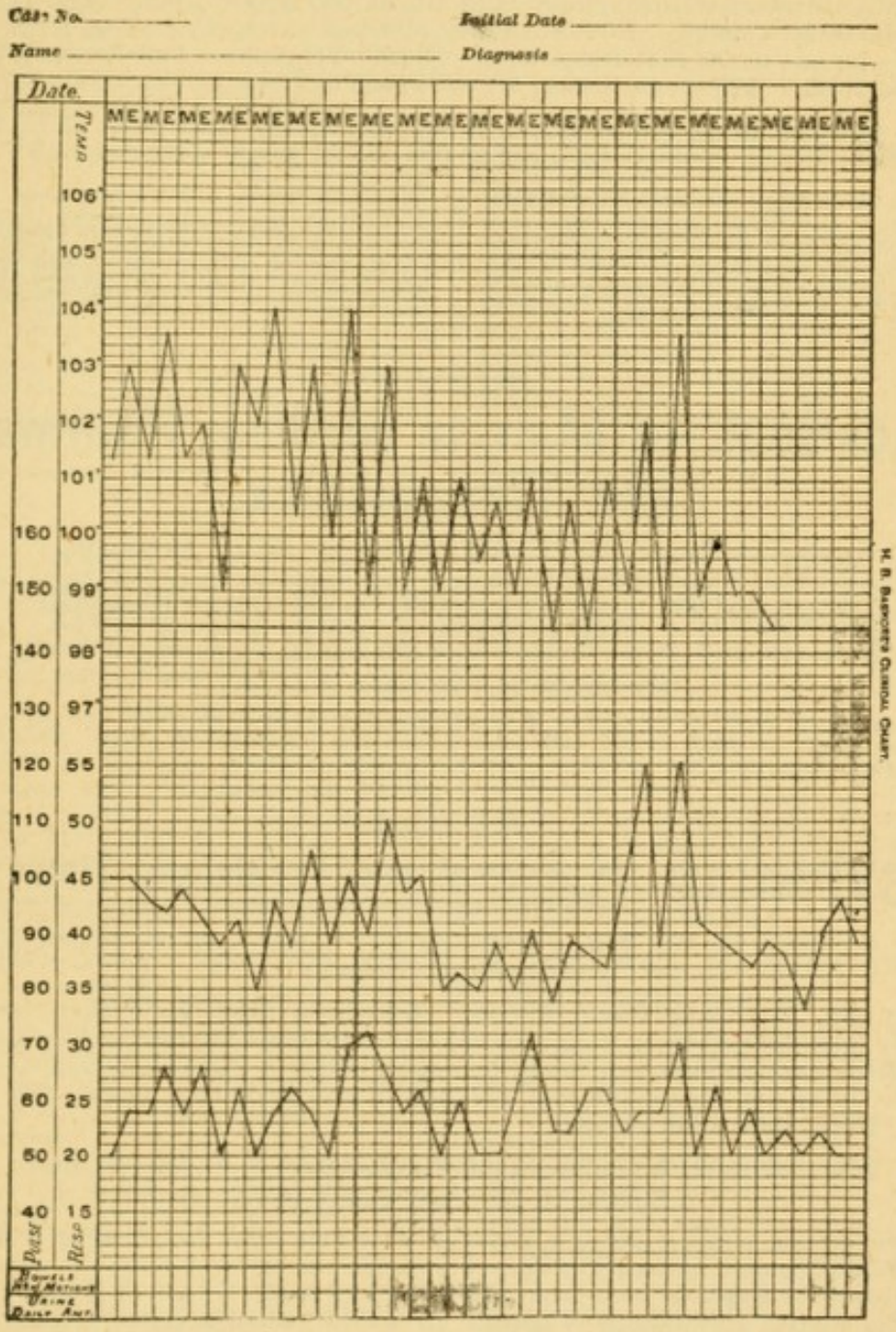
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