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ON

DISEASES OF THE THROAT.

ON

DISEASES

OF THE

MUCOUS MEMBRANE OF THE THROAT,

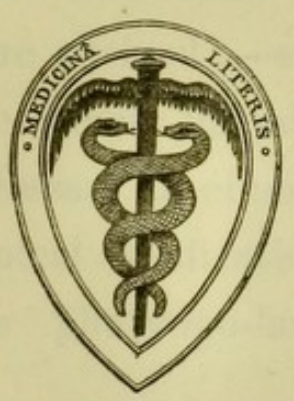
AND THEIR

TREATMENT BY TOPICAL MEDICATION.

BY

WILLIAM R. WAGSTAFF, M.A., M.D.,

FELLOW OF THE MEDICAL SOCIETY OF LONDON;
MEMBER OF THE LONDON PATHOLOGICAL SOCIETY, &c.



LONDON:

JOHN CHURCHILL, PRINCES STREET, SOHO.

MDCCCLI.

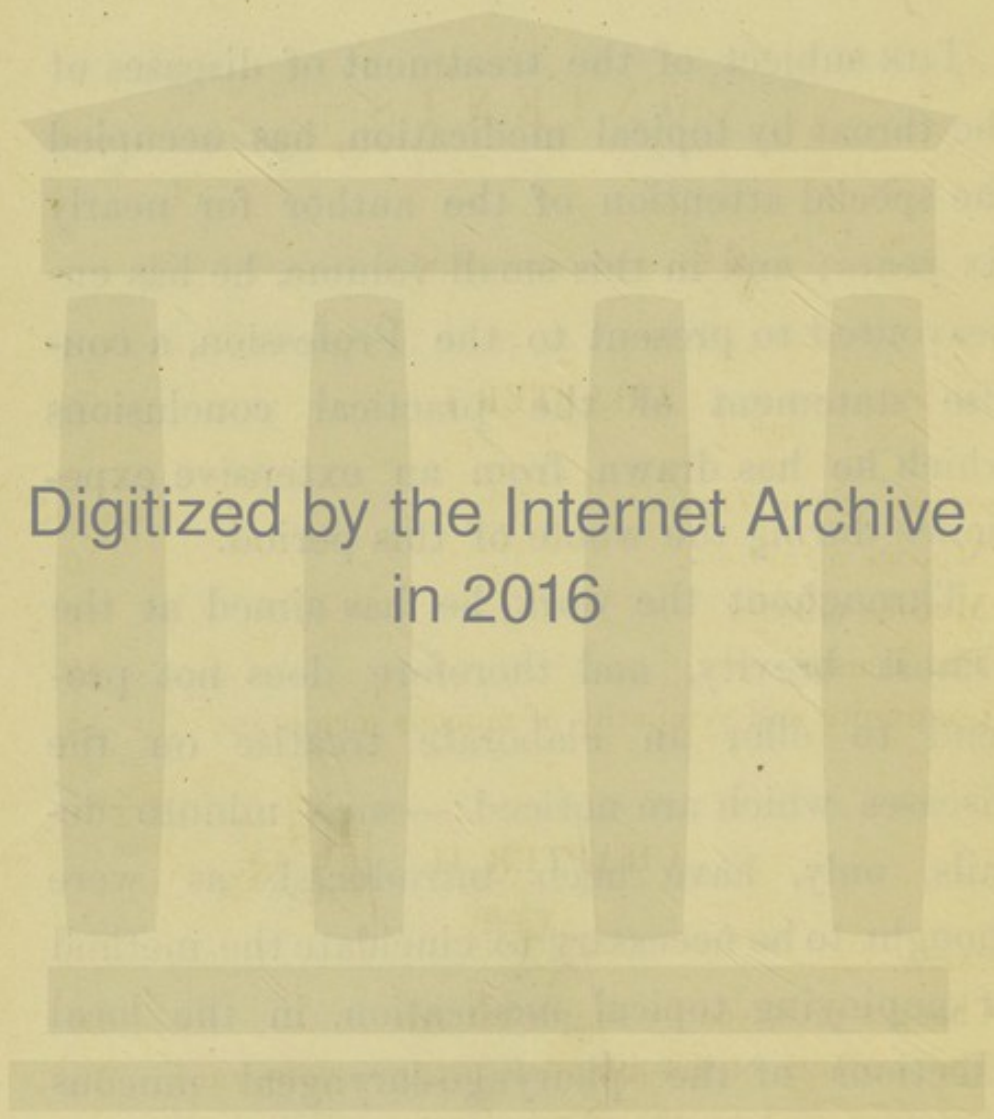
LONDON:
PRINTED BY G. J. PALMER, SAVOY STREET, STRAND.

PREFACE.

THE subject of the treatment of diseases of the throat by topical medication, has occupied the special attention of the author for nearly six years; and in this small volume, he has endeavoured to present to the Profession, a concise statement of the practical conclusions which he has drawn from an extensive experience during the whole of this period.

Throughout the work, he has aimed at the utmost brevity, and therefore does not pretend to offer an elaborate treatise on the diseases which are noticed:—such minute details, only, have been introduced, as were thought to be necessary to elucidate the method of employing topical medication, in the local affections of the pharyngo-laryngeal mucous membrane.

Cornwall Terrace, Regent's Park,
May 25, 1851.



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ON DISEASES OF THE THROAT.

CHAPTER I.

ANATOMY OF THE THROAT.

In presenting the following observations on the diseases of the mucous membrane of the throat,—including under this general term the fauces, pharynx, and larynx,—I do not think it requisite to give a minute description of the anatomy of these organs, but merely to take a cursory view of their relative situation, and afterward to examine, rather more closely, the peculiar structure of the mucous membrane, its follicles and epithelium.

Attention will be drawn in a special manner to the effects of morbid action in the muciperous glands, and those diseased conditions of

the mucous membrane which impair its organic function, rendering it incapable of secreting normal epithelium cells, thus depriving it of its natural protecting tunic. These abnormal conditions occur to a greater or less degree as the result of catarrh; an affection peculiar to mucous membranes, and by far most frequent in the mucous membrane of the respiratory organs: a disease, also, of vast importance on account of its various terminations, its multiform complications, and its serious consequences.

ANATOMY.—On looking into the mouth superiorly and posteriorly, will be observed the velum pendulum palati, a soft moveable substance attached to the hard palate on each side of the tongue and pharynx, and terminating in a thin edge, from the centre of which descends the *uvula*, a conical prolongation of the velum enclosing small glands, loose cellular membrane, and some muscular fibres. The uvula thus, descending from the centre of the velum, gives a lunated appearance to its edge on each side; these crescentic edges are named half-arches of the palate. The space bounded anteriorly and posteriorly by these half-arches or pillars is the

fauces, and the anterior opening into the space is called the *isthmus faucium*. These pillars are two on each side, and between them are situated the *tonsils* or *amygdalæ*.

Looking directly posteriorly, and beyond the fauces, is the *pharynx;* a large membranous and muscular bag, which extends from the base of the cranium to the commencement of the œsophagus, and situated behind the nose, mouth, and larynx. The pharynx is always closed except during the act of deglutition.

Upon pressing down, and at the same time drawing forward the base of the tongue, a fibro-cartilaginous body, somewhat oval in form, will be brought to view; this is the *epiglottis*. It stands nearly vertical, it is a little curved forward at its upper border, and along its sides, so that its anterior surface is concave from above downwards, and convex transversely, and its posterior surface is concave from side to side, and convex downwards. In the act of deglutition the tongue is turned backwards, and the larynx raised forwards, so that the opening to it is entirely covered by the epiglottis; and thus the larynx is protected from the en-

trance of any foreign body, and the food passes over the epiglottis into the pharynx, and thence to the œsophagus.

Immediately behind the tongue and the epiglottis is the first entrance to the larynx. This opening is of a triangular shape, with the base anteriorly, formed by the epiglottis. The sides are composed of folds of mucous membrane, termed arytæno-epiglottidean, and the apex, which is posteriorly, is formed by the appendices of the arytænoid cartilages. This entrance is always open, except in the act of deglutition.

About three quarters of an inch below this, is the inferior opening of the larynx, named the *glottis* or *rima glottidis;* it is very narrow from side to side, and of a triangular figure; the base is posteriorly, and is formed by the bases of the arytænoid cartilages, and by the upper and posterior edge of the cricoid; the apex is anteriorly in the angle of the thyroid cartilage, and the chordæ vocales form the sides.

On the fore part of the base of each arytænoid cartilage is a sharp projection, from which arise the vocal ligaments or chords, they

pass forward converging, and are inserted into the angle of the thyroid cartilage. The inferior is the stronger, it is tendinous and horizontal; the superior is membranous and semi-lunar. The narrow passage between these, as before stated, is the rima-glottidis.

Between the superior and inferior ligament of each side is a fossa or cavity, semi-lunar in shape, which is named the sinus or ventricle of the larynx.

Below the rima-glottidis, the larynx enlarges, and is of a circular figure, and soon terminates in the trachea, which afterwards bifurcates into the bronchi.

The arteries which supply the larynx are derived from the superior and inferior thyroid; the former is a branch of the external carotid, the latter of the subclavian.

The laryngeal nerves are four in number, two on each side, the superior and inferior; both are derived from the par-vagum or pneumo-gastric. The inferior laryngeal nerve supplies the dilating muscles of the larynx, while the superior supplies those which close the glottis, and also the lining membranes.

MUCOUS MEMBRANE.—Mucous membranes possess but a very limited degree of extensibility, and in order to obviate this difficulty in cavities which are liable during the natural processes of the organs to frequent changes of calibre and dimensions, they are placed in numerous folds or convolutions, thus providing for those distensions or elongations of the organs, which the performance of their functions require. This arrangement, however, if applied to the lining membrane of the larynx, would seriously interfere in the production and intonation of voice, which depends almost entirely upon the smoothness and integrity of this membrane for its power and clearness. Therefore another disposition is made which ensures a smooth and close lining upon those parts over which a free egress is required for the air, and at the same time supplies a sufficient redundancy of membrane to avoid any inconvenience from its inelasticity.

For the purpose of presenting a clear view of this arrangement, it will be expedient to trace the membrane from the base of the tongue into the cavity of the larynx. From the point men-

tioned, the membrane is reflected to the anterior or lingual surface of the epiglottis, forming upon its front or outer part, three distinct folds, by which a free motion to the epiglottis is allowed. It then passes downwards, adhering closely to the laryngeal surface of the epiglottis, and the cricoid cartilage. But upon reaching the ventricles of the larynx, and between the upper and lower chords of the glottis, it adheres loosely, whilst over the vocal ligaments it is thin and adherent; thus presenting a smooth surface, and, at the same time, a sufficiency of loose membrane to allow freedom of motion in the expansion and contraction of these important parts of the vocal apparatus.

The surface of mucous membranes is covered with a soft and moist cellular structure called *epithelium*, bearing a similar relation to these membranes, which the epidermis does to the skin.

This epithelium presents itself in many varieties of form; but the two in which it is found in the membrane of the organs now under consideration, are the tesselate, plaster, or pavement epithelium, and the cylinder, or ciliated epithelium. The tesselated epithelia are com-

posed of stratified layers of flattened nucleated cells, placed one above the other. In the ciliated epithelia the cells are in the form of conoid cylinders, resting side by side upon the mucous membrane. The normal shape of these cylinders is conical, but they occasionally present the oval figure. Their free extremities are sometimes fringed with minute hair-like filaments to which the name of *cilia* has been given. These cilia are continually in a state of vibration, and their motions being directed toward the outlets of the cavities which they line, they are supposed to act in propelling the accumulated secretions to the orifice, from which they may be removed. In the fauces and over the oral surface of the epiglottis, the epithelium is tesselate, with the layers placed so closely one above the other, as to form a covering of some thickness and strength.

The cavity of the larynx, from the basis of the epiglottis anteriorly, and from the superior vocal chord posteriorly, is lined with the ciliated epithelium; it is also found in the trachea and ultimate ramifications of the bronchi; it likewise covers the whole floor of the nasal

cavities, the muscles, septum narium, the entrance into the frontal, ethmoidal, the sphenoidal, and the superior maxillary sinuses and their cavities to their remotest recesses.

The epithelium is liable to constant waste from incessant ejection of its cells mixed with the discharges from the various cavities in which it is found. Thus the epithelial cells of the mouth, throat, and larynx, are being constantly separated, and thrown out with the saliva and expectoration. But, although the epithelia are thus liable to constant removal, yet they are reproduced to almost an unlimited extent; so that when they become detached from the mucous membrane by disease, or from the influence of any other cause, they are most readily renewed, so long as the mucous membrane retains its functional powers unimpaired.

Subjacent to the epithelium, is the mucous corion, a thick gelatinous web, in which the numerous bloodvessels are distributed, and ramified to an extreme degree of minuteness. This, when examined by the microscope, is found to consist of two parts; first, the basement membrane or *membrana propria*, a thin

film-like but comparatively firm web, upon which rests the epithelium; and secondly, a fibro-vascular layer, which is situated beneath the basement membrane. The former or basement membrane seems, so far as hitherto known, to be almost pellucid, in structure homogeneous, though presenting on its surface marks of nuclei, and from which some have imagined the nucleated cells of the epithelium to be secreted. On the other hand, these marks may be derived as impressions from the nucleated cells of the investing epithelium. External to this is the fibro-vascular layer, which, indeed, is a network of bloodvessels, lying between and ramified among the filaments of a firm fibrous tissue. This latter part appears to give colour to the basement membrane, and it certainly supplies it with blood, and probably nutriment.

External to these two tissues, is a filamento-cellular tissue, more or less loose, by means of which the mucous membrane is connected to the subjacent parts and the muscles, and by means of which it is made to move easily and extensively.

Mucous Follicles.—Nearly all the mucous

membranes lining the different cavities are supplied with secretory glands that produce the mucus by which their surfaces are lubricated. These bodies differ materially in their form and structure, and, in some instances, in the character of their secretions, in order to secure an adaptiveness for the parts in which their functions are to be performed. The variations in their arrangement are always, apparently, for the purpose of gaining the largest possible extent of secreting surface.

These glandulæ are formed by the moulding of the mucous membrane into minute sacs, tubuli, or cavities, with blind ends, the free surface of which secretes the viscid liquor, which is directed by valvular and other arrangements to the parts that it is intended to lubricate. In disease, as remains to be considered hereafter, these secretions increase greatly in quantity, and become materially vitiated in character. The mucous membrane of the pharynx, larynx, and trachea, is thickly studded with these secretory glands, which, in a normal condition, supply the air-passages with a bland transparent fluid, not abundant in quantity.

These bodies vary in number and size in dif-

ferent localities. The glands about the extremity of the uvula, in the pharynx, and upon the epiglottis, are large and numerous; those of the larynx are not so large, yet exceedingly great in number, especially in the superior part of this organ; the follicles also appear in the thickness of the vocal chords, and within the ventricles of the larynx; but in the trachea these glands are still more numerous than in either of the other localities which have been noticed.

The Tonsils.— Besides being itself provided with these minute saccular glands or crypts, the lining membrane of the fauces is extended on either side over a cluster or conglomerated mass of follicles named amygdalæ or tonsils. These bodies consist of a number of saccular glands closely aggregated together and enveloped in folds of the mucous membrane. On the internal and convex surface of the tonsils are seen a large number of deep and irregular sulci or depressions. The walls of these cavities are lined by mucous membrane, the surface of which presents numerous small apertures, leading into follicles that secrete the viscid fluid with which the cavities are generally filled. The secretion from these aggregations

of glands is ordinary mucus, which possesses no other properties than what are found in that produced by the other follicles of the throat and larynx. The sole object in the provision of this mass of glands on each side of the throat, appears to be the lubrication of the morsel for deglutition. The mucous follicles of the tonsils retain their secretion, till the approximation of the arches on each side of the throat, in the act of deglutition, squeezes it out upon the food.

In the diagnosis and treatment of the diseases of the mucous membrane and follicles of the throat, a valuable guide to the pathology of the parts which cannot be brought under immediate inspection may be obtained from the appearances presented by the organs that are so situated as to be readily exposed; for the continuity and sympathy of this membrane, and the close contiguity of the glandular bodies which it contains, rarely fail to induce a diseased condition, first in the larynx and subsequently in the trachea, similar to that which exists in the fauces, pharynx, or on the epiglottis.

CHAPTER II.

CATARRH.

In considering the diseases of the mucous membrane of the throat, a classification will be adopted having direct reference to the tissue which is primarily affected by the morbific influences, and also to the relative value of a healthy performance of the functions of these tissues in the economy of the system. In pursuance of this plan, the first affection to be considered is catarrh; for although this name has been applied to many conditions, which may be its sequelæ, and cannot be strictly designated by the term, yet I think it may be shown that well-marked, characteristic differences exist between genuine catarrh and those diseases of inflammation which many patholo-

gists have described as mere gradations of the same affection.

It is well known that, in the healthy state, the epithelial investment of the mucous membrane is being continually, though imperceptibly, thrown off, and as rapidly reproduced from the secretion of the true surface of the mucous membrane. Accordingly, upon examination with the microscope of the ordinary mucus of the air-passages, it will be found to consist of these cast-off epithelium cells, imbedded in the viscid secretion from the muciperous glands. An attack of simple catarrh produces the following changes :—the irritation of the morbific influences induces an effusion of serum between the true surface of the mucous membrane and the epithelium, and thus the epithelial tunic is raised somewhat above the surrounding surface. This diseased condition is usually confined to distinct patches: thus the act of coughing, or any rapid current of air, may effect a mechanical separation of this protruding patch, leaving the mucous membrane entirely denuded of its proper tunic; or the epithelial covering may yield at

different points, to allow the escape of the subjacent effusion. In this way a few isolated groups of ciliary cylinders become detached, and ultimately the entire patch is separated and ejected in the expectoration. If the irritation is not persistent, and there still exists sufficient power for the reproduction of a new epithelium covering, before the true surface of the mucous membrane is deprived of the old one, then the disease terminates. This applies, however, to one patch only of disease, and that too where the irritation is of an evanescent character: but, generally, many patches are produced in different parts of the mucous membrane, and the morbific causes continue to exert their influence for a much longer period; so that a simple catarrh may continue for a considerable time in its true nature, as a disease of irritation, from the numerous points that become the seat of effusion under the influence of the same exposure to morbific agents. This persistence of the affection in its simplest form is also favoured by the tendency which this and kindred diseases of the respiratory passages have, to spread from above downwards; so that

patches of mucous membrane near the oral and nasal openings may first yield to the exciting cause of morbid action, and through the recuperative energy in the membrane be supplied with a fresh layer of epithelium before it has been entirely deprived of the old one, thus effecting a cure of the disease at this point. During this process however, and subsequently, the morbific agent may attack other parts of the membrane, producing in them the same disturbance of vital function. In most instances, therefore, of catarrhal irritation, the mucous membrane will present numerous isolated patches of the affection in different stages of development.

The affection, the pathology of which is thus described, I would call simple catarrh. It is that abnormal condition which is so frequently occurring as the result of temporary exposure to changes of temperature, and which usually terminates by the method already described. It expends its force solely upon the epithelium covering. This is the course of a simple cold when it occurs under favourable circumstances for a recovery.

Sometimes, however, the irritating causes continue to act, and the organic function of the mucous membrane becomes so severely impaired, as to incapacitate it for the secretion of normal epithelial cells. Thus denuded of its natural protecting tunic, if the morbific causes have still an influence, it will go on secreting first mucus profusely, and then pus-globules, until it leads to most serious results. Hence it will be seen, that a simple catarrh of a trivial nature at the commencement, may become so grave an affection as to interfere materially with the healthy performance of the functions of the body, and even be the cause of death.

The more important tissues of the lining membrane now become the seat of disease; the epithelium being removed, the true mucous membrane and the muciperous glands are the predominant points of the affection, This constitutes acute catarrh.

If this acute catarrh is protracted, it is liable to bring about certain changes of structure, which in themselves will prove excitant causes to the disease, and thus a chronic catarrh be induced. Other organs, than the tissues of the

mucous membrane, may also become implicated, and the vital energy of the respiratory apparatus so materially exhausted, as to threaten the destruction of life.

Chronic catarrh is increased by the supervention of a fresh attack of the acute form of the disease, and if these recurrences are frequent, serious impediments will be offered to a termination of the affection.

A difference of opinion still exists among pathologists, as to whether catarrh is a disease of irritation or of inflammation. Although it is difficult to determine the precise moment when genuine catarrhal irritation ceases and inflammation begins, yet the vital phenomena of each, present such characteristic differences when fully developed, that I think it will be scarcely possible to deny a distinctive division between them. Although a majority of the various inflammatory diseases of the air-passages are the sequences of catarrhal irritation, yet it must be admitted that in some instances true inflammation of the air passages does occur independently of catarrh, as a cause. It is also true, that we now and then find inflammation occur-

ring in the lining membrane of the air-passages, at the same time with the existence of a catarrhal irritation, which terminates in the usual way, by the secretion of a new epithelium tunic before the old one has been extended, and which catarrh never passes into inflammation.

The gradual transformation of the secretion of mucous surfaces, from mucus-corpuscles into pus-globules, has been distinctly proven by Professor Bradham, Vogel, and others, not to be the sole production of ulceration.

After the surface of a mucous membrane is denuded of its natural epithelial tunic, from the enervation of its vital powers disabling it to reproduce normal epithelium cells, the serum which was at first secreted between the epithelial covering and the true surface of the mucous membrane, becomes blended under the continued influence of the morbific causes " with little irregular, granular bodies (inflammatory spheres,) or with regular globules containing a nucleus, which is brought to light by acetic acid (mucus-corpuscles and simple exudation-cells,) and soon after true pus-globules, which are easily recognized by their uniform

size, their semi-opaque and delicate granular appearance, and from two to four nuclei becoming visible on the application of acetic acid. The mucous surface thus furnishes pus without ulceration." *

Vogel believes that this transformation of mucous into purulent secretion is often very rapid, and that it may take place, and the secretion return to its natural standard within the space of a very few hours.

The rapidity of the restoration of the mucous membrane to a natural condition, will be greatly modified by the intensity of the inflammatory irritation, and the quantity of the pus-secretion; for by such attacks the mucous membrane will be long disabled for generating true ciliary epithelium.

Microscopic observation furnishes, to a considerable extent, evidence of the cure of catarrh or its passage into a chronic state.

Thus the gradual restoration of the mucous membrane will be characterized by the more

* An Anatomical description of the diseases of the organs of circulation and respiration, by C. E. Hasse, M. D., &c.—Syd. Soc. Ed. p. 263.

perfect epithelium cells which are thrown off in the expectoration, until finally the extruded cells evidence the formation of a complete and normal epithelial investment. But, where the disease becomes chronic, the mucous membrane, being denuded of its natural protecting tunic, secretes mucus-corpuscles in great profusion, mixed, often with scattered nuclei, and imperfect epithelium cells, and finally with pus-globules. The application of acetic acid renders all these elements of expectoration severally distinguishable.

Among the varieties of chronic catarrh, by far the most important, on account of its frequency, and the peculiar power which it exerts upon the general organism, is *hooping-cough*. Various endeavours have been made by pathological anatomists to refer this disease to an organic change of the respiratory organ itself, or to an affection of the stomach, pneumogastric nerve, or solar plexus. But I think Hasse is more correct in the remark that "experience would rather lead to the conclusion of hooping-cough being nothing more than chronic catarrh, which, in persons prone to strong nervous reac-

tion,—like children, and equally excitable adults, especially of the female sex,—provokes the well-known paroxysms. It is not fatal in itself, but only through the complications that beset ordinary catarrh. Of all forms, hooping-cough appears most liable to engender emphysema of the lung." With these few remarks, this interesting topic will now be left, to be treated more fully in a subsequent part of this work.

The necessity of distinguishing, in post mortem inspections, the difference between accumulations of mucus, the result of catarrh or inflammation, and the confined natural secretion of the mucous membrane, is so important, that I am induced to quote the entire paragraph of Professor Hasse upon the subject. "It may here be proper to observe, that every accumulation of mucus found within the bronchia after death, is not due to either simple or inflammatory catarrh. Thus in portions of lung long compressed by pleuritic effusion, the smaller bronchial twigs are almost always found replete with a thin whitish mucus. A careful inspection will, however, show the mucous membrane

to be thoroughly sound in all respects. The mucus must, therefore, be regarded as the natural secretion within an inert lobe of lung, withheld from access to the air."

The distinguishing characteristics between acute and chronic catarrh, are not sufficiently marked to ensure their recognition upon a post mortem inspection of the mucous membrane. Usually, however, there is a darker tinge to the membrane, where the chronic form of the disease has existed, "and frequently it presents a dense network of more or less delicate ramifications of vessels." In the acute form the uppermost stratum of the mucous membrane will be found tumefied and exceedingly friable, while, in the chronic form there will exist thickening and hardening of this layer.

"*Genuine chronic catarrh*," says Prof. Hasse, "invariably arises out of an acute state. It is very common in children, with whom, especially if they be of a strumous habit, it may abide for several years, ceasing only at the age of puberty."

"It is remarkable that senile catarrh, by determining a continued irritation to the respira-

tory organs, causes morbid predisposition to unfold itself there,—or disease, elsewhere existing, to throw itself upon the lungs. Thus, in the very individuals who, in their youth, had been scrofulous, but then escaped, we find, in the decline of life, catarrh productive of tubercular development, and even of Phthisis."

Catarrh sometimes proves directly fatal in those cases where the changes to the respiratory organs have occurred, which are hereafter to be described, through profuse mucus secretion, and consequent impediment to the oxygenation of the blood, producing emaciation, prostration, and hectic fever.

CHAPTER III.

SIMPLE CATARRH.—SYMPTOMS, CAUSES, PROGNOSIS, AND TREATMENT.

This form of catarrhal irritation is so extremely mild in its nature, and produces so little derangement of the general organism, that its symptoms, causes, and treatment, may be sufficiently described in a very brief chapter.

Simple catarrh is a disease of common every-day occurrence, and is not confined to either sex or to any period of life. It is characterized by an increased discharge of mucus, sneezing, and, sometimes, by cough. The lining membrane of the fauces and pharynx at first presents irregular patches, which are somewhat more red than the surrounding parts, and gradually this evidence of irritation spreads

over the whole surface. During the first few hours of the attack the throat becomes more dry than natural, but, after a time, the fluid beneath the epithelium tunic escapes, and, in connexion with the increased secretion from the muciperous glands, produces a copious discharge from the throat and nose. There is seldom any disturbance of the function of digestion; indeed this simple form affects, almost solely, the true surface of the mucous membrane and the follicular glands of the fauces, pharynx, and posterior nares.

Its causes are, sudden changes of temperature, exposure to rain, or a damp moist atmosphere, and any rapid transition from heat to cold.

The prognosis is always favourable; for, as the disease is generally seated in the throat only, it is fraught with but little danger.

Treatment.—This affection is so frequent in its occurrence, and so mild in its nature, that any positive treatment is seldom required. The chief object is to favour the vital energy of the mucous membrane by slightly astringent local applications, and to shield it from the action of

the atmosphere by mucilaginous drinks. The topical application to the pharynx and fauces of a solution containing twenty grains of the crystallized nitrate of silver to the ounce of distilled water, will be found most valuable in astringing the somewhat enlarged bloodvessels, and accelerating the formation of natural epithelium cells. It is of great importance that this form of catarrh should not be suffered to progress into a more acute phasis of the disease ; thus precautionary measures are required, rather than any active treatment of the existing affection.

CHAPTER IV.

ACUTE CATARRH.—SYMPTOMS, CAUSES, PROGNOSIS, AND TREATMENT.

In this form of disease the attack commences with the same series of symptoms that have been described as those of simple catarrh. But the point where simple catarrh, under favourable circumstances for reparation, terminates, is that at which, under a persistence of the morbific influences, and a low condition of the recuperative powers, the attack advances to the more important step of acute catarrh.

The profuse secretion from the mucous surfaces of the air-passages, which always occurs at the onset of catarrhal irritation, continues but a very short time in this form of the affection, speedily changing from true mucus, to a mixture of it with rolled up patches of separated epithelium, and the serous effusion from

the true surface of the mucous membrane. Soon the membranous surface is less suffused with mucus, and, as the irritation increases, it becomes more dry than natural; its secretion, now, is of a thin watery character, which is rendered more or less turbid and viscid, in proportion to the intensity of the irritation. The sputa soon present grayish points or streaks, which, progressively, render them entirely opaque. A hard wearisome cough, accompanied by more or less expectoration, is present. The voice is changed in character, becoming hoarse and difficult.

Should there be a persistence of the inflammatory irritation, a copious discharge of thick yellowish mucus will ensue, and, eventually, the secretion will present a decidedly purulent character. In this way pus may be formed in great abundance, whilst the mucous membrane does not undergo any perceptible loss of substance. At this stage of the disease there is great danger that it may overstep the limits of catarrhal irritation, and assume a true inflammatory character.

In the event of such an occurrence, the textures subjacent to the mucous membrane

will be implicated, and the secretion from the erosions will not only present undoubted pus globules when examined by the microscope, but will form a plastic inflammatory product. It should be remembered that, in an attack of acute catarrh, several patches of mucous membrane may yield to the morbific exciting causes of the disease at various times, and thus, whilst, at one point the affection may have advanced to the secretion of pus, at another it may not have completed its first stage.

Upon inspection of those parts of the lining membrane of the air-passages that may be brought to view during the existence of acute catarrh, there will be seen, at the commencement of the attack, "irregular rosy patches, nowhere distinctly circumscribed, but as if shaded off at their circumference. This reddening is occasioned by fulness of the extremely delicate superficial vessels, which, however, even in this condition, still admit of artificial injection,—according to Gendrin. In a short time, however, the above patches exhibit scattered vermilion points, whilst the pale vascular network becomes darker, and appears to go to a greater depth. The vermilion specks presently be-

come more numerous, unite to irregular undulating streaks, and ultimately coalesce in patches over the entire surface, imparting to the mucous membrane an uniform tinge, and changing its thin smooth aspect into one resembling plush. A ramifying of bloodvessels is now no longer visible upon the surface, though very evident in the submucous tissue. The upper layer of mucous membrane is mostly dry, double its natural thickness, and easily torn." *

In some instances, the patches of mucous membrane which yield to the disease are not so extensive, but appear to be confined to the small mucous glands. Then they present circumscribed circular erosions, four or five lines in diameter, which penetrate deeper than in the more diffuse forms, and are defined by a well-marked whitish margin. Sometimes these true glands, which are but processes or involutions of mucous membrane, when the predominant seat of the affection, are found enlarged to the size of millet or mustard seeds, of a whitish or yellowish colour. This enlargement, when occurring in acute catarrh, is produced by a diminution in the calibre of the glandular duct,

* Prof. Hasse, Anat. Des., &c.

thus preventing a free egress of the secretion of the follicle, and causing its distention. The difficulty of elimination is also increased by the thickened condition of the morbid product. This delay or accumulation of their own secretions, it is obvious, will conduce to the complete disorganization of the glands. Softening and destruction of their walls may thus result, and give rise to little isolated ulcers. But should a subsidence of acute into chronic catarrh take place without the liquefaction of the walls of the follicles, then they may retain their enlarged condition, giving a granular appearance to the surface of the mucous membrane.

The tonsils usually sympathise with the existing state of irritation, become enlarged, and the mouths of their ducts reddened. The nature of these bodies,—being formed by an aggregation of true mucous glands,—renders them especially prone to yield to morbific influences. Any enlargement of the tissues of their ducts would be liable to prevent the free egress of their secretion, and thus react, in a prejudicial manner, upon the entire organ. In this way we find that the small points of

depressions with defined margins, which result from the destruction of the external walls of the follicles, appear at an earlier period in the disease, upon the surface of the tonsils than in any other locality.

The secretion from these glands is soon changed, becoming thick, opaque, and muco-purulent; in this state it exudes slowly, and is deposited upon the surface of the tonsils, giving them a whitish coating.

The uvula is liable to enlargement and elongation, from an effusion between the mucous and sub-mucous tissues. The follicles situated near its extremity, which are numerous, yield to the general morbific influence, becoming large and prominent.

These diseased follicles of the uvula, posterior fauces, and pharyngeal membrane, when enlarged during an attack of acute catarrh, present an elevated pustular appearance, like granulations of various sizes with inflamed bases, and bearing a marked resemblance to the papulæ of varioloid.

Upon passing the finger over the laryngeal face of the epiglottis, it will yield the sensation communicated by plush.

Should the disease overstep the bounds of irritation, and attack the substance of the mucous and sub-mucous tissues, we then have acute inflammation accompanied by plastic exudation, which, when it attacks the glottis, larynx, or trachea, is true croup. Of this condition, however, it is not necessary to dilate in this place, as it will receive particular attention in a subsequent portion of this treatise.

Causes. — The most powerful predisposing cause of the various affections to which the mucous membrane lining the larynx, trachea, and bronchia is subject, is, without doubt, the influence of climate. Most writers on diseases of the organs of respiration agree that a cold and moist atmosphere operates as a potent agent in predisposing these parts to take on diseased action.

The climate of this country, then, it will be admitted, is peculiarly favourable to the development of catarrhal and other laryngeal and bronchial affections. Climate is not only a predisposing but also an exciting cause. Thus a variety of circumstances and conditions may render the mucous membrane peculiarly liable

to become morbidly altered by the influence of a sudden change of temperature, or an exposure to the moist and cold atmosphere to which allusion has just been made. In such an instance climate would be the exciting and not the predisposing cause. Among these predisposing causes, general debility of the system, severe and protracted mental labour, a sedentary mode of life, continuous confinement to the house, and the wearing of high, close-fitting, and warm neck-cloths or furs are the most prominent.

Few causes have a more powerful tendency to depress the vital energies, to weaken the nervous system, and to dispose the organs to take on diseased action, than an intense application of the powers of the mind, united with considerable mental disquietude. Persons whose position in life imposes upon them the most arduous mental duties, for which they are able to obtain so slight a pecuniary remuneration, that with the most rigid economy it is found barely adequate to supply themselves and those dependent upon them with the necessaries of life, become the easy and almost certain prey to disease.

A large number of this class may be found among clergymen, who, without a sufficient income to place them above temporal cares, are obliged to labour most assiduously to prepare suitable instruction for their flocks. It is very evident that such a condition of physical debility and nervous depression as these concurrent circumstances would be liable to produce, is but little prepared to resist the powerful influence of a great change of temperature, or a long-continued exposure to a damp and cold atmosphere.

Therefore it will be easily understood why clergymen are pre-eminently liable to attacks of acute catarrh, which for the same reasons, more frequently than among any other class, terminate in chronic catarrh, or "clergyman's throat" as it is often called. But of this form of disease more will be said in detail, when chronic catarrh is under consideration.

I have mentioned high, close, and warm cravats or furs as a fruitful predisposing cause. The practice of muffling up the throat, and preventing the cold air from exerting its healthful tonic influence upon the larynx and trachea, I

cannot but think is most prejudicial to the strength of these organs.

The muscular parts at the back and sides of the neck may be wrapped up with impunity, but I am fully persuaded that the front part of the throat should be left sufficiently exposed to secure a free access of the air to it.

I am daily consulted by persons who have been in the habit of rigorously excluding the air from the external parts of the throat; and one of my first directions is the complete abandonment of the fur, or mouth-wrapper, usually to their surprise, but always to their subsequent satisfaction.

Experience has not verified the assertion of some writers, that there exists a greater predisposition to acute catarrh in males than in females. This remark may hold good in reference to chronic catarrh, because men are subjected to a variety of causes which gradually render the mucous membrane less able to resist the influence of morbific agents. But I am unable to discover any peculiarity of formation, or other cause which primarily could induce the inference that men would be more

prone to catarrhal irritation or inflammation of the lining tunic of the throat than women.

In many affections of the upper portion of the respiratory tube, it must be admitted that the general opinion that males are more liable to them than females appears to be well founded. Statistical tables show, as conclusively as such evidence can, that boys are more subject to membranaceous croup than girls. Equally conclusive are the statistics which have been collected as to the greater frequency of ulceration of the epiglottis, lesions of the larynx, and ulceration of the trachea, among men than among women.

No period of life appears free from this affection; yet it has been acknowledged by most writers on diseases of the respiratory apparatus, that there is an increased susceptibility to morbid changes in these parts between the period of puberty and the age of thirty-six. Some diseases of the mucous membrane, however, as croup, are almost peculiar to childhood.

There is scarcely an exciting cause of acute catarrh, more powerful in its influence than an exposure to the vitiated atmosphere of a

crowded room. Continuing in a poorly ventilated room filled with people, often lighted with many candles or gas-burners, the temperature becoming heated and the air deprived of its vitalizing property, produces a combination of circumstances the best suited to deprive the system, and especially the respiratory apparatus, of its power to resist the morbific influence of a sudden exposure to a cold and damp atmosphere.

Yet a course of life is pursued by many which subjects them almost daily to this heavy tax upon their vital energies. A simple cold recurring frequently, then at shorter intervals and produced by slighter causes, then chronic catarrh, and subsequently permanent disease of the lungs, are the gradual steps in the category of effects which may result from inattention to appropriate preventive or remedial measures.

Prognosis.—The terminations of this disease are resolution of the irritation, inflammation, or chronic catarrh. Of these the most desirable is, of course, resolution; and this is by far the most frequent termination, therefore the prognosis is usually favourable. Yet great care is

required to prevent the irritation from passing into acute inflammation, which may result in grave consequences, or into chronic catarrh, which may prove, in a cachectic and scrofulous constitution, the exciting cause of phthisis pulmonalis.

Treatment.—Believing, as I do, that topical medication is a measure of first importance in the treatment of acute catarrh, I shall not consider it necessary to give a very minute detail of the general remedies, which are so carefully dwelt upon by most writers on this affection. For unless some manifest disease appears to have affected all parts of the system, as is often the case in influenza, no general remedial measures, of any moment, will be required; the disease being a local one, will need but little beside local treatment for its removal.

The plans of treatment which have been proposed by different authors, consist chiefly in the abstraction of blood, generally, by venesection, and locally, by leeches applied to the neighbourhood of the larynx and trachea; counter-irritation by means of blisters; together with the internal administration of tartarized antimony,

given to the extent of producing nausea, and of mercury, sufficient to cause some soreness of the gums. These more powerful remedies are not recommended, unless the catarrhal irritation has attained a high point of action bordering upon true inflammation. In the earlier stages of the affection, and in the milder form which it most frequently assumes, the general treatment should not be carried beyond a brisk cathartic, and the local, be confined to the abstraction of blood by a few leeches applied to the external part of the throat, to mustard plasters, and to poultices. But whilst it is consistent with proper caution to pay due attention to the condition of the alimentary canal, cleansing it of any irritative substances which it may contain, and to reduce the tendency to inflammation by local depletion and counter-irritation; yet it should be recollected that the affection has its seat in the mucous membrane of the fauces, pharynx, larynx, or trachea, and that any direct application to either of these parts, which will counteract the morbific influence that has been exerted, and restore to the true surface of the mucous mem-

brane the power of secreting healthy epithelium cells, will terminate the disease in this particular organ, and in all probability prevent its further extension.

I have rarely found it requisite to resort to a mercurial course, or to general bloodletting, for the cure of acute catarrh, when the patient has come under my notice at an early period after the commencement of the attack.

Should the disease, however, have reached that point, when a reasonable fear may be entertained that it will soon pass from irritation into inflammation, then it may be necessary to resort to a mercurial course of treatment. Local bloodletting by means of leeches may also be required.

But the remedial measure upon which an extensive practical experience of many years, induces me to rely with the greatest confidence of complete and speedy success, is the application of a powerful astringent directly to the affected portion of the mucous membrane, or as near to the diseased part as our present knowledge and mechanical appliances will enable us to make it.

Topical Medication. — The propriety and value of local medication to diseased organs or tissues, has long been acknowledged, and many master-minds have been employed at different periods in devising mechanical appliances by which the advantage of this valuable remedial measure might be afforded to various parts, that previously had been considered anatomically beyond its reach.

The first attempt to test the soundness of the popular opinion, that the introduction of a drop of water or any other foreign body into the cavity of the larynx or trachea, would produce most pernicious consequences, and even death, was made by Sir Charles Bell, in 1816. Although the method of application resorted to by Sir Charles Bell, as recorded in his "Surgical Observations," &c., published in 1816, was, to use his own expression, "rough," yet it was sufficiently accurate to secure for him the distinguished honour of introducing to the profession a most valuable plan of treatment.

He records a case of extensive ulceration of the glottis, which had followed long-continued inflammation of the throat. Mr. Bell, being

sent for, late at night, found the patient, a young woman, sitting up in bed, breathing with a "harsh, sawing sound, and with great difficulty; she could speak only with great effort," and on attempting to swallow a little broth "much of it went into the wind-pipe, and she had a great struggle in recovering."

"Having ascertained," continues Mr. Bell, "by putting my finger over the root of the tongue into the glottis, that it was rough and irregular, with ulceration, I proposed to touch the surface with the *argentum nitratum*. It was considered hazardous, but something was necessary, and I was confident that the application would allay irritation. I made a small pad of lint, and attached it to the ring of a catheter wire, and bent the wire so as to pass over the root of the tongue and epiglottis; I dipped the lint in a solution of twenty grains of the caustic to half an ounce of water, and touched the glottis with it in this manner. With the fingers of my left hand I pressed down the tongue, and stretched the forefinger over the epiglottis; then, directing the wire along my finger, I removed the point of the finger from

the glottis and introduced the pad of lint into the opening, and pressed it with my finger. On withdrawing the lint, instead of coughing, she began to speak more audibly than usual, and had neither cough nor spasm from this rough operation. I repeated the application four times, and her breathing was sensibly better."

These applications were continued for some time, at intervals, and ultimately effected a cure of the disease.

Although Sir Charles Bell had this practical demonstration of the value of his treatment, we have no evidence that he continued to resort to it. Mr. Vance, a naval surgeon, next revived the method of treatment; although he left no record of his experience in the practice, yet he is said to have been very successful. But in his hands it seems to have attracted but little attention from the profession, and at his death to have fallen into entire disuse.

It would appear from a paragraph in Dr. Stokes's "Treatise on the Diseases of the Chest," that Mr. Cusack, a short time subsequently, was in the habit of applying caustic to

the cavity of the larynx. He attached a pellet of lint on the end of a finger of a glove, and drawing this upon the index finger of the right hand, it was dipped in the solution to be applied, and carried, " with great facility, to any part of the pharynx, and even to the rima."

About the same time the subject received much attention from two eminent physicians, Trousseau and Belloc, who published their views, and the result of their experiments in a valuable treatise upon " Diseases of the Larynx," at Paris, in 1837.

Having noticed that many local diseases occupy so small a point in the economy, that they often resist the most thorough general treatment, and that obstinate ulcers of the throat, nose, eyes, skin, vagina, rectum, &c., are generally controlled by topical applications made to their surface, they felt the necessity for discovering some method by which the larynx could be treated by topical remedies.

The great difficulty which opposed the application of medicinal remedies to the diseased points in the larynx, evidently consisted in the anatomical relations of the parts, and the func-

tional importance of the organ. They had no doubt, but the action of remedies would be the same internally as externally; and therefore if topical remedies could be applied to the larynx, as they are to the urethra, a new therapeutic avenue to its affections would be opened. They concluded the point to be ascertained, was "a method of bringing medications in form of vapour, powder, or liquid, in contact with the mucous membrane of the larynx without interrupting respiration." They contrived several ingenious appliances, by which they succeeded to a degree, in testing somewhat extensively the relative value of these three forms of topical medication, and finally arrived at the opinion that "liquids are much the most easily applied, and without risk of injuring the trachea and bronchia."

They did not attempt to enter the cavity of the larynx, but were content with the less efficient plan, of bringing a piece of lint saturated with the solution in contact with the laryngeal base of the epiglottis, and trusting to the few drops which might accidentally trickle into the cavity of the larynx. For this pur-

pose they also devised a syringe, from which a certain quantity of the liquid was discharged in a fine shower upon the epiglottis, and upper part of the œsophagus, and, perchance, into the larynx. Although they acknowledge the value of these topical applications, yet, they do not appear to have attempted to *enter* the *cavity* of the larynx, systematically, with a pellet of lint or of sponge, saturated with the solution. The dread of interfering with respiration seems to have been a stumbling-block to their discovery of the harmlessness and value which attends the introduction of a sponge into the larynx, charged with a medicinal liquid. It was left for Dr. Horace Green, of New York, to appropriate the experience of all these gentlemen, and with a master-mind to pursue the subject until he had completely conquered all obstacles, and had proven the entire practicability and safety of introducing a sponge saturated with a medicinal liquid *into the cavity of the larynx.* After testing the value of this therapeutic measure for several years, he published his views, and the result of his experience, in a valuable "Treatise on Diseases of

the Air Passages," &c., in 1846. The effect of this work was to turn the attention of a large portion of the profession to the subject; and his fore-runners in this practice had excited so little notice from their compeers, that most physicians and reviewers, being unacquainted with its history, accorded to Dr. Green the distinguished honour of its discovery, although he had made no such claim in his book.

It would certainly be difficult to decide, whether as much credit be not due to the reviver of a discarded or forgotten method of practice, as to its discoverer. In this case, we must confess, that an important therapeutic agent has been added to our list by the energy and discriminating judgment of Professor Green, which otherwise might have remained unknown to a majority of the medical profession. And although many years of experience have led me to conclusions differing widely from those enunciated by Dr. Green, yet I must express my conviction of the excellent service which he has rendered the profession and humanity, by his skilful experiments in topical medication.

Notwithstanding the explicit manner in which

Dr. Green asserted the facility of entering the larynx, and that a large number of physicians who had witnessed his performance of the operation were willing to endorse his statement, there were many who publicly denounced the application as impracticable and anatomically impossible. This assertion is even now made by some, who will not avail themselves of the facts within their reach, but prefer rather to condemn, than to institute the necessary examination to understand. Perhaps this opposition has been increased by the assertion of Dr. Green, which has been more extensively advocated by some of his recent disciples, that the sponge may be passed with facility, not only into the larynx, but also *through the rima-glottidis into the trachea itself.* I must confess that in the course of an extensive daily use for several years, of topical medication in the treatment of diseases of the air-passages, although I have not met an instance in which I have been baffled in the attempt to pass the sponge into the larynx, *down to* the chordae vocales, yet *I do not remember a single case in which I could assert that the instrument had passed the rima*

into the trachea. The only evidence that I have had of the solution finding its way into the trachea, is the occasional circumstance, which patients have related to me, of the occurrence of an expectoration tinged with the caustic, twelve and even twenty-four hours after its application to the throat. This retained secretion, however, may have been lodged only in the sacculi laryngei; though, I am inclined to the opinion that it is a proof of the medicinal liquid having reached the bronchia.

The instruments I employ for making a liquid application to the mucous membrane of the larynx are a bent spatula, and a whale-bone probang, curved to various angles to suit the different conformations of the mouth, to the end of which a small rounded piece of fine sponge is attached.

The method of employing these is to carry the end of the spatula to the lingual base of the epiglottis, then, by pressing the tongue firmly down, and drawing it forward from the base with the instrument, the laryngeal surface of the epiglottis may be exposed; when this organ is brought fairly in view the great diffi-

culty of the operation is overcome, for it only remains to direct the patient *to inspire* gently, and to pass the sponge of the probang to the posterior face of the epiglottis, and by a rapid motion to press it *downward and forward*, in order to introduce it into the larynx. Considerable skill in the manipulation is requisite to insure success, and this can only be acquired by constant practice, united with an accurate knowledge of the anatomical relations of the parts. Two points should be always remembered in the performance of this operation—first, that the epiglottis must be exposed, and second, that the end of the probang should be pressed *forward* as well as downward. With a careful attention to these directions, a skilful manipulator can scarcely fail to obtain an entrance into the larynx. Yet this result must not be expected, upon the first trial with any patient. Nor, indeed, will it be prudent to attempt the application until after the pharynx and top of the larynx have become somewhat accustomed to the presence of the sponge, and the medicinal agent with which it is saturated,—unless the character of the disease is of that urgent

nature that will not permit delay, as in membranaceous croup, or any other acute inflammation of the parts.

But in chronic affections of the mucous membrane of the larynx and trachea, much less difficulty will be experienced by the operator, and far less pain given to the patient, if two or three applications, at intervals of a day, are made to the fauces, pharynx, and epiglottis, before an introduction of the sponge into the larynx is attempted.

I have found by experience, that the instrument may be brought in contact with the laryngeal surface of the epiglottis, without producing any spasm of the glottis or the surrounding parts; but that the moment it touches either the pillars or the pharynx, a retching action, more or less violent, is produced, by which the larynx is elevated to a contact with the epiglottis, and thus the possibility of entering it is for a time, entirely precluded.

The substances which I have employed in solution, are the per-chlor. hydrarg., the bi-cyanid. hydrarg., the nitras hydrarg., the nitras potass., the sulphas cupri, and the nitras argent.,

(cryst.); of all these I most frequently use and greatly prefer the nitrate of silver, on account of its rapid action, its efficacy, and its harmlessness. I apply it in solutions of various strengths, ranging from one scruple up to one drachm and a half, to the ounce of distilled water. I prefer the nitrate of silver in crystals, to the an-hydrous rolls, for its greater solubility, the clearer solution it produces, and its more certain purity.

A sufficiently full description of my method of effecting topical medication to the larynx, has been introduced at this part of the work; because I believe that the disease now under consideration, and those affections which will be considered in future pages, are to be cured, mainly, by the use of this remedial measure—we may now return to consider the treatment of acute catarrh.

If the disease be in its early stage, and the irritation confined to small patches of the mucous membrane, it will be sufficient to employ a comparatively weak solution of the crystallized nitrate of silver, consisting of twenty grains of the salt to an ounce of distilled water. With this the tonsils, pharynx, and

epiglottis, should be effectually sponged once a day. In the event of the disease continuing to spread over other and larger portions of the membrane, after these medications have been employed, the strength of the solution should be increased progressively at each application, until sixty or even eighty grains to the ounce is reached. When a hard frequent cough occurs, accompanied by hoarseness of voice, with pain or impaired power on speaking, then the topical medication should be extended to the cavity of the larynx, so soon as the parts leading to it can be sufficiently accustomed to the presence of the sponge to allow its insertion, without difficulty to the operator, or danger to the patient. The relation of one or two cases with all consistent brevity, may be useful in exemplifying the method in which I employ this remedial measure in acute catarrh.

Case I.

In January, 1850, a gentleman aged thirty, of robust constitution, and who usually enjoyed good health, applied to me for medical advice.

Ten days previously he had been exposed to

a severe rain storm for several hours, whilst in an open carriage. A day or two afterward, he discovered that he had "taken cold." First a dry hot throat, with reddened conjunctivæ, and slight febrile symptoms, were present, followed in a day by profuse mucous discharge from the nose, then cough and considerable expectoration. Hoarseness of the voice, succeeded in a short period by almost complete aphonia, came on about the sixth day after the exposure; finding these symptoms did not yield to the routine remedies which had been employed, he applied to me.

Upon examining his fauces, pharynx, and epiglottis, which were readily brought to view, by means of the bent spatula, I discovered an enlarged condition of the tonsils, with a pearl-coloured secretion covering their surfaces; many rose-coloured patches of considerable size existed upon the pharynx and laryngeal face of the epiglottis. Upon passing the finger over the top of the larynx and epiglottis, the same sensation as that given by velvet was communicated to it, and points could be distinguished which were evidently elevated above the surrounding parts.

By the use of a mirror, I discovered the membrane of the posterior nares to be in a similar condition with the lower part of the pharynx.

The previous treatment had consisted in cathartics, expectorants, and the moderate use of antimony. I at once made an application of a solution of the nitrate of silver, thirty grains to the ounce, to the fauces, tonsils, pharynx, and epiglottis. I did not attempt to introduce the sponge into the larynx at this interview, yet the voice was improved in so marked a manner when he called the next day, that I am induced to believe that some of the solution must have trickled into the larynx from the sponge, whilst it was in contact with the base of the epiglottis.

This topical medication was continued for three successive days, with evident improvement from each application, and on the fourth day, a considerable hoarseness and weakness of voice still continued, it was thought advisable to extend the medication to the cavity of the larynx. Keeping the epiglottis full in view, by a firm pressure upon the base of the tongue

of the bent spatula with the left hand, with the right, the curved whale-bone rod and sponge, the latter saturated with the solution, was passed to the base of the laryngeal face of the epiglottis, and then, by quickly pressing it *forward* and downward, it was readily carried to the rima-glottidis. Very little pain or uneasiness was produced, and so excellent was the effect upon the disease, that two more applications completely restored the parts to a healthy condition.

I shall only instance one other case of acute catarrh, to show the value of topical medication with good astringent remedies, in that state of epithelial abrasion, and altered secretion of the true surface of the mucous membrane, in which pus may be produced without any loss of substance in the membrane.

Case II.

A clergyman was obliged to perform the duties of his office, whilst affected by a slight cold, the result of an exposure to a current of air in a crowded room. As the services progressed his voice became increasingly hoarse,

and at their termination he had almost entirely lost it. Rest and complete silence restored some power to the voice, yet he continued hoarse, and the cough which was at first slight, became more frequent, accompanied by an opaque globular expectoration. On the fourth day after this unwise use of his voice, he applied to me.

The fauces, pharynx, and epiglottis, presented many ash-coloured patches with distinct lines of demarkation, plainly showing that the surface of the mucous membrane was entirely deprived of its epithelial covering. The secretion from these denuded surfaces presented all the characteristics of true pus, and when treated with acetic acid acted in every respect like pus-globules.

An application of the solution of nitrate of silver, forty grains to the ounce, was at once made to the top of the larynx, the pharynx, and fauces, and continued for three successive days, with great relief to the more urgent symptoms. The cough was decidedly less frequent, the expectoration less opaque in its appearance, and containing a large proportion of healthy

mucus; the catarrhal patches had lost the red colour and the defined edges, and were no longer covered with the peculiar ash-coloured secretion, which was so apparent before the local applications were made. Notwithstanding the decided improvement which had taken place in the pharyngo-glottidean mucous membrane, still the hoarseness and debility of voice was very little better than before topical medication was resorted to; I therefore considered it advisable to extend the application of the solution to the cavity of the larynx. The forty grain solution was readily introduced; the effect was most advantageous; it was re-applied every other day for five times, when the voice was completely restored to all its accustomed volume and power.

It will scarcely be necessary to extend my remarks any farther upon this plan of treatment, as sufficient has already been said to give an idea of its value and the method by which it is employed.

CHAPTER V.

CHRONIC CATARRH.—SYMPTOMS, CAUSE, PROGNOSIS, AND TREATMENT.

Chronic Catarrh itself will require but brief consideration, as there is little to be said about it that does not equally apply to acute catarrh; but when we come to treat of the sequelæ, which, after long standing, it invariably produces, we shall find material for more extensive comment.

When acute catarrh passes into the chronic form, the mucous membrane assumes a darker tinge, sometimes inclining to a brown-red, but, for the most part, the colour is of a violet shade. There is frequently seen a dense network of ramifications of vessels, more or less delicate, covering the membrane. The mucous

secretion constitutes a thick, turbid, grayish, or yellowish-gray, and, for the most part, copious fluid; thus differing essentially from the tenacious and pellucid materials which is produced in the first period of acute catarrh. Considerable thickening of the uppermost stratum of the mucous membrane is induced. There is usually a troublesome suffocative cough present, which becomes most annoying at night.

Cause.—In speaking of the cause of this affection, I wish to be understood, that a distinction is here recognised between that bronchial irritation caused by tubercle, by disease of the bronchial glands, and by most heart affections, and true chronic catarrh. For I entirely agree with Prof. Hasse, in the assertion, that "*genuine chronic catarrh* invariably arises out of an acute catarrh." Therefore, as I do not class every species of abiding irritation and chronic inflammation of the respiratory mucous membrane, whatever their source, under the general denomination of chronic catarrh, I shall say that its cause is acute catarrh.

Prognosis.—This disease will almost always

yield to proper treatment; therefore its prognosis, when under judicious care, will be favourable. But if reliance is placed upon expectorants, gargles, emulcients, and similar palliatives, without the addition of topical medication to the affected membrane, then the disease will persist, and some one of the consequences which is invariably produced by its continuance will ensue. And, although neither of these sequelæ will in itself endanger life, yet the continued irritation which will be determined to the respiratory organs may be productive of tubercular development and even of phthisis. Thus, the prognosis of chronic catarrh will be favourable or unfavourable, according as suitable measures have been used, to act upon the local affection, or as an undue reliance has been placed upon general remedies.

Treatment.—In this form of catarrhal irritation, the main reliance, in my opinion, for its cure, must rest on topical medication with the solution of the crystallized nitrate of silver. The effect of its application to the mucous membrane, in some of those cases of somewhat long standing, which have baffled all the means

of counter-irritation, and the general remedies usually employed, will be so speedy and effectual, that it will astonish and gratify both patient and physician.

If the mucous membrane has become considerably hypertrophied, then a constitutional alterative, as, for instance, the potass. iodid., may be usefully employed. I generally make the applications to the fauces, pharynx, and epiglottis, every other day, for three or four times, before attempting to pass the sponge into the larynx; and, in some instances, I have not found it ever necessary to extend the caustic application to the cavity of that organ. The strength of the solution which is used must be regulated very much by the judgment of the practitioner; but in chronic catarrh it will always be found safest to commence with the milder solutions first, increasing gradually as the requirements of the case may demand, and the quietude of the nerves of the patient will permit.

It will be found, however, that a mild solution, for instance, of twenty grains to the ounce, when applied to the arytæno-epiglottidean membrane, may produce extreme spasm at the entrance

of the larynx, and consequently much suffering to the patient, which will not occur if a solution of double the strength be used. This result is quite contrary to what theory would lead us to expect; but my experience has frequently confirmed the observation.

I have treated this division of my subject thus briefly, because I have concluded to consider separately, the various consequences and changes of tissue that may result from a continuance of catarrhal irritation for any considerable period of time.

CHAPTER VI.

ORGANIC SEQUELÆ OF CATARRH IN THE UPPER PARTS OF THE AIR-PASSAGES.

Hypertrophy of the mucous membrane.—Enlargement and hypertrophy of the follicles or muciperous glands; liquefaction of their walls, resulting from distention. — Indurated and enlarged tonsils.

The most important symptoms produced by these changes are: —

Hoarseness of Voice;
Dysphonia, or Difficulty of Voice;
Aphonia, or Loss of Voice;
Irritable Cough;
Suffocative Cough;
Spasm of the Glottis.

SECTION I.

HYPERTROPHY OF THE MUCOUS MEMBRANE.—SYMPTOMS, PROGNOSIS, AND TREATMENT.

Permanent or repeated sources of irritation are productive of augmented secretion, and, eventually of various changes of the structure of mucous membranes.

Hypertrophy, or, at least, a *manifest thickening* of the mucous membrane, is one of the most frequent results of chronic catarrh. This thickening appears to arise from the increased energy or luxuriance of growth which the irritation excites in the mucous membrane. For upon its examination in the dead body, it will be found that the thickening has occurred without any marked alteration in the structure of the membrane. Often, the accuracy of observations made during life have been doubted at post-mortem investigations, because the redness, which some insist upon as an unfailing accompaniment of chronic catarrh, is not to be seen. It will not be denied by any modern

pathologist, that redness, so far from being an infallible sign of pre-existing irritation, is truly the most uncertain; for it is a recognised pathological fact, that redness, how bright soever it may have been during life, may completely disappear after death. This fact is so clear and palpable, that all anatomists have observed it; and it will only be required for me to instance some familiar examples in acute and chronic diseases, in order to render it apparent that even in inflammation pallor takes the place of redness after death. In erysipelas, in confluent small-pox at the period of inflammation in the pustules, in high grades of fever when the tongue is intensely red, do we not find after death that the bright tint has entirely disappeared, and that pallor exists in those parts where there had been the expression of intense inflammation during life?

In chronic phlegmasiæ the same result occurs. The blood is seldom intimately combined with the tissues; but it still circulates in its own vessels, and when life is extinct, the parts that were inflamed lose their red colour: this may often be seen in chronic ophthalmia and severe cutaneous diseases.

If these laws are so plain which govern the capillary circulation of the skin, the conjunctiva, the mucous membrane of the mouth, and other parts which are visible, must we not infer that the internal viscera, and tissues which are invisible during life are amenable to the same laws.

Therefore, should the fauces, tonsils, pharynx, epiglottis, and glottis, present a deeply-reddened appearance during life, which entirely disappears at death, would it be unjustifiable to assume that the larynx and arytæno-epiglottidean membrane, although pale, had been equally under the influence of catarrhal irritation. This assumption will appear still more reasonable when the delicate sympathy which exists in the mucous membrane is remembered.

Symptoms.—This organic change does not produce the same train of symptoms irrespective of its particular seat in the trachea, larynx, or pharynx; but it will be attended with a variety of effects, some producing but little inconvenience, and others even endangering life, according to its locality. This thickening often occurs at the commencement of the two main

bronchial trunks, and near to the extremity of the trachea. In these parts it does not exist to a great degree, and seldom produces much inconvenience, unless aggravated by renewed attacks of acute catarrh, when the thickening may be so materially augmented as to cause a complete obstruction to the passage of air through the main tube of an entire lobe, and thus endanger life. But when the thickening is at the entrance to the larynx, or at the rima-glottidis, it becomes far more perilous, and if acted upon by a continued irritation, it will, in a majority of instances, cause death under repeated suffocative seizures. When affecting the pharynx or laryngeal face of the epiglottis, the annoyance and even pain from cough and spasm will be constantly present, often acting powerfully upon the entire organism.

It may be well to repeat the rule which, I think, usually governs the progress of catarrhal irritation. The instances are rare in which this disease does not commence above and gradually travel downward : thus the pharynx and adjacent parts of the mucous membrane of the throat will be more liable to reiterated attacks

of catarrh, and the consequent organic changes in its tissues, than the larynx,—and the larynx than the treachea.

In detailing the symptoms of this consequent of chronic catarrh, I shall first describe those which pertain to it when confined to the fauces, pharynx, entrance to the larynx, and epiglottis.

Should the fauces, pharynx, and epiglottis be the principal parts affected, dryness of throat, a constant wearisome cough, accompanied by slight expectoration, and a sense of tenderness upon swallowing, will be experienced. The cough often increases in severity when the body is in a horizontal position, and sometimes awakens the patient from sleep. Upon inspection of the parts by means of the curved spatula, or any other instrument which will serve to keep the tongue firmly down, and thus prevent it from obstructing the light and view, the membrane will present a rusty brown, slate gray, or dark blueish colour; the exuberant growth of epithelium, which in some instances is thrown off with the blennorrheal discharge, leaving a bare and almost excoriated surface, more frequently appears to remain to add

thickness to the epithelial layer itself, and thus furnishing the mucous membrane with a velvety, villous covering, somewhat resembling that of the intestinal canal. Sometimes the mucous membrane presents a smooth surface of a pale, greyish appearance, and at others a rough uneven one, as if stripped in patches of its epithelium.

Accompanying a permanent tumefaction or hypertrophy of the mucous membrane, there is in most instances a blennorrhœa, which bathes its surface with a glassy transparent mucus. This continual excessive secretion is of a greyish white colour and milky appearance, which sometimes is accompanied by an exuberant formation and extrusion of epithelium cells. The thickened membrane is compact, firm, tough, and is with difficulty torn; its connections with the subjacent areolar tissue, which is itself in some instances preternaturally dense, are more close and firm than when the parts are in a normal state.

If the thickening be uniform, then the membrane will present a smooth surface; but often the papillæ and follicles attain so great an in-

crease in size, that it presents a warty and rugged aspect. But I am now confining my remarks to a condition of hypertrophied mucous membrane, in which no enlargement of the muciperous glands occurs. I believe that some pathologists doubt the possibility of catarrhal irritation effecting an organic change in the mucous membrane without the follicles being to a degree involved in the alteration. This, it appears to me, is an incorrect conclusion; for, in this country at least, both acute and chronic catarrh, and their various terminations, may affect the mucous membrane and its follicles, either conjointly or separately.

When the mucous membrane of the epiglottis and entrance to the larynx is the seat of the thickening, it is far more perilous, and, if sustained or increased by repeated attacks of acute catarrh, it will cause a succession of suffocative seizures, which sooner or later will prove fatal.

The simple, non-tubercular, laryngeal phthisis, described by Trousseau and Belloc, consists in a disease of the mucous membrane of this part, which in some of the cases related by them was thickening with ulceration, in others

effusion of different kinds beneath the membrane into the sub-mucous cellular tissue, and in others, an enlargement and purulent softening of the mucous follicles.

With some persons the relative arrangement of the parts of the throat is such, that, without any extraneous assistance, they can so open the mouth as to expose the laryngeal surface of the epiglottis to view, and, in such, a little additional manipulation with the bent spatula will bring the top of the larynx quite in sight; but these are rare instances. In most cases, especially where the patient has not been accustomed to showing the throat, or looking at its reflection in a glass, a practice much resorted to by those who suffer from these maladies, the physician will fail to obtain a sight of more than the upper half of the posterior face of the epiglottis. I have received valuable assistance, in some cases of this latter class, by the use of Mr. Avery's ingenious lamp and reflector, and a silver speculum, at the end of which is a steel mirror. The apparatus of Mr. Avery, after many years' attention to such modifications as its actual employment suggested, is now a

practically valuable instrument for throwing a strong light upon parts which heretofore have been but imperfectly, if at all seen. A mouth-piece is provided, by which the lamp may be held between the teeth, thus leaving both hands at liberty.

Having depressed the tongue with the bent spatula, the speculum, which is a straight silver tube, is introduced into the mouth until its mirror end nearly touches the pharynx: the concentrated light is then thrown into it, and thus the entrance to the larynx, and at times even the rima-glottidis, are plainly seen reflected in the steel mirror. To prevent the condensation of the humidity of the breath upon the mirror, it will be necessary to heat it, until its temperature is equal with that of the expired air.

If all these means fail in procuring a sight of the parts, or even should they succeed, valuable information may be obtained by "touching" the epiglottis and top of the larynx with the finger. By this manipulation the practised finger will at once detect any important variation from a healthy state in the mucous membrane. The sensation

given to the touch by enlarged follicles, or the depressed points from ulcerated muciperous glands, or the villous, velvety covering of a thickened mucous membrane, cannot fail to be recognized with facility and accuracy.

Prognosis. — When the thickening of the membrane is confined to the pharynx and fauces, it is not likely to terminate in any serious consequences; but this organic alteration of the tissues renders the membrane more susceptible to yield to morbific influences, and to renewed attacks of acute catarrh, which may overstep the boundaries of the old affection, and involve parts more directly connected with the important functions of life. Therefore, although producing but little inconvenience whilst circumscribed by these outlines of the pharynx and fauces, yet it may indirectly endanger life, by increasing the susceptibility of more important parts to come under the influence of disease.

When the thickening is at the entrance to the larynx, it is far more perilous, and if kept up by sustained irritation it then proves fatal, sooner or later, under repeated suffocative seizures.

If the lower part of the trachea, or either of the bronchia near to the bifurcation, should be the point at which the thickening exists, serious results may be produced. Repeated fresh attacks of acute catarrh may so augment the tumefaction or thickening of the membrane at the commencement of a bronchial tube, as to obstruct entirely the entrance to one lobe of the lung, and thus endanger life.

Hence, it will be observed, that these changes of tissue require early and efficient treatment to prevent the increased susceptibility to disease which they engender, and to check the progress of irritation to those important vital organs, the functions of which are never disturbed with complete impunity.

Treatment.—A course of medication directed solely to the general system without any reference being had to local treatment, will be found utterly futile. Much advantage will, no doubt, be derived from proper attention to the general health, but a reliance upon such attention, unaided by appropriate topical medication to the parts which have undergone organic alterations, must result in disappointment to the physician and patient.

My chief dependence is upon the assiduous application of an appropriate remedy directly to the parts diseased; and in the particular change of tissue now under consideration, I have found none so efficient as the crystallized nitrate of silver. The hydrarg: bi-cyanid: has been much recommended as a valuable local application in these chronic indurations or tumefactions of the mucous membrane, but after a thorough trial of its powers, I have almost entirely discarded it from my list of topical agents. In cases of follicular enlargement or softening, with evidence of the existence of a syphilitic taint in the system, influencing the nature of the local disease, a solution of the bi-cyanide of mercury, of the strength of four to ten grains to the ounce of water, may be advantageously alternated with the nitrate of silver; but I have found none of these affections so amenable to any other medicinal agent, as to the solution of lunar caustic; therefore it has become my sheet-anchor for the cure of this class of affections, and I seldom resort to topical medication with any other therapeutical substance, excepting in rare instances for enlarged tonsils,

or in such cases as are complicated with the peculiar taint before mentioned.

As illustrative of the symptoms and method of treatment of this class of disease, I have selected the following cases from my note-book

Case III.

A. G. T. a barrister of considerable celebrity in this city, aged forty-six, of good constitution and regular habits, was attacked in 1845, with influenza. The general system suffered much from the attack, by which he was confined to his room for three weeks. He was treated at first, by the abstraction of much blood both locally by leeches from the neighbourhood of the throat, and generally by venesection. Subsequently great prostration supervened, and tonics with a generous diet were resorted to. The throat which had been exceedingly red and painful at the early part of the disease, and had been considerably relieved by the antiphlogistic measures, was again more painful, and the redness and tumefaction of the membrane returned. Enlargement of the tonsils, and enlargement with elongation of the uvula super-

vened, causing intense pain upon swallowing, with great tenderness and soreness of the throat. Topical bleeding was again resorted to, with poultices, and warm fomentations; this, with attention to the proper regulation of the bowels, and the application of the solid caustic to the surface of the tonsils and uvula, soon relieved the more active local symptoms. The voice was hoarse and uncertain; a hard dry cough was present in the early stage of the attack, which became more easy upon the subsidence of the acute catarrhal irritation; the expectoration, at first small in quantity, consisting of a glassy, thin discharge, having now and then a small opaque globule in it, became profuse, thick, and of a yellowish white colour.

This cough and expectoration did not entirely cease for several weeks after all other symptoms of the disease had entirely disappeared. From the period of this attack until the fall of 1849, this gentleman had frequent recurrences of catarrh, always accompanied by more or less disturbance of the general system, by cough and hoarseness; he also noticed, that every year his susceptibility "to take cold" was increased.

When he consulted me, he was suffering under the fourth attack of "cold" in that year. His voice was hoarse and uncertain, his cough exceedingly hard and painful, and the slightest exertion either in walking or talking excited a severe paroxysm of the cough. Upon examining the throat, by means of the bent spatula, I found the tonsils considerably hypertrophied, with their surfaces flattened, as though their naturally oval rotundity had been squared off with a knife; the uvula was enlarged, but not elongated; the mucous membrane covering all the parts brought to view, was of a brownish-red colour, of a uniform thickness, and presenting the villous velvety appearance which I have before described. An examination, by touching, discovered the entrance to the larynx, and the laryngeal surface of the epiglottis, to be in the same state of thickening, as the membrane of the fauces and pharynx.

I immediately made an application of a solution of the crystallized nitrate of silver, of the strength of forty grains to the ounce of water, to the mucous membrane of the fauces, pharynx, and epiglottis; this produced con-

siderable spasm of the glottis, which, however, soon passed over, and a copious flow of saliva and mucus soon came on. These applications were made for five days in succession, with manifest relief to all the distressing symptoms; the colour of the membrane became paler, and its surface smoother. At each operation the spasm gradually decreased in violence, and on the sixth morning so little inconvenience was experienced from the application to the pharynx, epiglottis, &c., that I determined to pass the sponge into the cavity of the larynx. No difficulty occurred to prevent this manipulation, and the solution was readily introduced into the larynx, down to the rima-glottidis.

The application of the caustic to the fauces, and pharyngo-laryngeal membrane, was repeated on each alternate day, for three weeks, when my patient was so greatly benefited, that no necessity remained for their farther continuance.

This gentleman has since passed two winters with scarcely any recurrence of irritation in the throat, and he expresses himself, as now, able to endure exposures with an impunity that

he had not known for five years previous to his undergoing this method of treatment.

Long experience has taught me, that these organic alterations seldom result from catarrhal inflammation where topical medication has been judiciously employed in its treatment. This has been so fully and variously manifested in my practice, that I feel myself justified in asserting, that much suffering would be prevented if more attention were paid to this important method of treatment.

Case IV.

T. C., a farmer in Essex, consulted me in December 1849. He was fifty-six years of age, a bachelor, of good constitution, and had always enjoyed excellent health previous to the commencement of the affection, of which he complained. About seven months previously he had suffered from a severe "cold" which incapacitated him for the performance of his usual avocations, for several weeks. His cough had been very harassing, continuing with but slight abatement, for three months. It then ceased during the day-time, but upon first

getting in bed at night, he was usually attacked with a "fit of coughing" which often lasted for an hour. Sometimes he would have a recurrence of this seizure during the night. He drank cold water, sucked lozenges, and resorted to most of those methods which are instinctively suggested to one suffering in this way, with some temporary palliation of the annoying symptoms. About five or six weeks before coming to town, upon retiring to bed, the accustomed cough commenced, but almost at once passed into a sense of constriction about the entrance of the wind-pipe, accompanied by that crowing sound which is so characteristic in croup. In addition, there was a "clucking" noise as though the epiglottis was being rapidly struck against the top of the larynx. This alarming attack continued for several minutes, and then sufficiently lessened in intensity to permit of natural respiration; but the sense of constriction had, at no time, been completely relieved. Suffocative seizures, recurring twice or three times during the night, were now established; hydrocyanic acid, musk, valerian, and a variety of anti-spasmodics were administered without any advantage.

Although a strong, hale man, he was evidently in a state of great mental excitement, from the fearful character of the attacks. A careful examination revealed considerable tumefaction of the mucous membrane on the laryngeal face of the epiglottis, and at the entrance of the larynx. Touching these parts with the finger, increased the constricted feeling about the top of the air-passage, and induced a slight suffocative seizure. When this had quite disappeared, I made an application of the nitrate of silver solution, forty grains to the ounce, to the epiglottis and top of the larynx. Some spasm was excited, but by no means so much as the irritability of these parts had led me to suppose would occur. These applications were continued daily for one week, the solution being gradually increased to double its first strength; then the parts were touched with the caustic each alternate day, for five weeks, when the patient was considered cured, and they were no longer required. In addition to the topical medication, one grain of the iodide of potassium was given in solution three times a day, attention was paid to the proper action of

the bowels, and the throat was sponged externally for ten minutes morning and evening, with cold water.

This gentleman has enjoyed unremitted good health, in every respect, since he left my care, up to the present time.

There is no doubt, but an hypertrophied, tumefied, or thickened condition of the laryngeal mucous membrane, especially that which forms the upper and lower vocal chords, is adequate to produce, and often does produce, without any complication with ulceration of the membrane or the muciperous glands, that peculiar affection popularly known as "clergyman's throat." Partial or complete loss of voice may likewise result from this cause. In order to illustrate the symptoms and treatment of this form of disease, and the wide differences which exist in the length of time required for the topical applications to produce the desired changes in the parts, and a consequent return of their natural powers, I will transcribe the history of two cases from my note-book. One is the case of a clergyman, aged thirty-eight,

affected with dysphonia, whose voice did not regain its normal tone and power, until after three months of assiduous topical medication; and the other is that of an unmarried lady, aged thirty-six, who had complete loss of voice, aphonia, which was restored after eight applications of the caustic solution to the cavity of the larynx. These I will proceed to recite.

Case V.

A clergyman from Devonshire, aged thirty-eight, of good constitution, consulted me for a throat affection, which so materially interfered with his powers of voice, that he had been compelled to withdraw from his official duties.

Although he had frequently "taken cold," yet he could not trace the commencement of his dysphonia, to any severe attack of catarrh or influenza. His appetite was good, although of late his power of digestion had not been so active as formerly, and he found it necessary to be careful in his diet.

He described the attack as commencing about fourteen months before his visit to me, with an aching pain in the throat, principally confined "to the part at the back of the palate." After a little time his voice became hoarse, and he could not talk without feeling some pain. There was some cough; this state of things continued for about a week, during which time he talked, debated, read aloud, and performed all his usual duties without giving any attention to the soreness of the throat, or hoarseness of the voice. In another week, all the uncomfortable symptoms had disappeared, and the voice resumed its former tone and power. About a month after, a more severe attack of the disease than the former occurred; the soreness was more severe, the voice more husky, and the pain upon speaking, even in ordinary conversation, more acute. At this time, all the parts of the throat, in sight, were red and appeared inflamed, the palate likewise was relaxed. A few simple remedies were employed, such as gargles and lozenges, and the affection subsided in a few weeks. But the voice did not regain its timbre or power of

sustenance, and he soon found that he was unable to speak even for a moderate length of time, without a sensation of great fatigue and uneasiness following the exertion. Notwithstanding this unfavourable progress of the disease, he continued to perform all his official duties, each exercise of his voice in public, being followed by increased soreness and pain in the larynx, and by diminished clearness and volume. At length he was several times interrupted in his reading, by the complete loss, for a minute or two, of all power to speak above a rough whisper, and eventually the pain and difficulty in the use of voice rendered him unfit for the performance of his duties. Complete rest to the organs of voice, change of air, counter-irritation over the larynx, and tonic remedies were prescribed. Accordingly he went to the continent, remaining abroad for five months, persisting all the time in strict attention to the remedial measures directed by his physician. Upon his return, he considered himself so much improved in health, that he might resume his official labours without any difficulty. But the first public effort convinced

him that, although his general health had been greatly improved by travel and rest, his local disease was in the same state as before leaving. However, he was exceedingly unwilling to leave his charge, and therefore endeavoured to continue his ministerial labours, although with much suffering. He was soon forced to abandon all public speaking, and was persuaded to come to London for advice.

He placed himself under my care in June of last year. His voice was hoarse, his countenance distressed, his pulse quick and frequent, his tongue pale and furred, and his bowels constipated. The mucous membrane of the fauces, pharynx, and epiglottis, was thick and villous, and of a brownish red colour; the uvula was long and attenuated, excepting at its extremity, which appeared to be distended by effusion. I removed this lower portion of the uvula, which was merely a prolongation of its mucous membrane, and then applied a caustic solution of thirty grains to the ounce, to the fauces and pharynx, and top of the larynx. These topical medications were, after a few times, extended to the cavity of the

larynx down to the vocal chords, with marked advantage. The iodide of iron was given, and care was taken to keep the bowels regular with mild cathartics. Under this treatment, after a continuance of the sponging with solutions, gradually increased in strength up to eighty grains to the ounce, for nearly three months, the mucous membrane resumed a healthy appearance, and all the powers of the voice returned to their natural condition. No relapse of the affection has since occurred, and this gentleman is in the active performance of his pastoral duties.

Case VI.

The lady, whose case is now to be recited, consulted me in January of this year; she has furnished me with the following history of her disease:—"Upon looking back even upon the frequent heavy colds of my childhood and youth, I distinctly remember that sore throat with hoarseness of voice, was the usual accompaniment. And I can scarcely remember any winter for the last twenty years free from cough—a dry

irritable throat, and loss of voice for a few weeks or days at least. For the last six or seven years the throat has been increasingly irritable, and the loss of voice prolonged, extending to months instead of weeks, even to seven months' absence, without any return. The chest has shown strong sympathy, and several severe attacks of bronchitis have occurred, besides inflammation of the larynx.

"Blisters, leeches, and mustard-plasters may have partially removed the irritation, but the voice remained untouched, until, to my great surprise, it yielded to your plan of treatment. I think, sir, it partially returned after six applications, but the eighth fully restored it, after an absence of three months, and it is now quite natural, only stronger than usual, and more like the voice of my best days. I am sensible, too, of a decided change in the throat, it has more power, appears braced up, and is less dry. Perhaps my voice has been more tried than the female voice generally is."

Upon examination of the pharyngo-laryngeal mucous membrane, it was found to be in a state of thickening, which did not, however,

give to the touch the same sensation of toughness and solidity as was found in Case V.; it felt more like tumefaction than organic hypertrophy. There was no enlargement or hypertrophy of the muciperous glands.

So little spasm was produced by the application of the solution of nitrate of silver to the pharynx, epiglottis, and top of the larynx, that the sponge was readily introduced into the larynx at her third visit. From this time there was, evidently, a progressive restoration of the voice. The strength of the solution was increased gradually from thirty grains to that of sixty grains to the ounce. At the eighth visit, as she says in her statement, her voice was completely restored. But it was not considered safe to cease the topical medication until the part of the mucous membrane of the throat which could be seen, should have resumed its normal appearance; therefore the applications were continued every other day. Some domestic engagements requiring her presence at Hastings, she left town four weeks after I had first seen her, and remained there for six weeks. During her absence she was subjected to con-

siderable mental affliction by the death of a friend, and also exposed to changes of air, which gave her cold, without producing any alteration in her voice. Upon her return to town, I again saw her, and finding some congestion of the membrane, I advised a re-continuance of the applications once a week. These were followed up for a few weeks, and she is now completely well.

SECTION II.

ENLARGEMENT AND THICKENING OF THE WALLS OF THE FOLLICLES OR MUCIPEROUS GLANDS; LIQUEFACTION OF THEIR WALLS RESULTING FROM DISTENTION.

It will be observed that enlargement and thickening of the muciperous glands are here placed amongst the sequelæ of chronic catarrh. This has been done, not because it is believed that these alterations of the follicles never occur as the effects of specific diseases of the glandular structures, but from a conviction, founded

upon extensive practical observations, that the cases in which these changes are thus produced, must be viewed as the exceptions to the rule. Dr. Horace Green, in his excellent treatise which has been before referred to, attributes nearly all the affections of the pharyngo-laryngeal mucous membrane to morbid alterations occurring primarily and essentially in the muciperous glands. That these true glands are peculiarly prone to derangement of function from their situation, their delicate structure, and the anatomical relations of their parts, cannot be denied; yet the instances that have come under my notice, in which follicular disease has been produced without any serious morbific influence having been exerted upon the entire mucous membrane, are exceedingly rare; unless the slight enlargement of the follicles which is almost daily met with in persons of robust health, and who have never experienced the slightest inconvenience from it, should be classified with the idiopathic follicular diseases. But these slight variations from the natural appearance of the glands, unattended with any abnormal consequences, are so common, that

one can scarcely be induced to consider them as conditions of disease. For none of the usual symptoms of follicular derangement are present; and it would appear as though the glands performed all their normal functions; no dryness of throat, no cough, no viscid expectoration is manifested, therefore it must be inferred that the secretion and elimination of simple healthy mucus continues to the same extent as when no such hypertrophy has taken place. This state of simple enlargement of a muciperous gland, without any derangement of its secretory function, appears to be quite consistent with those alterations of structure which pathology has proven to be the usual causes of enlargement or hypertrophy of these organs. Some increase in the thickness of the tissues entering into the formation of the duct and mouth of the gland, may so diminish the facility of egress for its secretion, that an accumulation of mucus and a consequent distention of the follicle may ensue. Now, it is not difficult to understand how a *permanent* thickening of the distended walls may follow, whilst the calibre of the gland and its capacity for secre-

tion and elimination shall have returned to its natural state. Thus I can readily comprehend the existence of follicular enlargement, unaccompanied by any functional derangement, and therefore requiring no medical interference.

In most cases where a train of symptoms have led a patient to seek medical advice, I have found the glandular disease, accompanied by some organic alteration in the whole of the mucous membrane; therefore, although great merit is due to the valuable clinical observations of Dr. Green, I must acknowledge my belief that he has given to the affections of the follicular glands of the laryngo-pharyngeal mucous membrane, a distinctive and separate importance, which more properly belongs to morbid changes involving all the tissues of the membrane.

Symptoms.—Like hypertrophy of the mucous membrane, with which these enlargements of the glands are often complicated, the symptoms will vary according to the locality of those follicles which have undergone the organic alterations.

If the abnormal changes have affected only

the glands of the velum, fauces, and pharynx, we shall find the same congeries of symptoms produced as have already been described as the consequence of thickening of the mucous membrane of these parts. In one particular, however, there will be a marked difference produced by a complication of this latter disease with enlarged follicles, or with that more advanced stage of glandular alteration, in which their walls have been broken up by absorption, the effect of over-distention. The expectoration will, in addition to the thick opaque mucus secreted by the membrane, consist of the occasional presence, in its substance, of small, distinct globules, round in form, and presenting, under the microscope, all the properties of true pus. These globules, I presume, have been the accumulated secretion of those muciperous glands which, under the influence of disease, have undergone so great an alteration in structure, that the calibre of their ducts has been greatly diminished, and thus its elimination completely stopped; upon the liquefaction of the walls occurring, the whole of these incarcerated contents are evolved, and, retaining the

shape of the cavity of the gland, they appear in the expectoration as distinct globules, which, as has been said, furnish, upon examination with the microscope, all the characteristics of pus.

When the numerous group at the extremity of the uvula is the subject of this chronic disease, the organ becomes greatly elongated and enlarged in the neighbourhood of the glands, and, in this way, often rests upon the base of the tongue, from whence, in the act of deglutition, it is readily brought in contact with the epiglottis and pharynx, creating a frequent, dry, spasmodic cough. When the inner surface of the follicles is exposed through the destruction of their anterior walls, a sore eroded mucous membrane becomes an additional source of irritation, which is affected by every morsel that is swallowed. If the edge of the epiglottis be the seat of the follicular disease, I have noticed that the glands yield more speedily to the destructive influence of distention than those in any other situation; and thus, it is a rare occurrence to find these bodies in a state of enlargement in this locality. More frequently

the glands will be ruptured before the symptoms become sufficiently aggravated to induce the patient to seek medical advice; and therefore, when the epiglottis is exposed to view, its edge will present a notched or serrated appearance, produced by the indentations of the ruptured follicles and the abnormal thickening of the inter-glandular mucous membrane. Violent suffocative spasms are caused by these lesions, which are readily induced by exposure to sudden changes of temperature, either from hot to cold, or the reverse; the inhalation neither of cold or warm air, if uniform in temperature, appears to bring on the spasm, but at the moment of a change from one to the other the paroxysm is produced.

Enlargement, rupture, or ulceration of the follicles of the laryngeal membrane exert a decided influence upon the vocal sounds. From the observations of modern pathologists, as Louis, Andral, and others, we learn that the symptoms developed, and the effects produced upon the voice by these changes, differ materially according to the seat and extent of the disease. M. Louis has recorded twenty-two

cases of laryngeal follicular ulceration accompanying phthisis; in fourteen of these, the patients had suffered from heat and pricking pains in the laryngeal region, with hoarseness and a marked alteration to a greater or less extent in the power and tones of voice; these symptoms gradually increased in severity, and were followed by partial or complete loss of voice. Post-mortem examinations revealed in all of them small superficial erosions or ulcerations, seated either within the ventricles between the arytænoid cartilages, or at the point of juncture of the chordæ vocales. In the remaining eight cases the ulcerations in the larynx were much deeper, destroying, in a measure, the chordæ vocales; these were attended with the same character of symptoms as the others, but developed with much greater intensity; they were accompanied, moreover, with a cough which had a peculiar cracked or whistling sound.

When the disease of the glands or mucous membrane of one of the vocal chords is affected, the voice will be rendered rough and hoarse; if both the vocal chords become involved, the

voice loses its power, and is reduced to a harsh whisper. Should the sub-mucous areolar tissue, and the thyro-arytænoid ligaments themselves become injured or destroyed, the loss of voice is complete, and no power is left to utter any proper distinguishable sound; and a whisper, which is an articulation of the ordinary respiration, alone remains.

Disease of the muciperous glands of any portion of the laryngeal membrane will produce cough, pain, loss of power and hoarseness of voice. The expectoration will be precisely the same as that which accompanies the affection of the faucio-pharyngeal membrane. The sensation of the presence of a hair, or some such foreign body, in the windpipe, will excite a frequent hawking effort for its expulsion. Pressure upon the larynx externally will cause considerable pain.

Although I have thus described the various symptoms which characterize the disease of the glands in different localities, I do not wish to be understood as stating that the follicles of one particular part of the mucous membrane are often the subject of abnormal changes,

whilst others in neighbouring situations remain in a state of health. These isolated patches of disease seldom occur; for the continuity of tissue and sympathy which exists in the mucous membrane, renders it almost impossible for one distinct portion of the pharyngo-laryngeal membrane to be the seat of chronic irritation or inflammation, or their sequelæ, without the other parts of it becoming more or less involved in the affection. Therefore, when the symptoms characterizing the enlargement, liquefaction, or ulceration of the glands in any especial locality are given, it must not be inferred that these organic alterations are often found to be the seat of such changes without any abnormal condition existing in the surrounding parts; but only that the affection frequently assumes a greater degree of intensity in some localities, and that then each locality will present distinct diagnostic symptoms. A complication of thickening of the mucous membrane with enlarged and otherwise diseased muciperous glands, is the state which most often presents itself.

Prognosis. — If the organic alterations are confined to the fauces, uvula, and pharynx, the

prognosis is by no means grave, excepting so far as it acts as an exciting cause to the production of disease in parts more essential to life. Should the affection be allowed to remain without any remedial care, there will be great danger of its extension to the mucous membrane of the larynx and trachea; and thus, eventually, the lining membrane of the bronchial tubes and minute air-passages may succumb to the irritation, inducing a condition most favourable to the development of dangerous diseases of the lungs.

Enlargement and elongation of the uvula is not in itself of much importance, for it may be very readily gotten rid of; but it acts mechanically as a cause of irritation upon the glottis and larynx, often exciting a determination of blood to the mucous membrane, which, if allowed to persist, may produce inflammation and its consequences.

When the epiglottis and entrance to the larynx become the seat of these abnormal changes, there is considerable danger that such a torpid, paralyzed condition of these parts may ensue, as to cause suffocation. Although I have

never seen fatal consequences produced in this way, yet the symptoms accompanying the disease are of so formidable and frightful a nature, that one can readily understand why death should result from it. When the follicles situated upon the edge of the epiglottis are the ones more particularly affected, the prognosis will be far more favourable than when those about the entrance to the larynx are complicated in the disease. In several instances, where the history of cases has proven that serious organic alterations had existed in the mucous membrane and its glands for many years, I have found the rim of the epiglottis completely serrated with indentations produced by the destruction of the follicles, showing, conclusively to my mind, that very extensive disease may exist in this situation without endangering life.

Trousseau and Belloc have ably illustrated, in their Treatise on Laryngeal Phthisis, &c., the very grave consequences that often result from chronic disease of the mucous membrane of the larynx. They use the word *phthisis* in its appropriate sense, as denoting any chronic disease

attended with emaciation and hectic fever; and as these laryngeal affections often terminate in phthisis or consumption, they have applied the name laryngeal phthisis to all those organic alterations and lesions which, previously to the appearance of their essay, had not received much investigation, and had been classified under the indefinite heads of chronic laryngitis, bronchitis, &c. &c. The opinion of these French pathologists concerning the dangerous nature of the chronic affections of the laryngeal mucous membrane, has been fully confirmed by the more extensive observations of Dr. Ryland, Professor Green, and others.

Treatment.—It seldom occurs that the attention of a physician is called to those incipient stages of disease which lead to the organic alterations now under consideration. This is greatly to be regretted, for appropriate topical measures may be employed in their treatment with as much certainty of success as we are accustomed to expect from the use of quinine in the treatment of intermittent fevers. The patient seldom applies for medical aid until various secondary symptoms have supervened,

which greatly complicate the remedial means to be employed, and require a much more efficient treatment. The plan to be adopted will vary according to the seat and extent of the disease, and the different complications with which it may be associated. Embraced in this plan are both the topical and general remedies which are required in the treatment; but I shall direct my attention to the more particular examination of those of the former class.

Topical Medication.—The existence of a variety of lesions and alterations in the mucous membrane resulting from irritation, and similating very nearly the sequelæ of inflammation, is a strong argument against the routine practice so frequently resorted to in all chronic affections of the throat: this practice consisting chiefly in alteratives, blisters, mustard plasters, gargles, &c., without any attention to the direct application of medical substances to the local disease. Whilst I do not deny the necessity of general treatment in some cases, yet I have found it to be so seldom required, that my principal reliance is now placed upon topical medication. Its value is daily seen

in my practice, in the facility with which cases are cured that have long withstood the most heroic treatment by blisters, alteratives, and all the kindred measures usually resorted to by those who will not take into consideration the local nature of these affections.

The various methods employed in performing topical medication, have been so fully described in the section upon Acute Catarrh, that it will be unnecessary to repeat what has there been said, farther than to state, that in all the affections of the mucous membrane of the fauces, pharynx, larynx, and upper part of the trachea, I greatly prefer the application of the solutions of the crystallized nitrate of silver to either of the other measures, insufflation or inhalation. But when the disease has extended to the lining membrane of the bronchial tubes, both insufflation and inhalation may be usefully employed.

When I come to treat of laryngeal affections complicated with asthma, I shall be able to relate many interesting cases, which satisfactorily prove the value of the insufflation of medicinal agents in a state of extremely fine powder.

Case VII.

Hypertrophy of the faucio-pharyngeal mucous membrane, complicated with destruction of the walls of the follicles on the laryngeal face and edge of the epiglottis.

In the winter of 1849 I was consulted by a married lady *æt.* sixty, the mother of a large family, who had been suffering for five years with an affection of the throat, which had been so severe as to require her to be kept constantly in a well-warmed house during the whole of the cold weather. The least exposure to cold or damp air increased the cough and irritability of the throat. Talking for a moderate length of time produced hoarseness and loss of power in the organs of voice. Breathing the atmosphere of a room, in which any considerable number of persons was congregated, also caused an accession to all the distressing symptoms.

Upon examining the throat, I found the faucio-pharyngeal membrane of a brownish-red colour, presenting a villous or velvety appear-

ance, both tonsils considerably enlarged and indurated; and upon making firm pressure upon the base of the tongue, and drawing it forward with the bent spatula, I readily exposed the edge and some of the laryngeal surface of the epiglottis fairly to view. This organ was covered with small ulcer-like erosions, which communicated to the finger the sensation of distinct depressions: the whole surface of the mucous membrane gave to the touch the feeling of elevated papillæ.

In addition to this affection of the throat, there existed some sub-acute rheumatism, confined chiefly to the muscles of the face and scalp.

No active treatment had been resorted to for many winters, great nervous sensibility existing, which prevented the employment of other remedial measures than those of a gentle nature. Slightly astringent gargles, demulcents, and palliatives of various descriptions, were directed with great skill by Mr. Ansell, the lady's usual medical attendant.

I recommended that local applications of a solution of the crystallized nitrate of silver

should be made to the epiglottis, pharynx, and tonsils, and that all other treatment should cease. To this course the family and their surgeon fully consented, and I accordingly proceeded at once to touch all the parts just named with a solution of the caustic, of the strength of thirty grains to the ounce. This produced considerable spasm and some pain, which lasted during the greater part of the day. On the next morning the application was again made, with diminished difficulty, and repeated daily for one week, when the strength of the solution had been gradually increased to sixty grains to the ounce. The topical medication was proceeded with on every alternate day for two weeks, until, at the expiration of five weeks from the commencement of the treatment, the follicular erosions on the epiglottis had entirely disappeared; the colour of the membrane was reduced to its natural roseate hue; the hoarseness of voice and cough had disappeared, and the membrane, although still evidencing a state of chronic thickening, by its velvety character, was completely cured of this attack of acute catarrh, supervening

upon the organic alterations which had resulted from a long continuance of chronic irritation. The tonsils were somewhat reduced in size by the caustic, but had evidently undergone such structural changes, that it would be vain to expect to reduce them to a normal condition by any system of medication whatever.

With the susceptibility of this lady's system to any important medical interference, I could not urge the removal of a portion of these diseased bodies; a course which, under other circumstances, I should have strongly recommended, as I view the presence of these organs in this abnormal state as a powerful predisposing cause to acute irritation or inflammation of the pharyngo-laryngeal membrane. For the same reason I was not allowed to persevere with the local medications, for the purpose of reducing the thickened membrane to its normal condition.

No recurrence of acute catarrh took place from the time of the treatment until March of this year (1851), when an attack of influenza induced a considerable degree of irritation in the faucio-pharyngeal mucous membrane, with-

out, however, causing any return of the former disease of the epiglottis and entrance to the larynx. This condition soon yielded to local applications of the caustic solution.

Since the topical treatment was first employed, this lady has been able, with moderate care, to drive out during the winter, and to participate in the enjoyment of social life; pleasures from which, for many years, she was completely debarred during the continuance of cold or damp weather.

Case VIII.

"*Clergyman's throat.*" — *Follicular disease of the pharyngo-laryngeal membrane;—enlarged tonsils and elongated uvula;—dysphonia.*

In the winter of 1847, I was consulted by H. M. L., an eminent minister in the Society of Friends, *æt.* forty-two, who was suffering with dysphonia. His public ministerial duty had required a very frequent use of his voice for more than twenty years, and during the two years immediately preceding the time of his consulting me, he had been engaged in an ex-

tensive foreign mission, holding many public meetings each week, and subjecting his organs of voice to almost incessant labour. Pain and soreness in the region of the larynx were often felt during the first year of this excessive use of the voice, sometimes accompanied by hoarseness and dysphonia. Frequent attacks of simple and acute catarrh occurred, which received no attention beyond some temporary palliatives; even rest was not allowed to the affected organs, but he continued to exert them as long and as severely, whilst in this condition, as when in the most healthy state. This course soon produced so much pain, hoarseness, and difficulty of voice, that he was obliged to seek medical aid; the physicians to whom he applied, directed their remedial measures chiefly to the general system, without giving any attention to the local disease, beyond the application of croton oil, as a counter-irritant, to the external part of the throat. From these means little benefit was derived, so that at the time of his application to me, his symptoms were of a most harassing nature. He was unable to speak even in the subdued tone of ordinary conversation, without

a sensation of increased effort being required in the throat to effect the utterance; whilst talking he was frequently interrupted by a short hacking cough; and any continued use of the voice produced heat, dryness, and pain in the larynx; his public addresses were made under great suffering, the timbre of the voice was changed, and a sharp hacking cough occurred at every few words. Pressure upon the larynx produced a sense of tenderness; considerable soreness was felt at the upper third of the sternum: a sensation resembling that made by a hair, was constantly present at the top of the windpipe, causing a frequent coughing effort to expel it: the expectoration was slight in quantity, consisting of small globe-shaped opaque sputa. Emaciation had proceeded with some rapidity during the four or five previous months, occasional night-sweats were noticed, the digestion was impaired, and the bowels were torpid. Great nervous prostration existed, inducing a state of melancholy entirely inconsistent with the natural habit of the mind, and clouding all the enjoyments of social intercourse. An examination of the fauces, pha-

rynx, and glottis, discovered enlarged tonsils which exuded upon pressure a yellowish-coloured cheesy matter,— the uvula elongated and resting upon the base of the tongue,—the pharynx studded with diseased follicles, some enlarged and some disorganized; and the edge and laryngeal surface of the epiglottis, as also the entrance to the larynx, likewise covered with muciperous glands in various stages of organic alteration.

The upper and diseased portions of the tonsils were excised, leaving the lower strata of these aggregated glands intact,—the uvula was shortened, and topical applications, with a solution of the crystallized nitrate of silver, were made to the pharyngo-laryngeal mucous membrane. Three months of treatment by local medication, and some appropriate remedies directed to the functional derangements of the liver and bowels, completely restored the voice to its natural force and power of endurance. No return of the disease has since occurred. The cure was somewhat retarded in this case by the determined persistence of the patient in the public use of his voice. With

the progressive return of the mucous membrane to a normal condition, there was an equally rapid relief from the sombre and melancholic state into which the mind had fallen.

Case IX.

Follicular disease, complicated with frequent attacks of bronchitis.

A married lady, *æt.* thirty-five, was recommended by her brother, an eminent physician in London, to consult me. She has kindly written for me the history of her case up to the time when I saw her, from which I shall make some extracts. "Since 1837 I have suffered from severe coughs. When I took cold I did not recover like most persons; on the contrary, the cold was always followed by a spasmodic cough of long duration, and as distressing and violent as hooping-cough, frequently accompanied by sickness—these coughs were almost as frequent in summer as in winter, and fatigued me very much, lasting sometimes six or seven months; all the usual remedies were tried unavailingly, and change of air alone afforded me

any relief. These coughs continued increasing in violence and frequency for many years, but it was not until 1848 that the alarming and distressing symptoms occurred. In the winter of 1848 I began to suffer from shortness of breath and wheezing, as though I were asthmatic; I frequently felt much oppression in the night, and slept uneasily. Soon after I had an attack of acute bronchitis which was subdued by the usual remedies, but left the cough I have before described, which continued, with the exception of very short intervals, during the whole of the winter and early part of the spring. The cough was accompanied by abundant expectoration, the difficulty of breathing was so great as to oblige me to sit up in bed at night. In the spring of 1849 I went to Paris, and during the five weeks of my sojourn there I was in a miserable state. Ascending stairs greatly increased the difficulty of breathing; I passed hours each night by the fireside or sitting up in bed; the expectoration was copious, and at times streaked with blood. I had profuse night perspirations,—during sixteen nights I never slept except under the in-

fluence of opium, and even then disturbed by starting and a sense of choking. I returned to England, and the bronchial affection was promptly subdued, but the tendency to these attacks remained the same. In the early part of the summer I again had bronchitis, caused by exposure to night air, which was cured by blisters, &c. In July another attack occurred and was subdued in the same way. The shortening of the uvula, which was considerably elongated, gave me some relief; I went to the country and returned much better: but in the beginning of October the cough returned, the difficulty of breathing increased, and these symptoms ended in another attack of bronchitis, which was again subdued by similar means as the former attacks had been. I was better for a time, still the cough and expectoration did not entirely cease, nor the suffocative sensation at night. By careful confinement to the house I passed the winter better than could be expected; but in the spring all the severe symptoms returned; the attacks of bronchitis became more frequent. During the months of July and August I was tolerably well, but in

September all the miserable sensations returned,—my nights became more and more disturbed. I came to town, intending to hurry off to Hastings, but was soon confined to bed by bronchitis."

At this time I was sent for; I found the lady in bed, bolstered up to almost a sitting posture, very much flushed, and breathing with apparent difficulty; each inspiration producing a loud, raucous sound, which could be distinctly heard at some distance from her. The tongue was covered with a brownish-white fur; pulse 120, quick and frequent, but easily compressible; skin hot and dry; and the bowels constipated. No dullness was distinguishable on percussion; auscultation with the stethescope discovered sibilant râles under the right clavicle, which were more sonorous at its sternal extremity and over the trachea and larynx.

Examination of the throat with the aid of the bent spatula, discovered an irritable and congested condition of the whole faucio-pharyngeal mucous membrane, which was thickly studded with enlarged follicles. Upon passing the finger over the epiglottis, and pharynx, the

membrane was felt to be villous and velvety, having, in some places, well defined pits or indentations, caused, no doubt, by the disorganization of muciperous glands.

I concluded that this was not an attack of acute inflammation of the bronchial mucous membrane, but only an acute catarrhal irritation, supervening upon organic alterations in its tissues, which had resulted from numerous other attacks of a similar nature, and, perhaps, upon chronic catarrh. Indeed the whole history of the case appeared to me to warrant the conclusion, that the several attacks which had been called bronchitis,—with the possible exception of the first, — were in reality acute catarrhal irritations, leading, in some instances, to catarrhal pneumonia, but which seldom passed into inflammation. With this view of the case, I determined to rely mainly upon topical medication for the cure of the attack. An application of the caustic solution of forty grains to the ounce was at once made to the fauces, pharynx, and top of the larynx, and a mercurial purgative prescribed. This course produced such immediate relief to all the ur-

gent symptoms, that the lady left her bed the next morning, and called upon me, when I repeated the operation of sponging the same parts that had been touched the day before. At the third visit I found no difficulty in passing the sponge, saturated with a solution of the strength of sixty grains to the ounce, into the cavity of the larynx. The wheezing and oppression were greatly relieved by this measure, and a repetition of the application on three or four successive days completely dissipated all the symptoms of the acute disease.

There remained, however, evident thickening of the pharyngo-laryngeal mucous membrane with enlargement and other morbid alterations of its follicles; the topical treatment was therefore continued, and in a short time the membrane was restored to a more natural condition. Although this lady has been subjected to far greater exposure to exciting causes during the past winter, no attack of acute catarrh or bronchitis has recurred.

I could cite a large number of cases from my note-book, to prove the great advantage which

may be derived from topical medication in many of those affections which are loosely classified under the head of *chronic bronchitis;* a term which is so vaguely employed, that it not only does not define the correct nature of the affections to which it is applied, but it also deceives by directing the attention of the patient or the inquirer from the organs most essentially diseased, to those which are only secondarily or sympathetically affected. Thus, it is almost daily occurring to me, to find cases that had been previously pronounced chronic bronchitis, yielding speedily to the local application of appropriate remedies to the cavity of the larynx; proving conclusively one of two propositions;—either that the disease has been wrongly named, and is confined chiefly to the pharyngo-laryngeal mucous membrane, or, that chronic bronchitis may be readily cured by a local treatment of the pharynx and larynx:—although I believe that the sympathy existing in the mucous membrane is so great, that the restoration of one part of it to a healthy state, will exert considerable curative influence upon other parts beyond the reach of

the direct remedial measures, yet I am more inclined to favour the first of the two propositions, than the second. I will only relate one other case to show the effect produced upon (so called) chronic bronchitis, by topical medication.

Case X.

Follicular disease of the pharyngo-laryngeal mucous membrane and thickening of its tissues, complicated with "chronic bronchitis."

C. M., a labouring man, *æt.* twenty-eight, living at Uxbridge, whose father and mother are advanced in age, and healthy, was sent to me for medical aid, by his father's employer, in November, 1850. For several years his habits had been very intemperate, and about two years and a half before seeing me he was attacked by a severe inflammation (he said) of his lungs, which was treated by bleeding, cupping, blistering, &c. From this he had never completely recovered; pain in the upper part of the right side of the chest, a severe cough accompanied by some expectoration, night-sweats, emaciation and difficulty of breath-

ing continued. After a few months he became an inmate of St. Bartholomew's Hospital, where he remained for many months, and by the skilful treatment which he received there, he was greatly relieved of the pain in the chest and night sweats; but the difficulty of breathing was not much benefited. He then returned home, and after a few months was admitted into the Brompton Hospital for Consumption, where he remained for three or four months, and then left without any marked improvement in any of his symptoms. Still hoping for medical relief, he entered as an out-patient at St. Bartholomew's, but finding no advantage from the remedies prescribed, he discontinued his attendance.

When I first saw him, the countenance was pale and care-worn, the body emaciated, the breathing extremely difficult, voice hoarse and evidently requiring great exertion to produce it, the skin was cold and moist, the pulse quick and feeble, and the bowels torpid. Upon auscultation and percussion, I could detect no abnormal condition of the lungs, excepting some vesicular emphysema at the upper part of the

right lung. Sonorous and sibilant râles were heard very distinctly over the trachea and larynx. An exposure of the fauces and pharynx revealed a deep cavernous throat, covered by a pale and glairy mucous membrane, which was studded with pits made by the disorganization of muciperous glands. The epiglottis was readily brought in sight, and its follicles were found to be similarly affected with those of the other parts of the membrane.

Here, then, existed a serious local disease which had not been noticed by either of his former medical attendants, and which appeared to demand immediate treatment. The fauces, pharynx, epiglottis, and top of the larynx, were well sponged with a solution of the nitrate of silver, forty grains to the ounce, which produced a somewhat severe suffocative spasm, lasting, however, for a few minutes only. To be brief, the applications were soon extended to the cavity of the larynx, and the solution gradually increased in strength, to eighty grains to the ounce; these were continued three times a week for two months, and afterward once a week for three months; during the first two

months he took three grains of the iodide of potassium daily, and attention was paid to the condition of the bowels. The effects of this course of treatment were, return of the voice to its natural power, increase of flesh, loss of cough, and great relief to the oppression and difficulty of breathing. Before this topical medication was resorted to, he was unable to walk a quarter of a mile, even at a very slow pace, without the sense of oppression being so great as to compel him to rest; before leaving me he was constantly in the habit of walking from his home to my house, a distance of seventeen miles, without being obliged to stop; and upon some days he has walked thirty miles. He is now able to do light work, and is altogether in a state of great comfort when compared with that of the three previous years.

I do not consider that it will be necessary for me to increase the number of examples already given, to prove the value of topical medication in the treatment of each of the sequelæ of chronic catarrh, for the method by which it is beneficially employed differs so little in any of

these organic alterations, that a series of cases illustrating its application to every variety, would only add to the size of this essay without increasing its value to the professional inquirer.

CHAPTER VII.

INFLAMMATION OF THE PHARYNGO-LARYNGEAL MEMBRANE AND ITS MUCIPEROUS GLANDS.

ACUTE inflammation of the mucous membrane lining the air passages in most instances follows catarrhal irritation, but sometimes it occurs without the pre-existence of this affection. It is characterised by a more aggravated form of all the symptoms which have been detailed as belonging to acute catarrh, and usually runs its course with greater rapidity, terminating very speedily either in resolution or ulceration.

The sequelæ of inflammation are almost exactly the same as those which result from catarrh, and therefore topical medication is equally valuable in their treatment as in those various organic alterations which have been detailed as the consequences of catarrhal irritation. My

reason for devoting more space to the remarks upon catarrh and its sequelæ than will now be required for treating of inflammation and its consequences, is the great infrequency of the latter, when compared with the former; for a very large proportion of the affections and organic changes occurring in the mucous membrane of the air-passages are varieties of catarrhal irritation and its sequelæ. Yet the resemblance of the two conditions, irritation and inflammation, is so close that it becomes a point of great difficulty in some cases to decide when the former ceases and the latter begins. Mucous membrane, when affected by acute inflammation, presents a different appearance from that produced by acute catarrh; in the latter disease the villous, velvety, condition of the surface of the membrane, is readily appreciable both to the sight and the touch; in the former, the injection of the membrane is far more intense, involving a complete distention of all the vascular apparatus, tinting it with a deep red colour; instead of the erectile, villous sensation, conveyed to the touch by the membrane in a state of irritation, it is soft, pulpy, and fragile.

Whilst irritation exerts its principal influence upon the true surface and superficial layer of the mucous membrane, inflammation attacks its deeper, and the sub-mucous tissues.

Inflammation has a great tendency to terminate in ulceration, and when this event occurs, the appearance of the lesion differs materially from those superficial erosions which result from catarrhal irritation, and are so frequently, I think, miscalled ulcers. When a small patch of the true surface of the mucous membrane, is exposed whilst under the influence of catarrh, by being deprived of its epithelial covering, it presents a reddened, glairy, and somewhat depressed point that strongly resembles an ulcer; and its similarity becomes still more marked when the secretion from this denuded surface is changed, by the action of morbid influences, from simple opaque mucus to true pus globules. These erosions have neither the depth, the intense red colour, nor the irregular, but sharp edges of ulcers; nor do they involve any loss of substance.

If an ulcer has been correctly defined as "a granulating surface secreting pus," I think it

may be very distinctly asserted that this lesion is of rare occurrence in a chronic state in the mucous membrane of the larynx and trachea, unless its character is decidedly tubercular. When ulceration takes place from inflammation, in a mucous membrane free from tuberculosis, it heals readily, its base becoming a dense cellular tissue, and the surrounding mucous membrane being drawn in, and at length becoming adherent over it. But where the ulcer is of large extent, it acquires a fibro-callous base, but does not cicatrize; it remains bare, and sometimes obtains a smooth covering like serous membrane. The simple erosion, which is produced by catarrh, or the irritation of acrid secretions from some important parenchymatous organ, and tubercular ulcer, very rarely heal. Thus, I think, some strong reasons have been given in support of the opinion which has been advanced, that a large majority of these cases which present themselves for treatment, when uncomplicated by tubercular disease, are not true ulcers, but morbid changes engaging the upper layer of the mucous membrane, disabling it from secreting normal

epithelium cells, and thus depriving it, at points, of its natural epithelial tunic; in this denuded state, the action of morbific agencies upon the true surface of the membrane, produces such changes in its secretions and appearance, that it closely resembles ulceration. This morbid alteration, which would be pronounced by many observers to be ulceration when seen in the living subject, can seldom be detected after death without a close microscopical investigation; no redness, no sensible depression, no appreciable edges, no granulation, and no pus secretion can be then discovered with the unassisted eye. A critical inspection, however, with the microscope, will show points or patches of the true surface of the mucous membrane deprived of its epithelial covering, which have, evidently, been subjected to irritation and hyper-secretion; but the circulation having been carried on in the natural vessels of the parts, without much increased dilatation, no appreciable distention or redness remains. From this disappearance after death of all manifestations of disease in mucous membranes, which have been pronounced during life, to be

affected with congestion, inflammation, or ulceration, the opponents of local treatment have drawn a strong argument against the assertion, which has been made by some, that *ulcers* occur very frequently in the mucous membrane of the air passages.

Treatment.—In addition to the usual antiphlogistic remedies which are employed in the treatment of acute inflammation of the pharyngo-laryngeal membrane, the most valuable assistance may be derived from topical medications. The most useful of all the methods that have been detailed in a former part of this work, as those by which medicinal agents may be applied directly to this membrane, is, in this, as in most other affections, in the form of solution; and the particular remedy which experience has led me to prefer over all others, is the crystallized nitrate of silver. Acute inflammation progresses so rapidly in its course, that the curative measures must be vigorously and actively used, in order to arrest the disease; therefore, the solution should be of greater strength, and applied more frequently than in chronic inflammation or catarrhal irritation.

I have found that a solution of the strength of sixty or eighty grains to the ounce, applied to the inflamed parts, twice or three times during twenty-four hours is the most beneficial method of employing it. In acute laryngitis, it has been of the utmost value in my hands, and I have seen such immediate benefit follow its application, that I rely more upon it for the cure of this disease, than upon all the other measures usually resorted to. The powerful astringent properties of the nitrate of silver, the harmlessness and speed of its action, and the almost specific influence which it appears to exert upon inflammatory and catarrhal diseases of the mucous membrane, render it an invaluable adjunct to the list of therapeutic agents, to be used in these affections.

SECTION II.

INFLAMMATION OF THE MUCIPEROUS GLANDS.

These organs often sympathise with inflammation of the mucous membrane, and become congested, enlarged, inflamed, softened, and

ulcerated; occasionally they are alone affected, exhibiting isolated patches of inflammation or its consequence.

Congestion or inflammation of the follicles changes the character of their secretion, often rendering it thicker, which, with a diminished calibre of their ducts, prevents its free elimination, and this retention becomes a fresh exciting cause of inflammation. When ulceration occurs as the effect of inflammation, the lesion presents many points which distinguish it from the broken down and disorganised mucous follicle, resulting from chronic catarrh. The true ulcer has a sharp irregular edge, and a dark red inflamed base, it usually varies in size from a millet seed to a lentil, and the redness of the surrounding mucous membrane manifests its implication in the affection of the gland. But in those cases where the muciperous glands are found affected from catarrhal irritation, becoming highly softened, so that their covering ultimately disappears, there is left smooth, excavated pits, no bigger than pin's heads, of a round or oval shape, with regular edges, and the surrounding membrane

showing very little sympathy with the lesion. I am quite inclined to believe that these disorganizations are often confounded with the product of inflammation, or are classified under the head of tuberculosis of the membrane. Well-marked distinctions, however, exist between this catarrhal lesion, and the true tubercular ulcer.

Treatment.—Inflammation of the muciperous glands seldom occurs unless the whole mucous membrane is involved in the disease; therefore, the remarks that have been made upon this affection of the membrane and its treatment, will have equal force when applied to the curative measures which should be employed in the abnormal condition of the mucous follicles, which is now under consideration. It is quite unnecessary to repeat those remarks, farther, than to urge the great advantage to be derived from appropriate topical medication, when thoroughly and correctly applied.

SECTION III.

ANGINA EPIGLOTTIDEA, INFLAMMATION OF THE EPIGLOTTIS; AND ANGINA ŒDEMATOSA, ŒDEMA OF THE GLOTTIS.

Although these two affections have been treated as distinct species of disease by some writers, yet it would appear more eligible to consider them under one head, since they generally occur together, and arise from the same anatomical peculiarity, namely, the presence of a considerable layer of loose cellular texture beneath the mucous membrane, a peculiarity not met with in the air passages beyond the glottis. Both varieties, moreover, present the same train of symptoms, and seem dependent upon the same pathological conditions.

The inflammation assails the mucous membrane above the glottis, and particularly those of its folds which unite the epiglottis on the one hand with the root of the tongue and the arches of the palate,—on the other, with the larynx, especially laterally, in the direction of the ary-

tænoid cartilages,—these folds being, as is well-known, very lax and moveable, and susceptible of great extension.*

The disease may seize at once, in consequence of violent catarrhal irritation, upon the above spot, and either confine itself to that, or encroach upon the vicinity; or it may result from the extension of an acute or chronic inflammation, already affecting neighbouring parts. Thus, a suppurating tonsil may give rise to this fatal affection; or erysipelas of the external skin, or again traumatic inflammation consequent upon surgical operations performed above the larynx. In other instances, the main inflammation is rather of a chronic character, or at least latent and insidious in its course, so as scarcely to be cognizable during life; thus, the results of previous dissections are all that the practitioner has to guide him in forming his diagnosis of this dangerous malady. To this category belongs the œdema of the glottis, in which tuber-

* The chapter upon these diseases in Prof. Hasse's Pathological Anatomy, is so complete and excellent, that a large portion of it has been transcribed, *verbatim*, in this section.

cular degeneration, and other forms of laryngeal phthisis occasionally terminate; as also that consequent upon so-termed parotid tumour, and upon laryngeal suppuration during the progress of typhus fever. But the disease in question may follow, in the same latent manner, cancerous affections, caries of neighbouring bones, and organic affections of parts remote from its own seat; this last fact has been shown by a case recorded by Louis, in which an hepatic abscess occurring in a cachectic youth, was followed by fatal suppuration about the fauces, with sero-purulent tumefaction around the glottis. Finally, œdematous infiltration may be caused by mere mechanical hinderance, as tumours, which by pressing upon bloodvessels, prevent the return of blood.

The disease is rare, and appears to occur only in the adult, but not in one sex more than in the other. Sometimes, inflammation of the epiglottis betrays itself during life, under the aspect of a conical, dark red tumour, projecting behind the root of the tongue. After death the whole of the mucous membrane between the root of the tongue and the glottis is

seen to be uniformly tumefied, so that the outlines of the epiglottis and arytænoid cartilages, together with the numerous folds and recesses in the vicinity of those parts, have become effaced.

This is the result of inflammatory effusion into the interspaces of the loose cellular texture subjacent to the mucous membrane. In proportion to the intensity and duration of the inflammatory process, this exudation is sometimes of a purely serous and liquid nature, so as to flow away upon incision; sometimes blended with coagulable materials and jelly-like; sometimes, again, mingled in various proportions with pus; sometimes wholly purulent. Hence the tumour, which is always soft, lax, and tremulous, like jelly, varies greatly in colour, being of a pale or of a reddish colour—sometimes of a dingy yellow or greyish white, and more or less opaque—but for the most part superficially dotted with red. The swelling being dependent upon infiltration of the sub-mucous cellular texture, cannot extend to the inferior surface of the epiglottis, because, there, no layer of cellular tissue exists; hence

the epiglottis has the aspect of having both its lateral edges bent over towards its nether surface, so as to present a narrow perpendicular groove, which is sometimes almost covered by the overhanging tumour. Neither does the swelling extend to the vocal ligaments, (so that the term *œdema glottidis* is not strictly correct;) but the tumour, hanging down on each side, and in size often exceeding a pigeon's egg, overlays the glottis in such wise as to leave but a narrow opening towards the posterior part, which allows the column of air to pass out during expiration, but is closed up at any attempt at inspiration. In no example recorded did the œdematous infiltration beneath the mucous membrane show itself in any marked degree beyond the glottis. The mucous membrane of the affected parts is always reddened, puffy, and variously changed. Where the disease is of catarrhal origin, the fauces and the palatine region are generally found simultaneously inflamed, and the tonsils destroyed by suppuration.

Œdema of the glottis, when at all violent,

commonly proves fatal. Inflammation of the epiglottis, when occurring alone, is more susceptible of cure.

Treatment.—This disease is fortunately of very rare occurrence, but it would be still less frequent, if a close inspection of the throat were uniformly made in every case presenting symptoms of any abnormal alterations in this organ. If every case of simple catarrhal irritation affecting the mucous membrane of the throat were carefully examined, with the assistance of appropriate instruments, this and other serious diseases might be frequently arrested at their very onset, by the recognition of their incipient stages, and the application of suitable remedies. Topical medication, together with local depletion, varied in extent, to suit the intensity of the inflammation, will be found most useful in an early stage of the affection. When the inflammatory effusion has produced a tumour that prevents the free ingress of air to the ungs, incision and evacuation of its contents has been resorted to with some temporary relief. I believe that scarification of the tume-

fied parts, followed immediately by a local application of a strong solution of nitrate of silver would prove to be a most valuable therapeutic measure in the treatment of this formidable disease.

SECTION IV.

TUBERCULOSIS OF THE MUCOUS MEMBRANE AND THE MUCIPEROUS GLANDS OF THE THROAT.

Tuberculosis is one of the most destructive diseases to which the mucous membrane is subject. Tubercles may form either in the mucous membrane, within the muciperous glands, or in the sub-mucous cellular tissues. When they originate within the sacs of the follicles, these glands become enlarged, and elevated above the surface of the adjacent membrane, and ultimately softened and liquefied, leading to the evacuation of the glandular contents, and the production of deep well-defined ulcers. The deposition of tubercle-cells upon the true

surface of the mucous membrane, beneath the epithelial investment, produces irritation, then loss of substance, and afterwards ulceration. A similar course will follow the formation of tubercle in the more deeply-seated tissues of the mucous membrane.

Some pathologists maintain that tubercle is never found, in the mucous membrane of the larynx and trachea, running through a complete course of disease, unless it is complicated with pulmonary phthisis. But the observations of Trousseau and Belloc go far to prove the occasional existence of true tuberculosis in the laryngo-tracheal membrane, entirely independent of any similar disease in the lungs. Another point, about which some difference of opinion exists, is the relation, as to time, which the development of laryngo-tracheal and that of pulmonary phthisis, bear to each other. Some assert the more frequent pre-existence of the disease in the larynx and trachea; whilst others maintain that, in most cases, the lungs are first attacked, and that the upper parts of the air-passages merely become impli-

cated during the progress of the pulmonary affection

I am inclined to the opinion that tubercular ulcers are seldom met with in the larynx without the co-existence of tuberculosis of the lungs; and, therefore, it is of great importance, in all cases of tubercular disease of the mucous membrane of the throat, to institute a scrutinous investigation into the condition of the lungs.

The affection now under consideration is so insidious in its progress, that the tubercle is rarely seen in its early stage of development; indeed, an opportunity seldom occurs of observing the disease until softening and ulceration have taken place. Notable differences exist between the true tubercular ulcer, and those simple erosions of the mucous membrane which are often observed during the course of pulmonary phthisis, or those softenings and disorganizations of the muciperous glands, which result from catarrhal irritation. These erosions always remain superficial, being confined to the epithelium, or to the upper layer of the mucous membrane; their surfaces are smooth and

pallid, and usually covered with a thin, whitish, and soft pellicle. The disorganized follicle, or patch of mucous membrane, resulting from catarrhal irritation, is also superficial, of a circular or oval shape, with well-defined edges, and a smooth, but reddened base. *Tuberculous ulcers* are deep, irregular in shape, and their base is rough and uneven, as if gnawed. Their edges are prominent, sharp, and irregular. They are very prone to deepen rapidly, and also to spread superficially:—this tendency of tuberculous ulcers to increase in dimensions, arises from the continual fresh deposition and softening of tubercles at their margins and base.

Tuberculous ulcers occur more frequently in the larynx than in the trachea; and the susceptibility to them appears to diminish with the descent of the membrane into the lungs. When they accompany the more advanced stages of pulmonary phthisis, a continued irritation will be kept up in them by their contact with the tuberculous matter expectorated from the lungs.

Tubercular ulceration of the laryngeal mucous

membrane occurs principally in persons of a scrofulous diathesis. The period of life at which it is usually developed, is between the twentieth and thirty-fifth years; it has been observed before puberty, and in advanced age, but these instances are very rare; men are more frequently the subjects of this kind of ulceration than women; Professor Hasse says, in the proportion of two to one.

When the destructive process of tubercular ulceration attacks the vocal chords, difficulty of voice, and finally complete aphonia will ensue. From the circumstance of this affection being confined almost entirely to the larynx and upper part of the trachea, it will be difficult to bring the disease actually in view; but the tuberculous character of the expectoration will afford a positive evidence of its existence, when connected with distinct symptoms of its seat being the upper part of the mucous membrane of the air-passages; and when, also, no evidence of the presence of softened tubercle in the lungs can be discovered.

Should tuberculosis originate in the glands or tissues of the mucous membrane, as a pri-

mary disease, and not arise from an advanced tuberculous affection already manifested in the lungs, any treatment which will check or arrest its destructive process, may prevent a development of phthisis pulmonalis. The close relation which the important parenchymatous organ, the lungs, holds to the mucous membrane of the larynx and trachea, produces an active sympathy with its diseases. Therefore it will be a matter of first importance, when primary tubercular ulceration does exist in the laryngo-tracheal membrane, to endeavour by every advisable measure, to cure this affection, and thus prevent the influence which it exerts, as an exciting cause to the development of tuberculosis in the lungs. A primary tubercular ulcer of the mucous membrane, is commonly very minute when it first becomes manifest, but it soon enlarges, both superficially and in depth, by coalescing with neighbouring ulcers, and from the softening of tubercles which have been deposited, secondarily, at its margin and base.

Treatment.—Topical medication to the cavity of the larynx, with a solution of the nitrate

of silver, together with a generous diet, and the internal administration of tonic and alterative medicines, is the course which I have found the most useful in these cases.

CHAPTER VIII.

EXUDATIVE INFLAMMATION OF THE MUCOUS MEMBRANE OF THE THROAT.

CROUP.

ANGINA MEMBRANACEA.—Exudative inflammation of the mucous membrane most frequently occurs in the air-passages, and exhibits itself in those croupy inflammations which are so constantly witnessed in the pharynx, larynx, and trachea. This exudative process is characterized by its plastic product, which varies in consistence from that of cream to the toughness of leather, and is grayish-white, or yellowish and fibrinous. The plastic exudation forms with great rapidity; it has various gradations of consistency, from a tenacious mucus,

wherein are suspended thin membranaceous flocculi, to the firm and tough false membrane of considerable thickness.

Croup is a disease of childhood, and attacks children, most frequently, between the second and tenth years. There are few cases on record where it has occurred as early as the sixth month.

Many pathologists declare, and the assertion is quite in conformity with my own observations, that these exudatory inflammations of the air-passages invariably spread from above downwards, and never in the opposite direction; so that, when commencing in the trachea, it can only descend to the bronchia and pulmonary cells, but cannot mount to the larynx. There seems also to be a tendency in the disease to attack the more deep-seated parts as life advances. Thus, the fauces, pharynx, larynx, and trachea, are the situations in which it will be found in children, whilst in adults it rarely occurs in any other part than in the lesser ramifications of the bronchial twigs.

Croup has been divided, very properly, by

some authors into separate classifications, and distinguished by names in accordance with the part which is the essential seat of the disease; thus we have laryngeal croup, tracheal croup, bronchial croup, and croupy pneumonia, each of which is characterized by symptoms and pathological changes that are distinctive and important. Of these I shall only speak of the first two forms; because, in this brief essay, it is not my purpose to give a full description of the diseases of the air-passages, nor to attempt a critical disquisition upon any of the subjects which are brought under consideration, but only to present some brief sketches of those affections of the mucous membrane of the throat, in which I have found topical medication to be a valuable remedial measure. For this reason also I have purposely avoided a collation of the opinions of various eminent writers upon the method by which these diseases should be treated; supposing my reades to be acquainted with the usual treatment, and confining myself, therefore, to observations upon the advantage and manner of using local medications.

ANGINA MEMBRANACEA, CROUP, usually commences with an attack of catarrh, of longer or shorter duration, which merges into inflammation, when the plastic lymph is at once thrown out. This plastic material forms an adventitious membrane, sometimes confined to distinct patches, and at others, though rarely, extending throughout the greater portion of the air-passages. A mechanical hinderance is thus presented to the free ingress of air to the lungs, causing the crowing sound which is so characteristic of croup. Some pathologists, however, believe that this suffocative breathing results more from the disturbance of nervous energy and impaired action in the laryngeal muscles, more especially of those which serve to open the glottis, which arises from the violent inflammation, than from a mechanical hinderance. They also assert that death is due rather to this inflammatory spasm of the muscles of the glottis, than to mechanical occlusion.

The membranaceous product, when first formed, adheres with great firmness to the true surface of the mucous membrane; but, upon a subsidence of the inflammation, there

is a secretion of watery mucus, or of muco-purulent matter, beneath the layer of adventitious membrane, which serves to detach it from the mucous membrane, after which it is expelled by coughing, either in shreds or in one tubular mass. Beneath this false formation the mucous membrane has a raw, sore appearance, but it never undergoes any loss of substance from this species of exudatory inflammation. Sometimes, however, the false membrane cannot be completely expelled; then it becomes attenuated, and perforated with small holes like a net-work, which occasionally remains fastened to the surface of the mucous membrane. In such cases suffocation may occur some days after the patient is supposed to be recovering: this arises from the rima glottidis becoming stopped up with detached remnants of this false membrane.

Croup in children is almost always developed upon an attack of catarrhal irritation, which affects the fauces and tonsils, and often continues for a day or two before the plastic inflammation commences. A little soreness of throat, hoarseness, and a rough, stridulous

cough occurring in a child, should be carefully watched, and a thorough examination of the throat should be made; for, often, appropriate topical medication to the fauces and pharynx, at this stage of the affection, will prevent the serious attack of croup which in a few hours is likely to be developed.

The important pathological proposition, that the progress of exudatory inflammation is from above downwards, and never in the opposite direction, which is supported by the highest authorities, is one that should be always remembered: and when its truth is universally admitted, early and appropriate topical medication cannot fail to assume its just position in the list of valuable agents which are recommended for the treatment of membranaceous croup.

Treatment.—The great importance which I attach to the application of appropriate remedial agents directly to the affected part in croup and at as early a stage of the disease as possible, must have been inferred from the remarks already made upon this affection.

I shall not relate the usual means which are

employed in the treatment of croup, but confine myself to a description of the methods of using topical medication which I have found the most beneficial.

In the treatment of croup by local applications, I have always employed a solution of nitrate of silver, because I consider it the most safe, efficient, and certain therapeutical agent, that can be introduced into the pharynx and larynx for the cure of this exudative inflammation.

Topical medication is a measure that may be resorted to in every stage of this disease with great advantage; but it is of the highest importance, to recognise the very earliest commencement of the affection, so that the catarrhal irritation may be arrested by a suitable local application, and thus prevented from passing into inflammation. At an early period in the disease, the tonsils may be seen to be covered with a white or cream-coloured coating, and patches of similar material may be perceived about the pharynx, and often upon the laryngeal surface of the epiglottis. When this appearance is discovered, an application of a

solution of nitrate of silver, twenty grains to the ounce, should be at once made to these parts.

In the second stage of the disease, when the plastic product obtains a greater thickness, and the formation of the false membrane has commenced, the topical medication should be extended to the cavity of the larynx; for the tendency of this disease being, to spread from above downwards, every precaution should be taken to prevent its progress. Fortunately, the same caution which has been given in another part of this little book against attempting to introduce the medicated solution into the larynx before the entrance to it has been accustomed to the presence of the sponge and caustic, need not be observed in these cases. The action of the muscles is usually so much impaired from the nervous derangement, occasioned by intense inflammation, that no unpleasant consequences will be found to arise from an introduction of the medicinal agent, at once into the larynx. I seldom employ a solution of greater strength than fifty grains of the caustic to the ounce of water, and in far the larger

number of instances, not beyond that of thirty grains to the ounce.

Infants are readily operated upon, and the application is generally attended with immediate relief to the suffocative symptoms. To introduce the solution into the throat of an infant, it will be necessary to have the child held by the nurse in a semi-sitting posture, the head resting upon her left arm. After bringing the little patient close to a strong light, the operator should stand upon the right of the nurse, and with the spatula in his left hand, press the tongue of the child downward and forward until the epiglottis is fully in sight: with the right hand, the saturated sponge at the end of the probang is carried quickly to the base of the epiglottis, and pressed forward and downward into the cavity of the larynx. When the application is to be made at night, or in a situation inaccessible to a bright, natural light, I usually avail myself of Mr. Avery's ingenious lamp and reflector, which is held in the mouth, and thus, without depriving the operator of his hands, enables him to concentrate a strong light upon any

spot he may desire. Of course, the size of the sponge to be introduced into the larynx of a child, must not be so large as though the patient were an adult; for the dimensions of the opening to this organ, as well as its own capacity, are much smaller in the child than in the adult. Anatomists are aware there is but slight difference in size between the larynx of a child of two years and one of twelve years of age; and that, at this period of life, the calibre of the tube is from three-eighths to half an inch in diameter; consequently, if the sponge be formed so as not to exceed one-third or one-half of an inch in diameter, it can be made, with slight pressure, to pass the entrance into the laryngeal cavity.

I have employed topical medication in almost every variety and stage of this disease, and with such universal advantage that I would gladly, did my time allow, recite several cases to show the immediate relief which usually follows the local application of medicinal agents to the affected mucous membrane. In one case, which had proceeded to the suffocative and hopeless stage, an abatement of all the violent and

threatening symptoms followed immediately the sponging of the fauces, pharynx, and larynx, with a thirty grains caustic solution. Although this little patient eventually succumbed to the violence of the disease, it was evident by the benefit that resulted from the local treatment, that it might have been instrumental in saving the child's life, had it been resorted to at a somewhat earlier stage of the disease.

Large, fat children, of a leuco-phlegmatic habit, appear to be peculiarly prone to the disease, and in such, the inflammation often proceeds so insidiously that the exudative stage is fully developed before the advice of a physician is sought, or even before the attention of attendants is attracted to it. Such children bear topical medication better, and the disease yields more readily to it when occurring in them, than in those of a nervo-sanguineous temperament. I have always found immediate relief to follow,—even where recovery did not occur,—by the mechanical removal of the plastic matter with the sponge, as well as by the advantageous influence exerted upon the inflammation by the powerful astringent properties of the nitrate of silver.

I will add to this brief sketch, the remark, that in topical medication consists my main reliance for the cure of true membranaceous croup, and that in my estimation no other remedy whatever is required, when the disease is detected in its catarrhal or early inflammatory stage. I am convinced that I have again and again, prevented attacks of exudative inflammation of the air-passages in children, by applications of the solution of nitrate of silver to the fauces and pharynx, whilst the mucous membrane of these parts was in that state of catarrhal irritation, which almost invariably ushers in an attack of membranaceous croup.

No reference has been made to laryngismus stridulus, because my personal knowledge of the applicability of topical medication to it, is confined to a few cases, and although my experience in its employment has given me a favourable view of its value, yet my data are, at present, too few, to form a judgment upon.

Hooping-Cough.—When treating of chronic catarrh in a former part of this work, I stated that the efforts of pathologists to refer this disease to some fixed seat, having failed, I was

inclined to the conclusion that hooping-cough is nothing more than chronic catarrh. With this view of the pathology of the affection I have for some time past been treating hooping-cough, by topical applications to the pharyngo-laryngeal mucous membrane. But the difficulty of getting children, the class in whom the disease is most common, to submit to frequent topical medication, has prevented me from being able to ascertain satisfactorily, the result of this remedial measure.

A lady who was the subject of this affection submitted to the topical treatment with an evident alleviation of all the distressing symptoms. The duration and severity of the cough, were evidently influenced by the applications; yet I should desire further experience before forming a conclusion as to the value of topical medication in this disease. At the request of this lady, I frequently sponged the upper part of the pharynx, behind the velum palati, with great advantage; she assured me that the affection appeared to be seated in this locality, and the answers of her two children, who were suffering with the disease at the same time,

went to show that they felt the morbid change in this locality more than in any other. I shall persevere in the employment of local medication in this disease, under a firm conviction that it will prove useful, whenever the patients will submit to a daily application of the solution of nitrate of silver.

CHAPTER IX.

THE ENLARGED TONSIL.

The situation and composition of the tonsils render them peculiarly susceptible to sympathize with the affections of the pharyngo-laryngeal mucous membrane, and to undergo organic alterations from the continual influence of morbific agents. These bodies consist of an aggregation of follicles, which, like the other muciperous glands of the throat, are formed of involutions of the mucous membrane; indeed, they are secretory sacs, having small ducts and open mouths, through which their product is eliminated. Any morbid thickening of the tissues of these ducts diminishes their calibre, and prevents the free egress of the secretion of the gland; thus, distention of the

follicle may result, which will exert a prejudicial influence upon the secretory sac itself. Distention may also occur from a change taking place in the thickness of the secretion, which would prevent its free passage through the outlet of the gland. Both of these alterations sometimes occur together, producing considerable enlargement of the entire tonsil. When a thickening of the tissues of the follicles or of the secretion is produced by catarrhal irritation, there is a complete subsidence of these morbid alterations, after the two or three first attacks; but if there is a frequent recurrence of catarrh the thickening of the tissues remains, and a permanent enlargement of the tonsil is the consequence. In this way the greater number of enlarged tonsils are produced.

Permanent enlargement, or hypertrophy of the tonsil, arises also from inflammation of the mucous membrane. Tonsillitis, or acute inflammation of the tonsil, has a tendency to terminate either in ulceration, suppuration, or a permanent thickening of its structure. The destructive process of ulceration or of suppura-

tion, usually produces such organic alterations in the superficial layer of the mucous follicles of the tonsil, that even after the lesions are entirely healed, there remains a mechanical hinderance to the elimination of the secretion; or, in other words, the mouths and ducts of the muciperous glands are left in a state of complete occlusion, by the deposit of an inflammatory product over them. This stoppage produces distention, and this distention reacts upon the follicles of the tonsil, causing a sub-acute inflammation and destruction of the secretory powers of the gland. Sometimes this low grade of inflammation causes ulceration and sinuses, which ramify in the body of the tonsil. Supposing, then, that the only office of the tonsil is to secrete a fluid for the lubrication of the morsel at deglutition, and to moisten the surfaces of the fauces and pharynx, which otherwise would become dry by the continual passage of ari air over them, it will be evident that, if thi function is impeded or prevented, some morbi changes in the mucous membrane of the throa must follow.

Frequently these organic alterations and morbid changes are confined to the superficial layer of the mucous follicles composing the tonsil, whilst the deeper seated layers, or radical of the organ, retain a normal condition; and, in order to obtain the advantage of an appropriate secretion from the tonsil, it is often only necessary to relieve its healthy parts of the superincumbent mass of disorganized and useless follicles which prevents its free elimination.

When these glandular bodies, the tonsils, are inflamed, intense pain is produced by the compressing action of the muscular organs which surround them on every side: anteriorly, in the musculo-membranous fold, is situated the constrictor muscle of the fauces; posteriorly, in a similar fold, the palato-pharyngeus is placed; and below is the base of the tongue. In the act of deglutition all these adjacent parts are made to press against the tonsil; thus, it may be readily understood why, in inflammation of the tonsils, severe suffering is induced by the mere act of swallowing, even when no bolus of food is present to exert a

mechanical attrition with the diseased body. Chronic enlargement and induration of the tonsil, is not accompanied by any pain upon pressure, unless the gland is in a state of irritation or inflammation;—diseased conditions to which it is extremely subject.

The cellular tissue situated between the follicles of the tonsil, is often the seat of inflammation, which terminates in suppuration or chronic thickening and induration. This latter organic alteration frequently constitutes the true state of the so-called scirrhous tonsil.

In some instances the destruction of the adjacent walls of three or four follicles, and the intervening cellular tissue, will create one large cavity lined by a membrane which secretes a fluid greatly modified in quality from the natural secretion of the healthy follicle. This unhealthy product varies in consistence from pus, or a cheesy concrete friable substance, like tubercle, to the solidity of a calculous deposit. Tonsillary calculi are often found imbedded in the substance of the glandular body, varying in size from the bulk of a grain of millet to that of a kidney-bean. The colour of these

deposits is white, with a yellowish tint in the centre; they appear, when examined under the lens, to be formed by the agglomeration of a number of small grains, without any distinct central nucleus; by analysis, they have been found to consist of coagulable albumen, phosphates, and carbonate of lime.

Enlarged tonsils that have undergone such morbid alterations in their structure as to be disabled from performing the healthy function appropriate to them, are not only useless incumbrances, but they act as predisposing causes to catarrhal irritation, and inflammation of the muciperous glands and tissues of the pharyngo-laryngeal membrane. The remarkable sympathy which exists between mucous membranes induces a great tendency for diseases to spread in them. Therefore, the presence of these diseased tonsils becomes a source of constant irritation and morbid excitation to the neighbouring follicles and mucous membrane. They may increase to such a size as nearly to fill up the entrance to the pharynx, and thus offer a serious mechanical hinderance to the free passage of air to the lungs. Voice, also, is often

affected by the presence of enlarged tonsils; the utterance is thick, and a long continued exertion with the vocal organs, occasions hoarseness and difficulty of speech:—these alterations in the vocal function are produced, in a great measure, by the obstruction of the enlarged tonsils, and, somewhat, by a sympathetic affection of the mucous membrane of the larynx and chordæ vocales, which is induced by the presence of these diseased bodies.

Hypertrophy of the tonsil may exist without induration: it is sometimes hereditary; and in those cases where an excess of development is present in the tonsils from earliest childhood, there is often observed many characteristics of a scrofulous diathesis. But enlargement of tonsils is far more frequently the result of the direct operation of accidental morbific influences, than of any constitutional predisposing or exciting cause.

Tonsils, which have undergone important and permanent organic alterations, become a constant cause of irritation to the mucous membrane, producing frequent sore throats, hoarseness, and eventually, a thickening of the pharyngo-laryn-

geal membrane. These diseased bodies not only act thus, as permanent irritants to the mucous membrane, but they often impede deglutition, and interfere seriously with respiration.

Treatment.—If the tonsils are permanently enlarged, indurated, or hypertrophied, their presence can be of no possible use to the functions of the throat—and in those cases where they have reached a size that renders them a positive hinderance to deglutition and respiration, the sooner they are excised the better. Or, if they evidently excite irritation and inflammation in the follicles or tissues of the mucous membrane of the air-passages, the removal of a portion of them ought not, in my opinion, to be delayed. Another evidence which would warrant me in recommending excision of the tonsils, is a frequent recurrence of inflammation in them; even, although, no important sympathy should be shown by the neighbouring mucous membrane in the inflammation.

Although I have seen a very large number of persons with enlarged tonsils, it has not

fallen to my lot to meet with a single instance, in which deafness was produced by the mechanical occlusion of the internal meatus, from their pressure over its entrance, or upon the parts immediately surrounding it. These diseased bodies may excite irritation, and subsequently, thickening of the mucous membrane lining the auditory canal, so that its diameter may be materially lessened throughout its whole extent, and by this means, some interruption in the sense of hearing may follow.

When I speak of excision of the tonsil, I do not wish to be understood as recommending a complete extirpation of the gland, or that the operation should be performed with a view to eradicate as much of that organ as is practicable; but an excision of so much of the morbidly altered mass, as will suffice to remove any obstruction which it may offer to deglutition and respiration, and also to lay open any sinuses which may be burrowing in its substance, or to evacuate the purulent contents which may be incarcerated within the distended follicles.

The method by which I think this operation should be performed, varies somewhat from

that usually followed. In the first place, the excision should be so regulated that the cut surface of the tonsil will present a concave shape, from behind, forward. By this arrangement, the anterior and posterior edges of the wound will project somewhat beyond its centre, forming flaps, covered on their external surfaces by mucous membrane; upon the approximation of these flaps, a partial covering to the wound will be formed, which will protect it from the irritation of the cold air which may be inhaled through the mouth, and from the painful effect of the attrition of food. I am also inclined to believe that when the incision has been made in this manner, the wound heals more readily, and the remaining portion of the aggregated glandular body returns to a normal condition much more speedily than in those cases where the tonsil has been so excised as to leave a flat or square surface.

After excision I am in the habit of applying a solution of caustic, of the strength of forty grains to the ounce, daily, until the suppuration from the wound has entirely ceased. My object in making this application, is to check in-

flammation, and to excite a healty action in those follicular sacs, which are allowed to remain untouched by the knife.

Sometimes a disposition to glandular affections in other parts of the body, may present itself in persons who have enlarged tonsils; this disposition may be entirely dependent upon general debility, and exist, when no scrofulous taint in the system, either hereditary or other, can be discovered. In such cases the use of some of the combinations of iodine with iron will be found most beneficial; the iodide of iron, or the syrup of the iodide of potassium and iron, are the preparations from which I have noticed the greatest advantage to be derived.

Sometimes, although the instances are very rare, I have seen tonsils that had been enlarged for a considerable length of time, return to their normal size under the assiduous application of strong solutions of the nitrate of silver, alternated by the simple tincture of iodine, conjoined with the internal administration of some alterative and tonic medicine. These medicinal measures, together with a well re-

gulated dietetic regimen, will be found to have an admirable effect in those cases of enlarged tonsils which appear to depend upon general debility.

Much annoyance and, perhaps danger, might be prevented, if great watchfulness were exercised in the treatment of scarlet-fever, measles, and all the other exanthemata, as also of all diseases which produce sore-throat, to prevent a permanent continuance of enlargement of the tonsils.

Children, and especially those of a strumous habit, seldom have measles, or any of the exanthemata, without the occurrence of some enlargement of the tonsils, which usually becomes permanent, unless appropriate topical medication is resorted to at an early period after its development. If these bodies are suffered to pass into a state of chronic enlargement, the person will be liable to frequent attacks of sore-throat, which often produces such a great and rapid increase in the size of the tonsil, as to create a reasonable cause of alarm for the ultimate issue of the disease.

SECTION II.

ELONGATION AND ENLARGEMENT OF THE UVULA.

But few words will be required upon this subject, in addition to what has already been said in former parts of this essay. Chronic catarrh not only produces an enlargement or other change in the numerous follicles at the extremity of the uvula, but it likewise, in many cases, effects such morbid alterations in the mucous membrane and the sub-mucous cellular tissues, as to cause extensive effusion into the cellular structure, and a consequent elongation of the organ. A relaxed state of the uvula may accompany simple or acute catarrh, which will disappear upon the subsidence of the affection; but when the effusion and elongation have resulted from chronic catarrh, and have been present for any considerable length of time, nature will not often be able, unaided, to restore the organ to a normal state.

This pendulous body, when morbidly elongated, will create an irritation of the pharyngo-laryngeal membrane, and an annoying cough,

by its contact with the epiglottis and the pharynx.

Treatment.—The application of astringents to the diseased organ, should first be thoroughly tried, and if no beneficial effect is seen to follow this measure, the uvula should be somewhat shortened.

I am satisfied that the complete truncating of the organ, is an operation which should never be performed, when no other indication demands it, than chronic elongation. For the irritation and inconvenience arising from this condition of the uvula, are produced only by its contact with the pharynx and epiglottis; and this mechanical irritant will be completely removed, by the excision of so much of the diseased organ, as will reduce its length to that of the healthy uvula. Nor do I know what argument can be used to justify the operation of truncating the uvula, when no other disease is present than chronic elongation. As the muciperous glands, which are very frequently the cause of a continual irritation in the mucous membrane of the uvula, are situated, mainly at its extremity, the removal of a portion of it

will necessarily involve a removal of them; and thus, all the advantages which can be derived from truncating the uvula, may be obtained, with equal certainty, from an excision of a portion of it. Under these circumstances, it is not difficult to decide, if guided by the rules of conservative surgery, which operation should be adopted.

Some advantage will be gained, I think, by excising the organ with a bistoury, cutting in an oblique direction from behind, forward and downward, so as to have that part of the extremity of the stump which is rubbed by the food in its passage to the œsophagus, covered by mucous membrane. This method does not require more time than excision with a pair of scissors, and is attended with none of the objections which are made by some surgeons to the crushing action of that instrument.

CHAPTER X.

INHALATION OF POWDERS.

For several months past I have been employing topical medication, with solid caustic, by means of inhalation; and although I have not yet met with the beneficial results that I had expected from this method, in those affections which are confined chiefly to the mucous membrane of the trachea and bronchia, yet I have seen sufficient advantage follow the operation, in a few instances, to encourage me to persevere in endeavouring to contrive such mechanical appliances as will insure the introduction of finely-triturated medicinal powders into the air-passages, below the larynx.

The difficulty of teaching the patient how to aid the operator, by taking a full, strong inha-

lation at the precise moment when the instrument containing the power to be inhaled is properly adjusted over the entrance to the larynx, has been the chief obstacle that I have encountered in this procedure. But I have just had an instrument made, which is so constructed as to shield the medicinal powder from the action of the expired air, and also, by means of a spring trigger, to discharge its contents at the pleasure of the operator. With this instrument I find very little difficulty in giving such direction to the powder, and discharging it at the precise moment, that will secure its being carried by the force of the current of inhaled air into the air-passages. But I have not experimented with it for a sufficient length of time to warrant me in forming any definite judgment upon the value of this method of topical medication. The powder that I have employed consists of one part of the anhydrous nitrate of silver well triturated with five parts of loaf sugar. This I have used in chronic catarrh complicated with asthma, and frequently with benefit.

After I have extended my practical experience

in this method of treatment, to such a number of cases as will give sufficient data to warrant a conclusion being drawn from them, I may, perhaps, consider the result to be possessed of an importance which may render it worthy of being communicated to the profession.

THE END.

LONDON:
PRINTED BY G. J. PALMER, SAVOY STREET, STRAND.