

On polypus in the nose and other affections of the nasal cavity : their successful treatment by the electro-caustic and other new methods / by J.L.W. Thudichum.

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ON

POLYPUS IN THE NOSE

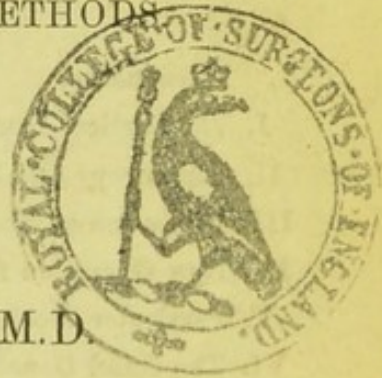
AND

OTHER AFFECTIONS OF THE NASAL CAVITY;

THEIR SUCCESSFUL TREATMENT BY THE ELECTRO-
CAUSTIC AND OTHER NEW METHODS

BY

J. L. W. THUDICHUM, M.D.



THIRD EDITION.

Illustrated with Woodcuts.

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ON
POLYPUS IN THE NOSE
AND
OTHER AFFECTIONS OF THE NASAL CAVITY.

Introduction.

THE treatment of diseases of the cavity of the nose has hitherto been attended with very great difficulties, owing to the circumstance that the cavity is large, complicated by many sinuosities, interrupted by many thin bony and membranous projections, and therefore little accessible to instruments by which growths might be removed, or topical remedies applied. The removal of excrescences from the lower and median nasal canal was yet the most successful of surgical operations in this organ, although it was frequently left incomplete, or remained unavailing owing to the speedy return of the polypi. But the topical application of remedies for the treatment of acute and chronic affections of the nasal cavity could only be attempted by mechanical contrivances which were so objectionable to the patients that after longer or shorter trials they had to be abandoned. Before the discovery of the following new modes of treatment, I had under my care several important cases of affection of the nasal cavity, in which the mere possibility of cleansing the cavity of the nose would have been a great boon to the patients; others in which I have no doubt the application of remedies such as we are in the habit of using against conjunctivitis would have effected a speedy recovery from painful and troublesome conditions. The only mode of cleansing the cavity of the nose which was then known in medical science was by injections with a syringe; but, owing to the velocity with which the injected fluid touched the walls of the nose, this process created always much irritation, pain, sternutation, and lachrymation, and the

patients mostly opposed the entrance of the fluid by expiratory efforts, which indeed were the only means they had of preventing the fluids from running down the choanæ and reaching the larynx. The mere effect of pure water upon the Schneiderian membrane being irritating, two causes combined to defeat the object of injections of water; and when medicines which might be supposed to have a beneficial effect upon the diseased Schneiderian were dissolved in the water, they, although perhaps better tolerated than pure water, could not be kept sufficiently long in contact with the affected parts to exercise upon them even such slight medicinal action as their necessarily diluted state permitted. There was a third application that could be made—namely, the introduction of medicines in the form of fatty or mucilaginous ointments. But this application of ointment to the surface of the lower canal of the nose, and to a part of the median canal—which are the only portions that, as a rule, can be reached, even by clever manipulation—is the most objectionable of any, so far as its accompaniments of irritation and pain are concerned, sternutation and lachrymation being not rarely long continued after it, and the peculiar pain producing a reluctance on the part of the patient, which it is difficult to overcome in young and old people. All these applications, then, were partial, imperfect, irritating, and consequently unavailing to effect the desired end. Many cases of superficial ulceration ended in caries, embittering the life of the patients, and through the odour making intercourse impossible and family relations troublesome; other cases of chronic inflammation ended in deformity of the external nose and the formation of polypi in its cavity, and produced a constant false resonance of the voice; a number lasted throughout a lifetime, the nose being a constantly weak part, and capable of prostrating the patient at any opportunity which dust and wind might afford; others had consequences even more severe, and the specific ulcerations of the cavity of the nose only too frequently terminated in that sinking of its bridge which is the most painful proclamation of disease with which a patient can become afflicted. Then there were the convulsive affections produced by local irritation in the nose—those cases of fabulous sneezing in which hardly any remedy availed in even diminishing the number of spasms in time, because the centre and seat of the irritation could not be reached by medical agencies. Truly dangerous were some cases of bleeding from the nose, in which the broken blood-vessel could not be reached by either styptics or mechanical compression, and could not be made to contract by contact with that most powerful of hæmostatic agents, ice or ice-cold water. Not a few cases of this kind terminated fatally,

or required the most desperate measures to prevent the fatal end, such as plugging of the nose and choanæ with sponges or tinder; and these not rarely left a condition of anæmia in which other accidental diseases could put a stop to life with comparative ease, or which continued without the supervention of other diseases, enfeebling and considerably shortening the rest of the life of such patients. Most of these difficulties are now overcome by the discovery of the following methods of treatment. They were originally published in detached numbers of the 'Lancet,' several of which are now and have been for some time out of print. The favorable reception which has been accorded to them on the part of many members of the medical profession has encouraged me to again publish them in the present separate form.

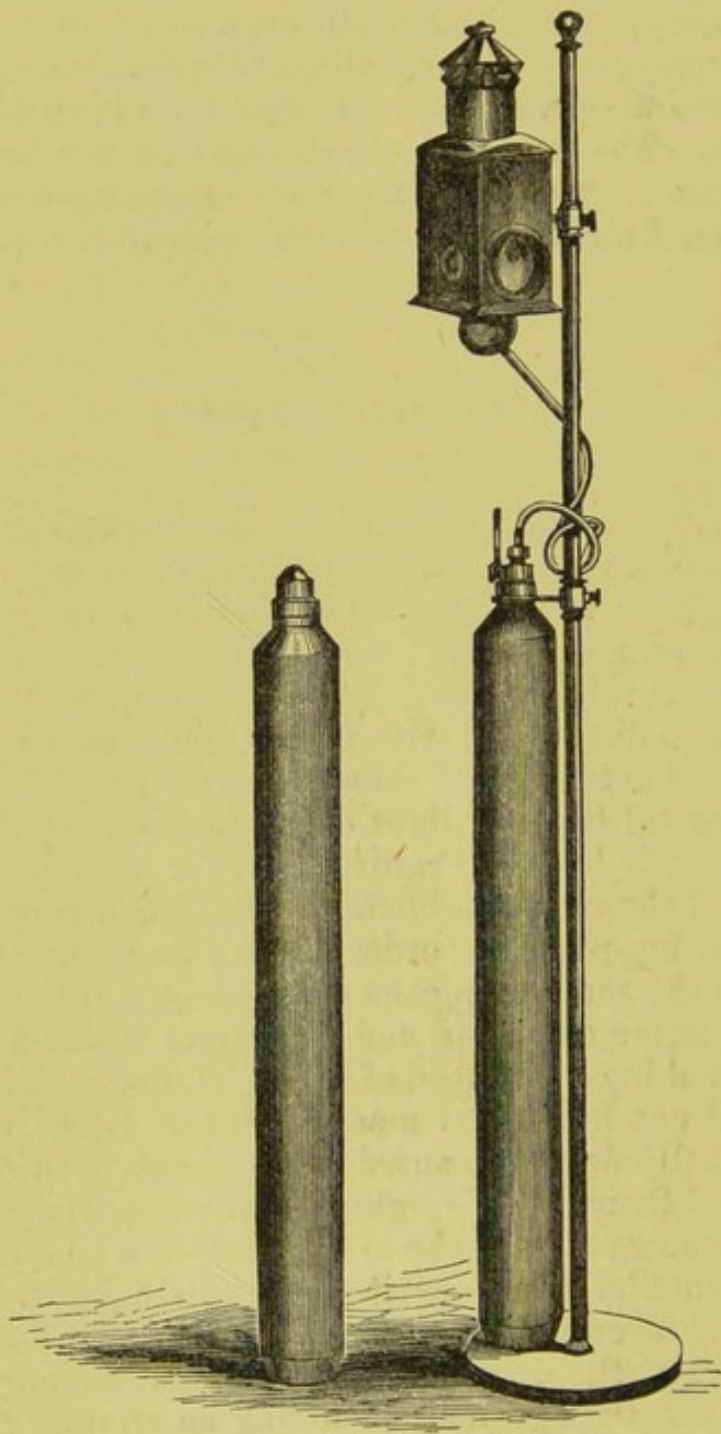
I. *The Medical Lantern.*

Those who have tried sunlight for the inspection of the nose or larynx, and compared it with the light given out by oil-lamps specially adapted to the operation, and provided with complicated condensers, must have come to the conclusion that the latter are relatively useless. At all events, my own practice soon made me dissatisfied with such arrangements as Tobold's lamp—instruments which I found top-heavy and unstable, and whose horizontal beam of light did not satisfy my demands for inspection, much less my requirements for illumination during operations. I therefore established a platform before the window of my consulting-room, in order to be able to utilise sunlight, thrown into the room by means of a heliostat, on all practicable occasions. Some diagnoses and operations which I had opportunities of making by the aid of this light, and which I am convinced could not have been made with the aid of an oil-lamp, however artfully devised, caused me to construct the following adaptation of Drummond's light to medical purposes:

A small lantern carries the arrangements which are required for the production of the spirit-oxygen-lime light. The glass spirit-lamp is screwed into the bottom of the lantern, in order that the level of the spirit may be always accessible to the eye. The rest of the arrangement, including an annular ditch round the burner, to be filled with water intended to cool the burner, are inside the lantern. The oxygen is supplied from an iron bottle underneath the lantern, in which it is contained under pressure produced by the condensation in it of several atmospheres of gas. A delicate screw-valve, moved by a lever,

easily regulates the flow of gas. The bottle and lantern are fixed to a stand, being a brass rod screwed in a heavy circular iron plate. Any position can be imparted to the lantern by means of the axial joint on its attached side, and the screw sliding clamp, which fixes it to the rod. The light passes

FIG. 1.



through a system of condensers in front of the lantern, and can be brought to a focus at any desired distance by the sliding arrangement of the bottom of the lantern which carries the light.

The lantern in this form is eminently practical. It is easily lighted: a match inflames the spirit, the lime is fixed by its side, the oxygen is turned on, and within a minute or two a splendid beam of light is projected from the condensers. The direction of the beam is readily adapted to the requirements of the operator. For laryngoscopy and rhinoscopy he carries the concave mirror on his forehead over a screen, which, as the light comes from above, can be so adjusted as to completely protect the eye from any incident rays, and leave it all its pupillary space for the inspection of the illuminated cavities. The lamp is put out as easily as it is lighted: the oxygen is turned off; the lime-cylinder buried in lime-powder in a suitable receptacle; the spirit extinguished by a brass cap which fits into the water-ditch. The amount of gas in the bottle can always be controlled by a pressure gauge to be screwed on to the top of it. A full reserve bottle is always kept in store, and any empty bottle is at any time refilled by the maker. I pronounce this apparatus (which I exhibited in 1867 at a *conversazione* at the Royal College of Physicians, and which I have now tried on many occasions during nearly eleven years) to be perfect, and greatly to be recommended to the profession, particularly for application in hospitals, but quite as suitable for the consulting-room of either physician or surgeon.

II. *Rhinoscopy and Nasal Specula.*

Hitherto the inspection of the nasal cavities from the side of the pharynx, choanoscopy, has been practised much more systematically than that through the nostrils. This has arisen through the impetus given to laryngoscopy, of which rhinoscopy was considered to be a mere appendix. But the neglect of what, in contradistinction from posterior rhinoscopy or choanoscopy, I will term anterior rhinoscopy, is mainly due to the remarkable circumstance that there were no proper specula by means of which this operation could have been accomplished. The only speculum I could find in the shops bore the name of Liston, and was not suitable for my purpose. I therefore constructed a series of specula to suit many cases and requirements, and ultimately retained the following forms as highly practical:

Two valves are held together by a spring, and when compressed from a canal of oval bore, about $\frac{3}{4}$ in. in length. The valve which expands the ala is from $\frac{1}{4}$ in. to $\frac{3}{5}$ in. longer than the valve which is placed against the septum. This latter inner valve should never be long enough to reach the sensitive part

of the mucous membrane of the septum. It follows from this that each nostril requires its own speculum. There must therefore be for each case a right and a left speculum. As the nostrils of different persons vary greatly in size, different sizes of pairs of specula must be at hand in practice. The speculum is inserted into the nostril while closely compressed; the moment the spring is liberated the nostril is fully expanded, and if the operator now draws the spring, which serves also as handle, upwards, the cavity of the nose can be fully inspected. The speculum, therefore, is designed exclusively to expand the atrium

FIG. 2.

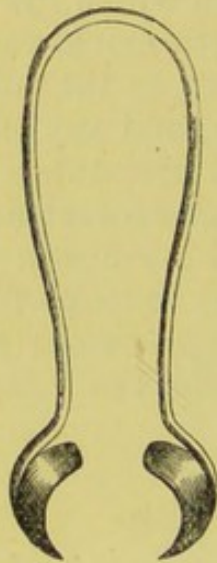


FIG. 3.



or membrano-cartilaginous part of the nostril; if it were allowed to enter beyond this, and to reach the isthmus formed by the unyielding cartilaginous septum and the nasal margin of the ascending branch of the upper maxillary bone, it would cause pain, and narrow by its own thickness this small passage. The new specula, several sets of which have been made for me by Messrs. Weiss, cause no pain, widen the atria to the utmost extent, and admit of the introduction through them, into any part of the nose, of instruments necessary for slight, delicate, or severe operations.

III. *Dilatation of the Nostrils.*

I have repeatedly found it necessary to permanently dilate the nostril, in order to obtain access to the cavity for instruments. Three methods can be employed for this purpose. The first consists in the introduction into the nostril and in-

troitus of the cavity of as many stems of the *laminaria digitata* as are required to fill it. They soon begin to swell, and effect a gradual enlargement of the nostril and of the introitus by pushing the cartilaginous septum on one side. The second method is forcible dilatation by means of such an instrument as that which is termed Liston's speculum, and which has the power of pushing on one side, and, if necessary, of breaking, the cartilaginous septum. For this operation no general instrument can be described, but a special instrument must be adapted to each particular case. Great care must be taken to make the fulcrum surface of the instrument, which has to rest on the ascending branch of the upper maxillary bone, as large and well adapted to the parts as possible, in order to prevent bruising on the sharp edge of this bone, which would otherwise be unavoidable. The third mode of dilating the nostril is by a perpendicular incision on either side of the median line. Happily, the necessity for this extreme measure is exceedingly rare, but in a few severe cases it is by far the most merciful to the patient, and leads most quickly to the desired result—namely, the possibility of introducing instruments for various operations, particularly the removal of tumours and exostoses: it is never required in operations for polypus.

IV. *New Operation for Nasal Polypi.*

The operation for nasal polypi, as hitherto practised in all countries, consisting as it did in the tearing out of these growths by means of a pair of forceps, has always, and more particularly when I was obliged to perform it myself, appeared to me one of the most barbarous proceedings of surgery. The bruising and general injury to the nose were very great; one or other of the shell bones was mostly broken; the bleeding was always profuse; and the suffering of the patient was so extreme that it required the greatest energy on his part and on that of the operator to enable him to endure to the end. Very commonly the patient and operator had the mortification of finding the polypi to grow a second and a third time, or to relapse even more frequently than that; many persons who had had one taste of the operation dreaded its repetition, and kept their polypi. The operation could not be ameliorated so long as the instrument used for it filled the entire introitus of the nose—so long as the blades of a forceps, however thin they might be, had to be opened in a narrow and unyielding canal—so long as the object to be seized could not be seen at the time

of seizure. A usual result of the proceeding was that small polypi were jammed up into the narrow parts of the cavity, and were thus made the certain origin of subsequent growths, or so-called relapses. In almost all cases the sense of smell, which had been only impaired by the polypi, became totally lost after the operation. I therefore threw aside the forceps altogether, and endeavoured to apply the electro-caustic method, which had not heretofore been used for this operation, and was rewarded with the most perfect success. Indeed, operations in the nasal cavity may now be made to vie in delicacy with operations upon the eye, and the opprobrium, so acutely felt by most surgeons with whom I have had an opportunity of conversing, is now removed from this chapter of science, and from this drawer of the surgical armamentarium.

FIG. 4.



The operation for nasal polypi, as now performed by my new method, is represented in the accompanying engraving. Besides the medical lantern and the specula (already described) it requires the following apparatus:

1. Platinum-wire loop-carrier and pulley, with handle. The

loop-carrier must be so thin that, while it is in the nostrils, the eye can see the interior of the nasal cavity. It is therefore made of two very thin gilt silver tubes, isolated from each other by a layer of unspun silk wound round the tubes, and varnished with shellac. The part of the loop-carrier which during the operation remains outside the nose is so bent aside or downwards that it is neither in the way of the eye nor in that of other instruments. This loop-carrier is fixed in the conducting handle, which bears the windlass. The handle and windlass which I use are adaptations of Middledorpf's instrument.

2. An electrical battery of five large Grove's elements, mounted in the best style, with platinum plates and gilt incorrodible connexions. The power yielded by such a battery is sufficient to make any necessary length of platinum wire white-hot; it is serviceable for all other electro-caustic operations which occur in surgical practice; and such a battery advantageously takes the place of the much too powerful and unwieldy, and in the working much less economical, instrument supplied with Middledorpf's instruments.

3. Connector and conductors. Formerly, wherever the electro-cautery was applied the services of a special assistant were required to establish connexion and let the current pass. This was so highly inconvenient that I had an instrument made by the aid of which the operator could at any time make and interrupt connexion by means of his foot. In the engraving the right foot of the operator is in the act of pressing down the button fixed in the end of the board on which the battery stands, and on the under-side of which the circuit is by this action established. A spring in connexion with this button is made of such strength that the mere weight of the foot does not bear it down; it is necessary to put the foot strongly on the button in order to establish connexion.

We will now suppose everything to be arranged as in the engraving; the lantern burns brightly, and the mirror fixed over the shade before the eyes of the operator throws a brilliant light into the nasal cavity of the patient; the head of the patient is resting against the assistant, who steadies himself by means of his left hand upon the back of the chair, and with his right holds the speculum upwards, resting his thumb gently upon the patient's forehead; the loop of soft platinum wire is introduced into the carrier, and connected with the windlass; it has been white-hot a moment before, and is now cool again. Everything is ready, and the operation proceeds. The platinum loop is passed over the polypus; it is then constricted round its pedicle by means of the windlass; connexion is made

with the foot, and after a slight hissing noise indicating the burning off of the pedicle of the polypus, the growth, mostly yet attached to the platinum, can be withdrawn from the nose entire. There is usually no bleeding, and the place where the polypus was attached is marked by a white stripe or spot. The patient has suffered some irritation from the instrument, and perhaps been obliged to sneeze, but after the use of his pocket-handkerchief is quite ready to proceed to the extraction of the next polypus.

V. *Particular Incidents of the New Operation.*

As the *single polypi* are removed, others come into sight which had been displaced upwards or backwards. It is also perceived that sometimes only a portion of a *cauliflower-shaped polypus* has been removed, and that the removal of two or three other portions is required before the true pedicle can be drawn into the loop and removed radically. In this way, from half a dozen to three dozen polypi have to be removed in some cases before the nasal cavities can be pronounced clear. Various little artifices are requisite to expedite the operation. Thus, polypi which shift at the mere approach of the loop have to be seized by little hooks, made either of steel or of flexible silver, and to be held fast while the loop is passed over them, or to be drawn into the loop. *Oscillating polypi*, or those which can be seen only during expiratory efforts, can only be extracted in this manner. Thus, in one case I seized with the hook and removed with the loop a polypus which was attached to the posterior edge of the septum, and by expiration only could be seen vibrating before the posterior middle canal of the left nostril. It was seized during vibration with a little sliding-forceps made of steel wire and introduced into the loop. Such is the delicacy of the operation that, although the loop-carrier and the forceps were in the nostril and passed for a length of three inches into the cavity, yet a little of the polypus was still visible to guide the rest of the operation. In another case I seized with the hook a polypus which was completely hidden under the posterior concave side of the right lower turbinated bone. After removal it was found to weigh a quarter of an ounce.

A frequent accident during the operation is *sneezing*, immediately after the seizure of a polypus. In such a case the patient must allow the spasm to expend itself without moving. The operator holds a cloth or his hand before the nose and mouth of the patient.

Bleeding sometimes, but rarely, occurs, when the wire loop touches the posterior vascular ends of the turbinated bone; in some cases, however, any part of the Schneiderian membrane will bleed on contact with instruments. I have always succeeded in arresting it within a few minutes by passing a current of salt water through the patient's nose by means of the nasal douche.

Exostoses sometimes complicate polypi, and the operator is liable to get them into the loop. This accident has occurred to me repeatedly. In such a case I let the assistant steady the patient's head, and heat the loop to whiteness. At the same time I seize the loop-carrier close to the nostril, and, with the thumb steadied against the maxillary bone at the side of the nose, I give a short pull. The exostosis is then detached clean, and without the slightest local injury. In case, however (which has not yet occurred to me), the exostosis should be stronger and not yield, then the white-hot wire would probably break. Failing this, the loop could be easily detached by unstringing the pulley, withdrawing the carrier, and ultimately the wire. Calmness of the operator easily reassures the patient. The exostoses can be distinguished by their colour, which is more like that of the natural mucous membrane—*i.e.* of a vivid red, and not like the pale-bluish red of fibrous or glistening white of mucous polypi.

Hard fibrous polypi with broad bases are the most difficult objects to deal with; but with them also the operation, if properly conducted, answers perfectly. As they would not admit of constriction by the loop, a hook has to be inserted at the base, and into the shoulder thus formed the wire must be made to cut while white hot. Hardly any mechanical force is then required, and the polypus comes off as if cut with a knife. A large polypus of this kind I removed in three slices; there was no bleeding, and the operation was so successful that the turbinated bone after a few weeks had assumed its normal shape and appearance.

In cases where the nostrils are excoriated, fissured, swollen, or covered with scabs (conditions which occur singly or united), it is requisite to let the patient undergo preliminary treatment for the removal of these exigencies. Of this treatment I shall reserve discussion for a future opportunity, when I hope to treat of the constitutional relations of diseases of the nose.

The following cases will illustrate my general remarks and special points of practice :

CASE 1.—Mr. —, a medical gentleman, had for many years suffered from obstruction in both sides of the nose, which, by

some eminent surgeons whom he consulted, had been declared to be caused by relaxation of the mucous membrane. On examination with the aid of the medical lantern, I found polypi, and removed them subsequently by means of the electro-caustic operation. During the first two sittings eight polypi were removed. As the patient was exceedingly irritable in mind and body, the operation proceeded but slowly, and had to be interrupted repeatedly. During the third sitting polypi Nos. 9 to 13 were removed; during the fourth, Nos. 14 to 17. One, situated far back upon the right turbinated bone, caused a little bleeding. In this case the displacement by crowding of polypi was most curious. The nasal canal, apparently cleared of growths, was, a week later, found to be again filled with polypi which had descended, but were now loose and much more easily seized than the earlier ones. Some had very long pedicles, and all, except one, were attached to the upper and lower turbinated bones. The exception was the vibrating polypus already alluded to, which was attached to the posterior edge of the septum. All the polypi were, though with much difficulty, successfully removed, and the patient breathed freely through both nostrils; and while before he had been obliged to sleep in a sitting posture, and with his mouth open, he could now recline and sleep with his mouth closed. Although no polypi of any kind were visible, and the soft palate could be easily seen through the lower nasal canal during swallowing, the patient had a sensation in his nose as if something remained there—a result, probably, of a new tension which the bones of the nose assumed after the internal pressure was removed.

CASE 2.—M. B—, a healthy, strong, stout man, aged thirty-nine, had a discharge from his nose, without odour, ever since his boyhood. Gradually the nose became obstructed, and now both nostrils are impassable on either inspiration or expiration, however forcible. On Nov. 29th, 1866, I removed nine polypi, amongst them a very large one, which was drawn from underneath the turbinated bone with a sharp hook. On Dec. 5th I again removed by the electro-cautery five polypi, also an exostosis or spicula from the left upper turbinated bone; another similar one on the left lower turbinated bone, which simulated a polypus, was not removed. On Dec. 12th I removed six polypi, amongst them one of enormous size, being nearly a quarter of an ounce in weight. Its removal, which was effected by means of expressly devised polypus hooks, cleared the passage for air in and outwards. On Dec. 19th I removed several small polypi and some stumps. After this nothing anomalous re-

mained visible in the nose, the respiration was quite free, and the patient was discharged perfectly cured. In this case the nostrils were very small and the nasal canals narrow. The septum projected towards the left side. The sense of smell was lost, which is not astonishing, seeing that twenty-seven polypi had for years compressed nearly every part of the mucous membrane. The patient was greatly satisfied with the result of the operations.

The polypi in Cases 1 and 2 were of the so-called mucous class; those in the following case, however, were of the hard fibrous variety.

CASE 3.—M. X—, aged fifty-five, had at the age of twenty contracted enthetic disease, and the complaint had gradually assumed the constitutional form. This had been termed and treated as gout, to which a few symptoms offered resemblance. After much neuralgic pain in head and limbs, he became subject to frequent colds in the head, until latterly polypi were discovered. On examination I found on the right side a large, long, broad-based polypus, or excrescence, on the fore part of the lower turbinated, and a cluster of several polypi on the upper turbinated, bone. The septum was so much bulged out to the left that it nearly touched the isthmus at the end of the vestibule of the ala. Here there were two crusted ulcerations. In the left nostril was a small polypus, imperfectly divided into two, very inaccessible, not obstructing, and not moved by inspiration or expiration. On Feb. 19th I removed the broad-based polypus by electro-cautery in two slices. If it had been attempted to remove this polypus by forceps, great injury and hæmorrhage would have ensued. The upper cluster of seven separate polypi was removed in ten pieces. Slight hæmorrhage was instantly arrested by the douche. On March 2nd the patient had recovered his sense of smell, which had been completely lost for some time. The septum had returned more to its natural position, and all parts looked well. I prescribed a sulphate of zinc lotion and salt-water douche, and on June 27th had the pleasure of again seeing the patient perfectly restored.

CASE 4.—M. T—, aged thirty-five, had perceived obstruction in his nose eight years ago, and had since then been operated upon three times, once while under the influence of chloroform. The polypi, however, always returned within six months. The patient's father suffered from polypi for many years without ever having them removed, and a sister has a complaint in her

nose which is termed "thickening." The patient's nose is very narrow, and most difficult of access. He has a high tenor voice, and is much impeded in its exercise by the growths. On May 7th and 8th I removed eleven polypi, of which four were large and four small; a perfect passage was established, and the patient suffered so little that he was able to sing in a concert next day.

CASE 5.—Mr. S—, aged sixty-five, was introduced to me by Mr. Ed. Taylor, of Clapham Common. The patient had suffered much from rheumatic gout, and had had the polypi more than ten years. A partial operation had once been performed, and much tannin had been used as a snuff, as recommended by Mr. Bryant. Nevertheless the nose on both sides was completely blocked. On Sept. 28th I removed twelve large polypi by electro-cautery, in the presence and with the kind assistance of Mr. Taylor. On Oct. 5th twenty-four further polypi, of which four were of enormous size, were removed. On Oct. 12th nineteen polypi were removed, of which five were of considerable size. The right nose was thus completely cleared, and the patient was able to respire freely through it. In this case the polypi all pulsated synchronously with the heart, and I apprehended much hæmorrhage. The right nostril did repeatedly bleed from the mere contact of instruments; but the left nostril, which was narrow, from the septum having been pushed towards the left by the enormous accumulation of polypi in the right cavity, did not bleed at all, the much more severe influence of the contact of instruments notwithstanding. Sixteen polypi were removed from its cavity. The patient expressed himself as greatly satisfied with the result of the operation. He can now breathe through the left nostril as well as the right.

CASE 6.—M. B—, aged fifty-one, was introduced to me by Mr. Fred. Webster, Wolverton Station, Bucks. The patient has suffered about twelve years. Three operations, performed relatively eight, six, and five years ago, never once produced complete relief, and were all followed by more or less complete relapse. A scrofulous tendency is alleged as a cause, which I believe to be correct, there being no other history or symptom of previous disease. Both nostrils are completely blocked, and no air passes even by the greatest efforts. On Oct. 2nd twenty-seven polypi were removed by the electro-cautery, a large one weighing a quarter of an ounce. On Oct. 7th I removed again eight small polypi, and perfectly cleared both nostrils and cavities. The patient had had a perfect passage for respiration after the first sitting, and was highly pleased about his new liberty.

This case offers the following peculiarities. In the right cavity a polypus formed a perfect bridge from the upper turbinated bone to the septum. It was separated from its insertion in the septum by the red-hot wire being pressed inwards into the cavity and withdrawn on the side of the turbinated bone outwards. The polypus, which had created an unexpected difficulty, was thus removed clear from its insertions. The septum was somewhat bulged to the left. After the operation the back of the pharynx could be seen through both nostrils, and the rising of the soft palate in the act of swallowing accurately observed—sufficient evidence of a perfect clearance of both the olfactory and respiratory canal. The patient could smell eau-de-Cologne quite well.

The foregoing cases are selected for the purpose of showing the efficiency of the new operation under the most difficult circumstances, in various subjects, in cases of long standing, and after repeated failure of the old method of pulling out the polypi by forceps. A considerable experience extending over nearly two hundred successful cases enables me to state that the operation strictly fulfils the ideal demand of its theory. On the whole, the results of the operation have surpassed my anticipations; and I can, therefore, have no hesitation in recommending it strongly to the attention of the medical profession.

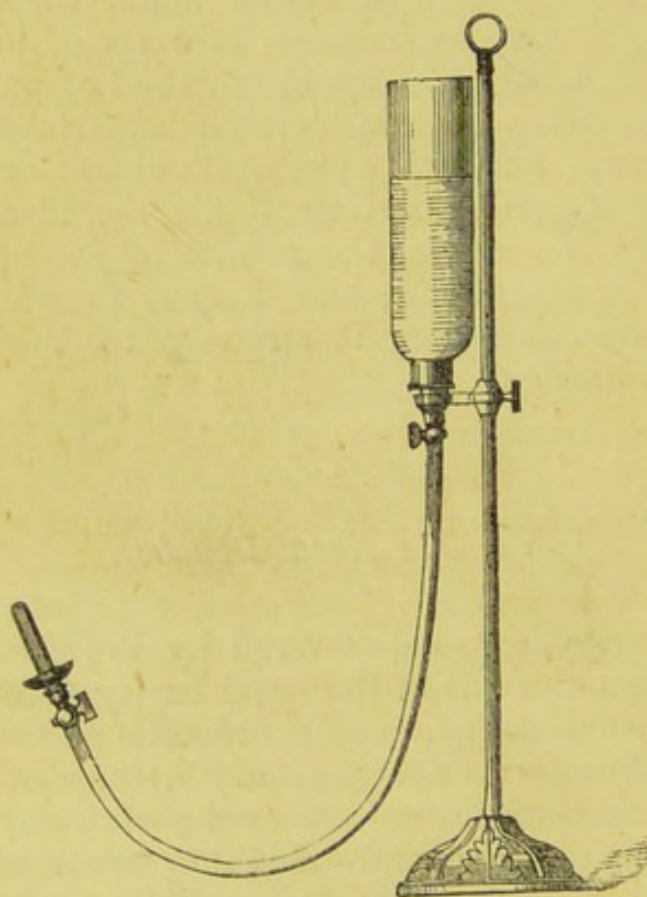
VI. *The Nasal Douche.*

Some years ago it was discovered by Professor Weber, of Halle, that when one side of the nasal cavity is entirely filled through one nostril with fluid by hydrostatic pressure, while the patient is breathing through the mouth, the soft palate completely closes the choanæ, and does not permit any fluid to pass into the pharynx (a physiological fact thus far already discovered by E. H. Weber, of Leipzig, before 1847, and published in 'Müller's Archiv,' 1847, pp.351-354); while the fluid easily passes into the other cavity, mostly round and over the posterior edge of the septum narium, and escapes from the other open nostril, after having touched every part of the first half of the cavity of the nose, and a great part, certainly the lower and median canal, of the second half. By means of the application of this principle to the treatment of diseases of the nose, it is possible easily and frequently to wash the nasal cavity, to disinfect and deodorize

it, to remove the sordes which accumulate so easily in it, and to apply to its surface a great number of beneficial medicinal substances, so as to prevent acute affections from extending, and to incline them towards a speedy recovery ; to stop hæmorrhages, allay irritations, and subdue in a remarkable manner chronic affections of the Schneiderian membrane, so as to re-establish a perfectly healthy surface and a normal condition of the organ of smell.

The apparatus.—A rod of iron or brass, thirty inches in length, is fastened upright into a heavily loaded foot, so as to form a firm stand. On this rod slides a nut, which can be fixed at any height by means of a screw, and carries an arm and ring, with which is connected a high cylindrical glass vessel of a capa-

FIG. 5.



city of from one to two pints. The glass vessel is open above, and its cavity contracts within the ring in which it is fastened, here directly to pass into a small-bore nozzle, to which a suitably sized flexible india-rubber tube, thirty-six to forty inches in length, is fastened. To the other end of the india-rubber tube a stop-cock is fixed ; and upon this a little cup-shaped collar,

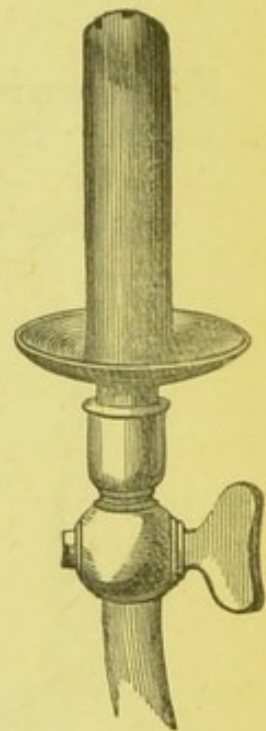
and upon this the cylindrical perforated nozzle of horn or of ebonite india rubber. If now the glass vessel is filled with fluid, and the little stop-cock immediately underneath the nozzle is opened, the fluid will escape at the fine openings of the nozzle; and if the nozzle accurately fits the nostril, and the fluid is allowed to flow, the fluid will enter and fill the cavity of the nose, as will be more specially described hereafter.

Great care must be taken to ensure an accurate fitting of the nozzle to the nostril of the person who is to be operated upon, as if fluid escapes by the side of the nozzle it makes the operation difficult and troublesome. It is therefore necessary to have several sizes of nozzles to be fixed upon the stop-cock at will—for adults, sizes of diameters corresponding to the sizes 5, 6, and 7 of the thick probangs of instrument-makers; for young persons and children, very fine and more conical nozzles of india rubber or horn. These latter small nozzles have but one central aperture; but the large ebonite ones are provided with four openings on the convex part, for reasons which a little practice will show as cogent; for as the nozzle has to be held in an oblique position, one or two openings are pressed against the membranous septum of the nose and closed, while at least one will be open and sufficient to afford a good stream of fluid, two or three giving a considerable current.

In order to avoid all possible chances of infection, and ensure cleanliness, I lay it down as a desideratum that every person using the apparatus should have his or her own nozzle, to be used exclusively by that person. In dispensaries and hospitals, where this cannot be so easily effected as in private practice, the utmost care should be exercised to clean the nozzles, and particularly the little openings, from any semi-solid matter, which easily becomes firmly adherent to them. As the current is always directed outwards through the openings, there is hardly any chance of the interior of the nozzle becoming unclean or infectious. Yet it will be well to give to each patient, particularly if he be the subject of specific disease, his own apparatus. Even the suspicion that a patient might by accident blow into the tube and endanger his successor will thus be avoided.

A more simple form of apparatus is figured in Figs. 7, 8, and 9. This was the original form of apparatus used, and the standing apparatus described in the foregoing was not constructed until the inconvenience, in many cases, of the simple

FIG. 6.



apparatus had been pressed upon the attention of the makers, Messrs. Weiss and Son, and of myself, by repeated experience.

FIG. 7.

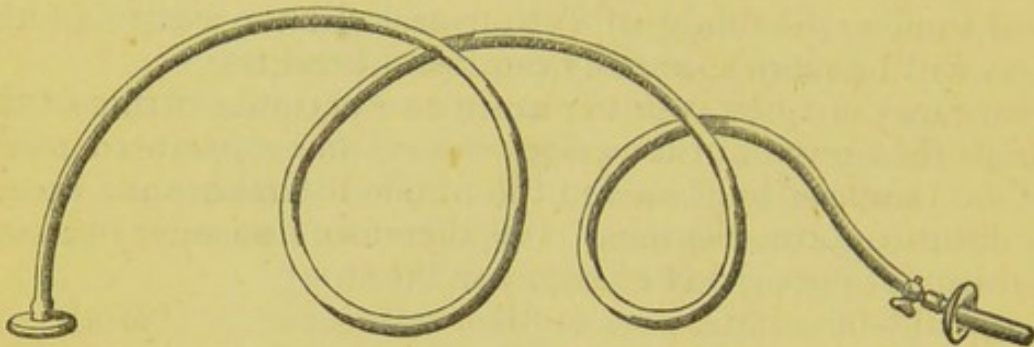
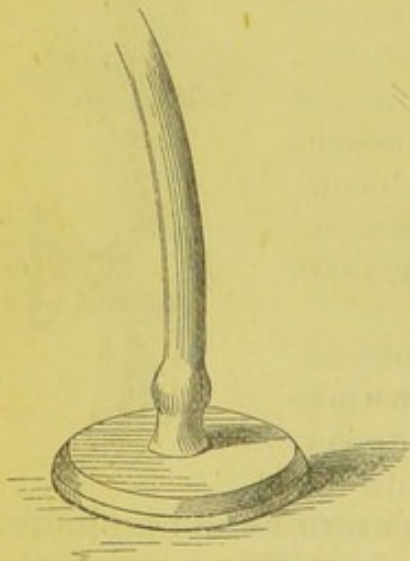


Fig. 7 represents a flexible tube, with a metal plate and nozzle attached. The shape and mode of fastening of the metal plate

FIG. 8.

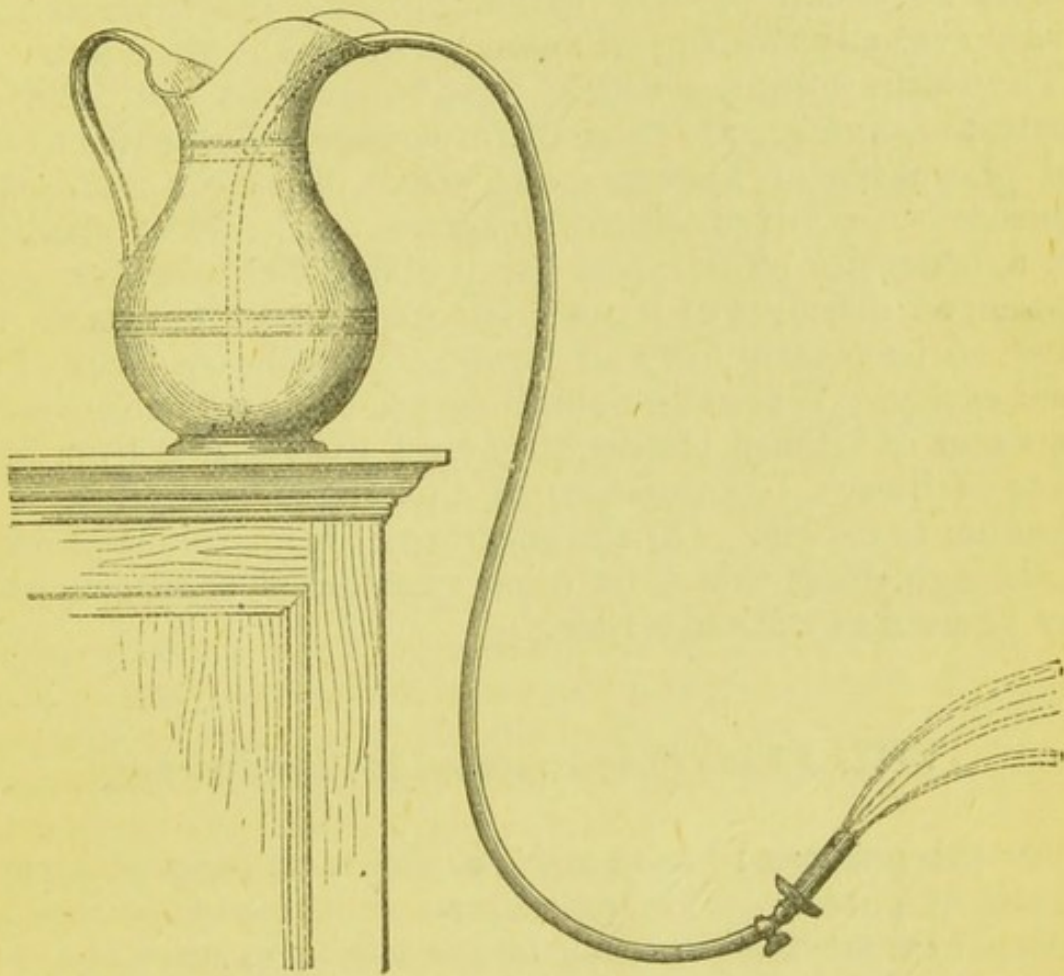


is better shown in Fig. 8. Its application is evident from Fig. 9. The end with the metal plate is dropped into a jug containing water or any of the saline solutions to be described. By compressing the tube, either in the fluid or peristaltically along its course from the jug towards the nozzle, or by suction with the mouth at the nozzle, the air will be expelled, fluid will be admitted, and will escape through the nozzle by syphon action, *i.e.* air-pressure.

In the 'Lancet' of July 13th, 1867, p. 40, Mr. C. Heath has published some remarks upon my plan as recommended in my original paper (the 'Lancet,' November 24th, 1864), in which he takes credit for simplifying my apparatus, and proposing two new forms of it. One he contrives out of an old gas-pipe and a piece of sheet-lead, the other is the vaginal douche recommended by Dr. Rasch. He also recommends as a novelty a portable douche-bag, with tube of india rubber. As the woodcuts Figs. 7, 8, and 9 were already made in 1865, and as all the apparatus of which they were representations had been made for me, and publicly sold, by Messrs. Weiss already at the time of the publication of my paper, viz. November, 1864, and as Messrs. Weiss invented the india-rubber douche-bag already in December, 1864, there remains nothing to which Mr. Heath or

Dr. Rasch could lay any claims of originality. These gentlemen have simply applied apparatus which had been discovered,

FIG. 9.



made, and sold at least two years before they at all considered these questions.

VII. *Fluids to be employed for Rinsing.*

Pure warm water, when introduced into the nose by means of the apparatus, causes in most persons a very disagreeable sensation, ending in lachrymation and sternutation (or tears and sneezing), with subsequent copious discharge of watery mucus from the nose. If the quantity of water run through the nose be large, the "cold" produced thereby, including the change in the sound of the voice, may last for some hours. To avoid this objectionable symptom, it is best to employ solutions of common salt, or other salts, of sugar, or milk, for rinsing the nose. In the course of practice cases will arise in which all these solutions offer advantages. For general use, a solution containing a small teaspoonful of common salt in a pint of water is satisfac-

tory. Some persons will bear less salt ; others will tolerate more. Of this solution—having a temperature rather lower than that of the blood—from one to four, or, if desired, any number of pints, may be allowed to flow through the cavities of the nose. It does not easily produce sneezing, rarely lachrymation, and hardly ever any subsequent symptom of cold in the head.

The saline solutions which, next to common salt, offer the greatest advantages are those of the common phosphates of soda and phosphate of ammonia and soda. They can be used by themselves, or mixed with the common salt. Their alkalinity has a beneficial effect upon the irritated Schneiderian membrane, and dissolves or loosens any deposits of mucus or pus, which so frequently dry and harden upon the surfaces of the nasal cavity. When these solutions are made with the common hot water of kitchen boilers, they are a little turbid from phosphate of lime. The presence of this slight precipitate is no objection to its use. On the contrary, it is a convenient means of distinguishing this from other uncoloured solutions which may be used at the same time.

VIII. *Fluids to be employed for Deodorising.*

For this purpose I have employed dilute solutions of permanganate of potash. This agent had done me such excellent service in removing the fœtor of the mouth in cases of typhus fever, that I was induced to apply it for the removal of the fœtor of ozæna, and with the most striking and immediate success. A solution of from one grain to ten grains in a pint of water is a good proportion, according to the severity of the case. The solution tastes alkaline, and acts as a feeble escharotic upon healthy, and particularly upon vascular or erythematous, parts. When the margin of the nostrils is excoriated, the permanganate colours the excoriated part brownish ; but the effect of this is rather beneficial than otherwise, as the excoriated and coloured part dries easily, and, after the shedding of the faint brownish pellicle, appears healthy.

IX. *Mode of applying Fluids.*

The fluid, of the proper composition and temperature, is filled into the glass vessel, which is lowered for that purpose. All air in the india-rubber tube is now replaced by fluid, the escape of the air upwards being facilitated by gentle manipulation. The

glass vessel is raised and fixed in the position which will give the desired pressure. A little fluid is now allowed to escape from the nozzle, to make sure that all air is expelled. The patient, (or healthy person, if it is only desired to show the physiological experiment) is seated in front of the basin, with his head and face slightly bent over it, the apparatus standing by his side. He is told to breathe through his mouth exclusively, and to abstain from swallowing. The nozzle, previously selected as of proper size, and connected with the apparatus and filled as described, is now inserted into one of the nostrils, and held there by the patient's hand of the same side. The little stop-cock is now opened, and after a few seconds a continuous and rapid stream of fluid is seen to flow from the opposite nostril into the basin below. Persons who have control over themselves will always bear the experiment as here described; but young persons, nervous females, and children become confused, begin to cry, or to swallow and breathe through the nose. In such cases the level of the fluid in the glass should be very little above the level of the introitus into the external ear, so that the fluid runs very slowly, or only drops out of the free nostril. The hand of the operator should be upon the india-rubber tube, to close it by compression the moment he sees bubbles come through the nostril, or perceives that the patient swallows or becomes confused.

It is always well to let the fluid pass at first under slight pressure, in order to allow sordes within the nose to be loosened and crusts of dried matter to be softened. When this has been effected it is useful suddenly to raise the glass vessel, and produce a rapid stream, which will then scour the impurities away. In some cases I have done this repeatedly with success. The loosening of crusts and lumps of inspissated mucus is always attended with some irritation, and also with retardation and diminution of the current of fluid. The sudden increase of the pressure is the surest means of causing the least inconvenience to the patient, and effecting in the quickest manner the purpose of the operator.

It is also well to reverse the current now and then, as sordes are much better detached in that manner. If only one nostril is diseased, or the principal seat of the disease, I allow the fluid to enter by the opposite side, and to leave by the affected nostril. I then change the current, and, filling the affected nostril, allow the current to leave by the healthy one. Thus half a dozen or a dozen changes may be usefully instituted. This reversal has sometimes the effect of throwing large lumps of inspissated mucus and pus upon the upper side of the soft palate; and as they are too large to be carried round the septum

narium into and through the nasal canal by which the fluid leaves, they are taken into the pharynx, and immediately ejected by the patient through the mouth. This presence of lumps upon the soft palate is, therefore, sometimes a cause of a sudden interruption of the operation. After the removal of these lumps the operation may be continued as before. It is really surprising what an amount of sordes will sometimes be removed from the nose by this rinsing process. Any one who has seen it once will easily conceive the manner in which, by means of these constant accumulations, nasal diseases become chronic, incurable, and lead to fearful suffering and death.

The shape of the basin in which the fluid which leaves the nose is received is a matter of some importance. A common washhand-basin will suffice in many cases in which the patients are not disturbed by the splattering of the fluid as it falls into the accumulating fluid in the basin. The splattering can be mostly avoided by so placing the patient's head that the current from his nostril runs along the side of the basin. But there remains the objection that the sordes, mucus, and dirty fluid are constantly before the patient's eyes. All these evils can be avoided by using a washhand-basin provided with a funnel-shaped tin cover, similar in construction to, but larger in size than, a common spittoon. It is still better to use a high cylindrical vessel of white china—say a large jug of a capacity of from one to two gallons—for the reception of the fluid from the nostril, as the funnel-shaped top can be made more inclined, thus ensuring a quieter flow of the water. For the consulting-room it is most convenient to have the washhand-basin sunk into the stand, with a tube leading from the lowest point into a hidden receptacle. If it is desired to collect any of the crusts and secretions for microscopical examination the aperture in the basin may be plugged, so long as the rinsing process continues. But even this I find unnecessary when the bottom of the basin is not too rapidly inclined, but rather flat. The mucus and inspissated discharges then adhere to the basin, the current from the nostril being insufficient to carry them down into the tube, and can be inspected, or removed with a forceps into a little white china dish and further examined. The inspection of these discharges is of some importance in a diagnostic point of view, for the nature and amount of the epithelium which they contain show us the special part of the nasal cavity from which they come. The upper regions of the nasal cavity are covered by a cylindrical epithelium, which mostly shows two or three layers of cells upon each other. The lower regions of the nasal cavity are lined with a ciliated cylindrical epithelium, the action of which removes particles of dust and fluid towards the nares.

When the discharges are purulent, they consist of pus-corpuscles only, with hardly any admixture of cylindrical epithelium. This characterises chronic ulcerations. When chronic ulcerations become extended, the pus is mixed with cylindrical epithelium which is thus being shed. When the affection of the nose is quite recent, no pus, but only cylindric epithelia are perceived in the secretion. In cases of old follicular ozaena the crusts have on their soft surface a villous appearance, being condensed mucus, indicating in some slight manner the distribution, size, and shape of the mucus follicles of the Schneiderian membrane. In cases of ulceration with rapid loss of substance, as in specific disease, elements of the deeper tissues, particularly fibrous structures, can be perceived in the discharges. When the nasal cavity is the seat of villous or other descriptions of ulcerated cancer, the elements of these tumours are found in the blackish-brown, thick, and extremely fetid discharges.

X. *Medicinal Solutions.*

Although the solutions before enumerated act in a measure as alteratives, resolvents, and escharotics, they rarely constitute a sufficient medical application by themselves, and are more frequently used for preparing the nose for the application of more energetic and specifically acting solutions. To this latter class belong the solutions of alum, sulphate of zinc, and sulphate of copper—the best astringents; the solutions of nitrate of silver and bichloride of mercury—the most suitable alteratives; and the solutions of chloride of calcium, in which suboxide or oxide of mercury is suspended in a finely subdivided state—the best specifics. Of stimulating solutions, a mixture of eau de Cologne with water or salt-water is sometimes useful.

The probable concentration of these solutions can be surmised from the circumstance that the sensibility of the healthy nasal cavity stands about midway between that of the eye and the mouth. When the nasal cavity is completely filled with fluid, the specific sense of smell cannot any longer be exercised; even the solution of eau de Cologne is not perceived to be such when it once fills the nose. The sense of smell being thus entirely obliterated by the fluid contained in the nose, the reflex effects which substances may exercise by means of this sense are entirely absent; and the only impingement which the fluids can produce is upon the filaments of sensitive nerves coming from the fifth pair. It is owing partly to this circumstance that comparatively strong medicinal solutions are borne

by the nasal cavity without great secretion. Another circumstance favouring the application of stronger solutions is the ready manner in which the healthy surface of the nose defends itself against irritating, chemically impinging substances by means of a copious flow of mucus. Excoriated or ulcerated parts lack this power of rapid secretion; and hence they are affected by medicinal solutions much more than the healthy parts of the surface of the nasal cavity. What is here stated is the general result of experience and experiment; but, at the same time, I must insist that the application of medicinal solutions in each case should be begun with the greatest caution, as individuals differ greatly in point of irritability of the nasal cavity. In the beginning, therefore, very dilute solutions of medicinal substances should be used, and their strength be increased gradually, after their effect has been well exhausted, by the use of greater quantities applied by a quick flow, or the use of smaller quantities in a slow current distributed over a longer time of contact.

Solution of alum.—Half an ounce of roughly powdered crystallized alum is dissolved in a small quantity of hot water, and the solution made up to one quart by means of cold and tepid water in such a manner as to ensure that the temperature of the solution should be below, but near to, blood-heat. In superficial ulceration or blenorrhagic conditions this solution is well borne. Ulcerated parts, which before its application were red, mostly appear as white patches after its application, thus showing that the effect of the alum on the ulcerated surface has been considerable. When I was desirous to manage with smaller quantities of solutions, I have sometimes mixed a little permanganate solution with that of alum.

Solution of sulphate of zinc.—From a scruple to a drachm of the sulphate of zinc, dissolved in a quart of warm water, together with half an ounce of sulphate of soda or sulphate or magnesia, gives a suitable fluid.

Solution of sulphate of copper.—Of this sulphate also from a scruple to a drachm, mixed with half an ounce of soda sulphate or magnesia sulphate, can be dissolved in a quart of warm water.

Solution of acetate of lead.—Of this crystallized acetate from a drachm to two drachms, together with half an ounce of crystallized acetate of soda, may be dissolved in the quart of warm water.

Solution of nitrate of silver.—Of this salt not more than from half a grain to a grain should be dissolved in each ounce of water. A quart of water, therefore, in which previously half an ounce of nitrate of soda has been dissolved, may

receive from sixteen to thirty-two grains of the nitrate. In particular cases the solution may be made stronger. The nitrate of potash is not so good as the nitrate of soda, because it has slightly irritating qualities. When it is necessary to use it in an emergency, when soda nitrate cannot be had, the solution should be more diluted.

Solution of bichloride of mercury.—The greatest caution is necessary in the use of this agent, as it has a tendency to produce excoriations on healthy surfaces. The first solution to be employed should be one containing five grains of corrosive sublimate in a quart of water, in which half an ounce of common salt is also dissolved.

Solution of chloride of calcium with suspended oxide or suboxide of mercury.—These fluids are the common phagedænic waters, or black and yellow wash, to which common salt has been added. Two drachms of calomel, twelve fluid ounces of lime-water, half an ounce of common salt, and twenty ounces of warm water, yield the black solution. One scruple of corrosive sublimate, half an ounce of common salt, twelve fluid ounces of lime-water, and twenty fluid ounces of common warm water, yield the yellow wash. These mixtures must be well agitated in the glass vessel while being allowed to run through the nasal cavity.

Sedative solutions.—Of prussic acid forty minims to the quart of warm salt-water, of tincture of opium two drachms, may be taken. These drugs may be added to some of the above solutions of metallic salts. But if this is desired, it is better to substitute a solution of morphia for tincture of opium. The prussic acid is incompatible with the copper, silver, and precipitated mercury solutions; it goes conveniently with the alum and common salt solutions.

Styptic or hæmostatic solutions.—Amongst these, ice-cold salt-water, containing an ounce of salt to the pint of ice-water, takes the first place. When this, after having been continued for a considerable time, is insufficient to stop the hæmorrhage, a fluid ounce of the tincture of the sesquichloride of iron may be added to each pint of ice-cold salt-water.

Stimulating solution.—One ounce of eau de Cologne upon ten ounces of salt-water is a useful stimulant. Strong spirit of wine may be taken in place of the eau de Cologne.

I have now fully, and for some readers perhaps somewhat too explicitly, described a number of medicinal solutions which may with advantage be applied to the treatment of nasal diseases by the method in question. I was desirous to impress upon the memory of the reader the fact that I recommend only such solutions as are brought up to a certain specific gravity by salts

which do not decompose the medicinal agents. There may be cases in which it is desirable to swell the Schneiderian membrane by watery fluid and produce endosmosis, and others in which highly concentrated solutions may beneficially be used to effect exosmosis and shrivel Schneider's membrane. These adaptations, and the various accommodations of the fluids and their degrees of concentration, I must leave to the skill and ingenuity of those who make use of this method. They will also probably multiply the resources of the rhinotherapeutic pharmacy, and thereby add to the success and certainty of this interesting method of treatment.

XI. *Modification of the above treatment.*

It is, under all circumstances, necessary to rinse the nose by means of a current of fluid ; but when it is once quite clean the application of the medicines need not necessarily be made by means of a current, provided always that the patients can be made to keep their soft palate up as well without as with the mental impression produced by the flowing liquid. If this is the case, a very small amount of fluid suffices for a very long operation, and one which it is reasonable to suppose to be as effectual as a rapid current. The level of the fluid in the glass being just a little above the level of the patient's ear, and the nozzle being placed in his nostril, a very slow current of fluid is allowed to enter, and regulated so that only single drops at intervals leave the free nostril. In this manner a few ounces of fluid can be made to do the service of pints. The modification is, therefore, much more economical in reference not only to material, but also in reference to the time and trouble of the operation.

The quantity of fluid which can be retained in both sides of the cavity of the nose when a person is lying on his back, amounts to from sixteen to eighteen cubic centimètres. The amount varies a little in the same person, owing to the circumstance that at one time fluid enters the collateral sinuses—Highmore's cavity—or the frontal sinuses, at another time no such entrance takes place. Probably also the soft palate may be more or less tightly drawn against the back and roof of the pharynx. The amount of fluid which one nostril will retain when filled by the above method until the fluid escapes by the other nostril, does not exceed nine cubic centimètres ; in young persons at the time of puberty, from seven to eight cubic centimètres. Allowing the fluid to escape from the free nostril at the rate of the whole contents of the filled side of the nose per

minute, an application of a medicinal solution for ten minutes would consume less than 100 cubic centimètres of this solution, or less than six cubic inches English measure.

XII. *Constitutional Treatment of Diseases of the Cavity of the Nose.*

Many disorders of the nasal cavity are chronic residues of general diseases, which in themselves are exhausted, and therefore do not influence the local condition any longer. Such, for example, are the ozænas which so frequently remain after scarlet fever or measles. In some of these cases the nasal disorder is purely local, and heals under local treatment. In other cases of the same origin some dyscratic tendency exists, which requires attention to the general health, otherwise but little progress is made in the treatment of the local manifestation. One of the first conditions of improvement is attention to the functions of the skin by washing, rubbing with hair-gloves, warm-water baths, Turkish baths, with shampooing. Cold applications to the skin these patients do not generally bear well, and the hydropathic douche has by them to be avoided. When the nasal organs become congested, as is evidently the case at particular periods, a purge is indicated and beneficial. When this takes place in young women just before the time of menstruation, it is necessary to favour congestion to the pelvic organs by slightly purgative doses of aloë. In cases complicated with chlorosis the aloë is beneficially combined with sulphate of iron, and given in pills.

Of dyscratic ozænas in young persons none are more common than the scrofulous and the syphilitic. It is necessary to diagnose them carefully, as they require very different constitutional treatment. The scrofulous is benefited by very dilute iodides, long continued, by cod-liver oil, ferruginous preparations, and all those attentions to dietetics which increase the appetite and keep away hurtful influences. The syphilitic forms of ozæna, which of course are also congenital, are rarely benefited by iodides, except when ulceration supervenes, and require a careful mercurial treatment. The treatment is most effectual when the patients are otherwise in good bodily condition, and should never be carried so far as to produce mercurial symptoms in the mouth or salivation. In such cases the astringent and alterative local treatment by the fluids above described, combined with the general or constitutional treatment, effects a speedy amelioration, and, if the patients and their rela-

tives are sufficiently careful and energetic, an early and perfect cure.

It must never be forgotten, in forming a prognosis of such a case, that if it has already lasted many years, may be a lifetime, several months at least will be required to effect a cure. For the organic changes in the nose are many and great, and require much time for transformation backwards to the normal condition. In not a few cases polypi form and have to be removed before the constitutional treatment is begun. The operation is succeeded by the topical treatment with astringents and specifics, and when the nose is doing well the dyscrasia is attacked constitutionally, and with care and attention a complete restoration to health is amongst the probable contingencies.

Another dyscrasia producing chronic disease of the nasal cavity with blenorrhœa, constant coryza, and almost complete closure of the nasal canals by swelling and polypi, is chronic gout. This occurs in men who are past fifty, and are not otherwise dyscratic, though, perhaps, addicted somewhat to spirituous drinks. In such a case I removed the polypi in one sitting, healed the nose by topical treatment, and removed all gouty symptoms for the time being by a course of diuretic treatment. When last seen by me the patient was in perfect health, and very grateful for the restoration of his breathing passage, the restitution of his natural voice, and the removal of the great number of inconveniences and pains to which the dyscrasia and its local manifestation had for years made him constantly liable.

In secondary and tertiary syphilitic ulcerations of the nasal cavity the topical treatment is of the greatest advantage, as it is best able to prevent the spread of disintegration, and conduce to speedy restoration. The nitrate-of-silver solution, if applied sufficiently often, will of itself cause many nasal ulcerations to cicatrize, but not prevent relapses. These can only be stayed by properly conducted courses of mercurial treatment. It may, at a later stage, be combined with iodides internally. If all these remedies are properly applied, and well supported by adjuvants, particularly all dietetic means to keep up or restore the strength of the patient, sunken or mutilated noses and perforated palates will have little chance of becoming the lasting reproaches of either the patients or of the healing art.

There are cases of chronic coryza, with some blenorrhagia, in which the affection of the Schneiderian membrane prevents patients from satisfactorily performing their business, which requires a full command of the organ of smell. Chemists, perfumers, wine and tea merchants, provision merchants, and others, may belong to this category. In cases of this kind the

topical treatment is beneficial. After the application of alkaline solvents in particular, the smell is clearer. When water has been allowed to run through the nose, it takes two minutes and a half before the sense of smell returns to its integrity. When saline solutions have been used it takes about a minute and a half; but after the alkaline solutions a minute suffices to allow the perception of odours to be clearer than before the application. If the special excitant of the olfactory, as perfumers term it, the neutralizer and stirrer-up of smell—ammonia—is applied immediately, even less than a minute will be sufficient.

I hope that the advance which we are making in the treatment of diseases of the nose may be shared by its physiology. There is no greater enjoyment of Nature's triumphs, and no greater safeguard against noxious things of all kinds, than a healthy nose.

11, PEMBROKE GARDENS,
KENSINGTON, W.

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