**On the treatment of enlarged tonsils, at any period of life, without the operation of excision / by William J. Smith.**

# *On Diseases of the Tonsils*

WILLIAM J. SMITH, M.B.

PART. I.


ON THE

# TREATMENT OF ENLARGED TONSILS.

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ON

# THE TREATMENT

OF

# ENLARGED TONSILS,

AT ANY PERIOD OF LIFE,

## Without the Operation of Excision.

BY

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# PREFACE.

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HAVING paid some attention to the anatomy, physiology, and diseases of the tonsils, and been struck with the want of concurrence between the observations of those—and they are few—who have treated of these subjects and my own, I have felt induced to publish the latter in the form of separate *brochures*, at short intervals, each treating of one or more points according to its or their importance.

I have chosen this method in the hope of being aided as I go on by the labours or observations of any of my professional brethren who have felt an interest in tonsillitic affections akin to my own; my object

being to secure for them an attention which they deserve but which has not, in my opinion, been as yet conceded to them.

Although apparently the tonsil is too small or insignificant to claim for itself a kind of specialism, yet I think, on consideration, the mass of secreting structure which the two conspire to make up is very little, if any, less than that of the whole of the Peyerian follicles. To these and their diseases a vast amount of time and attention has been given; whilst the former have been treated in little more than a very cursory manner.

Perhaps there are few disorders of childhood so linked with the future well-being of the individual as those to which these glands are subject; none which occasion to children so much distress and to their parents so great and frequent alarm; and none for which remedies have been so sparingly suggested.

I trust to be able to show that the tonsils as organs have not been duly considered, and that in the treatment of their diseases their functions have

been almost wholly overlooked; whilst at the same time I hope to show that the one may be easily and successfully treated at any period of life, and yet the other be in nowise interfered with.

10, *Finsbury Place, South*,
*May*, 1865.

Chronic enlargement of the tonsils is often hereditary, and in the large majority of cases, especially in young children, co-exists with an enfeebled state of health. The relationship in point of priority of these two conditions is a matter of importance in reference to the question of removal, for if it can be shown that the enlargement is not only an accompaniment but a cause of ill-health we have therein a strong argument in its favour.

Dr. Jenner classifies and describes thus the diathetic diseases of childhood :—

"Tuberculosis. — Nervous system highly developed; mind and body active; figure slim; adipose tissue small in quantity; organization generally delicate; skin thin; complexion clear; superficial veins distinct; blush ready; eyes bright; pupils large; eyelashes long; hair silken; face oval; goodlooking; ends of long bones small; shafts thin and rigid; limbs straight. Children the subjects of

tuberculosis usually cut their teeth, run alone, and talk early.

*Leading Pathological Tendencies.*—Fatty degeneration of liver and kidneys; deposits or formation of tubercle, and their consequences; inflammation of the serous membranes.

Scrofulosis.—Temperament phlegmatic; mind and body lethargic; figure heavy; skin thick and opaque; complexion dull, pasty looking; upper lip and alœ of nose thick; nostrils expanded; face plain; lymphatic glands perceptible to touch; abdomen full; ends of the long bones rather large; shafts thick.

*Leading Pathological Tendencies.*—Inflammation of the mucous membranes of a peculiar kind; so-called strumous ophthalmia; inflammation of the tarsi; catarrhal inflammations of the mucous membranes of the nose, pharynx, bronchi, stomach and intestines; inflammation and suppuration of the lymphatic glands on trifling irritation; obstinate diseases of the skin; caries of bone.

Rickets. — Mental capacity and power small; muscular force deficient; mind and body inactive; figure short; closure of the fontanelles retarded; face small but broad; skin opaque, often set with downy hairs. Children the subjects of rickets are late in cutting their teeth, in running alone, and in talking, and their teeth drop early from their sockets.

*Leading Pathological Tendencies.*—Softening of the bones; enlargement of the ends of the long bones;

thickening of the flat bones and deformities consequent on these conditions of the bones; so called hypertrophy of the white matter of the brain; chronic hydrocephalus; pulmonary collapse; laryngismus stridulus; convulsions; albuminoid infiltration of the liver, spleen, lymphatic glands, &c.

Syphilis. — Adipose tissue small in quantity; muscles flabby; cutis rough, deficient in contractility; complexion muddy.

*Leading Pathological Tendencies.*— Suppurative inflammation of the mucous membrane of the nose; ulceration of the mucous membranes of the nose and of the lips, mouth, throat, and anus; falling of the hair; eruptions on the skin of peculiar character; induration of the liver; suppuration of the thymus, lungs, &c."

Chronic enlargement of the tonsils is a disease of childhood, what then is the relationship it bears to the above named diathesis?

From an examination of a large number of cases, I am led to believe that to syphilis, the form of enlargement under consideration is related only by coincidence, and that with tuberculosis it has no connection whatever; in comparatively few of the cases examined were the stereotyped signs of scrofulosis met with, whilst the majority presented indisputable traces of past or present rickets.

Now rickets is essentially a disease of infancy, and enlargement of the tonsils, one of childhood. In rickets, after the diathesis has become extinct, and this often takes place at a very early age, the normal

shape of the bones may be restored; might it not then be that in many of those cases in which no recognized sign of rickets can be detected, the tonsils owe their enlargement to this constitutional condition, it being, like the deformity of the bones, the local evidence of a disease that outlives the malady to which it owes its origin? I have not unfrequently found a broad flat surface, in the site of an anterior fontanelle which has long since ossified, the only remaining trace of bygone rickets; and, though like all other effects of that disease, it is not constantly to be met with, it will be found, I think, more often than any other; and most frequently indicates the past existence of the diathesis alluded to.

The impossibility of obtaining *by enquiry* from hospital patients accurate information respecting the condition of their children in early life renders the solution of this question more difficult than it would otherwise be.

In connection with this matter I am bound to admit that the maximum enlargement of the tonsils does not occur when the rickety diathesis appears to be at its height; in fact, that it is often absent at this period. The earliest age at which I have seen well-marked non-inflammatory enlargement of the tonsils is eighteen months, but other observers have noticed it before this; thus M. Robert records a case wherein it occurred as early as the sixth month; and Dr. Hodgkin thinks that it is often congenital. With regard to the latter point how-

ever, I must state that, after examining a considerable number of infants, I have not yet met with an instance in which the enlargement existed at birth, though my observations are not at present sufficiently extensive to enable me to deny its occasional occurrence.

Should the above view be correct, and express truthfully the connection existing between rickets and tonsillary enlargement, the full development of the latter at a period subsequent to the decline of the chief symptons of the former suggests the possibility, of the exercise, on the part of the tonsils, of a remedial function, whether eliminatory or elaboratory, as a result of which the diathesis in question ceases to exist. The almost invariable affection of the tonsils in scarlet fever, and its frequent occurrence in syphilis and small pox, rather favour than controvert such an opinion; for though the anatomical characters differ much in the two cases, the difference may be accounted for on the supposition, that in the one, the glandular action being excessive, the determination of blood which accompanies secretion runs on to inflammation, while in the other the process being more tardy and prolonged, the phenomena of inflammation are not constant; but even in these latter cases the proneness to catarrh of the glands may depend on the same cause.

Chronic enlargement of the tonsils in the old and middle-aged is not a disease, but, like calcified and obsolescent tubercle, points to a past diathesis and

bears to the disease which occasioned it nearly the same relation as a scar to the wound in which it originated, some scars persisting through life whilst others become effaced; enlargement of the tonsils sometimes remaining but more often subsiding long before the approach of old age.

The comparatively early occurrence of senile changes in the structure of the tonsils—as, for instance, atrophy of the glandular part, and increase in the fibrous element,—point to the importance of these bodies as organs of early life; though this subject I hope to discuss more fully in a separate essay on their anatomy and pathology.

Chronic enlargement of the tonsils, then, is not inflammatory in its origin, but is the local manifestation of a diathesis, which, if not the rickety, more often co-exists with it than with any other; it predisposes to catarrh of the glands, and is often accompanied with ill health, which *in great part if not wholly*, depends on the same constitutional taint.

In accordance with this view, I hold it to be better for a patient with chronic tonsillary enlargement, to improve the health leaving the tonsils, than to excise the latter and neglect the systemic disorder.

By using the words "in great part if not wholly," I avoid committing myself to the opinion that the enlarged tonsil is unable, *per se*, to produce an injurious effect on the constitution. If such does occur, it is in consequence of impediment offered to respira-

tion, the exact amount of which I am endeavouring to ascertain by means of Dr. Sibson's valuable stethometer; and I trust I shall soon be in a position satisfactorily to discuss the question, how far a deformed chest is a direct result of the obstruction in these cases, and in what degree it is a simple accompaniment of the enlarged tonsils, both being the common sequence of one and the same condition, viz., the rickety diathesis.

The hypertrophied tonsil is very liable to be attacked by inflammation, though I feel compelled to differ from some high authorities with regard to the form it assumes. Acute suppurative tonsillitis has been in my cases rare, whilst sub-acute inflammation, sometimes of the mucous membrane covering its surface and lining its crypts only, at others of the organ generally, has been very common. In such instances the frequent recurrence of sore throat, sometimes very slight but often lasting for weeks together, constitutes in my mind a sufficient reason for interference; whilst, under the same circumstances, impairment of the voice in those who sing can be remedied with certainty only by their removal.

In many of those who suffer from chronic enlargement of the tonsils, respiration, *per nares*, is difficult, and in some impossible. When the obstruction is complete, there is generally though not invariably something superadded to the chronic enlargement, such as catarrh of the nasal mucous membrane, or inflammation of the tonsils them-

selves; the effect is in both cases the same, the enlargement persisting, and oral respiration being necessary, the features become altered and their beauty ultimately marred by a wide and gaping mouth. The earlier the period at which the tonsils begin to enlarge, the greater is the probability of such a result; for not only is the form of the mouth more likely to be permanently altered when the habit is adopted during the period of growth, but, in consequence of the increased dimensions of the fauces, an amount of enlargement of the tonsils, which during early childhood would have caused great obstruction, produces little or no such effect in later life. It must also be borne in mind that the enlargement may preponderate in this or that part of the tonsil, and so cause more or less impediment independently of the *absolute* size of the latter. Whether or not such a condition, when once acquired, is inherited by succeeding generations I am not in a position to say, and I find very high and respectable authorities at variance on the subject of the transmissibility of acquired physical states; but even if the mischief affects the individual only, and not his or her descendants, the prevention of such deformity cannot but be a most desirable object.

The narrowed and highly-arched palate, which is not uncommonly associated with hypertrophy of the tonsils and is by some considered a direct result of the latter, appears to me only a coincident hereditary condition; for, of several families, I have

remarked that in some members there has been a high palate with enlarged tonsils, whilst in the others the tonsils have been normal though the palate was contracted. In such, however, it may be that the abnormal shape of the palate common to several or all of a family was, in an ancestor, due to the mechanical influence of enlarged tonsils, and then, as an acquired condition, transmitted to children, some with, others without, that constitutional state on which tonsillary enlargement depends.

Deafness not unfrequently accompanies chronic enlargement of the tonsils; but its pathology, curability, and relation to the hypertrophy vary much in different cases; for instance—

Among the younger patients at hospitals and dispensaries inflammation of the *meatus auditorus externus* is one of the commonest affections; the health of such children is almost invariably below par, and many of them will be found to suffer from tonsillary disease. The inflammation generally subsides without permanent organic mischief, but in some cases the *membrana tympani*, and even the *tympana* are so damaged that more or less marked deafness persists. In such cases the deafness, although coincident with, is not an effect of, the hypertrophy of the tonsils.

I have already referred to the frequency with which the enlarged tonsil is attacked by subacute inflammation, and the mucous membrane of its surface and crypts not only participating in it, but, being often its chief seat, the process is said to

spread to the Eustachian tube, and to occasion more or less obstruction and consequent deafness by thickening its lining membrane.

There is a third class of cases, in which the deafness is cured or much relieved by destruction of the upper part of an enlarged tonsil, and to which the explanation of a direct mechanical closure of the mouth of the Eustachian tube has been applied. But I have been surprised to find that the same relief has sometimes been obtained when, by digital examination, I had convinced myself that the tonsil itself could not have blocked up the orifice; and I have only been able to account for the fact by supposing that, as the tonsil grows upwards, it sometimes causes a wrinkling of the mucous membrane, which, after the manner of a valve, obstructs the aperture of the Eustachian tube. Such an effect may be produced artificially after death. In this form of deafness I need scarcely say that partial destruction of the tonsil is highly beneficial; but I have learnt caution in being sanguine as to the recovery of the patient, as the two following histories will show.

S. T., æt 22, had suffered from deafness on the left side for about two years. There had been neither pain nor discharge, and, as far as I could make out, the *membranum tympani* was healthy. The left tonsil was enlarged, and its upper part extended higher than usual towards the Eustachian tube. Potassa fusa was applied in such a way as not only to diminish the size of the tonsil generally,

but to completely destroy the upper part; but though the hearing appeared to me to be slightly improved, the patient was unable to perceive any difference.

T. T., æt 28, had measles several years ago. Earache and otorrhœa followed, and deafness, most marked on the left side, has lasted ever since. The left tonsil was enlarged, but did not ascend so high as in the former case. After three applications of the caustic, the hearing was much improved on the left side, the patient remarking that she was then, though not before, able to hear the church clock; and, after two more visits, there could scarcely be said to remain any deafness on that side.

I need scarcely say that these results surprised me, as I had entertained a more favourable opinion of the former than of the latter case.

For the triviality of the remark that it is always advisable to see that no wax is accumulated in the external auditory canal, when ascertaining the cause of deafness complicating enlarged tonsils, I should feel bound to apologise, had I not on one or two occasions seen the attention so engrossed by the state of the throat that the condition in question was entirely overlooked.

There is a point, into the full discussion of which I shall not now enter, though, from its connection with the subject of operation, I cannot entirely omit it; viz., the influence of the tonsils in their normal and hypertrophied condition on the voice, both in speech and singing. Persons who sing, but

suffer from enlarged tonsils, almost invariably ask, when removal of these organs is recommended, will the operation affect the voice injuriously ?

In reference to partial removal, the examples of Miss Pyne and Mr. Harrison,* as well as of a host of less-distinguished artistes, should suffice to remove all fear and prejudice ; and I am able to testify to the fact that complete destruction of the tonsils does not of necessity entail impairment of the voice, having in the case of a vocalist got rid of them entirely without causing any injury in this respect.

The tonsils may be enormously enlarged and yet the voice be perfectly normal; but when the voice is altered, the quality communicated is not usually the nasal but that which patients and their friends describe as "thick." This character pertains less to the chronic enlargement than to the superadded catarrh, for it appears and disappears with the latter, and is sometimes strongly marked though the actual increase of the glands in size is not great; while in other cases it is wanting even when the fauces are nearly closed by hypertrophied but non-inflamed tonsils. Its occurrence, therefore, must be due either to a change in the resonant qualities of the mucous membrane, or to sudden as opposed to slow alteration in the form of the fauces ; for in persons of the same age and with tonsils enlarged to the same degree—in one acutely, in another chronically—the voice will be affected in the former, but not in the latter.

* Yearsley.

I have not met with an instance in which, in consequence of the excessive growth of the upper part of an enlarged tonsil, the true nasal tone of the voice has existed, though I am informed, on high authority, that such instances do occasionally occur.

With regard to the removal of the enlarged glands, I have no hesitation in asserting, not from *a priori* reasoning, but as a matter of experience, that there is no danger of injuring the voice thereby; but, on the contrary, that by lessening or removing the liability to inflammation, the capacity for singing will be considerably improved, as the patients are no longer troubled as before, by frequent attacks of hoarseness and sore throat.

The collection of a considerable number of cases of enlarged tonsils has failed to establish any connection between the size of these glands and the condition of the sexual faculties, no constant influence being exercised by their hypertrophy either on the time of the development of puberty or on the child-bearing capacity; whilst in the case of two female patients, of the ages of 22 and 20 respectively, the birth of fine healthy children, since partial removal of the tonsils, has proved that even if the supposed connection existed, an operation which removed only the redundant part of the tonsils effects no harm in this respect. In reference to this matter, it may be interesting to observe that in a case which has recently come under my notice, of a girl

æt 20, in whom there were neither mammæ nor hair on the pubes, and who had never menstruated, the tonsils were, if anything, larger than usual.

A younger sister of this patient had commenced to menstruate between the ages of 14 and 15.

## CHAPTER II.

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For those persons who possess within them that something which predisposes to chronic enlargement of the tonsils, partial removal by any means whatsoever, does not of necessity effect a radical cure, for the portion remaining may, and often does continue to enlarge, thus requiring a repetition of the means employed for reducing the size of the glands.

I make this statement from having had under my care for recurrent enlargement, the patients of those whose professional position is a sufficient guarantee that the operation was conducted with at least ordinary caution and skill.

Does then partial removal never afford other than temporary relief? Yes, for in many cases no further increase takes place; and in all the danger of its assuming inconvenient proportions, and necessitating a second operation, will be inversely proportioned to the completeness of the first; in other words, the smaller the piece which is allowed to remain, the greater the probability of a permanently good result.

Seeing, then, that by it a radical cure can be gua-

ranteed, is there any objection to complete removal of the hypertrophied tonsil? By the guillotine it cannot be done; by the bistoury, few surgeons, I think, would consider it a safe operation; for, though the main artery escaped injury, the difficulty of stopping hœmorrhage at such a depth from a branch of unusual size or abnormal origin, constitutes an objection to the plan. I have effected complete extirpation by a modification of the ecraseur, in which the chain is replaced by twisted wire. This improvement, due to M. Maisonneuve, lessens the danger of bleeding, because the tissues are torn more and cut less than by the chain, and the instrument is more convenient for operation on parts which, like the fauces, are at some depth from the surface, for it may be made to assume and retain during application, any form that is desired; but the operation is tedious and troublesome, and on the whole I am not disposed to recommend it, even for partial removal.

By means of potassa fusa, the tonsils may be completely and, as far as the operation itself is concerned, safely got rid of; but is it advisable to do so? I have effected it in a few instances, and the immediate result has been satisfactory; but the facts of physiology are opposed to the notion that organs of such constant occurrence as the tonsils have no functions of importance to perform. On the contrary, the converse is probably the case; and if the suggestions already made on this subject should be correct, the propriety of removing part rather than

the whole of the tonsil, at any rate during childhood, would be beyond question. Moreover, every object for which an operation is had recourse to can be attained as fully by partial, as by complete removal of the tonsils, with the exception that in the former case, the enlargement may recur; though if a small piece only is left there is little danger of this, and by the plan I am about to advocate, the remedy can be applied as soon as the increase begins, instead of waiting, as was formerly necessary, till the hypertrophy has become considerable.

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## CHAPTER III.

THE general health should, under all circumstances, be improved by therapeutic and hygienic remedies, into the details of which it is not necessary now to enter. With respect to the tonsils themselves, it is obvious that they should be partly or wholly removed.

*Firstly.* In cases in which they impede respiration, and thus exert a pernicious influence on the formation and capacity of the chest.

*Secondly.* In cases in which they occasion frequent attacks of sore throat.

*Thirdly.* In persons—especially vocalists—whose voice is apt to become thick or to be temporarily altogether destroyed.

*Fourthly.* In those who suffer from that particular form of deafness which is exclusively due to the existence of these glands in a condition of hypertrophy.

*Fifthly.* In those in whom nasal respiration is difficult or impossible, and whose features, consequently, are liable to become deformed.

The *slight* attacks of inflammation which so frequently complicate chronic hypertrophy may often be warded off by improvement of the health, and especially by the habit of daily cold bathing; but the condition in question requires, for its complete cure, operative treatment more often than not.

Of the tonic qualities of the cold bath, when properly used, I cannot speak too highly. It produces most benefit when the greatest degree of cold a person of given age and strength can tolerate, is applied for a *very* short space of time only; and the good effect is proportioned to the readiness and completeness of the reaction, to which friction with a rough towel greatly contributes.

Partial is preferable to complete destruction of the tonsils, as thus every necessary object can be attained, and the functions of the glands—probably important though ill understood—can still be carried on. This point is the more practical, inasmuch as it is often of the highest importance that the glands should be reduced in size at a very early period of life.

Having thus doomed the enlarged tonsils in case of their being complicated with certain other disorders, and that as soon as their existence is discovered—often in very early life—the question occurs, how is this to be done? Drugs are ab-

solutely useless so far as the absorption of the superfluous gland tissue is concerned, although useful in influencing and improving the general health.

## CHAPTER IV.

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After working for some time at the diseases of the tonsils, I was surprised at the number of cases in which there existed chronic enlargement, and at the numbers who themselves, or through their friends, were unwilling to submit to their removal by cutting; moreover, even when consent had been obtained, excision was often impracticable in young children. In the hope of finding some plan which would meet these difficulties, I tried cauterization by blisters and iodine at the angle of the jaw. I soon convinced myself that these methods were utterly useless. I then burned the tonsil with nitrate of silver, the effect of which was *nil*, unless so applied as to produce an eschar; and even when so used the benefit was very slight, in consequence of the action of the caustic being almost limited to the surface; in fact, I have no hesitation in asserting, and feel sure that I shall be supported in such an opinion by those who have given it an unprejudiced trial, that the lunar caustic is of no use in

promoting absorption of a chronically enlarged tonsil, though in certain stages of inflammation of its surface a light application of this substance will often produce very decided and beneficial results.

The above plans failing, I injected into the interior of the enlarged tonsil, by means of Pravaz' syringe, tincture of iodine and of steel, hoping that as in the case of nævi, and some other morbid growths, a moderate amount of inflammation would be excited, which would ultimately lead to reduction in its size; but in consequence of the free communication between the crypts, the fluid invariably escaped from the openings on the surface as quickly as it was poured in, and little or no inflammation followed.

I had seen the actual cautery extensively and beneficially employed in the French hospitals, in certain cases of inflamed joints, in which, till then, I should have pronounced it useless; viz., those in which an abundant exudation of lymph takes place, infiltrating and solidifying their soft tissues, but which, despite its hardness and extent, sometimes disappears quickly under the influence of the cautery. Ignorant at that time of the exact nature of the new tissue in the enlarged tonsil, I hoped that a similar result might be produced by burning it, and accordingly applied the cautery to the tonsil itself, having concealed the heated part in a non-conducting sheath, so that the patient might not be terrified by the introduction of a hot iron into his mouth. The application

was easy, but the result not successful; for, on examining the tonsils subsequently, they were found to be smaller, but smaller only in proportion to the size of the eschar which had separated; and though by this means my object was not attained, the results sufficed to show me that the tonsils would tolerate very rough manipulation without the occurrence of serious inflammation, or such as, in consequence of their proximity to the glottis, might occasionally prove hazardous.

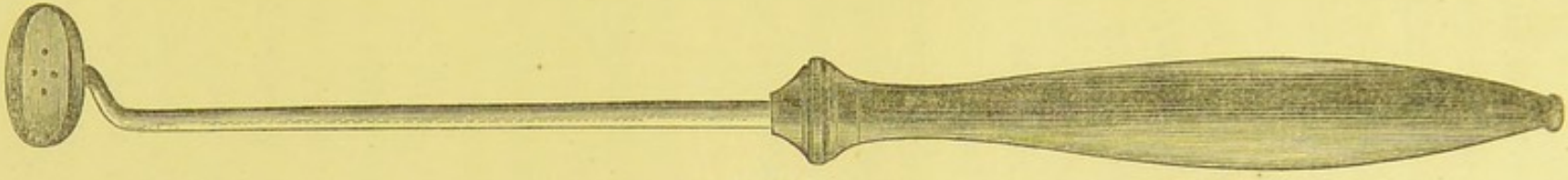
My next step was to cauterize by means of potassa fusa, and the result has exceeded my anticipations. Fully aware of the deliquescent qualities of the caustic and the relative positions of the tonsil and glottis, I need scarcely say that it was with some diffidence and great care that I at first applied it, but finding it safe, continued its use, and can now honestly state that, after employing it for a period of upwards of a year—not occasionally, but several times weekly—I have not yet met with an unfavourable circumstance.

The plan I at first adopted was as follows:—A cylindrical piece of potassa fusa, about a half or three quarters of an inch in length, was covered with lint, except on one side, and fixed in a caustic-holder, the lint being kept applied to the caustic by means of a piece of thread. Whilst the tongue was kept *in situ* by a depresser held in my left hand, the free part of the caustic thus prepared was rubbed by means of my right over the surface of the tonsil. To avoid the possible danger of some of the caustic

running into the larynx, I at first cauterized the upper part of the tonsil only; but I soon thereby learned that my fears respecting the caustic's tendency to spread had been exaggerated, its action being so quick and powerful that it is expended on the parts with which it first comes into contact, and burns from the point of application as from a centre, not only on the surface but deeply; in other words, the great power of the caustic renders its application safe, for, instead of running over the parts, it at once acts on them and is exhausted. The lint surrounding the potash was intended to serve the same purpose, by absorbing some of the liquified caustic, but it was further useful in protecting the uvula and guarding it from cauterization.

At that period I often applied the caustic by means of a pair of common dressing forceps; but, except occasionally and in case of emergency, I cannot recommend such a plan, as the slipping of the caustic might entail serious consequences.

When satisfied of the efficacy of cauterization by caustic potash, my attention was directed to the invention of an instrument which would render its application more convenient, and I requested Mr. Krohne to make me that represented by the woodcut on the following page. The metallic part consists of German silver, and is not acted on by potash, which, when fused in the oval plate, cannot after solidification fall out in consequence of the latter being cup-shaped with an inverted edge. The depth of



KROHNE.

INSTRUMENT FOR APPLYING POTASSA FUSA TO THE TONSILS.

this portion should be very limited; in fact, the shallower the better, as only a thin layer of caustic is dissolved during an application. It should also be oval in shape and not round; first, because the vertical generally exceeds the antero-posterior diameter of the tonsil; secondly, because, in consequence of the contraction of the superior constrictor and palato-pharyngei muscles during the application, the tonsils are so thrown forwards and towards the middle line as, with the position of the tongue, to block up the fauces, thus rendering the use of a broad plate impossible; and thirdly, because an oval plate can be introduced between the anterior and posterior pillars and the tonsil removed to any depth that is wished without doing any injury to these parts. Moreover, the long diameter of the part holding the caustic should be at right angles to the handle. This plate must also be secured by rivets, and, by a bend in the arm which supports it, made to occupy a different plane from that of the handle. The same instrument serves for the cauterization of both sides; and as the caustic is exposed only where intended for use, there is no danger of burning other parts than those desired, either during the time that it is kept applied to the tonsil, or, with ordinary care, during the introduction and withdrawal of the instrument. It is convenient to have two or three instruments of different sizes, though the one of which a diagram has been given will be found most convenient and applicable in all cases.

Fill the cup-shaped part of the instrument with

potash, to, or rather above, the level of its edge, by first heating the instrument in the flame of a spirit lamp, and then applying to it the end of a stick of the caustic, made hot in the same way.

The immediate effect of the caustic is to produce a dark red-brown or black colour at the cauterized spot, from its action on the blood in the part, afterwards followed very quickly by a redness and injection of the mucous membrane. On the following day the surface of the tonsil will be covered with a yellow-white layer of lymph, of varying degrees of consistence in different cases, which if left alone gradually disappears during the course of the second week.

The smarting ceases in about two minutes, but this is often followed by pain in the ear, which doubtless depends sometimes on the extension of inflammation along the mucous membrane to the Eustachian tube, but is often of reflex origin, for it occasionally appears instantaneously on the application of the caustic, and when the cauterization has been limited to the lower part of the tonsil, so that a healthy and uninjected piece of mucous membrane can be seen between it and the orifice of the Eustachian tube. Pain is, moreover, occasionally referred to other parts, *e. g.* the cheek. For two or three days there will be soreness and pain in swallowing, though much less severe than might be expected; and I have often noticed that patients who after the first application were unable to take solid food for a day or two, complained

little or not at all during the subsequent sittings, as though the sensibility of the surface of the tonsil was much greater than that of its interior. The amount of pain occasioned by the later cauterizations will depend in great part on the care with which the application is made, it being always advisable at the beginning to burn the entire surface of the part to be destroyed, so that subsequently the action of the caustic may be confined within this area; for, if such precaution is overlooked, considerable distress will be occasioned by subsequent applications.

In spite of all care that is taken to avoid it, the uvula will often be acted on in consequence of its coming into contact with the newly cauterized surfaces of the tonsils.

The voice, if thick before, generally becomes more so, and if normal, is altered by the cauterization for a day or two, especially at first; this effect does not usually follow later applications.

The effect on the lymphatic glands at the angle of the jaw is much less than *a priori* reasoning led me to expect. In some cases, where there is no previous enlargement, the glands remain normal throughout; in others there is an accession of slight tenderness without perceptible increase of pre-existing swelling; whilst in a third class of cases some increase in size takes place, though generally slight.

Whilst on this subject I may take the opportunity of remarking that enlargement of the glands

at the angles of the jaw frequently accompanies hypertrophy of the tonsils; in fact, it is common for mothers to bring their children for the "lumps in the neck," when the state of the throat on which these depend has been unobserved, and is elicited only by enquiry. Chronic enlargement of the tonsils does not affect the lymphatic glands; and, when coincident, the swelling of the latter will be found to depend, not on the hypertrophy, but on diseases which, from time to time, complicate that disorder.

With regard to the length of time during which the caustic should be kept applied to the surface of the tonsil, I may state that a minute suffices to destroy a layer of considerable thickness, especially after the surface has been already removed; for, in consequence of the large size of the crypts in the hypertrophied organ, the exposed surface will then have become alveolar, like honey-comb, and the potash is enabled to penetrate more deeply into its tissue. Of course the frequency of the application must depend upon the several results obtained and the intentions of the surgeon.

The caustic may be used twice or even three times a-week; but I have occasionally thought it advisable to postpone the second application longer than usual in consequence of the child looking pale and ill.

I anticipate an objection to the plan of cauterization on the score of its tediousness in comparison with excision; and when comparing the methods

shall endeavour to refute it. The number of applications required will necessarily depend on two circumstances, the actual amount of substance to be destroyed, and the results of each individually. Of the former the surgeon cannot form a fair estimate without attention to the following facts:—

1. The absolute size of the tonsil is not to be judged by the dimensions of that part which projects beyond the anterior palatine pillar, a *large* tonsil being occasionally scarcely visible. In reference to their relations to the pillars of the fauces, the cases of enlarged tonsils admit of division into three classes. In the first the enlarging gland grows towards the middle line, the projecting piece extending beyond the anterior pillar, the edge of which is as well defined as ever. In the second, the tonsil increases behind the pillar, and spreads it out in such a way that its margin approaches closer and closer to that of the opposite side, the tonsil itself being perceptible only by a side glance or not at all. This condition of the parts is most common in cases of acute and subacute enlargement, in which there is more or less swelling of the pillars themselves; but is not limited to such cases, as I have occasionally seen it in children when the affection was entirely chronic. In the third, the tonsil, which is covered by a continuation of the mucous membrane that passes over the palato-glossus muscle, grows in such a way that its anterior part occupies the same plane as,

and is smoothly continuous with, the surface of the palatine pillar, the margin of the latter being, as it were, so obliterated, that it is impossible satistorily to define their respective limits.

2. According as the palatine and pharyngeal muscles act or remain quiescent, so will the tonsils appear larger or smaller; for, when even of normal size, they become forced forwards and almost into contact with each other during contraction of the palato-pharyngei and superior constrictor muscles, and thereby acquire a fictitious appearance of enlargement.

3. When the fauces are naturally very wide there may exist a large interval between the tonsils, in spite of great hypertrophy of the latter.

To avoid being misled by any of these circumstances, it is always well to make a digital examination of the fauces.

My earlier cases were longer under treatment than I now find necessary, as, in order to prevent injury to the larynx, I at first cauterized the upper two-thirds only of the tonsil, so that any of the caustic which ran down from the burnt spot might act on the lower part, the destruction of which was effected afterwards with still greater care. This precaution is quite unnecessary; for, as I have remarked elsewhere, not only does the caustic not spread extensively, but the physical construction of the parts is such that unless a large quantity flowed down, the glottis could not be injured.

The tonsil lies in a furrow between the anterior and posterior pillars of the palate; and when, as in some persons, the gland is small and the pillars are broad, the former does not project, and a sulcus starting from the point of junction of the latter above passes almost vertically downwards, to join a fossa running transversely between the epiglottis and the root of the tongue. Even when the tonsil is enlarged the lower part of this sulcus almost invariably remains, so that while the patient is in the upright position a fluid would run along it to the space between the tongue and epiglottis, and not into the larynx.

I now use nothing for depressing the tongue, finding it easy to pass an instrument of the size of that in the diagram directly to the tonsil; my left hand is thereby left at liberty, so that, if the patient struggles, it can be employed for fixing the head. A saving of time is also thus effected, as the preliminary introduction of the spatula occasionally excites retching, &c.

If, as occasionally though rarely happens, a nasty taste is complained of after the cauterization, a gargle containing chlorine, or Condy's fluid, should be prescribed.

When on the subject of the relative merits of partial and complete removal, I remarked that though the latter could be effected without immediate injury, the propriety of leaving a portion of the gland is almost unquestionable; and I ex-

pressed an opinion that the functions of the tonsils are of most importance to the economy during early life. I have also pointed out the relations borne by enlarged tonsils to the pillars of the fauces. It may now be stated, as a general rule, that the tonsils should be reduced to a level with the edges of the latter. Occasionally they will have to be reduced below that level; and should the anterior pillars themselves be preternaturally broad they should likewise be narrowed by the caustic. When the fauces are naturally very wide, a considerable piece of the gland may be left projecting, except in singers, in whom the fauces are naturally and necessarily capacious. The liability to recur should not be forgotten, and secondary outgrowths, if purely chronic, removed with as little delay as possible; in fact so much of the tonsil should be removed as will suffice to remedy the inconvenience for which the operation was undertaken, but enough should be left to preserve its integrity as a gland, bearing in mind that the chance of secondary enlargement is small in proportion to the diminutiveness of the part remaining.

The cases of recurrent enlargement which have come under my notice have been, with one exception, those of persons operated on by the guillotine; and I think that if statistics could be obtained, such a result would be found frequently to follow the use of that instrument. A slice of

the tonsil can doubtless be removed quickly, and almost without pain; but the slice is often very small, and quite inadequate to the permanent relief of the patient. The cause of this I believe to be as follows:—The form of an enlarged tonsil differs from that of the guillotine ring, in being less regularly circular or oval, so that, unless the latter is considerably larger than the former, it cannot be made to embrace fairly the entire circumference of the projecting piece of the tonsil, but encircles a small part of the top, bottom, or centre only, as the case may be; and in this lies the objection to its use, that when the tonsils bear, in point of size, such relation to the fauces as to render their removal necessary, there is not space, especially during contraction of the palatine and pharyngeal muscles, for the use of an instrument with a ring so large as to enable the surgeon to pass it fairly round the base of the projecting portion. I do not say that such can never be, but that it very frequently is not, and in many cases cannot be, accomplished. I have already spoken of the movements communicated to the tonsils by the action of the superior constrictor and palato-pharyngei muscles; they may also be pulled out of their bed away from the carotid and towards the middle line, so that more of their substance is made to project beyond the level of the anterior palatine pillars. In some guillotines there is a prong attached, the object of which is to drag the tonsil out

in this manner during the time that the cutting blade is being pushed forwards.

If cutting be resorted to, the knife or bistoury is in my opinion, the better instrument for that purpose. Some surgeons have recommended the incision to be made from above downwards, others in the opposite direction. It matters little, however, which plan is adopted, provided that care is taken to avoid injuring the tongue and palate. M. M. Richter and Boyer have advised the upper and lower parts to be first cut, and the central piece to be divided afterwards; but this I regard as unnecessarily prolonging the operation. Cloquet's plan of using scissors instead of the knife is neither convenient nor effectual.

The most important point to be attended to, in order to render the operation successful, is that of pulling the tonsil well towards its fellow by means of the vulsellum during the use of the knife, the edge of which should be turned away from rather than towards the carotid.

I have referred to removal of the enlarged tonsil by means of Maisonneuve's constricteur. The only advantage possessed by this instrument over the knife is, that patients will sometimes consent to its use when they will not permit the latter to be employed; moreover, if the surgeon should wish, for any reason, to extirpate the whole of the tonsil, the constricteur would undoubtedly be the safer instrument of the two, as vessels of considerable

size may be torn through by it without bleeding; for, excluding the improbable accident of a wound of the main trunk of the internal carotid, it is well to bear in mind the occasional occurrence of abnormities, in point of size and origin, of its branches to the tonsil.

## CHAPTER V.

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On reviewing what has been said respecting the treatment of enlarged tonsils, I think the chief thing to be decided is—whether the glands shall be reduced by the knife, guillotine, or caustic; and the following are the main facts which influence this question.

1. The inconvenience experienced by those who have chronic enlargement of the tonsils is sometimes slight; and in consequence they, or, if very young, their friends object to a cutting operation, even when assured by the surgeon that it is, if well performed, almost painless. Removal is therefore either omitted altogether, or postponed till after childhood, when the slow but injurious effects of the enlargement will have been accomplished. To cauterization this objection does not apply, as there is rarely any difficulty in obtaining consent; indeed, I find that, in not a few cases, the previous use of nitrate of silver has served to allay all fear. Therefore the fact that many permit cauterization when

they will not consent to excision, indicates one advantage possessed by the former over the latter plan of treatment.

2. In very young children, in whom the obstruction may be considerable *in consequence of the narrowness of the fauces*, the operations by knife and guillotine are not satisfactory; for the small amount to be removed renders the latter instrument useless, and the patients refuse to render that assistance by which alone the employment of the bistoury can be made safe and thorough. Neither of these circumstances affect the plan by cauterization; for, however small the absolute size of the tonsil, the potash may be applied as easily as when very large;—in fact this is a point on which I strongly insist, viz., that the applications should be commenced as soon as the hypertrophy begins to produce injurious effects; for, as in case of early lithotrity, the number of sittings is thereby lessened, and other ill effects of the disorder are prevented. In one case, as in the other, the opportunity does not always occur; for it often happens that, in consequence of the absence of symptoms directly referring to the throat, the abnormal condition of the gland is overlooked, but when the occasion does present itself, no time should be lost in affording relief.

3. In those persons in whom there exists chronic enlargement of the tonsils, but in whom these bodies being seated more deeply than usual, and behind an anterior pillar of uncommon breadth, are scarcely visible, the guillotine cannot be used; and by the

knife, either none at all, or a small piece only, can be cut away without an amount of injury to the anterior palatine pillars, which few surgeons would think it expedient to inflict. By caustic, however, the tonsils may be removed, even under these circumstances, without any difficulty; for it is not necessary to reduce the pillar and tonsil to the same level as when the knife is used, but the former may be slightly narrowed and the latter afterwards destroyed more deeply.

4. By means of potassa fusa, the removal of the tonsil can be effected much more completely than in any other way; for, when the guillotine is used, it rarely happens that there is not a very large piece left; and though by the knife this may be to a great extent guarded against, by pulling the tonsil well towards the middle line during the incision, the tendency is to cut away too little rather than too much.

5. Potassa fusa may not only be made to destroy to any depth that is thought necessary, but it can be applied to any part of the tonsil however limited. This is of great importance in those cases where, though the projection beyond the palatine arch is not great, the top of the tonsil extends high up into the angle formed by the junction of the anterior and posterior palatine pillars. For the relief of deafness in such instances, both the knife and guillotine are useless, but a small instrument carrying caustic potash can be employed successfully.

6. When, after removal, the remaining piece of

the tonsil begins to enlarge, the caustic can be applied at once, thereby obviating the inconvenient necessity of waiting till it has attained such large dimensions as are necessary for the use of the knife and guillotine.

7. Struggling and impatience on the part of the patient offer no serious impediment to cauterization; for, the head being steadied and the hands held, a favorable opportunity is watched for quickly introducing the instrument, and the application continued in the manner already described.

8. In point of safety there is nothing to choose between excision and cauterization, as both are devoid of danger, except it should be necessary to go very deeply, when the advantage would certainly be in favour of the latter. The worst symptom which I have yet seen during a somewhat extensive use of potassa fusa has been slight spasm of the glottis, which occurred in the following case.

A boy, æt 6, was brought to the Eastern Dispensary, complaining of sore throat and deafness. The tonsils were enlarged, and the lymphatic glands swollen on both sides. After the pain in swallowing had subsided, potash was applied to the right tonsil with the effect of exciting spasm of the glottis, for the child was unable to inspire for a second or two, and the air then entered the larynx with a crowing sound. Three days after this both tonsils were cauterized, and with the same effect on the breathing as before. After five applications, the child was dismissed cured, the

laryngeal spasm having occurred each time, and being evidently due to reflex action, for it took place when, for the purpose of experiment, I touched *momentarily* a very small spot of the *upper* part of the tonsil.

9. In reference to the length of time occupied respectively by excision and cauterization, I am bound to admit that the former is the more speedy operation; but it will appear, from what has been already said, that the caustic is chiefly recommended for cases in which excision is either impracticable to the surgeon or objected to by the patient. When the fauces are wide, the patient not very young, and the tonsil well beyond the palatine arch, excision would remove the inconvenience more quickly than cauterization; but the possibitity of recurrence should be pointed out, and the caustic applied early if it does take place.

*I subjoin a few out of many cases which have come under my treatment in order to illustrate the method and the advantage of cauterization.*

*Case* 1.—L. G., æt 14, came to my house on February 17th, presenting the following appearance: High narrow palate; gaping mouth; dribbling of saliva, especially at night; enlargement without tenderness of a lymphatic gland at each angle of the jaw; and tonsils which, during a passive state of the palatine and pharyngeal muscles, nearly touched each other, though they had been partially excised about three years previously. Inspiration *per nares* was so difficult that it could not be continued many minutes, but expiration was more easy. There were neither thickness of the voice nor pain in swallowing. Potassa fusa was applied to both tonsils without occasioning pain in the ears.

*February* 22*nd*.—"Voice very thick for a day or two" after last visit; no tenderness of the lymphatic glands. Cauterization repeated.

25*th*.—Caustic to both sides.

*March* 1*st*.—Ditto.

4*th.*—Slight pain in right ear after cauterization of that side; none in the left; nasal respiration easy.

11*th.*—Both sides again cauterized; pain in left ear only.

22*nd.*—Potash to both tonsils.

*April* 13*th.*—Whilst the fauces are quiescent, a sulcus exists between the anterior and posterior palatine pillars on either side; but a piece of the tonsil is perceptible to the finger, and can be rendered visible by exciting contraction of the faucial muscles. Lymphatic glands in *statu quo*. No soreness or inflammation of the tonsils.

*Case* 2.—A. B., æt 10, was brought to the Metropolitan Dispensary, complaining of frequent attacks of sore throat and "thickness of the voice." Both tonsils were very large, and a swollen lymphatic gland existed on either side.

There were occasional deafness and well-marked deformity of the chest of the kind peculiar to rickets.

*December* 29*th.*—Both tonsils touched with potash. The voice, which was normal before, was almost immediately altered in quality, and pain was felt in the right ear.

*December* 30*th.*—No tenderness of the lymphatic glands. Nasty taste complained of.

*January* 3*rd.*—Cauterization repeated.

10*th.*—Ditto.

14*th.*—Ditto.

18*th.*—Ditto.

25*th.*—Ditto.

*February* 1*st.*—Both tonsils so reduced as to be if anything smaller than is usual to children of patient's age.

*Case* 3.—Mrs. H. brought to my house, on Jan. 8th, her son, æt 7½, for enlargement of the tonsils, these glands having been partially excised four years previously. The mouth was kept constantly open, and there was slight deformity of the chest. The voice was stated to be altered when the child got cold, at which time, also, there appeared lumps in the neck. Slight deafness existed always, and was subject to occasional increase. Attacks of sore throat were frequent.

*January* 11*th.*—Potassa fusa applied to the left tonsil.

14*th.*—Tenderness of lymphatic glands, which were previously enlarged. Deafness has been more marked since the 11th, but is less this morning. Left side burned as before.

18*th.*—Right tonsil operated on.

21*st.*—Hearing much improved. The treatment was continued till the patient had paid me thirteen visits, the mother desiring to have one side only cauterized on each occasion. The deafness had quite gone, but the lymphatic glands remained large. Once only was pain felt in the ear.

*Case* 4.—S.N., æt 2, presented the signs of strongly-

marked rickets. The ends of the long bones were slightly enlarged, the anterior fontanelle was widely open, and the chest much deformed, there being a marked projection of the ribs posteriorly on the right side and a flattening on the left. Both tonsils were large, but not the lymphatic glands, though these latter were apt to become so occasionally. There were some bronchitis and great recession of the lower half of the chest, amounting, in fact, at the ninth rib to 10°, as measured by Dr. Sibson's stethometer. On March 4th, potassa fusa was applied to the right tonsil, and the cauterization has been repeated three times subsequently, so that now that tonsil is not larger than is proper to children of two years of age. The bronchitis has nearly disappeared, the recession is scarcely perceptible, and the health has much improved. I suspend for the present my opinion respecting the amount of influence exercised in this case by the state of the tonsils before and after the cauterization, for, I need scarcely say, that the bronchitis and rickets have each received attention. The mother does not wish, and I have not pressed interference with the left tonsil.

*Case* 5.—I was consulted on February 4th, by the mother of a little girl, æt 7, whose tonsils were considerably enlarged and whose health was below par. Quinine and cod-liver oil were given, at the same time that the tonsils were cauterized, and now after seven applications of the caustic, the health which began at once to improve seems perfect, and the

tonsils are not larger than in other healthy children of the same age. In this as well as in case 2, the cauterization was effected with great ease, the children bearing it even without crying.

*Case* 6.—On November 29th, E.B., æt 14, came to me at the Eastern Dispensary, complaining of sore throat. The tonsils were swollen, and their surfaces red and inflamed; the voice was thick and the lymphatic glands were large and tender.

*Dec.* 12*th*. — The inflammation had subsided but a narrow space only existed between the two tonsils. of which latter a very small piece projected beyond the palatine arch, the remainder being concealed behind the anterior pillars which had been spread out during its growth. The glands at the angle of the jaw had returned to their natural size. Right tonsil cauterized.

16*th*.—Both sides cauterized.

20*th*.—Ditto.

27*th*.—Ditto.

31*st*.—Ditto.

*Jan*. 4*th*,—Anterior palatine pillars cauterized as well as the tonsils.

7*th*.—Potassa fusa to both tonsils.

11*th*.—Ditto to tonsils and pillars.

After this four more applications of the caustic were made, but each time to one side only. The fauces were then wide and spacious, the anterior palatine pillars having been narrowed at the same time that the tonsils were reduced in size. This

child was said to sing; and the friends, who considered his voice tolerably good, except during an attack of catarrh, found it, if not improved, certainly not injured by removal of the tonsils.

ON THE

# DANGER OF ADMINISTERING CHLOROFORM IN CERTAIN CASES OF ENLARGED TONSILS.

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When the capacity of the chest is increased by the action of the inspiratory muscles, air of necessity enters by any opening or openings which are at the time patent, and in the double entrance to the lungs we have an illustration of the great principle of compensation by which Nature adapts herself to casual difficulties in the performance of her functions. Under ordinary circumstances respiration may be carried on through the nose and mouth simultaneously, or through either of these passages exclusively. When there is *no* obstruction in the nose, air may be made to pass *entirely* through the mouth during both inspiration and expiration if the soft palate is raised and kept applied to the posterior wall of the pharynx. *Exclusive* nasal respiration occurs not only when the mouth is closed, but

even when the latter is widely open, supposing that the root of the tongue and the soft palate are in co-aptation. Of the readiness with which the passage through the mouth is intercepted by apposition of the tongue and velum, any one may easily convince himself by closing the anterior nares and endeavouring to expire through the nose, when even though the mouth is kept open, no air escapes; but that in the nasal passages is compressed, and the palate is applied to the root of the tongue with a force proportioned to the strength of the expiratory effort; again, when the mouth is nearly closed, there may be sufficient space between the tongue and palate, to enable oral respiration to be carried on with perfect freedom, so that the degree of patency of the mouth is no criterion of the readiness with which air enters the lungs by this channel. When awake and in health we can voluntarily determine by which of these passages air shall enter, but in comatose conditions such is not the case, and obstruction of the nose may then prove a matter of considerable importance. During sleep respiration is sometimes carried on through the nose and mouth at the same time; at others, through the nose only. Under the latter circumstances, if the anterior nares are quietly pinched together the patient either wakes or is somewhat roused and opens the mouth. In artificial plugging, and in some diseases of the nose, no air can possibly enter by this source, and yet such persons respire safely during sleep, so that there is an

adaptive automatic arrangement of the mouth and tongue which takes place like the movements of respiration during the unconsciousness of sleep; in the insensibility of disease this does not always occur, as is shewn by the following case, for an acquaintance with which I am indebted to the kindness and courtesy of my friend Mr. Roberts. A woman aged 60, was brought into St. Pancras Infirmary in a state of coma, dependant on cerebral hæmorrhage. The mouth was quite closed and considerable force was required to depress the lower jaw; the pulse was feeble, and after attentive examination no paralysis could be detected. She could be sufficiently roused from her comatose state to reply when asked her name, but answered no other questions. On pinching together the anterior nares respiratory efforts were made, but no air entering the chest the uneasiness occasioned roused the patient *pro tem.*, and the mouth was opened; after a very short time, however, she relapsed into her previous state of insensibility and the mouth was shut, so that though the muscular action continued, no air gained admission, the cheeks sank in during inspiration and lividity occurred. This experiment was repeated several times, and continued long enough to convince me tnat fatal apnœa would have occurred had the nasal obstruction not been removed. But the following question at once suggests itself; would not relaxation of the muscles which kept the lower jaw so firmly applied to the upper have *necessarily* occurred prior to death, and

at a stage which, though it would be unwise to induce by experiment, might nevertheless be recovered from ?

The following case, witnessed by me, will, I think, justify an answer in the negative. A gentleman who was administering chloroform to a patient during amputation of the breast, through his anxiety to see the operation, gave so much of the anæsthetic that the woman was suddenly discovered to be almost dead, the respirations being reduced to about five or six per minute, and the radial pulse being imperceptible. The Surgeon, on endeavouring to open the mouth in order to give brandy, found the jaws so firmly closed that great effort was required to separate them.

What would have been the probable result had there been nasal obstruction in such a case ? Not even temporary opening of the mouth could be expected, for the insensibility was too profound for the patient to be roused, as in the former instance, by the feeling of the necessity to breathe, while in such a condition the complete withdrawal of air for even a short time must have proved fatal. The firm closure of the mouth was in this case the more remarkable because of the complete relaxation of the muscles of the limbs. Enlarged tonsils occasionally obstruct nasal respiration as completely as plugging of the nares, and of several such cases which have come under my notice I will relate two.

A girl, aged 13, was brought to me at the Metropolitan Dispensary, complaining of weakness; no

reference was made to the throat; and on enquiry it was described by the patient and her mother as "quite well." On examination, however, I found the tonsils very large, and both inspiration and expiration impossible when the lips were kept closely together.

Cases of this kind are not common, for when nasal respiration is quite stopped there is generally something superadded to the chronic enlargement of the tonsils, such as inflammation of the Schneiderian mucous membrane (which, by the thickening and discharge, blocks up the nasal passages), or more or less acute inflammation of the tonsils themselves, as in the case of a boy, aged 11, whose mother consulted me at the Eastern Dispensary on the propriety of removing the tonsils, which, having been large for several years, were liable to a temporary increase in size from attacks of inflammation when the child "got cold." When first seen by me the pain on swallowing had subsided, but the mucous membrane of the fauces was still red and nasal respiration impossible. At the end of a fortnight, the voice having improved in tone, and the tonsils lessened in size, inspiration and expiration could be performed *per nares*, though not without a feeling of uneasiness, and the latter, as is usual in such cases, with less effort than the former.

If in instances like these chloroform is given without a watchful attention to the position of the mouth and tongue, the patient is exposed to great danger, for should the mouth be kept closed, as is

not uncommonly the case, asphyxia must of necessity result. It is true that before the insensibility has reached a certain stage of intensity, the non-aerated condition of the blood creates a feeling of discomfort, which prompts to the opening of the mouth, but, that done, more chloroform is inhaled, the coma becomes profound, the mouth closes, and suffocation ensues.

Of the several plans of treatment adopted in cases of suspended animation from the inhalation of chloroform, there is one which consists in simply opening the mouth and pulling the tongue forwards, recommended, I think, on the supposition that the asphyxia is occasioned by retraction of the tongue, and consequent occlusion of the glottis. Is it not more likely that, when such treatment has been of real efficacy, nasal obstruction has existed ?

In the cases of which I am treating, chloroform may be given, but care must be taken not only that the mouth is open, but that a space exists between the tongue and soft palate, the former, if necessary, being depressed by the finger or carried forwards out of the mouth. When the true state of things has been overlooked, and death is imminent, the treatment to be adopted is that for suffocation, for it is to asphyxia proper, and not to poisoning by chloroform, that the symptoms are due ; it being, of course, useless to employ any of the modes of artificial respiration, unless there exists a passage to the lungs through either nose or mouth. Though I have referred to this subject in connection with

enlargement of the tonsils, it is obvious that any of the several diseases which occasion obstruction of the nose may, under similar circumstances, produce equally disastrous results. Moreover, in insensibility from other causes than the inhalation of chloroform these same diseases may prove fatal through the lack of that instinctive, or rather purposive arrangement of the jaw and tongue, by which alone the mouth can be rendered available for the purpose of respiration.

The object of the above is not to convey the impression that asphyxia will invariably occur under the circumstances in question, for the approximation of the jaws is not constant; but on this subject I hope to renew my remarks at a future time.

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