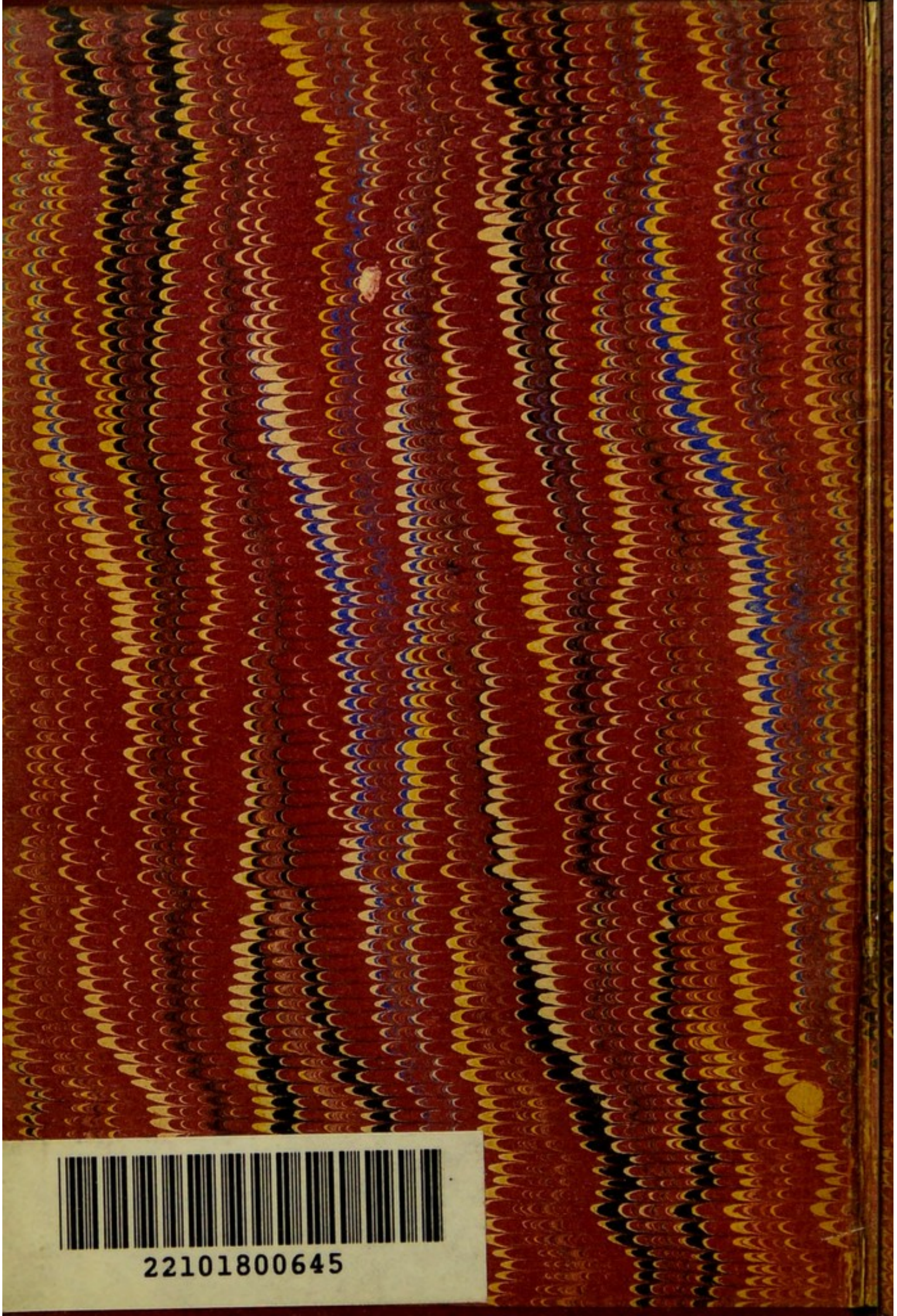
Tonsillitis in adolescents / by C. Haig-Brown.

TONSILLITIS

C. HAIG-BROWN



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With the authors kind regards,

TONSILLITIS IN ADOLESCENTS.

(THESIS FOR DEGREE OF M.D.)

BY

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CONTENTS.

PREFACE.

It has been endeavoured, in the following pages, to touch upon the more important features of follicular tonsillitis as it is met with in people during the period of growth and development, with especial reference to its ætiology, complications, and diagnosis; with, at the same time, an attempt to prove or disprove the value of the various therapeutic agents commonly employed in its treatment.

The paper was accepted, as a graduation thesis, by the Medical Faculty of the University of Aberdeen in 1885; and the originality thus rendered necessary compelled the author to base the opinions expressed solely upon cases which had been under his own observation, rather than (as might, perhaps, have been usefully done) to quote and analyze the views of other writers upon the subject. This must stand as an apology for the paucity of references; but where

these have been made, the source of quotation is attached.

It has been considered advisable to make a few trivial additions to the original in order that one or two points of special interest, which arose during the latter portion of last year and the earlier portion of the present, may not be lost sight of.

CHARTERHOUSE,
May, 1886.

TONSILLITIS IN ADOLESCENTS.

CAUSATION.

As regards the ætiology of the malady under consideration, my opinions are based upon the experience furnished by 500 boys, between the ages of twelve and nineteen, of at least average good health, all well-fed and well-clothed, and all passing their lives under general circumstances as nearly as possible alike. It has been my lot to watch these boys for several successive periods of three months, comprising all seasons of the year, and I find that the results of each term of three months very nearly correspond. Many cases of sore throat come under my observation: of these, several are purely 'colds,' by which I mean that they are merely parts of a general catarrh of the faucial, nasal, and conjunctival mucous membranes, and in some cases of those of the lower respiratory and gastro-intestinal tracts; a few are a condition of catarrh limited to the fauces and pharynx; while others, again, are associated with inflammation of the tonsils and the pharyngeal follicles,

which become enlarged and have their secretions increased and their tubular epithelium destroyed by the inflammatory process; the result being that the throat is painful, swollen, and covered with 'lymph' in patches varying from the size of a pin's head to that of a shilling, that the maxillary glands become enlarged and tender, and that there is more or less severe fever. It is to the last-mentioned set of cases that I wish particularly to refer, directing my remarks now to what seem to me the principal causes operating in their production. And I may at once say that I put any of the eruptive fevers and diphtheria aside, as none of the cases upon which I form my opinions have been due to these; or rather, perhaps, in our present state of knowledge as to diphtheria and suppressed scarlatina, it is safer to say that no case was attended with rash, sloughing of throat, or persistent albuminuria, nor any succeeded by peeling of the skin, renal disease, or paralyses.

I am inclined to think, as I do of acute pneumonia, that inflammation of the substance of the tonsil is a special, perhaps a specific, disorder, which runs a fairly definite course of fever (usually three days when uncomplicated); that, like the inflamed lung, the inflamed tonsil is at a disadvantage from constant movement and constant exposure to air;* that though the exciting causes of its inflammation are frequently exposure to cold and damp, and, perhaps more than

* The inflamed lung, indeed, has more chance of rest in consequence of the usual co-existence of adhesive pleurisy or of effusion into the pleural cavity.

these, emanations from the mouth, nose, or sputum of a person already affected, there is necessary for its production a condition of the system which is below the standard of perfect, or even good health ; in fact, a suitable soil must be found before the disease will develope itself,* and, under certain circumstances, a person is peculiarly prone to become the subject of tonsillitis, which in the absence of these predisposing conditions he would escape. Among the conditions determining suitability of soil are *age, the rheumatic diathesis, climatic influences,* and *septic conditions of the surroundings.*

Age.—A person usually gets his first attack of tonsillitis before he is sixteen ; and though it is no uncommon thing to meet with it in children under ten or twelve, it is much more often seen between the ages of twelve and eighteen. The following explanation suggests itself: Taking it for granted that a lowered state of constitutional health is necessary before tonsillitis can be developed, and considering how many young females give evidence of debility, particularly by becoming anæmic, during the fitting of their generative organs for reproductive processes, we may assume that the same process in boys assists in detracting from the standard of perfect health. By far the majority of boys that come under my notice for illnesses of all kinds are of the ages of fourteen, fifteen, and sixteen ; and, looking at the ages of 127 consecutive cases of tonsillitis, I find that only *eighteen*

* *Vide* contribution by author to *Brit. Med. Journal*, 1886, on these points, with reference to pneumonia.

are more than *seventeen years old*, *twenty-six* are *sixteen*, *forty-one* are *fifteen*, *thirty-eight* are *fourteen*, and only *four under fourteen*—that is, 105 out of 127 are between fourteen and seventeen years of age.*

Rheumatism.—There are many points about tonsillitis which allow of a comparison between it and rheumatism, such as its tendency to recur, the often metastatic affection of the tonsils, and the fact that young people are more liable to be affected than old. But one may, I think, do more than merely suggest a comparison, and say that the tonsillar inflammation is sometimes truly rheumatic; or, to put my meaning in other words, that in many instances the cause which predisposes to the development of tonsillitis is

* A further relation between the tonsils and generative organs is suggested by the occasional occurrence of atrophy of one testicle after removal of the corresponding tonsil. Can it be that in some individuals the vaso-motor supplies of the two glands have their origin in a common nerve-centre, and that when the vaso-dilators of the testicle are habitually exercising their influence, as we may presume they do in supplying the testicle with the blood required for its fuller development at puberty, the vaso-dilators of the tonsil are also causing a slight hyperæmia, so that the tonsil is then, more readily than at other seasons, liable to become inflamed? And that, on the other hand, after removal of the tonsil, the remaining cicatrix irritates the nerve-centre where its vaso-motor nerves originate, and thence the irritation is reflected down the vaso-constrictors of the testicular bloodvessels, with the result that these contract, the blood-supply to the testicle is diminished, and its further development is accordingly arrested? We are accustomed to see 'sympathetic ophthalmia,' due to irritation from a cicatrix in a special portion of the eye opposite to that inflamed; may not a like irritation explain the occasional atrophy of the testicle after tonsillotomy, the vaso-constrictors being stimulated rather than (as in the eye) the vaso-dilating nerves? Of course the same result might follow upon inhibition of trophic nerves set about in a similar manner.

the rheumatic habit, while the cause which excites the inflammation is cold or damp, just as these are the usual determining factors in articular rheumatism. In the first place, as has been observed by others than myself, it is very frequently found that the subject of articular rheumatism has had a 'sore throat' perhaps a month, but more commonly ten days or so, before he felt pain in his joints; or that simultaneously with the joint-affection there is tonsillitis. We often find, moreover, that patients who give evidence of pericardial or endocardial inflammation, and who have no articular rheumatism or Bright's disease to account for it, are the subjects of tonsillitis; that many patients whom we treat for tonsillitis have either had rheumatism themselves or come of a rheumatic family; and that, during their throat-inflammation, a considerable number of people experience achings of the bones (? periosteal), a very acid perspiration, and not uncommonly develope a cardiac murmur.* This latter circumstance is perhaps of small value in the majority of cases, for the murmur does not necessarily imply more than a temporary valvular affection, due to no permanent lesion of the endocardial membrane; yet in the minority it is, I feel confident, indicative of pericarditis, endocarditis, myocarditis, or a combination of all.

Taking the 127 consecutive cases above quoted with reference to age, I was able to obtain from 119 of them trustworthy information as to the presence or absence of a rheumatic condition; *seventy-six* of these

* *Vide* pp. 38-46.

gave some history of rheumatism. In *fourteen* the patient himself had previously had *rheumatic fever;* in *twenty-four* he had had '*rheumatism;*'* in *twenty-eight* there were *rheumatoid pains* at the time of the attack of tonsillitis; in *ten* the patients were not rheumatic (*i.e.*, as to joints) themselves, but their parents were; altogether *forty-six* had *rheumatic parents*—twenty-two the fathers, fourteen the mothers, and ten both parents; while *seventeen* had either *brothers or sisters* who had suffered from rheumatic fever. Five of the 113 boys who had not previously had rheumatism have since suffered from it themselves. I was not able to obtain a history of chorea, either personal or family, in any cases; but in a few instances the rheumatism was felt for the first time after scarlatina. It is also an interesting fact that only one of the rheumatic patients had ever suffered from iritis, but what I have had pointed out to me as the 'rheumatic aspect' was remarkable in as many as twenty of them; this consisting in the main of very dark hair, a fair skin, red cheeks, and thick lips combined. I have seen it in hospital patients afflicted with rheumatism, and cannot help being struck by the similar aspect in some of the boys whom I have seen with tonsillitis.

Climate.—I have always found that the moister the atmosphere the greater is the number of cases of tonsillitis. It does not seem to matter, however, whether the mean temperature is high or low, what

* Principally muscular rheumatism, lumbago, plantar pains, and the like.

the direction of the wind, what the amount or time of rainfall, or what the pressure of the atmosphere; but usually when the dry and wet bulbs read equal for three or four days together, tonsillitis cases become numerous. Thus in the fortnight, September 21st to October 5th, the comparative humidity (at noon) averaged 80, and there were *two* cases; from October 6th to 19th the humidity averaged 82, and there were *five* cases; from October 19th to November 2nd, 86, and *seventeen* cases; November 2nd to 16th, 93, and *thirty-seven* cases; November 16th to 30th, 100, and *forty-one* cases; December 1st to 14th, 93, and *twenty-seven* cases. I would repeat that there was no corresponding ratio to be observed in the mean temperature, the rainfall, the height of the barometer, or the direction of the wind.*

As I have before hinted, it may be that moisture of the atmosphere calls into life any rheumatism that may be dormant in the system, and that as a damp air is more liable to induce rheumatism than a dry, it assists in causing an affection so allied to rheumatism as tonsillitis.

Septic Conditions.—That inhalation of an atmosphere of which some of the constituents are fetid matters of organic origin has a great tendency to produce a 'sore throat,' is nowhere better exhibited than amongst the nurses and young men employed

* The direction of the wind may be a factor in the production of some diseases. Of twenty-nine consecutive cases of acute pneumonia under my care in the last two and a half years, twenty-seven commenced when the wind was N.E. or E.

in the treating of sick people in hospitals. Even where the wards are excellently ventilated, the water pure, and the food good, hospital sore throats are very common. This occurrence is more frequent among the nurses than the men; and among the men we find it is generally house-surgeons who suffer rather than dressers; which facts lead to an inference that, the closer the contact with the sick, the greater is the likelihood of 'taking' a sore throat, presumably from inhalation of their fetid secretions. It is not unusual, too, to find a patient convalescent from surgical operation or acute disease the victim of one attack, if not more, of tonsillitis during his stay in hospital.

Now in all the instances of tonsillitis from which I quote, I was enabled to find by the tests of physical and chemical examination that the drinking-water was free from any impurity from its source to its final distribution; and where filters and cisterns were in use, that these were properly clean, and the latter had no connections with water-closets. As to the milk, though it came from three different dairies, and its specific gravity (1·020) sometimes suggested watering, there was no reason to suppose that it was a factor in the production of the cases. With reference to sewage-disposal, matters are different. Some care is nowadays taken to prevent, as far as possible, any escape of gases from sewers and soil-pipes into a house; but at this point in a great number of cases the care ceases, and the sewage once out of the house, the soil-pipe and drain ventilated, and everything *in* the house

made so as to pass muster, little care is taken with the outside conditions. Filthy surroundings to a house are nearly as dangerous to its occupants as unventilated drains, and nothing tends to make the ground round a house more filthy than soakage of sewage from a cesspool in proximity.* Overflowing or uncemented cesspools permit of organic matters passing into the soil, and if this be allowed to occur within a few yards of a house, the 'ground-air' which enters the house will undoubtedly do so loaded with organic products which have not had time to become oxydized, too subtle, perhaps, to allow of detection by the senses, but sufficiently noxious to cause illness. It is too often forgotten that a warm house is constantly drawing up into itself air from the soil around it, unless its basement be most carefully paved and cemented; and this teaches us that if the surrounding earth be not kept scrupulously clean, the house which it surrounds must be unhealthy.

I could quote a long list of private houses in which tonsillitis has prevailed among the inmates, and in which during its prevalence there have existed unventilated soil-pipes, direct communications between sink-wastes and drains, cesspools which ventilated themselves into the house or its windows, and like insanitary abominations; but in which on the rectification of these matters the cases of tonsillitis either

* A cesspool is a most objectionable means of drainage in any schoolhouse; but if circumstances make one necessary (and it is difficult to conceive how they can), it should be situated at least fifty yards from the house, cemented, and *efficiently* ventilated.

greatly diminished in number or entirely ceased.* But we must not lose sight of the fact that there are many examples of the ways by which a poisonous atmosphere may be breathed by the occupants of a dwelling otherwise than through defective closets, soil-pipes, and drains. The 'ground-air' is the most insinuating of all the carriers of poisonous matter; next to this is the air which enters by the windows; and last is that which may enter from closets and drain-pipes. The last is usually guarded against; the two first frequently overlooked.

Our conclusions must therefore be, that whenever septic air enters a house the power of its inmates to resist disease becomes lessened; that even if the septic atmosphere do not directly cause illness, it strongly predisposes towards it; and that the diminished power to resist disease so produced, assisted by the deteriorating influences of puberty, a damp climate, and rheumatism, is the usual predisposing reason for attacks of tonsillitis, which are probably determined by cold or contagion.

Cold.—The methods of chilling which I most often find to have been at work are exposure to a cold wind when the body has been heated by violent exercise, strolling up from cold bathing with a damp towel

* One house, with forty-seven occupants, was never free from tonsillitis. I found on inspection that all the sink-pipes and bath-wastes ran, without any disconnection, into a cesspool ventilated solely by two rain-water stacks, each of which opened above immediately under a bedroom window. Under this system (October to December, 1883) the sore-throat percentage for the house was 40; after proper attention to the defects (October to December, 1884) it was 8; October to December, 1885, it was 5; January to April, 1886, it was 0.

wrapped round the neck, and suddenly going out into the cold air from a hot room without any additional clothing. It may be that chill acts prejudicially by producing a catarrhal condition, and so enabling the virus, if it be at hand, to find ready entrance into the system, a supposition lately advanced in favour of the infective theory of acute pneumonia, and with equal justice applicable to tonsillitis.

Contagion.—Very commonly I find that the patient has been in close intercourse with another case of tonsillitis in its earliest stage, the proximity being such as is necessitated by reading from the same book, drinking from the same glass, sitting in the same study, or sleeping in the same bedroom. So constantly is this the case, that it can often be foretold after the occurrence of one case what boy will next fall ill with the disorder. Observe a boy with tonsillitis, find out those most intimately connected with him, pick out from these one or two whose appearance is suggestive of impaired health, and you will seldom be mistaken in predicting the same disorder for them within a day or two.

Contagion is an agent in the causation of follicular tonsillitis which must never be forgotten; for my own part, I believe it to be a most powerful adjuvant in the dissemination of the disease. When many cases occur simultaneously in a large household, the probability that the sufferers have all been exposed to a common source of septicæmia, viz., some defect or other in the general hygienic (not necessarily drainage) arrangements, is very strong; but it sometimes occurs that

tonsillitis assumes an epidemic form when no fault can be found with the drainage, water, milk-supply, or cognate conditions, and when neither scarlatina nor diphtheria are prevalent. Under these circumstances the cases do not occur simultaneously, but the people attacked fall ill in succession, the members of the household who escape being those whose general health is best at the time, who are over the age of puberty, and who have no rheumatic tendencies. The limit of the epidemic is exceedingly difficult to determine, and the only means of checking it lies in prompt isolation of definite or even suspected cases. I venture to quote in illustration two specially instructive instances.

(1.) On September 19th, 1884, fifty-four boys returned after the summer vacation to one of the Charterhouse boarding-houses. On the 21st one, aged seventeen, was attacked with simple acute tonsillitis, and he stated that one of his sisters at home was in bed with a sore throat, and that he had kissed her when taking leave upon his return to school. By October 5th four of the elder boys had been attacked, each successive case having been quite clearly associated with his predecessor in illness. On October 7th two of the younger boys were taken ill, and after these three other little boys, who were in turn followed by a boy of fifteen; this last was succeeded by twenty-four others by the end of the month, and then not a single case occurred in the house during the remainder of that school-term. Now, besides the fifty-four boys, there were in the house eleven servants, with the master, his

wife and children; and had the epidemic been caused by defective sanitation, it might be supposed that some, at least, of these latter, who were living under the same conditions with the boys, would have suffered. But none did, and a most thorough inspection of all possible causes left no other conclusion than that the boys had been infected one from another. The only weak point in the evidence lay in the fact that the disease spread directly from the elder boys to the younger; and this was cleared up by the proof that the two boys first attacked among the little ones were the special fags of two of the seniors who suffered early, and had in this way been brought into close association with them at the onset of their illness.

(2.) On January 23rd, 1886, I was called upon to see a girl who acted as cook at a preparatory school of nineteen boys, whose ages were from ten to fourteen. She had just returned from a week's holiday in London feeling very unwell, and was suffering from subacute tonsillitis. She kept her room three days, and on January 27th came downstairs in the evening, and of her own accord went into prayers. In her position of cook she headed the row of servants, and by this coincidence sat next to the first of a row of boys. This boy was attacked with tonsillitis on February 1st, and by February 3rd two of the other four who slept in his bedroom on the first night of his illness were also attacked. Next a boy in a different bedroom was taken ill, and it was found that two days previously he had sat next to a boy in church who had felt ill all the Sunday, but had made no complaint

until the Sunday evening when he was isolated, suffering from tonsillitis. By February 16th five more had been laid up, and then followed one of the masters, who, by the way, did not live in the house, but only came in for school and meals. During his illness, which lasted a fortnight (the left tonsil suppurating), only three people had communication with him, viz., his brother, a nurse, and the head-master. The two former escaped, but the latter, who had on two or three occasions suffered severely from rheumatism, was attacked; and here the disease ceased. The sanitary arrangements in this house were most excellent; I can personally testify that there had not been a case of follicular tonsillitis in the house for two years before the commencement of this epidemic; there has been none since; and no cause could be assigned for the epidemic other than contagion.

Now the narratives of these two houses throw light upon two very interesting and important subjects, viz., the *duration of the incubation period*, and the *time at which the contagia are most active*. It will be noticed that in the only two instances where the disease was contracted from convalescents, *i.e.*, in the case (1) of the boy who sat next to the convalescent servant at prayers, and (2) of the principal who visited his convalescing junior master, the disease did not show itself for *four days* after exposure to contagion; but that in all the others, in which exposure occurred during the first day of illness, it manifested itself in *two days*. And it cannot be argued that there was any later chance of exposure, for every case was kept apart, excepting

the two already quoted, from the time of discovery of the disease until all redness had left the throat.

It may, therefore, be assumed that the contagium is most virulent at the commencement of the disease and most certain, while with the decline of the inflammation the rapidity and the certainty of its action diminish likewise; and this is the more deplorable because a patient with tonsillitis frequently is not detected until he has been already ill for twelve hours or more; but it, nevertheless, gives additional force to the application in schools of the rule that any boy complaining of headache, shivering, sickness, or sore throat should be immediately banished from the house.

MORBID ANATOMY.

An inflammation of the tonsil in its whole portion, such as probably occurs in the acute cases, commences, *as far as the eye can tell*, by a catarrhal condition of the mucous membrane which covers the gland, and which dips into the mouths of its secreting follicles. The frequent association, however, of the inflammation with a rheumatic state points rather to the fibrous tissue being affected in the first instance, and the mucous covering secondarily. The early complaint of headache, stiffness of neck, and aching rather than soreness of throat before any redness is visible, tend to confirm the view that the fibrous elements are attacked before the mucous membrane, and perhaps that the

planes of connective-tissue on which the tonsil rests are involved before the tonsil itself.

With the progress of the disease inflammatory products are exuded into the interstitial tissue, and into the secreting follicles, and these together with the shed epithelium escape from the mouths of the follicles, giving rise to the little green dots seen studding the tonsils' surface. The quantity of lymph and epithelium exuded is in proportion to the intensity of the inflammation, and hence in the more severe cases we find the whole tonsillar surface covered with a greenish mass which may extend to the corresponding anterior pillar of the fauces and the uvula. This lymph physically is soft and shreddy, rather than tough and leathery like a diphtheritic membrane; its colour is a yellowish-green rather than an ashy-grey, and it can be removed without much difficulty, being most adherent over the mouths of the tonsil-follicles: its removal leaves no excavation, and rarely excoriation of the subjacent tissue.

Having reached its extreme point of intensity the inflammation subsides, resolution being quite the most usual termination. The tonsil shrinks, the green lymph on its surface is removed, partly, perhaps, by re-absorption, but more particularly by being rubbed off and swallowed or spat out, and the parts rapidly regain their normal condition and appearance.

This is not, however, the invariable mode of termination. If resolution be not rapid, and more especially if there have been two or three previous inflammatory attacks, the products of inflammation are apt rather

to become organized than absorbed, and the state of the tonsil to become one of so-called hypertrophy. But there is no hypertrophy of secreting substance, the increase is solely in the interstitial tissue, which causes continued pressure on the tubules and their consequent atrophy.

Suppuration may ensue upon acute inflammation, the cell-proliferation being so rapid that several individual cells are subjected to a pressure inconsistent with nutrition, and that they consequently become degraded into the elements of pus; or it may be that this occurs only in cases where the constitution is more than usually feeble, in which the already ill-nourished cells are more easily deprived of their vitality by pressure. It is curious that when this happens the affection is at first unilateral, and the second tonsil becomes inflamed and suppurates perhaps four or five days later; but when the tonsils are simply inflamed and do not suppurate, either the two are affected simultaneously, or there is rarely more than one or two days' interval between their involvement.*

SYMPTOMS.

THE disorder presents itself for clinical observation in one of three forms—acute, subacute, or mild, of which the subacute form is that most often met with, making up about fifty per cent. of all cases; while the acute

* This metastasis of inflammation is exactly what is met with in articular rheumatism and rheumatic iritis.

and mild varieties each form about twenty-five per cent.

As, in a clinical sense, the acute is certainly the most interesting variety, it is the best to select for the consideration of symptoms.

An Acute Case.—Sometimes the general, and at other times the local symptoms are the earliest to call forth a complaint. Pain and stiffness of the neck, aching and a little dryness of throat, leading to repeated attempts at swallowing, and headache, which may be so severe that the throat and neck are disregarded for the time, are the earliest signs which the patient experiences of the commencing inflammation. These are followed—it may be in an hour, or it may be a full day later—by shivering. The shivering occupies a variable period, usually occurring in paroxysms, and less often in one rigor, which may be prolonged for two or three hours. A feeling of malaise, accompanied by achings of the bones and muscles and total anorexia, succeeds the shivering, and within twenty-four hours from the initial headache or stiff-neck the patient is in a state of high fever.

The temperature averages 103°; the tongue is coated with a thick white fur; the appetite is gone; the muscular pains are severe; the pulse is full and bounding, though rarely beating more than 110 or 120 per minute;* the skin-exhalations and breath are fetid; the bowels confined; and the urine diminished

* An important point in distinguishing a case from one of scarlatina.

in quantity, increased in specific gravity, rich in urea and urates, and deficient in chlorides. Coincidently with the aggravation of fever the throat becomes more painful; the tonsils are seen to be swollen to a considerable degree; they are one or both covered with a coating of greenish lymph, and when this coating does not completely cover them they present a red field studded with greenish dots, which lie over the mouths of the follicles. The glands at one or both angles of the jaw are swollen and tender to the touch.

This state of affairs persists usually for two or three days, and then the severe constitutional symptoms subside as rapidly as they commenced; there is a marked crisis, accompanied, it may be, by free perspiration, an increased flow of urine, or some looseness of the bowels; the temperature falls to 99°, or lower; the aching pains vanish; the patient expresses himself as 'nearly well,' and asks for something to eat; the cutaneous secretions and urine again become natural; the throat feels comparatively easy, and at once convalescence sets in, and health is re-established—with the exception of a little debility—within a week or ten days from the commencement. The tonsils have by this time regained their natural appearance, if we except a little swelling and redness; the maxillary glands are no longer tender, and the storm is past.

Such is the course of an ordinary case of acute follicular tonsillitis, but a few particular points are worthy of special comment.

(a) *Headache* is so common an accompaniment, even at the very commencement, that it is almost fair to say that there is no acute case of tonsillitis without it, and it is often so severe that it entirely diverts the sufferer's attention from his throat.* It is due, in some probability, to irritation of the superior cervical ganglion of the sympathetic through nerves which reach it from the tonsil, and from the ganglion vaso-motor influences are reflected to the internal carotid and vertebral arteries, resulting in an unbalancing of the cerebral circulation; and it is as well to recollect that impressions from the palate and tonsils may be conveyed to Meckel's and the otic ganglia, and from these be reflected to the trunks of the internal carotid and middle meningeal arteries respectively.†

(b) *The other indications of nerve disturbance* are met with variably: thus, though shivering is usual, there may be none at all; vomiting is more commonly absent than present, while a syncopic attack is by no means a rare commencement. And while it is curious to remark that both the vomiting and fainting are highly suggestive of irritation of the vagus-centre

* I constantly see boys who complain solely of headache, and find the cause of the headache to lie in an inflamed throat.

† I have lately seen a case of tonsillitis in which the right tonsil was more affected than the left, and in which there existed a persistent blush over the right malar bone and the right half of the forehead, with very marked dilatation of the right pupil. I ascertained that these phenomena were essentially idiopathic, and did not result from the use of belladonna or any other liniment. As the tonsillar inflammation subsided the blush gradually disappeared, and the pupil regained its natural size. Were these indications of a reflex conducted by the sympathetic?

through nerves which reach it from the tonsils, it is quite as interesting to remember that either of these might follow irritation of the sympathetic ganglia in the neck, and be due, the one to disturbance of circulation in the vomiting centre, the other to temporary inhibition of the nerve-fibres which act in antagonism to the inhibiting vagus-branches.

(c) The *temperature* may, instead of falling on the third day, remain elevated until the fifth or sixth; and this is generally the case when the second tonsil has become inflamed later than the first, or when the affection has spread to the pharynx or the middle ear. Yet, in some cases with no complication there are five or six days' fever; but when the temperature does come down, its fall is as sudden as its rise was. As has been said, the temperature at its height averages 103°; but 104° and 105° are not very uncommon.* When it rises above 103° it is usual for the tongue to become brown and dry, the patient to be delirious, and albumen to appear in the urine.

(d) *The existence of albumen in the urine* seems to be in direct ratio to the height of the temperature. When this is over 103° a trace of albumen is often present; but there are no casts, and the albumen always disappears when the temperature begins to fall. Its presence is of no more importance than is the transient albuminuria of pneumonia and erysipelas, though on first finding it one is apt to feel a little uncertainty as to whether the throat affection is not of a diphtheritic nature. Yet it is important to note the

* *Vide* infra, p. 38.

time of its appearance—if it do appear—and of its disappearance, and for these reasons: if albumen be found for the first time on the second or third day, the temperature being at 103° or more, and disappear on the fourth, we are almost surely dealing with a case of simple tonsillitis; if, however, we find albumen in the early days with a comparatively low temperature (100° or 101°), and especially if the albumen persist for two or three weeks, the case is most likely one of diphtheria; while, if there have been no albumen early, and it be found for the first time after the end of two, three, or more weeks, it is most probable that the case has been one of latent scarlatina.

(e) If *suppuration* takes place in the tonsil, the temperature does not as a rule fall until the pus is evacuated, which occurs, if it be left to itself, generally about the sixth or seventh day, and then very often the opposite tonsil is found to be entering upon the condition which has just left its fellow.

The cases in young people which I have had an opportunity of watching with reference to the occurrence of suppuration have numbered 462. *Four hundred and sixteen* of these were fairly healthy, well-fed public-school boys, and in only *seven* did suppuration occur; the *remaining forty-six* were poor, badly-fed people, mostly females, all between fifteen and twenty-five years old, and of these *five* suppurated.

It must be allowed, then, that under the age of twenty-five suppuration is rare, and that its occur-

rence is specially favoured by poor living and unhealthy habits.

As to cases older than twenty-five, I think suppuration must be a common occurrence; but I am inclined to suspect that it is not, even in older persons, nearly so common as is generally believed, because the absence of it is evidently regarded as a rarity;* and it is the usual termination in resolution that has given rise to the error of belief that certain medicines† prevent suppuration, and 'cut short an attack.' An attack is said to be cut short if resolution commences on the third day; but in young people this is the rule and not the exception, and without any special treatment. Suppuration in an inflamed tonsil is probably of about the same frequency as the sequence of empyema on simple pleurisy.‡

A Subacute Case.—The clinical characters of a subacute inflammation are in the main those shown by an acute case, the difference lying in the comparative mildness of both fever and local conditions.

The initial symptoms are less marked, the throat is less painful, the neck less tender, and the appearance of each tonsil is that of a small red gooseberry which has been pricked in several places so that the greenish juice exudes at each point of puncture. The

* *Vide* numerous contributions to *Brit. Med. Journal*, Oct., Nov., Dec., 1885, Jan., Feb., 1886, with reference to 'checked and abortive cases of tonsillitis.'

† Notably, aconite and the salicin derivatives.

‡ The term 'simple pleurisy' is employed here with the special object of separating those cases which are produced by pneumothorax, pyæmia, and scarlatina from those due to other local and constitutional conditions.

patient feels ill, though not prostrate; his temperature averages 101° or 102°; his tongue is coated, but not dry, and his appetite is not entirely lost. Lithates are found to be in undue quantity in the urine; but about the third day there is a restoration to a state of health which would be perfect if there did not remain a little feeling of weakness, which in its turn gradually disappears in the course of a fortnight.

In a Mild Case the patient complains of an irritating sore throat and headache; and but for these, and the fact of his temperature being from 99° to 100°, he is fairly well. He feels able to go about his business, and his appetite is little impaired; the tonsils are red and slightly swollen, and here and there a minute dot of exudation may be seen. The local disturbances and the constitutional, if there be any, pass off on the third day, and there are no further complaints.

COMPLICATIONS.

If any complications arise during an attack of inflammation of the tonsils, the patient must be considered unlucky, for the majority of cases are troubled with no complication, although those which may arise are rather numerous.

Aural.—*Deafness* is occasionally experienced a day or two after an attack; and this is mostly the case when the inflammatory process, in addition to involving the tonsils, has attacked the posterior pillars of the fauces, and the anterior portion of the pharynx.

The Eustachian orifice, on one or both sides, becomes closed; the equilibrium of air in the tympanum is disturbed, the membrane collapses, the normal relations of the ossicles to one another and of the stapes to the fenestra ovalis, respectively, are disturbed, and sound-conduction is impeded.

Sometimes, however, the inflammation does not remain limited to the pharyngeal orifice of the Eustachian tube, but, extending by continuity along the tubal mucous membrane, invades the *tympanic cavity*. The catarrh thus induced may simply produce *serous exudation*, and, without due attention, *adhesions* in the tympanum; or it may become purulent, outlet for the pus necessitating a *perforation of the tympanic membrane;* and when the point of suppuration is reached, some anxiety arises as to the satisfactory termination of the case. The tympanic contents may be so much disorganized that there remains permanent interference with hearing; the discharge resulting from the abscess may become chronic, and, continually irritating the seat of perforation or the mucous membrane of the tympanum, give rise to granulations which form an *aural polypus;* or, worst of all, the pus, not finding a ready exit, may burrow upwards to the cerebral or backwards to the cerebellar dura mater, and originate a fatal *meningitis*. Perhaps these are gloomy views to take, but they are certainly matters for which all should be on the watch; and no one of them is likely to happen if attention is paid to the ears as early as it is called to them by the patient. It is important, in view of

the avoidance of these complications, never to attempt to treat an ear without examining the membrana tympani; if the membrane is excessively concave, not to allow it to remain so; if the handle of the malleus is very red and there is earache, to apply one or two leeches to the mastoid process; to incise the membrana tympani as soon as it bulges; to keep the middle and external ears as clean and as free from pus as possible; and to be very cautious, in the use of dry powders, not to block up the external meatus.

CARDIAC.—A cardiac murmur is developed in some cases of tonsillitis where none existed before the attack, and in patients who have never had any articular rheumatism; and I feel it necessary, at the risk of the error of repetition, to say that none of the cases referred to were (so far as could be judged) cases of scarlatina.*

I have heard developed during or shortly after an attack of tonsillitis, in patients who have had no articular rheumatism, and many of whom I know to have had no evidence of a murmur previously, the following bruits: (1) mitral systolic; (2) ? pulmonary systolic; (3) friction-sounds; (4) aortic diastolic; (5) presystolic. Of these the first three are by far the commonest—viz. (*a*), a systolic murmur heard best at the apex; not conducted upwards, but often audible

* *I.e.*, none presented rash, desquamation, or subsequent renal disturbances, and scarlatina was not in the neighbourhood at the time of their occurrence; the only point of resemblance lay in their being capable of reproducing themselves by contagion, but they never produced scarlatina; and one attack was not prophylactic against a second.

in the axilla (never at the lower scapular angle), soft and blowing in tone, and generally associated with some accentuation of the pulmonary second sound. (*b*) A systolic murmur heard loudest over the junction of the cartilaginous and osseous portions of the left third rib or in the left second intercostal space, seldom audible to the right of the sternum, but often heard for a distance of one or two inches to the left of that bone; harsher in tone than that just described as heard at the apex of the heart, and often associated with a pulmonary second sound louder than the aortic second. (*c*) A murmur which has all the characteristics of a pericardial friction-sound as to its rhythm, conductibility, area of audition, and tone characters.

It is quite exceptional to meet with cardiac uneasiness, pain, or palpitation during the development of these murmurs, or with any mechanical circulatory symptoms.

When they occur they are usually developed, the first (*a*) in the course of the earliest two or three days, the second (*b*) after two or three weeks, the third (*c*) in the first week. The cause of the last (*c*) I feel satisfied is pericardial inflammation; the causes of the two former are less obvious. That the basic murmur (*b*) is developed late, and that it is heard over and to the left of the pulmonary area, with no murmur at the apex,* are fairly sufficient evidence that it is of the kind developed in

* The basic murmur of anæmia is often associated with an apex murmur, but only when the anæmia is considerable. The apex murmur is nearly always developed after, and disappears before the murmur at the base.

anæmia, and whatever the cause of these may be, they do not appear to be due to inflammation of the endocardium; that the apical murmur (*a*) corresponds so exactly in all its characters with those most commonly developed in the early stage of acute rheumatism, that it is heard before there is time for muscular incompetence to have occurred,* and that there is so often a historical and often a stronger relation to be traced between attacks of acute rheumatism and tonsillitis, are very suggestive of its being due to inflammation of the endocardium, or to endo-myocarditis. It has been supposed that endocarditis, in order to produce sub-endocardial swelling sufficient in amount to cause incompetence of a valve, must have existed for some days, and that in the case of rheumatism it is at least coincident with and perhaps precedes the commencement of the joint-affection; but when it is remembered that one peculiarity of a rheumatic joint is the extreme rapidity of its inflammatory swelling, it is difficult to see why a similar rapidity should not mark rheumatic inflammation and swelling of the endocardium. Under this presumption we may believe that the cell-proliferation in rheumatic endocarditis is so rapid as to cause considerable swelling in a few hours; and as tonsillitis is sometimes the sole indication of a rheumatic habit, we can understand the development of detectable

* Dr. Sansom ('Lettsomian Lectures') states that in diseases where mitral regurgitation is common, owing to febrile changes in the heart muscle, the murmur is developed late in the attack; yet a patient is never in the best of health when he is attacked by tonsillitis, and a condition of debility, intensified by two days' fever, might considerably invalidate the cardiac muscle.

endocarditis within a day or two of the onset of tonsillitis. Such murmurs as these often make their appearance in the course of chorea and scarlatina, diseases closely related to acute rheumatism and apt to be associated with endocarditis.

The apical murmur usually persists for two or three weeks, and in the greater number of cases disappears entirely at the end of that time; how the majority attended with this complication subsequently progress it is difficult to say, because they after a year or two pass from my notice; but some I know to have become the subjects of chronic valvular (mitral) lesion. I am inclined to think that most cases get well without any later valvular trouble, and it seems reasonable to suppose that the endocardium may (more often than is usually suspected) be the seat of inflammation which terminates in resolution rather than in organization of the effused inflammatory products.

The systolic apex-murmur, then, means mitral regurgitation, and this is, for reasons already stated and elsewhere fully considered,* probably the result of endocardial inflammation. It is the murmur most commonly developed,† because the mitral valve is more apt to be implicated in simple endocarditis than the aortic; but it sometimes occurs in the course of tonsillitis that an aortic diastolic murmur is developed.

* Dr. Byrom Bramwell most thoroughly discusses the pros and cons of this question in 'Diseases of the Heart,' pp. 378 and 450.

† Perhaps I have met with it as often as I have because my patients are young people, and childhood is said to be specially liable to endocarditis.

Now, whatever the objections advanced against a systolic apex-murmur being due to a lesion of the endocardium, few will maintain that a diastolic aortic murmur in a young person (most unlikely to be the subject of atheroma, or calcareous thickening of the aortic valves, or a dilated aorta) can be due to any other cause;* nor does it seem possible to otherwise explain the occasional later development of a presystolic murmur.

The above statements have been made on the examination of the heart in 360 cases of tonsillitis. As fourteen of these had previously suffered from rheumatic fever, and one presented a cardiac murmur which I had strong reasons for suspecting to be congenital, it is necessary to omit them from the calculation. It is the remaining 345 cases, therefore, that have to be considered. In thirty-three (9·4 per cent.) a cardiac murmur was developed.

Of these, *eight* were *systolic basic* murmurs, best heard over and to the left of the pulmonary artery; they were first heard about ten or fifteen days after the onset, and all disappeared in four weeks under treatment.†

Eighteen were *systolic-apex* developed within three days of the commencement, fourteen of these being solitary apex-murmurs, and four associated with other murmurs; of the fourteen, ten disappeared within three weeks, four persisted for more than six months.

Two were *pericardial friction-sounds*, in each case double, limited in area, and intensified by pressure;

* Rupture, of course, was out of the question.
† In some cases iron, in others arsenic, was used.

they were developed on the second day, and did not last beyond the seventh.*

One was a *combination of pericardial friction, systolic apex, and diastolic basic murmurs;* in this case the friction was so loud that the other murmurs were not detected until it had almost vanished, so that the time of their development was uncertain.†

Four were *combined systolic and presystolic* murmurs; in all of these the systolic was developed within three days and did not disappear, the presystolic much later, at the end of some weeks.

In every case where the murmur persisted for six months, physical examination revealed the changes in the muscular walls and in the pulse consequent upon clearly established (though fairly compensated) and incurable stenosis or insufficiency of the mitral or aortic valves.

* In another case, quite recently seen with Dr. Sidney Taylor, friction was both audible and palpable on the second day at the heart's base; by the fifth day the apex was displaced upwards and outwards, beating immediately below the nipple, and friction could only be heard, not felt; by the thirteenth day the apex had nearly returned to its normal position, and no friction was audible.

† In this case, the patient, whose mother and only sister had had rheumatic fever, experienced his first attack of tonsillitis in November, 1884, during which the above-named complications occurred; in December, 1884, he had his first attack of acute articular rheumatism. In October, 1885, he again had acute tonsillitis, the temperature remaining above 100° for ten days after all throat symptoms had subsided; during these ten days pericardial friction was again heard at the base of the heart, and a presystolic murmur was developed in the usual position: this murmur could (and can now) always be heard when he was sitting or standing, but was only audible at intervals in the recumbent position.

Of 345 cases of tonsillitis, therefore, in previously healthy boys, eight presented undoubted lesion of the endocardium, which terminated in chronic valvular disease; three gave evidence of pericarditis; ten had the physical signs of mitral regurgitation, which terminated favourably; and eight showed a functional disturbance of the heart, probably due to anæmia.

I have been especially struck by the existence of a very high temperature—over 106°—in two or three of the cases complicated with a soft systolic apex-murmur. In one particularly, the temperature for three or four days was so septicæmic in character, shifting constantly between 100° and 107°, and associated with rigors and albuminuria, that we (Dr. Bristowe met me in consultation) thought we *might* be dealing with ulcerative endocarditis. The temperature, however, fell to normal on the fifth day, but the boy had to leave school in consequence of—as I heard from the family medical attendant—incurable heart-disease.

This excessive elevation of temperature is, however, by no means the rule; but when it does occur, it should direct attention to the heart.

Relapses occasionally occur, dependent, apparently, upon a fresh chill to an inflamed surface, owing to injudicious behaviour on the patient's part. But, separately from this, when every care is taken, there is sometimes a fresh rise within two or three days of the original fall of temperature, and in these relapses we have, as in the relapses of enteric fever, the whole scene enacted over again—renewed headache, shiver-

ing and sore throat, fresh exudation of lymph and epithelial products upon the tonsils, a second rise of temperature, and again its fall by crisis. I am not referring by the word 'relapse' to cases where one tonsil alone is at first affected, and the other becomes inflamed as the active processes are subsiding in that first attacked, but to cases in which the originally inflamed parts become during convalescence the seat of renewed inflammation. I had one case in which three relapses occurred—on the sixth, thirteenth, and twentieth days respectively, each being attended with a condition of throat similar to that of the original attack, and a temperature which fell by crisis on each third day of renewed febrility.

An Attack of Acute Rheumatism is very frequently preceded by one of acute tonsillitis, it may be by as long a time as five or six weeks, but more usually ten days or a fortnight; while, as has been already stated,* the two may be coincident in time. In fact, it is rare to meet with a case of rheumatic fever which has not been recently preceded by a sore throat; and though I am not prepared to say that tonsillitis is the forerunner or the companion of every case of rheumatic fever, the last eleven cases of the latter which I have had to treat have, within six weeks of the onset of the joint-pains and fever, been under my hands with sore throats. There was no reason for suspecting the original sore throat in any of these to have been scarlatinal; had there been so, the sequence of acute rheumatism would not have been very remarkable.

* *Vide* p. 11.

Bronchitis and Broncho-pneumonia occasionally* occur a day or two after the onset of tonsillitis; they are attributable to a direct extension of inflammation along the mucous tract. The infrequency of laryngitis has been advanced as an argument against the spreading of inflammation in tonsillitis;† yet it seems a scarcely sufficient one, for the bronchial mucous membrane is frequently invaded by a simple catarrh spreading from the nose and fauces, without any detectable signs of laryngitis.

Chronic Enlargement of the Tonsils remains in a few cases after tonsillitis, but very seldom after a single attack. Sometimes—mainly after a series of attacks—the two tonsils are left so large that they almost meet in the middle line; they keep up an unhealthy state of the pharyngeal, which spreads to the nasal mucous membrane, and leads to a chain of distressing conditions—met with, for the most part, in young children and adolescents—such as difficulty of breathing, obstruction of the Eustachian tubes, chronic naso-pharyngeal catarrh, and, as a result, a typical aspect. Children thus afflicted breathe with the mouth always open, snore loudly during sleep, and talk with a disagreeable guttural twang.

DIAGNOSIS.

There is no affection, in the present state of our knowledge, more difficult to handle socially than a

* I have met with 6 cases in 416.

† By Dr. F. P. Atkinson, of Surbiton.

sore throat, particularly if there be accompanying fever; there is a tendency among the world in general to consider all sore throats 'catching'—a practical example, perhaps, of the instinct of self-protection; there is no affection which creates a greater scare in a family, and there is none about which masters and matrons in our public schools are more indifferent, and none about which they know less, or think they know more, than a sore throat; finally, there is none which gives the doctor more anxiety, either in the matter of diagnosis or in the matter of prognosis.

When it is considered, in the first place, that the only visible sign of scarlatina may be a sore throat, so mild as to call forth no complaint from its subject, and yet so virulent as to be capable of reproducing undoubted scarlatina in a whole family;* and, in the second place, that we scarcely know how mild diphtheria may be—whether it is due primarily to a specific virus, or whether the infective organisms are peculiarly apt to become grafted upon a throat which is the seat of mere catarrhal redness, and impart to it the infectiousness of diphtheria;† that sometimes

* *Vide* case quoted by Dr. Bond, *Brit. Med. Journal*, Sept. 23, 1882, in which a boy of seventeen was sent home from a public school where scarlatina had broken out, he having had the disorder on a previous occasion. Every precaution as to disinfection was taken except that of examining the boy's throat, which was proved later to have been sore on his return, but not complained of. 'In a few days one of the children was down with scarlatina, and in due time all the others followed suit.'

† Whether, indeed, diphtheria, having once attacked a subject, in some cases does not disappear after it has run a certain

the most obscure derangements of motion and sensation are cleared up by a history of sore throat which, although contracted at the time of an epidemic, was little heeded; and that at other times we are startled to find general desquamation and nephritis in a patient who, during his sore throat and fever, exhibited no skin eruption of any kind; it may fairly be allowed that few things are more difficult to discover than the causes, or to predict than the results, of an acute sore throat.

The main point necessary in the case of follicular tonsillitis is to distinguish it from (*a*) catarrhal throat affections; (*b*) exanthemata, one of whose early symptoms is an inflamed condition of throat; (*c*) diphtheria; (*d*) syphilis.

(*a*) CATARRHAL THROAT AFFECTIONS among adults are perhaps common, and very often associated with a little fever (among children, however, they are by no means common; and any sore throat in a young person, especially if accompanied by glandular tenderness, should evoke the strongest suspicion of its being due to more than a simple catarrh);* they are usually mild, and of short duration, unless, by extending, the catarrh involves the larynx, trachea, bronchi, or pul-

course, but remains latent and is capable of recrudescence under favourable circumstances, *vide* Dr. Greswell, *Brit. Med. Journal*, March 6, 1886.

* Among the Charterhouse boys, I never *assent* to one returning to his associates after the mildest sore throat, without satisfying myself that (1) all local congestion has disappeared, (2) all glandular tenderness is recovered from, (3) the urine is healthy, (4) there is no desquamation. This routine ought to be observed in all congregations of young people.

monary alveoli; the tonsils merely share in the general erythema, and present no green dots which become larger as the disease proceeds; the glands at the angles of the jaw are seldom tender or palpable; and though the duration of fever is about the same as in tonsillitis (three days), the rise and fall of the temperature is much less marked.

(*b*) THE PRINCIPAL ERUPTIVE FEVERS which are associated with an inflamed condition of throat, and in which follicular tonsillitis often forms a prominent symptom, are scarlatina, rötheln, and measles. There are others in which sore throat often forms one of the early complaints, but is not so constantly present, viz., typhoid fever, erysipelas, varicella, and variola.

1. *In typical scarlatina* the throat is very red and inflamed all over, as much about the palate, fauces, and pharynx as the tonsils. Headache is not so intense as in simple tonsillitis; vomiting is much more often marked; and the pulse is much more rapid (130 to 150). Its further characteristics are the rash on the second day, the strawberry tongue about the fourth, the sudden rise of temperature and its gradual fall in about eight days,* and the sequence of desquamation, attended, perhaps, by albuminuria and renal forms. Yet it cannot be too strongly insisted that many cases of scarlatina are not in accordance with the type, especially those in which the rash is delayed in its time of appearance, is very slight, or is entirely latent; that

* I have this month had two scarlatinal cases in which a crisis occurred on the fifth day; so fall of temperature by lysis is not universal, though usual in scarlatina.

desquamation sometimes does not occur; that consequent renal affection is the exception and not the rule; and that the throat may be so slightly affected, and the fever so evanescent, that these are little heeded by the patient. The occurrence of sore throat, attended with enlargement of the glands at the angles of the jaw in a child (especially if attending school), at a time when scarlatina is known to be anywhere in the neighbourhood, should lead to the isolation of that child until its throat and glands have regained their normal condition. The statement of a previous attack of scarlatina must not be considered a bar to a second attack; and it must be remembered that a second attack may be unassociated with any skin eruption.

2. *In rötheln* there is always some throat affection, but seldom a follicular tonsillitis.* There is a general pharyngeal blush, not so bright as in scarlatina, but not limited to the tonsils. The temperature in few cases exceeds 100°, and when it does it rises gradually and falls suddenly. The eruption appears on the first or second day, often requiring careful inspection for its discovery; and there is, in many cases, a slight branny desquamation in the second week, which, however, never affects the hands or feet.† Enlargement of the lymphatic glands along the posterior borders of

* Within the last two months (March and April, 1886) I have examined the throat in 163 cases of rötheln; follicular tonsillitis was present in two only.

† It must be borne in mind that mild cases of scarlatina are frequently miscalled rötheln, more, I fear, from unwillingness on the part of the practitioner to cause alarm by the former name, than from inability to distinguish clearly between the two diseases.

the sternomastoids is a very characteristic, but not a constant, symptom.

3. *In measles* there is not always an affection of the throat, but such is often associated with the initial catarrh. The principal distinctive features are the course of the temperature, which rises afresh with the appearance of the rash, and falls by crisis, but not till the seventh or eighth day; the characteristic eruption on the fourth day; the presence of bronchitis; the slight consecutive peeling; and the history of the case.

(*c*) DIPHTHERIA is often suggested by the exudations seen upon the tonsils in follicular tonsillitis, and the two disorders have many features in common which increase the difficulty of their discrimination.

But, as a rule, in diphtheria: the patches of membrane cannot be removed without excoriation of the surface below them; they are to be seen elsewhere than on the tonsils; the membrane is tough and leathery, and of an ashy-grey colour; the larynx, and more rarely the nose, is apt to become involved; the onset is not very sudden; the debility is extreme; the temperature is rarely high (unless complications arise), averaging 100° or 101°, and falls gradually; albuminuria is very frequent, and persists for some weeks; there may be consecutive disturbances of motion, sensation, and reflex action,* in which the palate is most often involved, and which get well spontaneously in a few months.

Diphtheria, too, is not usually recurrent, and tonsillitis is; under the age of twelve the affection is more

* Absence of 'knee jerk' is especially common.

likely to be diphtheria, and after that age tonsillitis. but the difficulty lies not so much in distinguishing between typical cases of each disorder, as in discriminating those cases which depart from the ordinary type, or those where diphtheria supervenes upon acute tonsillitis.

(*d*) THE FIRST ERYTHEMA OF THROAT IN A SYPHILITIC SUBJECT may be associated with a little fever, and for a time mislead; but the co-existing roseolar eruption and the history usually remove doubt. Mucous tubercles and ulcerations, whether superficial or gummatous, are of themselves distinctive, but the little white 'mucous patches' seen about the tonsils in syphilis tend, by the symmetry of their disposition, to lead one astray; yet under careful observation with a good light more will be found at the sides of the tongue and on the mucous membrane of the lips and cheeks.

TREATMENT.

HYGIENIC.—The patient should, if possible, be isolated from the very commencement of the disease;* the hygienic measures adopted should be kept up rigorously as long as the tonsils remain injected, and they should be no less active than those employed with a case of diphtheria. It is well to diffuse some dis-

* I have been led to believe that a good deal of mischief may be done by a case in its earliest stage—*i.e.*, before the characteristic appearances of the throat are developed. Early isolation is, however, very difficult to accomplish.

infectant so as to reach the whole interior of the room; and a good method is by playing a steam-spray medicated with eucalyptol or terebene for half an hour three or four times a day; or perhaps a better, by keeping a steam-kettle constantly on the boil, with a few drops of either of these added to the water. All handkerchiefs, rags, spoons—in short, anything which comes in contact with the patient's mouth or nose, should receive careful attention immediately after use in a carbolic solution (one in twenty). Subsequent disinfection of the room does not seem to be required; but there is no harm done, and very little extra expense incurred, by boiling sheets, pillow-cases, and towels before sending them to a common laundry.

Throughout the febrile stage (which lasts about three days), and the day after, the patient should keep his bed; he may, as a rule, safely get up on the fifth day, provided his temperature be normal, and leave his room on the seventh; and, should the weather be favourable, go out of doors on the eighth or ninth, by which time he is quite harmless to his associates. If it is available, a week at the seaside will materially help to set him on his legs. It is of great importance to avoid a chill during the illness, for people are inclined to leave their beds and go out much too early; and these cautions are specially needed in large schools, where tonsillitis is spread far and wide by disobedience to medical orders and from the same carelessness most serious results to the patients have occurred.

Dietetic.—Diet is a very important element in the

treatment, by careful attention to which much unnecessary pain may be saved. During the fever there is considerable anorexia, the throat is very sore, and the movements necessitated by mastication and deglutition very much increase the pain in the maxillary glands; everything hard which rubs over the inflamed surface acts as an irritant; and further, every act of swallowing causes movement of the palate and tonsils. As little as possible, then, to eat for the first two or three days—and this to consist of such slops as milk and soda-water, arrowroot, and gruel; as the appetite returns, custard, boiled fish, an egg, etc., may be added; and by the seventh or eighth day from the commencement the ordinary diet resumed. The thirst of the early days may be relieved by barley-water, toast and water, and the like;* stimulants are seldom necessary, but are called for by much delirium, a very compressible pulse, or a dry tongue; the most suitable seems brandy, and this or port wine may be mixed with the arrowroot. During convalescence port is very beneficial, youths of sixteen being able to take four to six ounces a day without discomfort, and its use may be continued for a month, the quantity being gradually diminished.

Medicinal.—The question as to whether there are any drugs which, given internally, have a special action upon inflamed tonsils, is of necessity the first which crosses the mind of one called upon to treat such a condition, and those which have attained the highest reputation are *guaiacum*, *aconite*, and *chlorate*

* Small lumps of ice to suck are often highly appreciated.

of potash. I have noted the drugs used by myself in 360 cases of acute tonsillitis, and it is as well to say that, in every case where the bowels had not acted on the day of attack, a purgative preceded any other medicine—the purgative given being either blue and colocynth pill, or magnesia.

Of my 360 cases *thirty* had *guaiacum*—fifteen as mist. guaiaci, and fifteen as tinct. guaiaci ammoniata; *thirty cases* had *aconite*—ten in drop doses of the tincture every hour, ten in the same amount every two hours, and ten in three-drop doses every four hours; *sixty cases* had *chlorate of potash*, prescribed sometimes with dilute hydrochloric acid, and sometimes with the strong acid to form chlorine water, but the dose always averaging ten grains every four hours; *fifty* had a *simple saline* mixture (liq. ammon. acet. with sp. æth. nit.); *fifty* had the same, with five minims of *laudanum* every six hours; and a *hundred* had *plain water* coloured with cochineal.

All these cases took much the same course; in fact, I found no material difference. The guaiacum in a few caused diarrhœa, the opium in a few others produced headache, the chlorine was always complained of as very nasty to take, while the pink water was not objected to. I was not fortunate enough to meet with any case in which the attack was abortive, even under the administration of aconite; but in the great majority the temperature came down after having been elevated for seventy-two hours,* falling

* *I.e.*, dated from the onset of the attack, not from the time at which the patient was first seen and when the treatment was commenced.

by crisis; there were fifty-six in which it remained high after the third day, and these were mostly cases in which further cause of fever was obvious. In these the cause was: in twenty-seven, involvement of the other tonsil later than the first; in five, tonsillar abscess; in seven, purulent catarrh of the tympanum; in four, the presence of cardiac complications; in seven, the immediate sequence of acute rheumatism; and in three, pneumonia. And I am compelled to draw the conclusion that acute tonsillitis has its definite course, just as acute pneumonia and the many specific fevers (except syphilis), uninfluenced by drugs.

I have lately been using *salicin* and *salicylate of soda*, having been induced to do so by the recent correspondence in the medical journals. Excellent though their results are in acute rheumatism, they are by no means equally satisfactory in tonsillitis. The physiological effects of *the salicylate* when given freely (and to be of service in any disease it needs to be pushed) are so unpleasant that I have not tried it in more than *sixteen* cases. *Salicin*, on the other hand, I have used in *forty*, giving it in large doses at short intervals;* but I did not find the temperature in any case fall to normal before the third day.† In many cases I did not see the patient until he had been twenty-four or more hours ill, and I think this must

* In a few cases a drachm every hour until an ounce had been taken.

† Occasionally, after two or three drachms had been taken, the temperature fell 1° or 1·5°, but never below 100°.

be the case with many who have written to say that salicin or salicylate of soda reduced the temperature in thirty-six hours; in fact, tonsillitis is ordinarily a three days' fever, and cases do just as well without these drugs as with them. Want of appreciation of the essentially short term of fever in tonsillitis, and the idea that suppuration is the rule, and not the exception (as I believe it to be) are probably the grounds upon which salicin and its derivatives have gained their κῦδος in the treatment of the disease.

Yet one important argument may be adduced in favour of these medicines. Tonsillitis is very often the forerunner of acute rheumatism, and in twenty-three of the fifty-six cases just quoted as treated with salicin or the soda salt, there were indications of a rheumatic habit. One had had rheumatic fever, nine had flitting pains, one had a swollen elbow-joint, one had an endocardial murmur, and one pericarditis with some effusion; the remaining ten cases came of rheumatic families. How far, therefore, the salicin was instrumental in averting an attack which might otherwise have become rheumatic fever is open to surmise; and if it really have this power it deserves to be given in all cases of tonsillitis where the slightest evidence of rheumatism, historical or symptomatic, can be traced.

In ordinary cases an early and free action of the bowels* should be secured, after which such medicines

* Dr. Atkinson considers constipation an invariable accompaniment. I have found it frequent, but not invariable; but I have never met with diarrhœa.

as assist the secretions of the skin and kidneys are theoretically advisable; but practically the expectant treatment is the simplest, and equally sure: yet of such importance do I hold the action of 'medicine' on the minds of patients, particularly of the less educated class, that it seems requisite to prescribe something to be taken at stated hours.

When, however, the fever has abated and resolution is taking place, tonics are beneficial, particularly quinine, iron, and iodide of potassium; and I have found very suitable, both for medicinal and chemical reasons, a combination of the iodide with liquor arsenicalis.* Salicin in small doses is also a good general tonic.

LOCAL.—On considering the effects of local remedies upon acute tonsillitis, I would at once decry *gargles*; they rarely reach the parts which they are intended to touch, they always cause a good deal of action on the part of the muscles which we most wish to keep at rest,† and it is questionable if the usual active parts of gargles are the proper substances to apply to an inflamed mucous membrane. If gargles are used, and it is perhaps necessary for the patient's comfort that he should occasionally wash out his mouth and throat, warm milk and water or black-currant tea are the least harmful.

* The arsenic is an excellent tonic, the iodide is a good resolvent, and the potash base such a medicine as would suggest itself (presuming upon the lactic acid theory of rheumatism) for cases favoured by rheumatic causes.

† Viz., the raisers and tensors of the palate and uvula with the palato-glossi and -pharyngei.

Pigments are for many reasons as much open to objection as gargles, and their application causes a good deal of pain, apart from the difficulty of applying them, when the patient, owing to the tender state of the lymphatic glands, can barely open his mouth. *Lozenges* allow of more direct application of medicaments to the back of the mouth than do paints and gargles, but neither chlorate of potash (B. P., Wyeth's, or effervescing), guaiacum (Throat Hospital Ph.) nor tannin seem to exercise any favourable influence. Black-currant, particularly with 1-36th grain of morphia, are very soothing, relieving the constant tendency to swallow, and the continual short cough;* and the nicest form of them is the glycecols.†

Inhalations, especially of steam medicated with some antiseptic, afford the greatest relief, cause the least movement in the throat, and certainly make the breath less likely to convey contagion to the attendants. I find eucalyptol to be the most pleasing to patients; for while carbolic acid, iodine, and creasote are in many cases objected to on account of their odour, they rather tend to irritate than to soothe; but eucalyptol is seldom disliked either on the one ground or the other, and the warm moisture of the steam gives the greatest comfort. Moreover, inhalation is the only method of reaching with remedial agents those parts which often share in the inflammation of the tonsils, and whose involvement is so apt to

* Cocaine would probably be of service in this way; and might be used as a spray.

† Kirby and Co.

originate aural complications—I mean the post-nasal region and naso-pharynx. I generally direct inhalation every two hours through the nose and mouth from a large jug,* and keep this up until the temperature falls, after which I employ lozenges. Kirby's tannin glycecols form an excellent medium for the application of an astringent to the back of the mouth, the proper time for which seems to be about the fourth or fifth day from the commencement, and it is desirable to discontinue its use gradually rather than suddenly. It is generally sufficient to take eight lozenges for the fourth, fifth, and sixth days, and then three or four daily for another week. If the throat remain congested for a longer period, tannic acid and glycerine may be used; but even after the acute stage is over, and the necessity for resting the palate and tonsils at an end, I think paints have their drawbacks. Their application is always uncomfortable; if used just before a meal they are apt to be washed off, and if immediately afterwards they often cause vomiting. I therefore discard paints and gargles as much as possible, preferring to use inhalations or sprays in conjunction with lozenges.

While estimating the advantages of local treatment, I must not omit to mention the value of external warmth applied to the neck. It is reasonable to suppose that a *poultice*, if applied hot and kept so, affords some relief to congestion of the throat, possibly

* A tent and steam-kettle are preferable to this, but they are not always easy to procure.

by dilating the bloodvessels and increasing the secretion of the skin to which it is applied; but, even if this action of a poultice be hypothetical only, the warmth and moisture are undoubtedly comfortable to many; and for those who dislike a poultice,* the neck is rendered much more comfortable by being enveloped in *cotton-wool* than by being left uncovered. I am in the habit of recommending a poultice for two or three days, and then cotton-wool for three or four more.

Of course complications require treating as they arise, and I venture once more to lay especial emphasis upon attending to the ears at the first symptom of their involvement; to make daily enquiry for earache, deafness, or tinnitus, for so much is the patient's attention fixed upon his throat that he may omit to mention these symptoms; and to be alive to the fact that deafness or earache a week after a sore throat requires more treatment than a little warm oil.† It is well to carefully watch the heart, and the subsequent behaviour of any murmurs that may arise; and I would finally be emphatic upon one point which I have been taught by experience: be sure that if the temperature remain high for more than three days there is something more than tonsillitis; there is

* Spongio-piline is more cleanly, and keeps equally warm and moist. Some physicians prefer a cold compress made with this material.

† It has more than once occurred to me to see a boy with both ears discharging pus, who had complained of earache for several days, but had been assured by some ignorant though well-meaning old lady that warm oil or a piece of onion would cure his earache. The 'post ergo propter' fallacy has much to answer for.

probably an inflammatory complication, but there may be rheumatic fever or pneumonia.

With regard to the prevention of repeated attacks of tonsillitis, such as the subjects of chronic enlargement of the tonsils suffer from, and also of those troublesome and annoying symptoms depending upon a chronic naso-pharyngitis, the operation of tonsillotomy is most beneficial, and is indeed one of the earliest steps towards promoting a healthy state of the mucous membrane in the neighbourhood. It should not, however, be performed until the tonsils have for some time lost all inflammatory injection, for hæmorrhage from the tonsil is often difficult to control.

And with regard to cases in which the tonsils suppurate, there need be no hurry to make an incision unless free fluctuation indicate the abscess to be superficial, or intense pain and throbbing prevent sleep, and the temperature remain very high. A natural exit for the pus occurs usually in about six days, and it is advisable to avoid using a knife to the back of the mouth unless the need to do so is urgent. These cases always require stimulants pretty early, and quinine is very beneficial.

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