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LARYNGEAL TUBERCULOSIS.[1]

BY R. LAKE, F.R.C.S. ENG.

THE clinical condition which I have the honour of bringing before you in these lectures is one of no inconsiderable interest to the great majority of practitioners of medicine, and to those in general practice the importance of recognising and thoroughly understanding the symptoms and having a good knowledge of the methods of treatment cannot be over-estimated.

Tuberculosis of the larynx, as a pathological condition, has been recognised for over one hundred years, but observations on anything except its clinical aspect previous to the discovery of Koch's bacillus are necessarily but imperfect and of no scientific value, but are of purely academic interest.

It is a condition which produces the most distressing effects. The patient, probably already considerably emaciated and worn out by the general disease and by the effects of coughing, has superadded to these conditions—which in themselves are sufficiently distressing both to the patient and to his friends—acute pain in the throat, difficulty in swallowing, which may amount to an absolute inability to swallow, and loss of voice, with perhaps dyspnœa, which reduces the unfortunate individual to a most pitiable state. It is this condition, and the possibility of those of our phthisical patients who suffer from relatively slight laryngeal

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lesions sinking from bad to worse, and eventually even to a condition such as I have described, that justifies, and not only justifies, but imperatively demands, energetic treatment in cases where there is the slightest prospect of doing good, whether cure or relief alone be attempted.

I must ask you to bear in mind the fact that the views which I hold so strongly are not shared by a large number of my English confrères, although they are those held by many of the greatest authorities on laryngeal tuberculosis on the Continent. It may be that my own experience is small compared with that of some of those who speak on this subject, and depreciate curative operative treatment. However, I believe that views derived from personal experience, even if relatively small, are of more service than ideas culled chiefly from "authorities," however great. I shall consequently confine my remarks as far as possible to my own opinions and observations.

By the term *tuberculosis of the larynx* one attempts to include those lesions alone in which the laryngeal tissues have become invaded by Koch's bacillus. It is, however, necessarily a difficult and almost impossible task when we have to make a diagnosis clinically; and there are several of the slighter pathological conditions of the larynx which are seen amongst those suffering from pulmonary tuberculosis, and which are not seen in connection with any other general disorder, and which we are perfectly justified in grouping under the wide generic term of "laryngeal tuberculosis," although we are perfectly well aware that these minor lesions are in themselves non-tuberculous; that is to say, we should be absolutely unable to demonstrate in the diseased tissue any tubercle bacilli.

We will first consider, as far as our knowledge permits us, what are the predisposing causes to a laryngeal tuberculosis; but we must intimate that these predisposing causes, both general and local, will only apply to a secondary infection of the larynx or laryngeal tissues, and not to primary laryngeal tuberculosis.

Previous inflammatory states of the laryngeal mucosa are amongst the more common conditions which we have to consider as predisposing the tuberculous individual to secondary infection of the larynx. In these cases it is very likely the fact that during an acute attack of laryngitis, and after an excess of coughing or some casual cause, the tubercular bacilli are able to find their way into the already inflamed laryngeal tissues, for we must admit the probability that it is only when the local resistance is lessened that the bacilli are able to obtain this lodgment.

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Chronic laryngitis, again, is a condition which seems, from a good many causes, to be one which favours the entrance of the tubercle bacilli into the underlying tissues. The general pathological conditions found in chronic laryngitis consist in hypertrophies of the mucous membrane and of the submucous tissue. The effect of hypertrophies in these structures is to cause, in a large number of cases, a mild form of pachydermia laryngis, chiefly situated in the posterior commissure, and, as has been frequently pointed out, this is a part of the principal track along which the bacillus-laden sputum passes from the lungs. It was pointed out by Schottelius, and corroborated, at least by clinical observation, if not by absolute pathological investigation, by Moritz Schmidt, that a certain amount of sputum was frequently—one might say constantly—retained between the rugæ formed in the mucous membrane in hypertrophied conditions. This retention of sputum between the rugæ causes a maceration and exfoliation of the surface epithelium, with the eventual formation of small ulcers. That this is so I have also convinced myself by examination of portions of tissue removed during life. There is also another way in which bacilli find their way through the mucous membrane in hypertrophied conditions, and that is by the formation of minute abscesses within the epithelium. This condition is one I pointed out in 1895, and which by subsequent observation I found, as I have stated, to be entirely confined to hypertrophied states of the mucous membrane, and not found where the mucous membrane was of normal thickness.

That condition known formerly as a catarrhal ulcer is one which need not, I think, enter materially into our considerations. The so-called catarrhal ulcer, which was said to predispose to tubercular invasion, is merely a herpes of the larynx. This is not common, and even if it should predispose to a tubercular condition, is sufficiently rare to be absolutely omitted.

We have already alluded to chronic laryngitis as a local predisposing cause to laryngeal tubercle, and it is often noticeable that patients suffering with pulmonary tuberculosis in the early stages have well-marked chronic laryngitis ; but during the progress of the pulmonary disease acute exacerbations of the laryngitis or attacks of sub-acute laryngitis are extremely apt to occur, and if immediate attention is not devoted to the larynx for the removal of this condition, the inflamed mucous membrane more easily becomes, as we have said, invaded by bacilli, and more readily broken down when they have obtained an entrance.

Neither is the age of patients without its influence, for we find

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that patients in each decade are affected differently; that is to say, that a tuberculous affection of the larynx is almost unknown under the age of ten. In fact, of the three cases reported out of 500 each quoted by Rosenberg and Morell Mackenzie, I only found one case, while out of 500 cases of my own I have had but 2. Dr. M. Perrin (Nancy) has recently published an excellent treatise on this point, and he quotes twenty-eight authorities who have reported cases or compiled statistics from the time of Trousseaux (1837) to the present time. I cannot give the exact proportion of cases below the age of ten years to cases occurring during the remainder of life, but 2 per cent. will be nearly correct. The next period in which the affection of the throat is comparatively rare is after the fourth decade. Out of my first 250 cases, only ten patients were of fifty years old and upwards. Patients from eleven to twenty years of age and from forty-one to fifty come next in frequency, the former being, roughly, somewhere about half the frequency of the latter. But it is from the age of twenty-one to forty that the majority of our patients are derived, somewhere about 40 per cent. of the total number being found during these two decades—that is to say, during the time of the most vigorous growth.

With regard to sex, males suffer about three times as often as females from laryngeal tuberculosis; men are also more frequently affected by phthisis, according to most authorities.

We must next consider the effect of occupation on the liability to infection, which we should expect would largely influence the frequency; that is to say, that we should expect to find people following extremely dusty occupations would be more largely represented in our list than those who follow the more healthy occupations which keep them in the open air; therefore we should expect that bakers, for instance, would supply a relatively large proportion of our cases, as they do of about 25 per cent.[1]

We must also take into consideration that fact which we have already briefly alluded to—that is to say, that chronic laryngitis is a local predisposing cause—and in this connection bear in mind the remarks made by Sir Morell Mackenzie anent this disease, in which he pointed out the great frequency with which people following sedentary occupations suffer from chronic laryngitis, and we must also bear in mind the usual interpretation that is put on the word *sedentary*. I take it that the word "sedentary" has ceased to imply necessarily one who chiefly sits at his work, but it has come to include those who mostly spend their lives indoors, and who are

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out but little in the open air. Mackenzie's statement is quite correct, and is corroborated by a table which was compiled for me a year or two since, showing the occupations of 200 consecutive patients suffering with laryngeal tuberculosis and 400 consecutive cases of pulmonary tuberculosis without laryngeal infection in both of the years 1898 and 1899. It gives a total out of the 200 laryngeal cases of 140 occurring in people who followed sedentary occupations, or $\frac{14}{20}$ of the total number; while the number of those following sedentary occupations out of the 400 cases of pulmonary tuberculosis, which were taken, as I said, consecutively, works out at $\frac{145}{200}$, or relatively the same; that is to say, that if we compare the relative percentage of sufferers from pulmonary tuberculosis and from laryngeal tuberculosis, we find that the proportion is practically the same, although we might adduce figures, even from this list, towards showing that sedentary occupations, properly so called, may be considered to exercise a deleterious influence by predisposing the tubercular patient to laryngeal infection.

Syphilis.—The fact that this general infection predisposes to laryngeal phthisis will not be considered anything unusual, as we well know that it predisposes to pulmonary tuberculosis, whether the cause of this is to be found in a general weakening of the resistance of the tissues themselves by a specific poison, or whether it is that the more usual contractors of this disorder are to be found amongst the less temperate and careful classes, and are thereby the more likely to develop tuberculosis. From whatever cause the predisposition arises for syphilis to be followed by tuberculosis, in no part of the body is it more marked than in the larynx, and the peculiar combination is to be distinguished as having quite a separate clinical aspect.

Nose.—One would naturally expect that we should find some very distinct evidences as to whether or no tubercle bacilli have found their way into the system through the nose. This one may consider, first, as regards the presence of bacilli in adenoid vegetations; secondly, as to evidences of nasal infection *per se*; and, thirdly, as to the evidence of the passage of bacilli through the nose and thus into the air and food-passages. During the last few years a large number of investigations have been carried out, both in this country, in America, and on the Continent, with regard to the presence or absence of tubercle bacilli in the adenoid vegetations of the naso-pharynx in children. A sufficiently large number of cases has now been reported to place it beyond a doubt that in a fairly large proportion of all cases tubercle bacilli are to be found. It necessarily follows that the removal of these growths should

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render the number of cases of tuberculosis in children less. It is, however, not with that aspect of the question that we are now concerned; it is that these bacilli must have found entry into the organism of the child via the anterior nares, and in this connection there are several minor points in the anatomical structure of the nose which would favour the more frequent entry of bacilli in children, and which would, if correctly interpreted, demonstrate the necessity for the presence of post-nasal lymphatic tissue in childhood. These anatomical points are that in childhood the anterior nares are round, and situated more vertically than in the adult. At the same time the vibrissæ of the vestibule are not developed, nor do they attain any size—at any rate, until early adolescence.

The second consideration that we are interested in deals with the evidences of primary nasal infection by the tubercle bacilli, and with the influence that these infections have on the larynx. Writing some little time ago on this matter, I referred to the rarity of proven cases of primary nasal infection which had caused general tuberculosis. I found, however, one or two more cases, which show that this condition is not quite so rare as we have been in the habit of believing, and I will briefly allude to a case which came under my own observation in the past year.

The patient was a nurse, aged thirty, who was suffering from advanced pulmonary tuberculosis; she also complained of some nasal trouble. The nose showed, on examination, that a large part of the cartilaginous septum was destroyed, and that the edge of this ulcerated surface was a proliferating mass of granulation tissue. The history she gave was this: That some three years previously she had a nasal polypus removed from the right side of the nose by Dr. C. A. Wickham, of Willsborough, near Ashford, Kent. Dr. Wickham kindly informs me that at this time he removed from the patient's nose a polypus which had the following characteristics: It arose from the septum, and was very red and soft, and there was excessive hæmorrhage after its removal. The patient subsequently was treated at one of the Throat Hospitals in London, where the septum was scraped once or more. The history of the pulmonary infection was of only nine months' duration, so here we have a case in which one is justified in saying that in the nasal lesion one had the primary infection, and I cannot help feeling that it is possible that some of the bleeding polypi of the septum may be tuberculous growths.

A somewhat similar case to this is reported by Dr. Krieg of Stuttgart in his "Atlas der Nasen Krankheiten," in which the

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removal of the nasal polypus was also followed by sharp hæmorrhage.

Thirdly, one must consider what evidence we have as to any entrance of bacilli into the nose; that is to say, to what extent they are able to pass the natural barriers, vibrissæ, mucus, etc. Some investigations in these lines have already been performed by Strauss, but in order myself to prove to what extent tubercle bacilli could be found, I had careful examination made of the mucus of the nose of tuberculous patients living together in the North London Consumption Hospital, and so exposed to a greater risk of inhaling tubercle bacilli than would otherwise be the case. These investigations were carried out with the most careful antiseptic precautions. The instruments and swabs used for taking out the mucus and for making the preparations were carefully sterilized, and the vestibule carefully scraped and cleansed with an efficient antiseptic. The result of my observations showed that, while micro-organisms were found in about the same proportion of cases amongst the phthisical and non-phthisical people examined by Park and Wright, the most notable fact was the almost entire absence of tubercle bacilli. In only one instance out of my fifty examinations was even one single tubercle bacillus found. I may say that these investigations were carried out by means of cover-slip preparations, and not by cultures. The patient in whose nose the tubercle bacillus was found had advanced pulmonary tuberculosis, though the larynx and nose and naso-pharynx did not show any macroscopical evidence of the disease.

As additional evidence in favour of the inhalation of tubercle bacilli may be quoted the deleterious effects of overcrowding and overheating, combined with deficient nourishment. Overcrowding becomes important, inasmuch as it increases the probability of a phthisical patient being numbered amongst the inmates of any particular chamber. Overheating is of importance, on account of the vitiation of the atmosphere, and also the greater tendency for any expectoration to dry and be carried about in the form of dust. The want of nourishment, of course, merely aids the bacillus which has already found its way into one of the cavities of the body to overcome the resistance of the surface epithelium, and penetrate into the deeper structures. The class of people amongst whom overcrowding is most common, and whose environment is more like that described than any other, are the poorer East-End Jews, amongst whom phthisis is unusually prevalent, and who appear to me to yield an abnormally large percentage of laryngeal cases.

My attention has lately been drawn to some very interesting

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work done by Landouzy and Romme and others in relation to the liability of patients who have had tracheotomy and intubation performed, and who are unable to dispense with the cannula, to infection by tubercle bacillus. Frump and Pfandler show that in Germany these untoward results are less frequent. The operations were chiefly for the relief of dyspnœa in diphtheria, and of 350 such cases, 328 survived, 64 of the remainder suffered with tubercular lesions, either local or general. This, in itself, is a very striking piece of evidence with regard to the value of the nose in protecting the organism from infection.

Before leaving the consideration of the part played by the nose and naso-pharynx in determining the admission of tubercle bacilli into the body, we cannot go without briefly alluding to the question of the effect of nasal secretion. It is without doubt largely due to the constant pouring out of secretion that the pathogenic bacilli fail to obtain a lodgment in the nose, but it is an open question as to whether there is any bactericidal property possessed by it. This question has been investigated by Thompson, Park, and Wright, and the general consensus of opinion appears to be that, although the growth of various bacilli is somewhat retarded by this fluid, it is not inhibited. Incidentally, it may be noticed that 34 per cent. of the cases have exhibited staphylococci and 12 per cent. streptococci; but Park and Wright, in the investigations already alluded to, found them in six out of ten healthy noses and in 60 per cent. of children from an asylum, so that the classes of phthisical and non-phthisical patients yield about the same result when placed under similar conditions.

In considering the symptomatology of laryngeal invasion, it were better, had it been possible, to consider each symptom under two headings: one in which the first complaint is the trouble with the larynx, and the other in which the laryngeal invasion takes place after the chest has been known to have been involved for some time. It is amongst the former class of cases that one periodically finds cases in which there is a condition of the larynx that is quite anomalous, and which may for some time be suspected of being malignant. These cases contain among their number the genuine and the probable cases of primary invasion of the larynx by Koch's bacillus. If we are prepared to admit the frequent ingress of tubercle bacilli to the body viâ the respiratory airways, we must admit the possibility, at the least, of an occasional primary laryngeal tuberculosis. Necessarily, in cases in which the larynx presents itself as apparently the seat of the primary lesion, in order

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to demonstrate beyond a possibility of doubt that it is a primary one, one is obliged to be able to demonstrate post-mortem that the larynx is the only part involved, and that the lungs are as yet not affected. It therefore follows that this is only possible in a case of primary laryngeal tuberculosis, when death follows in a very short time of invasion. Again, as a less conclusive proof, I may quote cases which have been under my observation, in one of which I saw the larynx infected from the ear, and the chest was not involved for three or four months after the larynx. Another case, in which seven years ago I assisted in the operation and performed the microscopical investigations, and in which the larynx was infected by papillomatous outgrowth, I pronounced at the time to be tuberculous, and the chest first became infected some six months later, and the larynx remained healthy; and I have seen numerous other cases in which the larynx was apparently the primary lesion.

In these cases the first symptom is that of hoarseness and loss of voice, frequently with but little cough, and sometimes with almost no emaciation, and the evening elevation of the temperature will not be more than that which is not uncommonly noticed at times in cases of malignant disease.

On examining the larynx in these cases, the difficulties which present in diagnosis are largely due to the part or parts of the larynx affected; that is to say, if the epiglottis is involved, the condition is usually so typical that the question of diagnosis is not one of any difficulty. The same may be said, to a large extent, of the arytenoids, though perhaps the sources of error are here rather more common than in the case of the epiglottis. The larynx usually exhibits in these cases an abnormally red appearance; if there be any overgrowth of tissue, as a pseudo-pachydermatous condition of the vocal process, this is red, when in ordinary cases of the disease it is pale.

It must be admitted, however, that the difficulty of detecting early pulmonary lesions, which are situated anywhere except in those parts most easily investigated by auscultation, renders conclusive or satisfactory exclusion of early pulmonary tuberculosis extremely difficult; for it will be the experience of most of you, as it has been the experience of men constantly engaged in the physical examination of phthisical patients, that those who are also afflicted with laryngeal infection, more especially if that involves some stenosis, often exhibit no physical signs in the chest indicative of disease; yet, should they happen to die, it will be seen at the autopsy that their lungs are often in an advanced stage of tuberculous degeneration. In fact, it is never safe to conclude that

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because in a given case no physical signs, or but few and insignificant signs, are detected in the chest, the larynx is alone affected. Nor is it safe to assume that the whole of the variations in the temperature chart are due to the laryngeal condition because one does not detect any evidence of pulmonary disease. Naturally, as a general symptom, one looks at the temperature chart as affording a most useful aid. This is so in all except the primary cases, where the temperature may be but little affected for some weeks. Of course, as is well known, the normal individual has a slight diurnal variation in his temperature, and yet the chart of a consumptive patient is usually fairly characteristic.

Progressive loss of flesh is not always as useful in determining the character of a laryngeal lesion as of a pulmonary one; the night-sweats and loss of appetite are also extremely useful, although it is within the experience of a good many of us to find all these symptoms, including cough, loss of flesh, and night-sweats, in cases where the whole of the condition arose from nasal polypi or other obstruction to the nose. When the patient is already known to be the subject of pulmonary phthisis, it is not unnatural that any laryngeal affection should be classed as tuberculous laryngitis. It is, however, quite wrong to do this, for the patients, as we have remarked earlier in this lecture, are particularly liable to acute exacerbations of chronic laryngitis or slight attacks of acute laryngitis. These cases differ in no way from the same affections occurring in otherwise healthy individuals, and they require much the same treatment, with the exception that, should these cases of acute disease occur amongst people commencing the open-air treatment, it is well that for a time this be modified. I say commencing, for my experience is that patients with pulmonary phthisis who are treated by the open-air method do not suffer so frequently from acute catarrhal states of the upper respiratory tract as do patients who are kept in hospital under the old régime. Not only is this the case, but the occurrence of the severer laryngeal lesions, which are really tuberculous, is less frequent amongst those patients treated by the open-air method.

Special Symptoms peculiar to Involvement of the Larynx in Tuberculosis.—These are vocal laryngeal, exclusive of vocal pharyngeal, and reflex. The conditions of the voice with which one has to deal vary from a slight hoarseness to a complete aphonia. Dysphonia, or painful phonation, may be present, and other alterations of the vocal function. I have estimated that about 90 per cent. of patients, when suffering with laryngeal phthisis, suffer with some disturbance of the voice, and it has

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been estimated by others, and is universally accepted as approximately correct, that in at least 50 per cent. of all cases of phthisis does a laryngeal lesion present itself at some time during the progress of the disease. I have never been able to make any observations on this matter myself, as the patients from whom the majority of my experience has been derived have not been under my care or the care of my colleagues for more than six weeks to three months.

The interference with the voice may be of a purely mechanical nature. Again, it frequently is of a purely neurotic origin, or it may be due to absolute implication of the larynx and its tissues in the morbid process. Functional aphonia sometimes appears early in cases of pulmonary tuberculosis, and may even be the first trouble noted, yet such a case may never present any laryngeal lesion.

The mechanical complications may consist of the adhesion of tenacious mucus to the vocal cords themselves, of a mechanical obstruction by means of a pachydermatous thickening in the intra-arytenoid region, though not always sufficient to be considered as germane to the tuberculous process. Or it may be due to a loss of muscular tone in the internal tensors of the cords, so that they are no longer brought into apposition, and a condition like, in every respect, a hysterical aphonia is developed, with perhaps this exception—that it is by no means infrequent in males, much more so than the so-called *hysterical aphonia* is amongst the non-phthisical males of the population. Whether this loss of tone is due to the direct action of ptomaines and leucomaines on the muscle fibre, or whether it is due to the loss of tone consequent on increased physical weakness, I am not in a position to say. Also, as a mechanical cause of interference with the voice, one may class those cases of paralysis which are due to causes acting on the trunk of the recurrent laryngeal nerve.

Sometimes it will be noticed that patients with a rather chronic affection of the cords present a symptom which is rarely heard except in this disease. I allude to a sudden alteration in the pitch of the voice, going, we will say, from a bass to a tenor. This is due to a swelling of one cord suddenly becoming a little engorged or catching between the cords, and, as it were, cutting off the vibration of one portion of the cord in the same way that the pitch of the string of a violin is raised by having the finger pressed upon it.

These are the more prominent features that will be noticed without laryngoscopical examination, but in all cases one is well advised if a careful examination is made of the thyroid cartilage

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from without at some time of the examination, and for convenience we will consider it now. One desires to obtain information as to whether the cartilage is healthy or otherwise. In palpating the cartilages of the throat one should be able, in all except extremely stout people, to define the upper limits of the thyroid cartilage, and also the cricoid, and to feel if the edges are free and well defined. In cases of laryngeal tuberculosis in which the cartilage has become affected the thyroid plates become swollen. This swelling may be very slight, but when so is usually unilateral. When the perichondritis has become general the thyroid cartilage is no longer to be defined in the same way as if it were healthy. In rare cases suppuration takes place and fluctuation is found. This is, generally speaking, an extremely grave symptom, and of material consequence from the point of view of prognosis. Swelling of the cartilage, or perichondritis, is of advantage in assisting us in determining the relative importance of some conditions which are detected by means of the mirror. It is very rarely that there is any secondary glandular infection to be distinctly demonstrated in the neck, presumably on account of the patients rarely surviving for long when the disease has become already so extensive; but Jobson Horne's researches show this to be possibly more common than supposed.

Sufferers from laryngeal tuberculosis complain frequently of soreness in the throat, amounting to absolute dysphagia in bad cases. The sore throat may be due to a very slight involvement of the epiglottis or arytenoids, and it is rare to find the patients complaining much of painful swallowing unless there is ulceration present in either or both of these situations.

If the discomfort is due to an involvement of the epiglottis, the patients appear usually first to notice that their trouble is due to the ingestion of solid matter, whereas, on the contrary, if it is due to involvement of the arytenoids, it is fluids that more often either hurt them when they are swallowing, or the fluids themselves may find their way into the larynx. The reason that fluids give rise to more discomfort than solids when swallowed, when the arytenoids are large and tender, arises from the same mechanical cause as the fact that solids, as long as they are not too hard, are more easily swallowed than fluids in tonsillitis, and that is that the tender and inflamed parts are not so pressed against when a bolus of food is present as they are when there is nothing substantial passing them; they are, in fact, somewhat supported.

The importance of dysphagia is naturally great, for phthisical patients are notoriously disinclined to take an adequate amount of

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nourishment. They are fanciful in their appetites, and it requires very little to make them still more inclined to demur at taking the necessary amount of nourishment. For this reason, when we speak of treatment, we lay much stress on the relief of this symptom.

In common with all pathological states of the larynx, reflex pain is frequently observed, and, as is so frequently the case in malignant disease, the pain is referred to the ear and to the salpingo-pharyngeal fold. It is also occasionally referred to the palate, and should the larynx be involved more on one side than the other the pain is more noticeable on that side; and should the ulcerative process have extended from the larynx to the base of the tongue, as is sometimes the case, the pain may be very diffuse and severe in character.

Examination of the Larynx by the Mirror.—We must now consider the appearance of the larynx as seen by the mirror, and one must always bear in mind the fact that there may be much more extensive disease than we are able to discover by this means. Previous to introducing one's mirror, one naturally inspects the oral cavity and takes a glance at the oro-pharynx. In cases of pulmonary tuberculosis, as is well known, the mucous membrane of these parts is usually very anæmic, an anæmia which is but part of the general anæmic condition of the body, and an anæmia which is observable in the larynx of tuberculous patients as long as this part is not specially infected, but which may still be observed in chronic lesions of the larynx in some cases; and occasionally one will observe ulceration in the oro-pharynx. And here it is particularly easy to distinguish between the ulceration of tubercle and that of syphilis, the specific ulceration being much more sharp cut and the surfaces much cleaner than in tuberculous ulceration, a point which may often be, and often is, of great importance in the treatment of a case, and is more difficult when the larynx alone is involved. The general aspect of the larynx will exhibit this anæmic condition when there is only a small isolated lesion, such as an ulcer or a granuloma.

The most characteristic conditions seen in patients who complain much of their throats are a swelling, usually bilateral and pyriform in shape, of the arytenoids; also the so-called "turban-shaped" epiglottis, and ulceration on its dorsal aspect, and a general shallow ulceration of the whole larynx, with or without characteristic swelling. But for convenience I shall describe the various parts of the larynx separately, and include few descriptions of the general state.

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Commencing with the arytenoids, or arytenoid eminences, these exhibit a large variety, the most frequent condition being that, as I have said, of a somewhat pyriform-shaped swelling, with the base towards the centre, and in the early stages being of a bright pink colour. This, as the disease progresses, becomes larger, and may either remain of the same red colour or they may become much paler and more yellowish in tint. At times they are distinctly œdematous, and their epithelial covering is translucent in appearance. Again, at other times one may see, closely scattered over their surface, minute yellow points. These minute points are tiny abscesses, as yet contained in the mucosa proper. Should they rupture, they will form an irregular ulcer, which will have a grayish or yellowish-gray base, and it will be hard to say that the floor of this ulcer is lower than the surrounding epithelium. As a matter of fact, I very much doubt if it is. The ulceration is now of a non-tuberculous character, but grows in depth and penetrates into the submucus tissue, and it becomes a veritable tuberculous ulcer, and here, as in all other parts of the larynx, exuberant granulations tend to sprout up. If the arytenoids are swollen and in a chronic quiescent state, they have the yellow or pale tint to which I referred; and if the presence of tubercle bacilli has not been demonstrated in the sputum, and there are no other points to assist one in the diagnosis, the exclusion of syphilis will be difficult. The arytenoids are sometimes swollen to such an enormous extent that a view of the larynx proper is not to be obtained, more especially if the epiglottis has participated at all in the disease, and is consequently swollen, or if this organ should be placed rather horizontally. The œdematous arytenoids do not contain in their tissues anatomical tubercles, but they must owe their origin to some interference with the removal of fluids from the part, and I have once seen an œdematous arytenoid in a case of malignant disease involving the lower part of the larynx in which this must have been the case.

The epiglottis may be involved on any part of its surface by the development of ulcers which have the same characteristics as those I have described, but they exhibit very well that condition which was previously known as "snail-track" ulcer. I scarcely think this is a term which should be kept. Tuberculous ulcers are rarely situated on the anterior surface, and this is to a large extent the opposite to that which obtains in ulceration of the epiglottis in syphilis; besides which, these tubercular ulcers are not so clear cut or so deep as those which occur in tertiary syphilis, and they are also more usually rapidly filled with granulation tissue.

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Ulceration of the epiglottis may also take place at its edge, and it is also more often present in this situation in specific disease. The difference between tuberculous ulcers of the epiglottis and those caused by lupus is extremely well defined. In lupus destruction proceeds steadily, the surface of the ulceration being studded with small pink granulations, which do not become exuberant, and which are usually clean and not covered by any adherent slough. If the substance of the organ is involved, it becomes thickened and loses its yellow hue, and according to its original size gives a distinctive picture. If the epiglottis was upright and of small size, it now becomes rounded and thickened like a small bolster, forming, with the swollen arytenoids, a condition usually present with epiglottis involvement, that peculiar, turban-like appearance of which has originated the term "turban-shaped" epiglottis. If, on the contrary, the organ was large, and, as in most of these cases of large epiglottis, horizontal in direction, it completely precludes any view being obtained of the vocal cords—sometimes even of more than a part of the arytenoids; and it seems to me that the size of the epiglottis largely influences the position it occupies—that a large epiglottis is unable to remain upright, and is gradually forced to occupy the prone position by the constant passage over it of food. Not infrequently one will observe small translucent bodies on the edge or surface of the epiglottis, very much like small sago grains. These are small macroscopical tubercles, and if they are left alone will break down and form shallow ulcers. These are almost, if not quite, the only instances in which one sees macroscopical tubercles in the larynx.

When the arytenoid eminences are involved, and also frequently when they are not obviously involved, the posterior commissure is the site of either a swollen condition of the mucous membrane or of distinct outgrowths. This posterior commissure, which goes by the name of the interarytenoid region or the cricoid plate, when involved simultaneously with the arytenoids, loses its normal contour on its upper edge, for in health there is a distinct depression between the eminences formed by the small accessory cartilages, which becomes obliterated the moment swelling occurs. To such an extent may this be the case that the two swollen arytenoids merge one into the other at their bases. When the posterior commissure is the site of swelling, this takes place chiefly above the level of the vocal cords, and presents various pictures, from a simple uniform swelling to distinct cauliflower-like excrescences. These are sometimes red and sometimes pale. When they are red they are of more recent growth, but in all cases they are chiefly

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made up of a hypertrophied mucous membrane; that is to say, they are an example of pachydermia. Swelling of this region, without the pyriform swelling of the arytenoids, is also found in chronic laryngitis and in specific laryngitis, and has no special significance or characteristic, but the large cauliflower-like outgrowth I believe to be quite characteristic. Ulceration sometimes takes place in the interarytenoid fold, and is in these cases always covered with an adherent slough.

Ventricular Bands.—The peculiar conditions exhibited by the ventricular bands in this pathological condition are swelling and ulceration. The swelling, like that of the arytenoids, may be red or pale. If the ventricular band presents a uniform red and swollen appearance, it is due to perichondritis of the thyroid cartilage, and will be accompanied by a fixation of the vocal cord on that side, due not necessarily to any involvement of the nerves or muscles, but to deeper swelling, which precludes the possibility of any movement of the cord taking place. When the swelling is of a paler tint, I believe it to be due to an involvement of the tissues on its deep surface; that is to say, it is example of an infection of a ventricle, a condition which has been thoroughly investigated by Jobson Horne, whose researches we may allude to later. I have recently seen a case in which this obviously was the route of infection where the larynx was a dusky red.

In rare instances an abscess cavity is formed, either by retention of secretion within the ventricle or by a breaking down of a tuberculous mass into its interior, and once I have seen pus exuding—or I may more properly say pouring out—from the ventricle, with a subsequent disappearance of all swelling; and if I have been able to see this in one instance, one may assume that it is probable that it occurs in others, considering for how short a time the larynx is under actual observation.

A hæmorrhage may also take place if by chance a small vessel is involved in the ulcerative process, and it is not by any means rare that one sees a small amount of blood issuing from the ventricle or coming from the base of an ulcer on the band. When ulceration occurs on the ventricular bands, it is usually situated in the anterior two-thirds. These ulcers are usually of considerable extent and apparently shallow, but they have deeply involved and infected bases; that is to say, their floors are formed by a thick layer of granulation tissue, whereas the ulcers in specific disease are more punched out, having a greater appearance of depth, with overhanging edges.

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There is a condition which is known—or perhaps I should correctly say was known—by the term "collapse of the ventricles," and it was supposed to be due to eversion of the mucus lining, and in laryngeal phthisis this condition is not infrequently observed, and is recognised as a red swelling apparently protruding from the ventricle and lying on the cord; but certainly in this disease it is due to a swollen condition of the lining membrane of the lower part of the orifice of the ventricle. The vocal cords themselves show many and frequently characteristic appearances. In very early cases of tuberculosis one will occasionally see that one vocal cord is inflamed. This is quite a transient phase of the disease, and does not show that the cord itself is involved in the tuberculous disease; that is, the inflammation is purely inflammatory. But there is a condition in which the surface of the cord is involved, which, though I consider quite characteristic, I do not think is due to a deposit of tubercles, nor do I believe that tubercle bacilli are present. This condition is one in which the cords have a peculiar appearance, due to the presence of small, red elevations on them, sometimes longitudinal and sometimes more isolated. This appears to be due to the formation of a little small-celled infiltration in the sheaths of the small vessels in the submucus tissue. The mucosa clothing the cords may be ulcerated at any part, but this ulceration takes place more commonly in the posterior parts—again in contra-distinction to specific disease, which more usually affects the anterior third, although one does see ulceration in the anterior part in this complaint. That part of the portion of the vocal cord where it is inserted into the vocal process of the arytenoid cartilage may exhibit any of the following conditions:

If the patient has as yet no genuine infection of the larynx, but is constantly coughing, this part of the cord will exhibit a triangular red patch on its median aspect, which is caused by the vocal processes coming into violent and frequent contact, and from this state one of the following conditions may arise:

If the part exhibits a tendency to hyperplasia, the mucus membrane at the edges of this triangular patch will become elevated by the formation in the submucus tissue of granulation tissue, and a condition allied to pachydermia laryngitis as described by Virchow will arise, the vocal processes exhibiting a red papillomatous appearance, with a central depression, this central depression being caused by the more intimate connection of the mucous membrane with the underlying tissues in this situation, but with the important distinction that in non-tuberculous pachydermia this papillomatous mass is not red in colour. Ulceration will eventually take place,

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and a large excavated ulcer with elevated edges will replace the condition I have just described.

If, however, the tissues do not exhibit this tendency to hyperplasia, an abrasion may take place, and the mucous membrane will be destroyed, and the abrasion will extend anteriorly, being usually accompanied by a swollen condition of the subglottic tissues, which gives rise to the appearance of a longitudinal cleavage of the vocal cord.

At other times ulceration will appear on the whole or isolated portions of the cord, which, after a short time, will be occupied by small red granulations. In other cases the cord will have become irregularly eroded at its edge, giving rise to a saw-like appearance, and if the expectoration is scanty and tenacious, fine stria of mucus may be observed passing from one cord to the other.

The cords are sometimes completely destroyed, and it is in these instances that the aphonia is greatest, though the patient will accomplish a very marvellous amount of phonation by means either of the ventricular bands, or even by a sound cord coming into contact with the swollen subglottic tissue, which, as it were, takes the place of the destroyed cord.

There is a condition which occasionally one sees when the patient suffers as much from a barking cough and scanty expectoration, one which is not peculiar to laryngeal phthisis, in which the mucous membrane of the cord appears to become relaxed and flabby.

Tuberculomata.—The formation of tumours of tuberculous tissue, which are known as tuberculomata, is an occurrence of comparative rarity in the larynx; for all that, there is a large number of cases on record. Among my cases, which, up to the present time, number about 500, I have only had one instance of a tuberculoma in the larynx. This particular one was a small pedunculated growth which grew from one vocal process. They are, however, described as growing from all parts of the larynx, and are like tuberculous growths on other mucous membranes—that is to say, they are of a deepish-red colour, usually granular on the surface, and bleed readily. In days gone by, when the treatment of phthisis was less generally satisfactory than at the present time, it was noted that in the majority of cases in which tuberculous growth was removed from the larynx a fatal result followed fairly rapidly. From this it was deduced that the removal of tuberculomata from the larynx was a thing to be avoided, but there is no reason for believing this to be the case.

Tuberculomata are exuberant granulations, in the majority of

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instances, springing from the bases of tubercular ulcers; but perhaps in other cases they are formed beneath the mucous membrane, and retain a covering of epithelium.

Perichondritis.—We have considered the external appearances of perichondritis; we will now proceed briefly to consider the evidences of it as seen in the larynx. The swellings of the arytænoid eminences, which are most commonly not due to perichondritis of the arytænoid, but to an infiltration of the mucous membrane and its underlying tissues, though in certain cases, when the inflammation is more virulent than in others, the arytænoid cartilage itself may be affected. This may proceed to necrosis and exfoliation of the cartilage, but unless the cartilage is affected almost to an extent sufficient to destroy its vitality, I do not believe that the joint between it and the cricoid cartilage is often affected, although Dr. StClair Thomson brought forward last year at Cheltenham, in the discussion on this subject which took place at the British Medical Association's meeting, some very forcible arguments to show that it theoretically should be so; yet I have not so far seen any reports of this condition having been found post-mortem—by that I mean that I have not seen any descriptions of a tuberculous affection of the crico-arytænoid joint. When the arytænoid cartilage is involved and is affected with perichondritis, the cord on that side will be fixed, and the swelling will not be confined to the top of the cartilage, but will extend downwards, causing a large amount of discomfort when the patient swallows, on account of its projecting downwards into the pharynx. Eventually the abscess cavity will rupture, and the cartilage may be coughed up. At times the inflammatory process does not proceed to such an extent, and a sinus is sometimes seen from which pus issues in the region of the vocal process. The progress in these cases will be very slow, but the amount of cartilage which is necrosed may be thrown off and the sinus heal, a condition occasionally seen. If the thyroid plate is involved, the swelling on its cartilage will cause the fixation of the cord on the side on which the inflammation is. Should the thyroid cartilage become necrosed by this process, it may be coughed up in larger or smaller portions, but, speaking generally, the patient rarely survives long. If the process is very acute, it may be subdued by treatment; but then the patient will be constantly liable to further attacks, and one cannot help considering in these cases the advisability of free removal of the diseased parts. If the inflammation, when it is acute, cannot be subdued by the therapeutic measures at our command, suppuration will take place, and if the abscess ruptures internally it distinctly increases the severity

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of the case. If it ruptures externally an attempt may be made to eradicate the disease as far as possible, but we cannot hold out any very good hope of its being successful.

There is a condition which is seen in the larynx which might perhaps have been mentioned earlier. It is a gaping state of the orifice of the ventricles. One would hesitate, perhaps, in considering this a condition due to any tuberculous changes in the larynx, but it is a condition which is certainly far more commonly seen in the larynges of tuberculous patients than in other general diseases. It is due, I believe, to a loss of contractile power in the intrinsic muscles of the larynx, which passes through the upper surface of the ventricle, and its edges are thus not kept in apposition. It is also partly due to the loss of fat in the part, which is common to it with the rest of the body.

Subglottic Swelling.—I have not yet alluded to the subglottic swelling. Subglottic swelling is common to three specific diseases of the larynx—malignant disease, syphilis, and tubercle—and it is also found as a separate disease.

When seen in tubercle, one is inclined to the belief that the underlying periosteum of the part—that is to say, of the upper part of the cricoid—is involved, and ulceration, as well as swelling, may be present; but it is only rarely that one is able to detect the presence of ulceration with the laryngoscopic mirror, on account of the ulcers being situated beneath the cord, and thus hidden from view. One also sees not infrequently ulceration in the trachea, and these tracheal ulcerations sometimes are the sites of the small hæmorrhages, the blood being seen to ooze from their surfaces.

Paralysis.—This shows itself in the larynx as a paralysis of one vocal cord, which is usually fixed in the middle line, and also it is much more commonly found, that the left cord is affected. This recurrent paralysis is generally supposed to be due either to a pressure on the recurrent laryngeal nerve from enlarged mediastinal glands or from an irritation communicated to it when the subjacent pleura is involved. The peculiar characteristic of this condition lies in the fact that the paralysis, or paresis, as we should really term it, is frequently transient and variable. It may be noted after a little exercise of the voice in some cases, and one may even see a gradual diminution of abductive power come on during the course of laryngoscopical examination if the patient is made to phonate frequently, and one is often unable to observe any want of power in a cord which was apparently fixed a short time previously. Although this condition would seem to be peculiar to pulmonary tuberculosis, it may not be so, but I should incline to the belief

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that it is so. In very rare cases paralysis of the interarytænoideus muscle is seen. The other interferences with the voice which occur in this affection are principally due to lesions of the vocal cords, and, to a large extent, can be classified according to the extent of the lesion. Thus, hoarseness may be caused by the interference with the movements of the cord to which I have previously alluded, but it is much more frequently due to lesions of the cord—that is to say, to ulceration either of the mucous membrane covering the cord or to deeper ulceration involving its substance—and it will be progressive in its character. It will commence sometimes as simply a weakness of the voice — a so-called amblyphonia — progressing gradually into a most complete aphonia, this aphonia having quite a distinct character as compared with functional aphonia.

Associated Lesions.—Investigations, to which I have already alluded with regard to the rarity with which one is able to detect the presence of tubercle bacilli in the nose, would lead to the assumption that tuberculous lesions in the nose are relatively rare, and perusal of the reports of the various laryngological societies show that this is so. The nasal lesions which one occasionally finds are tuberculomata and ulcerations of the inferior turbinate and of the septum, and occasionally one finds ulcers in the naso-pharynx. The average of all cases in which I have seen nasal tuberculosis is about 1 per cent. Of these, one was a tuberculoma of the inferior turbinate, and the remainder tuberculous ulcerations of the septum.

I do not believe that the presence of a local lesion in the nose makes the prognosis of any case much, if at all, more serious.

The ear is another closely-allied organ which is occasionally involved, either with or without the association of a tubercular laryngitis. When it is involved as an allied lesion it materially influences the prognosis of the case. All cases of suppuration in the middle ear have the effect of undermining the resistance of the patient, and frequently also affect his mental powers, both with regard to his intelligence and his temper. So, if it were for no other reason, the presence of a suppurating ear cannot be looked upon as being without influence in ordinary cases of tuberculosis, and when the larynx is involved it will be a still more undesirable complication. The frequency with which a suppurating ear takes on a distinctive tuberculous character is open to question. Some authorities consider it much more frequent than others. It is probably more common amongst the poorer and worse-nourished classes, such as is seen amongst the poor in large towns on the

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Continent, but is certainly one comparatively rarely seen in England; but when it does occur, one is not able to look upon it as anything except a complication of the gravest kind. When the ear is the primary seat of the lesion—that is to say, when an otherwise healthy patient is affected with a primary tuberculous otitis media—the larynx may be involved secondarily and the lung later on. In these cases the prognosis is not so bad, but I am speaking from a very small number of cases; in fact, I believe I have only seen two, and both of these patients recovered. The course of events in these cases is that the infected and infecting pus finds its way down the Eustachian tube, and it may cause tuberculous ulcer in the naso-pharynx. It will then find its way down to the upper surface of the larynx, either dropping down the uvula or running down the salpingo-pharyngeal fold.

The question of whether one should operate on cases of suppurating otitis media in consumptives, in order to prevent this becoming the site of a secondary infection, is one of considerable interest, and I must also say I think it is one of great difficulty; and, besides, it must vary so enormously with each separate case that I find it difficult to express any definite opinion on the subject. But should a case of phthisis with a laryngeal infection have a suppurating ear, with no actual indication of urgency, I avoid operative interference, and content myself with the careful use of antiseptics. The detailed nature of this treatment is one that it is not necessary to enter into, but if operation seems likely to be required, I prefer to content myself with the smallest amount that is likely to attain the object in view, avoiding where advisable the radical operation, my reasons for this being that, as we shall see presently when describing and discussing various operative procedures on the larynx itself, the temperature is often raised for some time after operation, and the amount of harm might be greater than the amount of good; and in this connection we will return to the nose.

As you are aware, a very large number of cases of simple laryngeal trouble are due to nasal obstruction of one form or another, whilst this is also frequently the case in laryngeal tuberculosis; yet it is by no means a rule, and where the nose is obstructed the probabilities of the laryngeal trouble being either alleviated or cured are distinctly less than they would be were the nose patent.

Some six years ago I operated on several patients suffering from pulmonary tuberculosis, some of whom had been affected with laryngeal complication, whilst others had not, in order to relieve their nasal stenoses. My results were not encouraging; in fact,

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they were the reverse. One patient, who had progressed very well, and who looked like going out of hospital much relieved, died not so very long after the operation, and I cannot help believing that his death was accelerated by the operation. At any rate, I felt that the probabilities were in favour of this being the case, and from that time forward I have avoided doing anything for the relief of intranasal trouble of a non-specific character unless the patient had had a normal temperature for some months and was putting on flesh, and showed marked indications of returning health.

In the mouth itself a few associated lesions may be found. One which I pointed out some few years ago is a tuberculous ulceration of the lingual frenum. This is due to the formation of a small abrasion by the frenum being pulled against the lower incisors when the tongue is held out for laryngoscopic examination. It is a complication of no great moment, and can be easily cured by frictions with any of the solutions which one uses for the larynx. The other conditions which one sees in the mouth are ulcerations of the palate, of the pharynx, and of the base of the tongue, all of which are serious, and have a very bad effect on the patient, increasing the difficulty in swallowing and lowering his vital functions. They are also very painful and extremely difficult to remove. I have seen the whole of the pillars of the fauces, with the surface of the tonsil and back of the tongue, together with part of the pharynx, one large, ragged, painful ulcer. This, when taken in conjunction, as is frequently found, with a general superficial ulceration of the whole of the larynx, forms a condition which is most depressing, and one which is invariably rapidly fatal in its course.

Frequency of Infection of the Various Parts.—The matter we next consider is not without interest, and it is the relative frequency with which the various parts of the larynx are involved by tuberculosis. I have already made the general remark that lesions of the larynx are more commonly in the posterior half in tubercle, and in the anterior half in syphilis. The great reason that the larynx is involved in its posterior part when the disease of the larynx is secondary to pulmonary tuberculosis lies in the fact that the posterior commissure is especially the channel, or course, up which the sputum comes; but inasmuch as the sputum is not entirely confined to this area when it is coughed up, but passes over other parts of the larynx, the infection, when it is direct, may also, to a less extent, be found in other parts. The most frequent situation for any lesion to be found—whether this be simple swelling or whether it be swelling and ulceration, or ulceration alone—is the arytænoid region. Next to that comes that of the

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true cords, whilst the epiglottis, the interarytænoid fold, and the ventricular bands are affected in more or less equal proportion. The reason that the epiglottis is involved in this disease on its posterior aspect and edge is because it will be constantly struck by the sputum as it is coughed up, and, as was pointed out some years ago by Dr. Percy Kidd, the parts of the larynx where the epithelium is not provided with ciliæ are the parts where tuberculous infection is the most common, and they are those parts which are most frequently infected; for instance, take the arytænoid region. The great reasons why the true cords are so commonly the seat of disease is that to which I have already alluded; that is to say, their striking together, with subsequent abrasion or injury to the epithelium over the vocal process, for it is in the region of the vocal process that the earliest ulcers of the cords are most frequently observed, and it is the passage of sputum over the posterior part of the larynx. The ventricles of the larynx are often the seat of disease, although this may not be apparent to the naked eye, and it may be that the relative frequency with which the parts are involved is not the same pathologically as it is clinically, but it is from the clinical side that we have approached it.

Treatment.

Whilst the treatment of the throat lesion necessitates, as does any other lesion, treatment devoted to the part affected, we must always bear in mind that the throat affection is, in the majority of cases, but a complication. In the minority, where the throat or the larynx is the only part in which one is able to demonstrate the presence of disease, the laryngeal treatment is, in most respects, identical with that which is used for secondary lesions. For this reason the treatment in most cases should be such as will not interfere with that of the pulmonary lesion. I am not going to make any suggestions with regard to the general climatic therapeutics of tuberculosis, nor do I propose to offer any remarks as to internal remedies employed. I do not wish it to be assumed for a moment that to these influences I attribute but little success. On the contrary, I consider that it is to the due and proper use of general remedies that the treatment of laryngeal phthisis equally with pulmonary phthisis owes the success which we are at present in a position to attain; and howsoever great our success might be by treating the throat alone, it is only by paying the most careful attention to general treatment that our success can be of any lasting value; but in these days of specialism the treatment of

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the chest complaint—in this country, at least—is outside the province of the laryngologist, and rightly so.

Notwithstanding the importance of confining myself to the treatment devoted to remedies and surgical procedure directly applied to the larynx, there are a few points which—although almost trespassing on the field of general medicine—it is one's duty to allude to.

Thus, in the question of the food and in the manner of its administration, there are two methods of feeding patients—or, more properly speaking, of enabling them to take food—by means of which one can partly overcome dysphagia without the use of drugs.

The first is the method introduced by Wolfenden, which consists in directing the patient to lie on his face and to suck up fluid or semifluid nourishment by means of a tube from a vessel placed at a lower level; for instance, on a chair placed by the bedside. This will often enable patients suffering with severe dysphagia to take a large amount of nourishment with very little pain or discomfort.

The other method, and one which I think more applicable to slighter cases, is that introduced by Mark Hovell. In this method the nurse stands behind the patient with one finger placed on either side of the neck in the direction of the salpingo-pharyngeal fold—that is to say, parallel with the posterior border of the ramus of the lower jaw—and when the motion of swallowing is made, firm but gentle pressure is applied. This, again, will prove of great value and assistance.

Dietary.—The following should be carefully and rigorously excluded from any dietary of patients suffering from laryngeal phthisis:

All spices and condiments and hard material like crusts of bread; whilst bland and unirritating articles of food should be carefully selected, though unirritating flavouring agents may be freely employed. Milk in its natural state, as well as all preparations made from it, eggs, jellies, meat essences, and such-like, will form the staple dietary, and raw beef prepared in the way I have suggested—that is to say, finely-minced and served with the yolk of a raw egg poured over it—will, with a few exceptions, prove extremely easy of ingestion and palatable. I derived the idea of this as a food for tubercular laryngitis from my memories of the *biftak à la Tartare*, which will be familiar to many of you who have had any experience of German student-life.

Inhalations.—When a patient suffering with tuberculosis of the

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lung develops an acute laryngitis which is not specific, one must treat this acute laryngitis—often more properly speaking, subacute laryngitis—in exactly the same way as one would treat the same condition in a patient who was otherwise healthy; that is to say, he must, for a time, at any rate, be confined to the house in a moderately warm atmosphere—in fact, it is preferable to confine him to one room, and he must be given frequent inhalations of medicated vapour, the most suitable being that of benzoic acid or tinct. benzoin co., according to the preference of the medical attendant. These inhalations must never be given at a high temperature, the water from which the steam is obtained not being more than 140° F., the steam of this being not more than 120° F.

Specific Treatment.—We now come to the consideration of the specific treatment of tubercular laryngitis, which is to be divided into medical and surgical subsections.

By the *medical* one understands every procedure short of the use of instruments, with the exception of the submucous injection-syringe. I think it may be most useful to consider the various drugs which I consider to be of most value, with the indications for their use, and to omit entirely those with the use of which I am personally unacquainted, and those which I have not found to be of any substantial service.

Pigments or Paints.—The first class of drugs with which we will deal is that of the fluids which are used as pigments or paints, and before enumerating this small class of remedies it will be well to consider briefly the method of their application.

I have expressed the opinion before, which I have as yet seen no reason to alter, that the application of cocaine previous to the use of pigments to the larynx should not be continued longer than is absolutely necessary in the great majority of cases; for not only is it unnecessary, but patients suffering with laryngeal tuberculosis appear to me to be peculiarly apt to the establishment of an intolerance of cocaine—that is to say, it will frequently cause vomiting and retching. Again, it is better, as far as possible, to confine one's treatment of the larynx to those periods of the day in which the stomach is relatively empty—that is to say, if possible, some three hours, after, or just before, a meal. If cocaine is used, a weak solution, such as a mixture of cocaine and eucaine, each 10 per cent., will satisfy all requirements. This solution can be reduced in strength if it is necessary to continue using it on account of the nervousness or excessive sensibility of the patient.

All pigments should be applied on cotton-wool mops, as these can be destroyed after use, and the solutions should not be gently

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dabbed or painted on to the surface, but the mop should be pressed firmly against the part, and the solution *well rubbed in*.

Lactic Acid.—The best known, and probably the most generally useful of all pigments, is lactic acid. This may be used in any strength from 5 per cent. upwards. It was customary, when this acid was first introduced by Krause of Berlin, to be content, at any rate at the commencement of the treatment, with weak solutions, but at the present day one is in the habit of using from the commencement solutions of 20, 40, 60 and 80 per cent., or the pure acid. For my own part, I have entirely given up the use of lactic acid uncombined, and I shall presently ask you to consider the advantages of a combination. The disadvantages of using strong solutions at the commencement are that a small proportion of cases exhibit a want of tolerance of such a strong caustic. This is but to be expected when one remembers how in one's experience, every now and then, even an external application will, instead of soothing, irritate. One may mention vaseline, or even zinc ointment. But if one is to use lactic acid, I would recommend that 20 per cent. be used for the first few days, and that then the percentage be rapidly increased—say, every third day an increase of 10 per cent. The indication that one has exceeded the limit of tolerance will be shown by an increase of œdema in the larynx, or the presence of œdema if it were not previously present. For country practice especially, lactic acid, on account of its good keeping qualities, may be considered as still the remedy *par excellence* for all those cases in which a pigment is indicated.

Formalin.—The next, and, in fact, the only other, fluid remedy to which I attribute any value is formalin. Formalin was introduced as a pigment for this disease by Solis Cohen, of Philadelphia, and it may be used even up to 10 per cent., but for general purposes it is better to commence with 1 per cent., and to proceed cautiously up to 10 per cent., the limit of tolerance being shown by the same manifestations as in the case of lactic acid. It has the disadvantage of causing greater pain, but it has the advantage of causing a pain of much shorter duration than, lactic acid, and patients who have been treated by both the remedies give the preference to formalin. I used formalin alone for several years, and was very satisfied with it; but for the last six months I have used a combination of formalin and lactic acid, which seems to me to combine the advantages of both, and to be superior to either of them used separately. The formula I now recommend is formalin, 7 per cent.; lactic acid, 50 per cent.; glycerine, 20 per cent.; and water to 100 per cent. With all solutions of formalin, whether in

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combination or otherwise, a relatively fresh preparation is necessary; that is to say, no solution should be kept in use for more than two weeks, formalin vapour being very rapidly given off from the solution, and the solution consequently losing in strength.

The use of solutions or pigments is confined to the treatment of lesions above the cords, for it is impossible, at any rate in the majority of cases, to apply any solution below the cords, nor to any other part of the cord except its superior surface, and we shall see presently that we have a far more efficacious method of dealing with subglottic and cordial affections. This remark also applies to the insufflations of powders.

Powders.—The use of insufflations is no new treatment, and we are able to use these insufflations more easily for home treatment; that is to say, the patient is able easily to insufflate his own larynx, whereas the number of patients who can paint their larynges is not great.

The first powder we must consider is iodoform. This must be used in the form of a powder, and not of crystals.

Chinosol is another powder which has given excellent results.

Paraform is a powder which contains a large amount of formalin; and it is one of the substances from which formalin is made.

Orthoform is a powder which was introduced to the profession largely by Lichtwitz of Bordeaux.

The first three powders are remedial agents, and the last is a local anæsthetic. My custom in the use of powders is to use 50 or 75 per cent. of the remedial agent, and 25 or 50 per cent. of the anæsthetic. I prefer, of all these mixtures, 50 per cent. of paraform and 50 per cent. of orthoform. If one uses iodoform or chinosol, it is sufficient to add only 25 per cent. of orthoform. This is because there is no irritation set up locally by iodoform—in fact, I believe that iodoform has almost a local anæsthetic action on the larynx, and the irritation set up by chinosol is not very lasting; but one would suppose that the irritation set up by paraform would be both lasting and severe, and for this reason, as well as on account of its greater strength, which necessitates the use of a smaller quantity, one adds the larger amount of the anæsthetic drug.

Orthoform is a preparation which has yielded the most satisfactory results. It may be used in all cases to prevent the pain following either operative work or the use of pigments, or that caused by swallowing, should the mucous membrane be broken. If, however, the mucous membrane of the part is intact, orthoform will not give relief, for it is unable to act except under the conditions described.

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Injection into the Trachea.—For all tuberculous trouble below the cords, and in the majority of cases of the cords themselves, no treatment has yielded such satisfactory results in my hands as that of injections into the trachea. I have used various drugs and preparations, and I do not think that to any one solution one can credit a greater efficacy than to another.

In making intratracheal injections, the following points are worthy of attention: The temperature of the injection should be about 90° F. The amount injected is immaterial, but should not be less than ½ ounce; and, for the very obvious reason that a very large syringe would be apt to frighten the patient, the amount is not likely to be increased beyond 1 ounce. Again, as in a large number of cases cocaine will require to be used for some period, the injection should not be given on a full stomach, otherwise the effect is apt to be distinctly unpleasant. One should also take the precaution of having the nozzle of the syringe attached to the body by a screw or bayonet joint, for as the calibre of the nozzle is long and relatively small, the friction caused by the passage of fluid down it will be great, and consequently the resistance to the exit of fluid from the syringe will be great, so it is well to prevent the nozzle from separating from the syringe. This little accident is one which has at least one unpleasant consequence, for if the nozzle of the syringe is left in the patient's throat, when he coughs, as he will do in the majority of cases, all the fluid which is still in the long nozzle will come straight back into the face of the operator; and, again, if this happens in private practice it is not likely to increase the appreciation of one's skill on the part of the patient. By far the best vehicle is oil, and the oleum petrol of the British Pharmacopœia will meet all requirements, and the patent preparations supplied by various firms are only unnecessary luxuries. Any coal-tar oil of about a 5 per cent. strength may be used, as izal or creolin. When one uses the ordinary izal and creolin preparations it is necessary to add to the solution from 7 to 10 per cent. of lanoline, in order to form a good emulsion, as these preparations contain water, which prevents their mixing freely with the oil. The preparation that I generally use now is one which contains 3 per cent. of naphthalin and ½ per cent. of oil of cinnamon.

Before the injection is made the patient should be instructed to take a deep breath the moment the cannula is removed, and to hold his breath as long as he comfortably can afterwards. If this is done, and the tip of the cannula has reached well below the vocal cords, not one drop of the solution will be coughed up immediately. I am by no means sure that naphthalin is quite so useful as creolin or

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izal, my reasons being that, although after the injection the same symptoms of warmth in the lower part of the chest are felt, yet the patients do not taste the drug for such a long time afterwards.

It is, perhaps, well now to say why one considered that intra-tracheal injections would have an influence on the disease. The idea was that the expectorated pulmonary secretion became more or less clothed in an oily envelope of an antiseptic character, would be more easily expectorated, and therefore the cough less severe and less frequent, whilst there was less irritation caused to the inflamed part by the passage of the mucus over it, and that the probability of infective material resting on the diseased parts lessened. But it must also be borne in mind that as long ago as 1852 injections of this character were used in Edinburgh for the treatment of pulmonary phthisis, and for that they proved inefficacious; therefore this treatment is only of use as far as the larynx itself is concerned.

Choice of Remedies.—I shall now proceed to discuss the choice of remedies beyond that already touched on in discussing the question of paints and injections.

When there is swelling of the arytænoids and epiglottis, with or without ulceration of the false cords and of the interarytænoid region, one should confine one's treatment entirely to frictions of the part with one or other of the pigments suggested. But if the ulceration is deep, or if the swelling of the false cords is of that form which we have described as pointing to perichondritis, paints should only be used as an adjunct to operative treatment; and the same may be said to apply to cases exhibiting severe dysphagia, when the surface is intact, and when the patient's temperature chart is fairly regular, and where the highest point reached during the twenty-four hours is not greater than 100·5° F.

I would recommend—whatever treatment be adopted which is not operative in character—that it be employed daily; and that, where injections are indicated on account of disease below or including the cords, while there is at the same time disease above the cords which requires the use of a paint, the injections and paintings be either done on alternate days, or that, when the patient is sufficiently tolerant to enable the operator to employ both on the same day, the paint takes the precedence.

With the extensive superficial ulceration to which we have previously alluded, and to which one was in the habit of attributing a rapidly fatal issue, the effects of insufflations and of painting with lactic acid c. formalin solution will give the most surprising results, the larynx cleaning up, and the patient's general state

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improving in the most marvellous way; and the same may be said with regard to interarytænoid swellings and ulcerations. They will usually be most materially influenced for good by painting.

Again, all affections of the cords, with the exception of obvious outgrowths, will yield to these forms of treatment if they will yield at all. It is but rarely that surgical interference in ulcers of the cord will give one an improvement which one could not get by the means which we have at present considered. The use of paints in swollen conditions of the arytænoids and epiglottis is not so often successful, but it should always be tried, with few exceptions, for at least two weeks before considering that it is necessary to adopt more radical measures.

Ulcerations of the ventricular bands, unless of that shallow character we alluded to as a "snail-track ulcer," do not need quite so long a probation, one week, as a rule, being sufficient before proceeding to more radical measures.

Submucous injections of various fluids have been advocated by different observers, and may be considered as intermediary between treatment of the larynx by drugs and surgical interference, and, like most intermediaries, do not come out of the contest very well. They require a large amount of skill in their administration, and they require very wide experience in order that one should be able to select a suitable case, and it is not to all that this experience comes, and my opinion is that submucous injections have no place in the treatment of laryngeal phthisis. I must own to having employed them, and can also quote one successful case, but must admit I have had results which have reflected but small credit.

Direct Treatment of the Larynx.—That division of direct treatment of the larynx I propose now to lay before you is that which particularly acts as a bone of contention between the rival or opposing sections of the laryngological world. As this, the operative treatment, was largely "made in Germany," we cannot do better than say that this section is headed by that excellent man, Professor Krause, though perhaps it would be invidious to name any one man as heading the opposition. This is, I believe, one of the points over which contention will be long and eventual settlement remote, and I think that the reason is largely on account of the enormous diversity of lesions seen in the larynx in this disease, together with the still wider series of probabilities as to the relative conditions of the lung and the larynx, which must make it extremely difficult to compare results, even when cases are numbered by hundreds; and when one sees definite statements made with regard to the effect of operative treatment on the larynx by men

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whose experience of cases cannot be really great, one cannot help feeling grieved that opinions so honestly put forward should be so capable of misleading the profession, and thereby injuring the public; for when the experience of operative treatment is derived largely or entirely from the work done in the out-patient departments of our hospitals—whether special or general—and where the patients are still living with an insanitary environment, where their food is insufficient and not appetizing, whilst they are still obliged to work for their daily bread and the bread of their families, it is impossible that the best results can be obtained. In fact, I have before now expressed a doubt as to how far it was permissible for operative treatment in this disease to be carried on in the out-patient room. I am perfectly willing to admit that the temptation to operate on an apparently suitable case in the out-patient department is great, and that one may seem and be absolutely justified in doing a quite extensive operation when it is apparently impossible for the patient to obtain admission into a hospital, either on account of the demand for beds or on account of his own circumstances.

There is a wide difference between the class of laryngeal tuberculosis cases seen in the throat department of a general hospital, or in the out-patient department at a throat hospital, and the class of case which is seen in a hospital for consumption, where—and this is the important point—every case is examined as regards the larynx as well as regards the lung. For, in the first instance, the laryngeal lesion is the most prominent, as well as the most distressing, and appears to the patient to be the cause of all his trouble, and he naturally goes to a throat department for relief. Whereas the cases seen in a hospital for consumption are, in the majority of cases, discovered only by systematic examination of the larynx of all cases, which brings the proportion of really serious lesions down to a very different level to that which would be obtained in a general hospital out-patient department. And when we come to the question of large open-air institutions, where the cases selected are of the earliest and most favourable, you will understand that the proportion of serious cases may almost approach the vanishing point.

One can easily continue this theme without, perhaps, any great advantage, and it is only to be hoped—and most devoutly hoped—that sufficient accommodation for the poor who suffer with phthisis will gradually be found by the nation.

So far as possible, my advice with regard to operative treatment is that it be not carried out unless the patient has a hospital in-patient treatment or home treatment under his own medical man.

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There are naturally certain absolute counter-indications to the use of operative measures in the larynx, whilst, again, there are positive indications; but it is absolutely necessary that the majority of cases be judged on their own individual merits, and that it is, therefore, only by experience that an approximately correct judgment can be arrived at. I say "approximately correct," for I believe that the probabilities of an occasional error in judgment cannot be overcome even by the most experienced and skilful.

Counter-indications for Operative Treatment.—The most important counter-indication for treatment is a very advanced and progressive pulmonary tuberculosis, especially if accompanied by hectic and wasting. Again, as a counter-indication we have a high state of fever; in fact, my custom is, where possible, to avoid operating if the highest point to which the temperature rises during the day is over 100·5° or 101° F. This is one of the points most open to question. Extreme nervousness on the part of the patient is a distinct counter-indication—in fact, I know of no class of case where it is so necessary that your patient should believe almost in your infallibility as in this—and, lastly, where there is reason to suspect that the laryngeal involvement is a part of a general miliary tuberculosis.

Indications for Operation.—The most constantly favourable conditions are a steady temperature, a chronic, quiescent and non-progressive state of the lung, or the relative absence of pulmonary signs; cases where the temperature rises above 100·5° F., but where one is able with certainty to attribute the elevation of temperature to the laryngeal condition; where dysphagia is a well-marked or distressing symptom, which is not relieved by any other means, and when there is any tendency to laryngeal obstruction.

Last August I pointed out that the temperature not infrequently rose sharply after an operation on the larynx (in four out of thirty-five cases), and I also said that I considered this to be an indication for, at any rate, a temporary suspension of operative measures.

With regard to the question which was fairly widely discussed at the British Medical Meeting* at Cheltenham last year, and which I have since seen alluded to more than once—namely, should operative interference on the swollen parts of the larynx, when ulceration is absent, be undertaken?

I believe that, without doubt, the unanimity of opinion is from insufficient experience, for there is no class of case which yields such brilliant surgical results as that variety of laryngeal tuberculosis

* See Journal of Laryngology, Rhinology, and Otology, vol. xvi., pp. 559-581.

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where there is swelling only, which swelling does not yield to frictions by remedies, as lactic acid, and where ulceration has not yet added an additional cause for anxiety.

Surgical Treatment.—Proceeding with the surgical aspect of treatment, we have at our disposal instruments for scarifying and puncture, as well as scraping and cutting. The various knives that one uses for the relief of tension in the larynx have nothing peculiar in their structure which necessitates any remarks. Another instrument used for puncture is the galvano-cautery point. That again has no peculiarities and needs no description. The curettes that one employs are mostly either examples or modifications of Heryng's curettes, and in his case of instruments forms of lancets are also supplied. The cutting-forceps are all descendants of the cutting-forceps of Krause and Heryng, whose instruments have now been before the profession for a matter of fifteen years, and the tendency has been to make them either heavier to cut greater masses, as in the case of Gougenheim, whose large strong cutting-forceps were made to remove in one piece the whole arytænoid cartilage, as well as finer tube forceps, even more delicate than those of Krause. If one uses these fine forceps, their jaws must fit with the most absolute accuracy, and they must be of finely-tempered steel and as sharp as possible; otherwise one will frequently find that it is impossible to cut away the tissue seized in their jaws. My own pattern forceps is less strong than that of Gougenheim, but considerably stronger than the tube forceps, and I have performed most of my intralaryngeal operations with them.

Having just now briefly enumerated the more usual instruments which find a place in our armamentarium, we may with advantage consider the various operative procedures applied to the several sections of the larynx, taking them seriatim, and discussing them as fully as possible.

Epiglottis.—Commencing with the epiglottis, one has shallow ulceration confined to the posterior aspect, ulceration confined chiefly to the edge without material swelling, and swelling, "more or less marked," with ulceration, of the whole organ. The small ulcers do not necessitate any operative interference until other treatment has been carried on for a short time; in fact, to save unnecessary and therefore tedious repetition, we may make this general statement, that no operative interference should be undertaken until after milder forms of treatment have been used daily for, say, two weeks, without result. The exceptions we shall come to in due course.

As I just remarked, the shallow ulcers on the anterior or

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posterior aspect of the epiglottis do not, as a rule, require direct operative treatment. When they do, a gentle scraping with a curette is all that will be wanted. The small sago-like grains which I have described as being present on the epiglottis should invariably be picked off with a fine pair of forceps. When the ulceration is situated at the edge of the epiglottis, I do not think that it is necessary to either begin or continue with non-operative treatment, even for the short space of time suggested; but I would urge that the ulcer, if isolated, be cut out with cutting-forceps, and that the base be thoroughly cleansed with an extremely strong solution of formalin or lactic acid, or by the use of my formalin and lactic acid mixture. But if the body or fibro-cartilage of the epiglottis is involved in the tuberculous process, and is thickened to any material extent, I believe that there is no form of treatment so rational, so expeditious, or so useful as its immediate and entire removal by means of the galvano-cautery snare. Certainly, if the epiglottis is to be removed, it is hard to say what other method of removal can possibly be superior. If we consider the piecemeal removal by forceps, as was originally advocated when operative interference was in its infancy, we see how many days, and perhaps even weeks, must be occupied before our object is attained; for it is unsafe to cut deeply into the epiglottis with cutting-forceps, on account of the really severe hæmorrhage which is apt to follow, especially when the tissues are swollen, and therefore the vessels cannot contract. Again, cutting operations from without may be dismissed for the same reasons as external cutting operations in general, to which I shall allude again.

In removing the epiglottis with the galvano-cautery snare, the local anæsthetic required need not be a stronger solution of cocaine and eucaine than a mixture of 10 per cent. of each; and, having passed the loop over the epiglottis as far down as possible, it should be tightened before the current is turned on, and perhaps in this situation reasonable delay is more advisable than it is easy to give. The wire should by rights be tightened a little, and then the current turned on, but the loop not contracted during the period the wire is hot. When the epiglottis is nearly removed it can be seized with a volsella, so that it should not fall into the larynx, or the moment that the epiglottis is severed from its attachment a sharp cough on the part of the patient will expel it. In fact, although I have always had a pair of forceps handy to remove the epiglottis after its amputation, it has not been necessary to do so.

After the epiglottis is removed the stump should be well saturated with formalin and lactic acid solution, and an insufflation

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of iodoform and orthoform made. This performance should be repeated twice or more during the day, and daily for the following week, at the end of which time the whole wound will be clean and healthy.

The great advantages of a rapid and total removal of the epiglottis are that dysphagia—always present in these cases—is entirely removed, and that those parts of the larynx which were hidden by the swollen organ are now in view, and within the reach of our remedial measures.

Next, we will take the arytænoids, where we have to treat those pear-shaped swellings we alluded to in the earlier part of this lecture. Here, again, as in the epiglottis, the absence of ulceration should not be considered for one moment as a counter-indication for operation; in fact, if it were possible for one form or another to form a counter-indication, it would be the presence of extensive ulceration, and not the absence of it. Where the arytænoid is swollen, but where this swelling is obviously an œdematous swelling, where the tissues are soft and the cartilages are obviously not involved, and where the medical treatment proves practically useless, a scarification or multiple puncture will often—in fact, will usually—reduce this swelling in the space of a few hours, and relieve the patient of much discomfort. Where, however, the swelling is of a more solid character, and where the deeper tissues, and perhaps the cartilage, are also involved, whether there be ulceration or whether there be none, the whole swollen portion should be freely cut away with cutting-forceps, and we should remove as much as is possible at each sitting.

After any of these operative procedures the larynx should be well painted, and treated as after removal of the epiglottis.

In the interarytænoid fold ulceration truly forms an absolute indication for treatment. The tissues here, when there is ulceration, are shallow. The curette is easily applied, and the whole base of the ulcer may be swept with one application of the curette. This should be done the moment that ulceration is detected, and the base should be treated in the ordinary way. When there is a solid hypertrophic outgrowth in this region the necessity for operation is not so marked; in fact, it becomes immediately a question of advisability. If the patient's voice is materially interfered with on account of interference with the movements of the cords, or if the patient is going away from skilled assistance, then I think we should remove this mass—in the first instance to restore the voice, and in the second instance because these masses form the sites, in many cases, of a subsequent ulceration, and I look upon ulceration

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as being a much more serious condition and less amenable to treatment than the swelling, so I would remove the swelling to avoid subsequent ulceration.

Ventricular Bands.—Swelling of the ventricular bands is the one instance, perhaps, in which swelling may often be best left alone. When there is ulceration of their surfaces one should attempt, with a considerable-sized curette, to pick out the whole of the granulation mass forming its floor. This will have involved subjacent tissues to a very considerable extent, and one will be astonished sometimes at the depth to which the curette will sink and the size of the piece removed. But there also are times when swelling of the false cord necessitates operation. One form of swelling necessitates immediate operation, and the other form may wait until after our suggested probationary period. The instance I refer to in which delay should not be countenanced is where one ventricular band is swollen, where the swelling is acute, as will be judged by its colour, and where the cord is more or less fixed and very large, from which we deduced an inflammation of the perichondrium. Here we have a choice of two methods of treatment: one the igni-puncture, which is done by plunging into the swollen part the galvano-cautery point, and sinking it to a depth of about half an inch, this may be done in at least four or five places, or an ordinary laryngeal knife may be sunk into the tissue to an equal depth, and in quite as many places; in fact, the freer and more numerous the punctures the better.

Other cases in which delay is not only permissible, but perhaps even advisable, are where the ventricular bands are subject to a great thickening, but where, on account of this thickening, one is unable to obtain any fair view of the deeper parts, and removal of the ventricular band is required in order to enable one, if necessary, to treat them.

The vocal cords rarely require much operative interference. When they do it usually consists in picking off with a fine pair of forceps some mass of granulation tissue which has formed at the site of an ulcer, and which has become either sufficiently large to interfere with the voice, or which shows signs of becoming organized and developing into a little fibroid nodule, which would then interfere with the vocal functions. But there are occasional instances in which an ulcer situated on the vocal process or cord is particularly sluggish in character, and will not make any movement towards healing until it has been brought into activity by vigorous use of the curette; and, finally, the times when one finds it necessary to remove quite large outgrowths in the region of the

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vocal process, the pseudo-pachydermia of tubercle. Subglottic swellings can best be treated by means of the galvano-cautery point, either applied directly to their surface, which needs a very steady hand, or the same effect can be obtained by passing the point through the ventricular band external to the vocal cord. Occasionally it will be necessary to relieve the patient of portions of necrosed cartilage—either of the arytænoid or thyroid—by means of the curette or an incision of portions of tissue which are causing the portion of necrosed cartilage to be retained. But here we must, of course, be guided according to the necessities of the case.

Tracheotomy.—Before entirely dismissing operative procedures we must not forget tracheotomy and operations from without on the larynx. Tracheotomy is occasionally indicated. It should never be performed unless for the relief of immediate symptoms. As a curative measure it should not be entertained, but should be, as I have intimated, reserved for the relief of stenosis of the larynx, especially where that stenosis is due largely to the effects of tertiary syphilis. In these cases it appears to give the most excellent results. I say *appears*, for the instances of this complication which have come under my care have not been sufficiently numerous to allow me to speak with certainty.

As for any cutting operation from without, which has for its object the removal—or, rather, I should say the cure—of laryngeal tuberculosis, we can lay down guiding principles, the fulfilment of which is absolutely necessary in each case. First, the part should not be accessible from the mouth. Secondly, the expectoration from the lung should contain at the outside but few bacilli; better still should there be no expectoration or no bacilli. This practically means primary cases, and all cases of perichondritis where external operation may be of great value.

Prognosis.—We now come to the last, but an important, part of the consideration of our subject. I allude to the prognosis in these cases. The prognosis in advanced cases of laryngeal phthisis must necessarily be grave as regards life, and we are handicapped in considering the prognosis of laryngeal tuberculosis by the high mortality exhibited by the general disease, of which this is usually but a complication.

But if we consider the probability of curing the larynx, and the possibility of maintaining that cure for part, at least, of the life of the patient, be that one year or several, we are not in such a hopeless position. Of course, no one would expect that by curing the laryngeal trouble one would cure the pulmonary trouble. We see cases in which the patient has had severe laryngeal mischief in

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which life is prolonged, without any subsequent laryngeal infection, for the space of several years. I can myself speak of cases which are alive now, and which have been well for at least four years. I have also had cases in which the larynx has remained well for two or three years, and in which the patient has succumbed eventually to his pulmonary trouble without further throat trouble.

Thus, the prognosis is not necessarily bad as regards the larynx. In fact, we may go further, and say that the prognosis in cases of laryngeal invasion of the cords and interarytænoid region is good; that in the case of the involvement of the arytænoid region only it is very fair; that when the larynx is involved in more than one part, as the arytænoids and ventricular bands, it is not so good, being rather unfavourable than the reverse; but that when the epiglottis is involved to any serious extent—I do not mean by simple ulceration at its border or at its surface, without thickening of the cartilage itself—it is extremely bad. When we consider, however, the relief of urgent symptoms, such as dysphagia, we can consider it good even in the serious cases, for it is rare that a combination of operative interference joined with a proper use of local remedies will not enable the patient at any rate to die in comfort. Laryngeal tuberculosis is one of those lesions where an early recognition of the pathological process is almost essential to a good result, and it should therefore be incumbent upon those who have to treat pulmonary tuberculosis that the larynges be examined, at any rate on admission to any institution, or as soon as the patients first complain of laryngeal trouble. It is by so doing that I have been enabled to treat a very large number of cases of the earliest involvement of the larynx with a very marked success. Our results have not the brilliancy, perhaps, of a case which recovers after extensive operation, but the general results are superior to those obtained when only serious involvement of the larynx is dealt with.

I have not troubled you extensively with statistics. One reason of this is that I have already compiled a good many statistics on this matter, and I could only increase the numbers from which those statistics were drawn. But in my list of cures, compiled to the end of 1900, no less than 48 cases out of 329 left my hands with their larynges in a healthy condition, with the exception of any scarring due to the lesion or operation. Some of those cases had died of the pulmonary disease at the time that this list was compiled; but a point I particularly wish to emphasize is that cases of laryngeal phthisis, whether early or late, should never be considered so grave as to warrant their being left entirely alone.

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The amount of relief which can be given, even in cases which are rapidly going down hill, is very great, even if the treatment should consist in only punching out one ulcer on the arytænoid or removing an inflamed and painful epiglottis. I cannot see any impropriety or any reason for considering this in the least at variance with the highest principles of medicine.

Nor will I burden you with any account of the pathology of this disease, as for several years, I regret to say, I have done but little of this work, but would remark that the presence of miliary tuberculosis in the larynx is rare, and forms an example of the most intractable variety that we have to deal with, while the more localized the lesion, the greater our prospects of cure, though it must not be supposed that the whole of the swelling present in any part of the larynx is formed by tuberculous tissue. In fact, the rareness of tubercles and the great difficulty of demonstrating the presence of tubercle bacilli in portions of tissue removed show that often we are obtaining our good results by a good drainage of the tissues and the relief of tension, and this is good surgery.

NOTES.

At the annual meeting of the Laryngological Society of London, held on January 10, the following were elected officers and members of Council for the ensuing session: President—E. Cresswell Baber, M.B.; Vice-Presidents—E. Clifford Beale, M.B., F. W. Bennett, M.D., J. Dundas Grant, M.D.; Treasurer—W. H. R. Stewart, F.R.C.S. Edin.; Librarian—StClair Thomson, M.D.; Secretaries—C. A. Parker, F.R.C.S. Edin., James Donelan, M.B.; Council—F. de Havilland Hall, M.D., J. Barclay Baron, M.B., Sir Felix Semon, M.D., Lambert Lack, M.D., Richard Lake, F.R.C.S., Ernest Waggett, M.B.

The annual dinner of the Society, which was held the same evening, was largely attended. After the toast of the "King," that of the "Laryngological Society of London" was proposed by the President, Mr. Cresswell Baber, who referred to the large amount of work done by the Society during the eight years it had been in existence, Dr. Clifford Beale proposed the "Guests," which was responded to by Sir William Broadbent and Sir Alexander Mackenzie.

The charitable bequests under the will of the late Mr. Brocksopp include legacies of £100 to each of the following hospitals: The

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