brought almost to his knees by paroxysms of coughing; value £3. He was turned out to grass in April, improved at once, and by July there were no signs of asthma. He was returned to work, but during the following winter, probably owing to the confinement and altered feeding, he developed a less severe attack of asthma. This passed off, and in July he was sold for £40, and was hale and working five years later.

It is likely that many diseases in animals, such as pleurisy and tuberculosis, are lumped together as asthma; but it is trifling with the subject to dismiss asthma in birds as aspergillosis. If the disturbed metabolism arising from over-feeding and under-exercise is the cause of asthma, the bird in which we should most expect it is the canary; and canary breeders are quite familiar with what they rightly call asthma. A bird has naturally a more active respiration and metabolism than man; but a caged canary can get no exercise, and has little to do but feed.

A canary breeder got an asthmatic canary from a neighbour to destroy. It had been fed *ad lib.* on all sorts of seed and other food. He himself had been cured of asthma many years ago, and instead of destroying the bird, thought he would try a plan similar to that I had laid down for him. Instead of filling up its dish with a day's food, he gave it small regular feeds of plain canary seed, and thus cured it. I have had many asthmatic canaries examined by pathologists, who have found tuberculosis in none.

Asthma is probably a disease of civilization. While man had to hunt and kill what he ate, asthma was not likely to arise. An asthmatic visited a Red Indian location in Canada. An old squaw said to him: "You breathe heavy." "Yes; I have asthma." "You English eat too much." "What would you have me do?" She held up two fingers: "Two days no eating." Which was exactly the advice I had given, and which elicited the story. Inquiry among medical friends in various parts of the globe has elicited a number of interesting facts which, however, require sifting, which cannot be detailed here, but of which the following is a summary:

In Central Africa, still uncivilized, there is no overcrowding, the diet is mixed; tuberculosis, asthma, and enlarged tonsils and adenoids are unknown. In China and Manchuria, while the day is largely spent in the open air, overcrowding is common at night; the diet is largely carbohydrate (rice), but no milk is drunk; teeth are often filthy; asthma and enlarged tonsils and adenoids are rare, tuberculosis of glands and lung common. In Siam the life is rather more indoors, the diet more mixed, and milk is drunk and betel chewing common; teeth are filthy; asthma and enlarged tonsils and adenoids not uncommon; tuberculosis greatly increasing. In India conditions vary in different parts and among the different races, but carbohydrate forms a large proportion of the diet, and milk is drunk; tuberculosis is common, asthma also in some parts, but enlarged tonsils and adenoids do not seem to be common.

The inference seems to be that asthma tends to appear in proportion as the life is spent indoors, as there is overcrowding, as carbohydrate forms the staple diet, and as milk is drunk. This about milk is interesting, because my experience proves beyond doubt that asthma cannot be cured when much milk, raw or boiled, is taken. I have cured two cases of hay fever in adolescents who took large quantities of milk by simply cutting it down.

Asthma, then, being in many if not in most cases a toxæmia due to want of adaptation of food, not only to the needs, but to the biochemical peculiarities of the individual, its essential treatment is obvious, simple, but involving much painstaking trouble in every case. I have dealt with this elsewhere at length.

Some think that attention to the nose has been over-emphasized, but, for reasons given above, this is doubtful. After that the main thing is to procure elimination of toxins and prevention of further toxæmia; or, to use Guelpa's phrase, "Désintoxication et renouvellement des tissus." Long before the appearance of Guelpa's book the fact of week-end asthma and the voluntary fasting of the asthmatic during his paroxysm till it ceased had taught me the value of fasting, and it was practised with success. And Hyde Salter sixty years ago rightly took pains with the individual diet. But not enough attention has been paid to cookery. With an unusually irritable *vagus* it is important that the digestive organs be taxed as little as possible.

THE value of the estate of Sir Leander Starr Jameson has been sworn at £45,082 18s. 10d., the net personality being £42,747.

A SURVEY OF 1,064 OPERATIONS FOR THE COMPLETE REMOVAL OF TONSILS AND ADENOIDS,

WITH A CONSIDERATION OF THE POSSIBILITY OF A REDUCTION IN THE NUMBER OF OPERATIONS,

BY

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THE consideration of the large number of operations performed for the removal of the faucial tonsils and adenoid growth, or hypertrophied pharyngeal tonsil, makes one pause to wonder whether all these operations are really necessary. It must be remembered that the tonsils, both faucial and pharyngeal, are normal structures present for some definite purpose in every child.

When the tonsils and adenoid growths are septic, diseased, or hypertrophied, so that their presence produces definite and harmful symptoms, every one will agree that they should be efficiently removed, but the predisposing and exciting causes of infection and enlargement of these structures should be reviewed before deciding that operation is necessary. The experience gained by a close study of 1,064 cases, in addition to those seen during seven years in charge of a London County Council school clinic for affections of the nose, throat, and ear, may throw some light on their etiology. The cases have been carefully examined before operation, they have been seen two or three hours after operation, again one week afterwards, and, finally, six months later.

Etiology.

The age at which children require operation varies, but I have not seen one case of congenital enlargement of the tonsils or adenoid tissue, and agree with Lambert Lack¹ in doubting its occurrence. The youngest case was aged 16 months, and there were only five under 2 years. Children operated on under 2 often have recurrence, and the best results are obtained when the operation is performed between the ages of 3 and 6.

The strumous or scrofulous child is a common victim of "tonsils and adenoids" and has a typical appearance with enlargement of the lymphatic glands, phlyctenules of the cornea, excoriation of the nostrils by nasal discharge; such children lack immunity to catarrhal affections and to tuberculosis. This type of child runs in families, several members of the same family are strumous, and there is a family history of tuberculosis, suggesting that the condition is due to a tuberculous predisposition, in addition to bad surroundings in a poor home in a large city. The removal of tonsils and adenoids in such a child, followed by a visit to the seaside with good surroundings and food, leads to a vast improvement in health.

The most marked cases of enlarged tonsils and adenoids amongst children occur in those in whom there is evidence of dirty, badly ventilated, unhealthy homes with their cheaper carbohydrate diet. In these cases parasites, particularly *Pediculus capitis*, are invariably present, and the fact that they cause enlargement of the superficial cervical glands makes one consider what influence pediculi have on the lymphatic tissue of the pharynx. To operate on these children and to send them back to their squalid surroundings is to court failure. The removal of tonsils and adenoids in these cases is almost as illogical as scouring the hair of patients to remove pediculi and immediately allowing them to use the same dirty, infected pillow and clothes. The percentage of well-cared-for children with good surroundings seen in private practice who require operation is much smaller than in the case of poorer children seen at hospital.

Cameron² has shown that excessive carbohydrate diet among the poorer classes, which is the rule owing to its cheapness, produces a catarrhal tendency. Again, there is evidence to indicate that infection—for example, the tubercle bacillus—is conveyed to the tonsils by contaminated water, milk, and food.

The effect of locality is difficult to estimate, and at one time it was found that a large number of the cases came from the low-lying districts of the river banks, and from a valley town where there were watercress beds and a stream running through its centre, but statistics of this

sort tend to be erroneous. In the dry climate of southern Italy adenoid operations are extremely rare.

Scarlet fever, diphtheria, measles, and whooping-cough have been credited with a predisposing influence. Measles certainly has preceded operation in a large number of cases, but since the majority of children have had the various fevers, the estimation of their effect on the lymphoid tissue is difficult. Children with enlarged tonsils and adenoids are much more liable to have acute otitis media as a complication of scarlet fever, measles, and diphtheria.

Some general infections enter the body through the tonsil, and this organ is said to be a portal for infection of the vermiform appendix, for acute rheumatism, tuberculosis of the cervical glands, and, most probably, scarlet fever. Tonsillitis frequently precedes or follows appendicitis, and tonsillitis can be part of a general intestinal infection. Poynton and Paine³ record a case of appendicitis following follicular tonsillitis, in which the organisms in the tonsils and appendix were identical; they showed that the appendicitis was a result of a blood infection, and that the cause of appendicitis may be a streptococcal invasion through the blood stream from a follicular tonsillitis. Brian Metcalfe⁴ records two cases of appendicitis immediately following tonsillectomy. Appendicitis associated with tonsillitis is always severe, and requires immediate operation. It is stated that the tonsil is the portal of infection for acute and chronic rheumatism; tonsillitis frequently precedes rheumatism. I have often removed unhealthy tonsils in patients who have had acute rheumatism; also in cases of chorea and chronic rheumatism. In the cases of acute rheumatism and chorea both diseases may recur, and P. R. Cooper⁵ records a case of severe acute rheumatism which followed a few months after tonsillectomy.

In two of my cases, seen three years after enucleation, there had been no return of acute rheumatism, and their general health had been excellent. In one case of erythema nodosum and chronic rheumatism the symptoms had disappeared since enucleation of the tonsils three years before. A similar result was obtained in three cases of chorea.

Mitchell found the bovine tubercle bacillus in the tonsils of fifty-one out of seventy-two cases of children with tuberculous cervical glands and also traced the source of the bacillus to infected milk. Of the tonsils of ninety children with no infection of the cervical glands, 6.5 per cent. gave histological evidence of tubercle bacillus, and 10 per cent. gave a positive result with the guinea-pig. My experience coincides with this result, and in practically all the cases of tuberculosis of the cervical glands (upper deep cervical set) seen the tonsil was unhealthy and required removal. It was a small flat, spongy tonsil, and not a large hypertrophied tonsil.

The most frequent exciting cause of enlarged tonsils and adenoid growth is the common or influenzal cold, measles, or some other specific infection. In a large number of colds there is a mild or even severe tonsillitis—in fact, tonsillitis is frequently called influenza by the patients and their relatives. The doctor is generally asked to see a child during these illnesses, and as the symptoms of a prolonged cold resemble those found when the tonsils and adenoids require removal, an operation is advised; but when the child is seen some time after the cold or acute infection has disappeared there may be no signs of tonsil enlargement or adenoid growth and all the symptoms have disappeared. In cases of this kind it is advisable to wait until the acute infection has subsided before deciding to operate. It occasionally happens when a child is seen during the winter or catarrhal season that the hypertrophy of the tonsils and adenoid growth and the necessity for removal are well marked, but for various reasons operation is delayed until the warmer, drier months of summer, and then the small amount of adenoid growth and the small, normal-looking tonsils removed, make the operator wonder whether he has done an unnecessary operation. This occurrence bears out the fact that the tonsil and adenoid enlargement is often temporary, and that a child should be kept under observation before finally deciding to operate. Removal of tonsils and adenoids before an acute infection has completely subsided, or during the acute stage, leads to increased sepsis, otitis media, suppuration of the cervical glands, and all the septic complications of such an opera-

tion, which, under the best of conditions, is always accompanied by a certain amount of sepsis confined to the wound.

Local sepsis, particularly bad teeth and nasal suppuration, are frequent causes of enlargement and inflammation of the tonsils. It has been my custom for many years to send all tonsil and adenoid cases with bad teeth to the dentist to have the mouth put in thorough order before operation, and no operation is performed until the gums have completely healed. I am in entire agreement with T. B. Layton,⁶ who stated that the number of cases sent for dental care who were found on their return not to require operation was surprising. Even in adults the tonsils will visibly shrink, so to speak, after the removal of oral sepsis. Practically all cases of suppurative tonsillitis or quinsy are accompanied by oral sepsis, and, in a clean mouth, severe follicular tonsillitis will recover without suppuration or abscess. A tonsil and adenoid operation done in the presence of oral sepsis leads to septic complications, particularly otitis media.

Nasal sinus suppuration is rare in children, but the great majority of young adults with nasal suppuration have enlargement of the adenoid tissue of the nasopharynx and tonsils which disappears with the successful treatment of the suppuration. One attack of tonsillitis does not call for removal of the tonsils, but frequent attacks occurring once or twice a year with enlargement of the cervical lymphatic glands (tonsil glands) indicates a thoroughly septic tonsil which requires enucleation.

Causes of Operative Failure.

The first of the common causes of the recurrent operation for removal of tonsils and adenoids is tonsillectomy, or the incomplete removal of the tonsil; the septic stumps are more susceptible to repeated attacks of tonsillitis; I have seen a schoolboy who has had tonsillitis every term after tonsillectomy, and a girl who had nine attacks of tonsillitis in a year following tonsillectomy, and other similar cases.

At a discussion on the relative values of tonsillectomy and tonsillectomy at the International Congress, 1913, the majority present were strongly in favour of tonsillectomy, or complete enucleation of the tonsil. My figures down to 1913 showed that, out of 1,520 cases operated on, 41 had had tonsillectomy performed elsewhere and enucleation of the tonsil stumps had to be done. The examination of another 78 cases of tonsillectomy showed that 39, or 50 per cent., were failures, and in 36 enucleation of the stumps had to be performed. Every surgeon has his own method of enucleation, but the most satisfactory and surest method is that of "dissection" as described by George Waugh.⁷

The second cause of failure or recurrent operation is the performance of the operation by inexperienced and occasional operators. The removal of tonsils and adenoids requires considerable practice.

The third cause of recurrence has to do with the adenoid operation. Children are frequently seen with anterior nasal obstruction, such as a septal spur or marked deformity and deviation of the septum, in which the obstruction is in front of the nasopharynx and produces symptoms and signs of adenoid growth, yet the nasopharynx has been repeatedly scraped for adenoids with no beneficial result. Of fifty-two recurrent operations, ten were due to this cause of nasal obstruction.

Enlargement of the posterior ends of the inferior turbinates has been stated by some to be a cause of recurrent operations, and some operators remove the posterior ends of the turbinates when removing the adenoid growth. I have looked for this condition for many years and have not found permanent enlargement of the posterior ends in children, and I do not consider it necessary to add to the operation by their removal.

There are cases of recurrent adenoid growth, fortunately rare, which, in spite of the fact that the growth has been thoroughly and efficiently removed, require second or third operations, and this suggests that the effect rather than the cause has been removed.

Complications.

The complications of operation are remarkably few, usually remote and due to sepsis. The absence of complications and of any observed disadvantage to the patient

by the loss of the tissues removed will perhaps account for the great popularity of the operation. The immediate complications consist of haemorrhage and shock, both of which are uncommon, more particularly shock. Neither haemorrhage nor shock occurred in any of the 1,064 cases. Most operators see that haemorrhage has ceased, or is insignificant, before the operation is completed. Shock, when it occurs, is the result of insufficient or inefficient anaesthesia.

The remote complications are chiefly the result of sepsis. Acute otitis media occurred in 4 of the 1,064 cases, and one of the four required a simple mastoid operation. The incidence of otitis media can be diminished by careful management before and after operation. It is more common in hospital practice where the patients are treated as out-patients, and is practically absent in private practice where care is taken before and after operation and the patient's surroundings are better. The preparation of the mouth, the avoidance of operation during acute infections, and the rest in bed for three days after operation in a clean home diminishes the incidence of otitis media. In order to avoid operation during an acute infection or in children who are possibly sickening for any infectious fever, such as scarlet fever, measles, etc., the temperature is taken while they are waiting their turn for operation, and if the temperature is above 99° operation is postponed.

Severe scarlet fever and measles are known to follow operation with disastrous results. I have known of two cases in twelve years' experience; such cases do not return to hospital, and are not always observed, but E. W. Goodall and J. D. Rolleston, from a long experience of fever hospital work, both state that they have not seen more than a dozen such cases of scarlet fever or diphtheria following operation in twenty-five and seventeen years' experience respectively. In all cases before operation it is advisable to see that the ear passage is clear and does not contain wax, as a blocked meatus adds to the difficulty of treatment of otitis media. Suppuration of the cervical lymphatic glands is very rare, and I can only remember two or three cases in a period of twelve years; in the series here discussed there were none.

Results.

The results of operations in the carefully selected and well-marked cases are excellent; not only are the symptoms relieved, but there is a great improvement in the general health and comfort, due to the fact that the child sleeps better, its appetite is increased, the hearing improves, the frequent and prolonged colds cease, the flat chest develops, and growth is more rapid. The removal of adenoids in the so-called idiopathic asthma of the nervous, wheezy child has no beneficial effect, and most of these children have no adenoid growth. Idiopathic asthma must not be confused with the intermittent suffocative attacks during sleep, which are due to adenoids, and are cured by the removal of the growth.

A large number of children have attacks of earache and deafness during colds, with retraction of the drums, which frequently suppurate; and if such a case is allowed to continue without operation, the deafness or dullness of hearing becomes permanent, and is beyond cure. The affection of the ears makes operation imperative. In all cases of earache and deafness operated on the ears become normal, except in the older patients, in whom the damage has been done by the long duration of the inflammation. Cases of recent suppuration rapidly heal and the otorrhoea ceases.

The mouth breathing and frequent colds disappear if the patient is made to perform suitable exercises to expand the chest and to promote nasal breathing. No operation is complete unless followed by a course of breathing exercises and the teaching of children to blow their noses efficiently every morning. The parents are told that breathing exercises are as important as the operation, and should be carried out every day for at least six months, commencing a fortnight after operation.

Occasionally a school child will have a temperature, of obscure origin, of 100° with a rise to 102° or more for some weeks following a so-called influenzal cold which on careful inquiry is seen to have been tonsillitis. There is slight tonsillitis with enlargement of the cervical tonsil lymphatic glands. The enucleation of the tonsils cures the fever, and the cervical glands slowly disappear. There are two types of enlargement of the upper deep

cervical set of glands as the result of infection of the tonsils. The first is inflammatory, and accompanies most attacks of acute tonsillitis, and disappears with the tonsillitis. In repeated attacks of tonsillitis the enlargement, which is limited to the tonsil gland of the upper deep cervical group, becomes chronic, but gradually disappears after the removal of the tonsils. The second type of enlargement is tuberculous, is more marked, and there is extension to the other glands of the deep cervical group. If the case is early and the glands are not caseating, removal of the tonsils with suitable antituberculous treatment results in their disappearance, but the majority of hospital cases require removal of the glands in addition to the tonsils.

Nocturnal enuresis has been stated to be due to adenoid growth and its accompanying suffocative attacks during sleep, but in my experience true regular enuresis occurring every night is rarely, if ever, due to adenoids. Very few children with well-marked adenoid growth have this symptom, and I have seen a number of cases of enuresis with absolutely no adenoid growth. Moreover, the removal of the adenoids has not cured the enuresis.

Whatever the function of the tonsil may be its structure and behaviour are similar to that of a lymphatic gland, and it is reasonable to suppose that the remaining lymphatic tissue of the pharyngeal wall, the lingual tonsil, and cervical glands compensate and take on the function of the tonsils and tissue removed, but I have not seen hypertrophy of any of these structures after operation, not even the cervical glands.

I have carefully examined a large number of children six months or more after operation, and have endeavoured to follow up cases, and I have not observed any deleterious effects or disadvantages following removal of tonsils and adenoids. I have not obtained any evidence to indicate that the removal of the tonsils predisposes these children to diphtheria, scarlet fever, or other acute infections, but I have seen several cases of unhealthy spongy tonsils yielding cultures of the Klebs-Loeffler bacillus weeks after the quarantine period had elapsed. E. W. Goodall and J. D. Rolleston both state that in their experience there is no reason to think that children who have had tonsils and adenoids removed are more susceptible to scarlet fever or diphtheria. I have not seen and have no records of tuberculosis of the cervical lymphatic glands appearing after removal of the tonsils.

In conclusion, when a child has a specific set of injurious symptoms which can be definitely attributed to the tonsils and adenoid growth, nothing but benefit results from removal, but there is a need for careful examination and selection of operation cases. An attempt should be made to ascertain and eliminate the cause of the condition under observation before the question of operation is finally settled.

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THE TREATMENT OF AMOEBIC DYSENTERY WITH EMETINE AND BISMUTH IODIDE.

BY

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DURING the months of July and August, 1917, 40 cases of amoebic dysentery admitted to a military hospital in Mesopotamia were treated with emetine and bismuth iodide, used either alone or in conjunction with emetine hydrochloride.

These cases formed in July 25 per cent. and in August 34 per cent. of all cases admitted in which blood and mucus were present in the stools. They also furnished all the severe cases and the deaths from dysentery during the above period. Four deaths occurred, in two of which hyperpyrexia from the intense heat undoubtedly hastened the end. The remaining two were due to peritonitis following perforation of dysenteric ulcers, and occurred in very debilitated subjects two or three days after admission.