ON THE SUPPOSED IMMUNITY OF NATIVES OF INDIA TO ENTERIC FEVER.

RESULTS OF THE SERUM TEST.

BY SURGEON-MAJOR S. F. FREYER, M.D., A.M.S.,
Dagshai, India.

EARLY in May last, during the prevalence of an epidemic of enteric fever at this station, my attention was called to a case of sudden illness in one of the native servants (sweeper) of the Station Hospital in attendance on the enteric patients; after five days' continuous fever he convalesced slowly. The senior medical officer, strongly suspecting it to be a case of enteric fever, asked me on the second day of the illness to apply the blood test, which I did, with an immediate positive result. In consequence, however, of the often-disputed immunity of natives to this fever, it was necessary to make a control experiment.

A healthy attendant (sweeper) from the same ward was examined, but he also gave the reaction of immunity. The remaining sweepers and one ward servant—seven in all—were submitted to the test, and found immune. It then occurred to me to try whether these natives are born immune, or contract the disease after birth; and, if the latter, at what age. Three infants at the breast, from 6 to 10 months old, were tested, but none of the three showed the least reaction of immunity. Five children varying from 2 to 4 years were next examined; four of them reacted promptly and strongly; the other, a boy aged 4, showed no reaction. Lastly, six Icnis boys were taken, their ages varying from 10 to 13. Five of them gave the reaction of immunity, and one no reaction. I may mention that these boys had no connection with the hospital, and although two of them belonged to the sweeper caste, the others did not.

I should have preferred to complete the series of experiments by testing some of the rural population, but my duties at the present time confine me to cantonment limits. Besides, the interest in the question is, for the present time at least, and as far as I am concerned, entirely due to its bearings on the environment of the British soldier in cantonments.

It will, I think, be sufficiently obvious from these experiments that, at any rate in the immediate neighbourhood of cantonments, we have the forms of this disease widespread amongst the native followers, and in such intensity that only very few of the youngest children escape the disease.

This, then, reconciles the opposing views of some of the ablest medical officers who have served in India, for whilst the native is—no more than probably any other mortal—not born immune to this disease, he meets it at such an early period of life that it passes over him unobserved, or, not having received sufficient immunity in his childhood attack, he gets in adult life the masked disease still, due this time also to its mildness of form as a second bout of the disease. Such was in all probability the case in the senior medical officer's patient.

We can now give a rational explanation of the yearly increasing sickness and mortality from enteric of the British soldier in India. When in the old days the soldier came out here at a mature age, he came from a home which, from a sanitary point of view, might perhaps without much exaggeration be compared to the home of the natives of India. It ought therefore to be no matter of surprise that he remained free from the disease during his whole service in India, and in spite of the most insanitary surroundings such as we know prevailed in Indian cantonments in those days. He was, in fact, immune to enteric fever long before his arrival in this country. Such, however, is not the case at the present day. The sanitary condition of the British Isles has of late years improved by leaps and bounds. As a consequence those who arrive in the country soon fall victims to a disease which meets them at every turn.

It is necessary for me to state that the blood test used is one which I found absolutely reliable after an examination in my wards of thirty odd cases of undoubted enteric fever, many of them immediately on admission, and about the same number of cases which after further observation for a few days proved not to be this disease, but ordinary ardent fever,

due to over-exposure to the sun, and lasting only three or four days, or other such slight and very temporary ailment, with a cause which was not obvious at first.

The mode of procedure was practically the same as that recently advocated in the *BRITISH MEDICAL JOURNAL* by Professor Delépine, and might be called the Metchnikoff-Widal test. After washing the finger it was treated with absolute alcohol, and when dry punctured with a piece of an ordinary sharp steel pen, which could be thrown away and not used a second time. The small pipette, recently drawn out in the flame and sealed at both ends, had the ends then broken, and again sealed when the few drops of blood ascended partly into the bulb. Whilst preparing the suspension of the bacillus on the cover glass a sufficient quantity of serum will have separated out towards the bulb of the pipette.

The suspension found most convenient for these experiments was made by adding three loops of a vigorous culture from gelatine, or preferably agar, to one-third of a watch-glassful of sterile normal saline. Ten loopfuls of this were then put on the cover glass; next the empty end of the pipette was broken off down to the bulb until it admitted the loop, which became filled with a film of serum and some corpuscles. This was then smartly rubbed into the cover glass suspension. The dilution was thus about 1 in 12, but no pretence was made to determine this accurately, as in actual practice such fine measurements were found quite unnecessary. A streak of vaseline was drawn round the cover glass, after mounting, to prevent evaporation. Thus prepared the specimen lasts for days. The vaseline may be applied on the end of a match, which should be afterwards burnt in the flame to avoid any risk of its being dipped into the vaseline pot a second time.

Observations were made within half an hour, and again after twenty-four hours. The reaction was certain within the half hour, but of course much more obvious after twenty-four hours. Air bubbles, which will be present, do not seem to interfere with the reaction, and, as Professor Delépine has remarked, the few stray corpuscles are an advantage in supporting the weight of the cover glass as a roof. They also assist in the focussing of the oil immersion lens.

At one time, owing to my gelatine culture degenerating from age and dryness, I found the reaction so slow that I was almost despairing of the test from doubts as to its uncertainty, when fortunately Surgeon-Major Davies, A.M.S., happened to arrive at our station to analyse the water supply, and was kind enough to revive the culture in his incubator on broth, and afterwards on agar.

After this experience, and although the advantages of the method are obvious, if it were proved to be quite certain, I feel no inclination at present to use dead bacilli for the suspension, as advocated by some.

I owe an apology for once more describing the blood test, but it seems to me that some of the methods at the present time followed at home, and recently described in the *BRITISH MEDICAL JOURNAL*, with their complicated apparatus, are enough to deter any beginner from attempting what is really a very simple test, and within the reach of all.

ON STONE IN THE BLADDER AND OPERATIONS FOR ITS REMOVAL.*

BY SURGEON-MAJOR J. A. CUNNINGHAM, M.D., M.Ch.,
Indian Medical Service.

EVER since I presented to the surgical museum of the Queen's College, Belfast, the collection of calculi numbering 350 which were removed from the bladder by me in India, by lithotomy and litholapaxy, I have thought it appropriate that I should exhibit them, and read a paper on the subject before this Society. I trust that what I have to say will interest the meeting, and afford a theme for profitable discussion.

You will find amongst these specimens, I believe, examples of almost every variety of calculus that affects the human bladder, and I suspect that in the various operations for their removal almost every conceivable complication or difficulty was met with in one or other of them.

* Read before the Ulster Medical Society, Belfast.

I propose to confine my observations chiefly to the operations for removing stone from the bladder, but as I would be certain to be asked to explain the real or apparent prevalence of calculous disease in India as compared with this country, I shall in anticipation endeavour to do so.

That stone is more prevalent in ratio to the population in certain districts in India than in any part of this country may, I think, be asserted; and that it is infinitely more prevalent in certain regions of India than in others is an undoubted fact.

The parts of India where stone is most prevalent are the North-Western Frontier, Scinde, the Punjab, and the North-Western Provinces. Now over these regions two general conditions hold that I believe exercise a paramount influence in the causation of stone.

First, enormous mountain ranges, composed largely of limestone, bound these territories; large rivers arising in the mountains intersect them, which carry and deposit in their alluvial soil considerable quantities of lime salts. These lime salts are in turn imparted to the drinking water of the communities inhabiting these regions. Now, if an excess of lime salts is taken into the body, it is reasonable to assume that they will appear in excess in the urinary secretion.

The second condition is great alternation of climate and temperature, excessively hot dry summers, when excessive perspiration carries off most of the fluid excreted from the body, and the urine is of minimum volume, but excessively concentrated: in fact, just such a solution of salts as precipitation or crystallisation is likely to occur in on the slightest provocation.

This provocation is supplied by a diseased or deranged condition of the urinary organs or passages brought about by the great and sudden alternations of function called forth by the sudden alternations of temperature experienced in the regions to which I refer, where the scorching summer months are followed by sharp cold weather in the winter months, especially at nights, when a good fire is very enjoyable. Each day of the cold season again provides the sudden alternations of temperature above referred to; during the day a nearly tropical sun imparts excessive heat to people exposed to its direct rays, when perspiration will be at its maximum and the urinary secretion at a minimum in volume. This will be followed by a chilly night, with perhaps frost, when the opposite state of affairs occurs as regards the secretions. To these sudden alternations of temperature, especially when not obviated by suitable clothing, avoidance of exposure, etc., are attributable not only the disease I am now considering, but many others, and especially malarial fevers, which account for perhaps more sickness and deaths in India than all other diseases combined.

Stone in the bladder is not quite so prevalent a disease in India as might at first sight be led to assume on seeing such a collection of specimens in the practice of one surgeon. The population is very large, and the number of operating surgeons comparatively small, and when a particular surgeon acquires a reputation for a special operation, this gets known amongst the people for great distances, and, accustomed as they are to making pilgrimages, sufferers often make long journeys to put themselves in his hands. For several years I have noticed that the majority of my litholapaxy cases came from districts beyond my own, and a district in the Punjab would extend for about fifty to eighty miles in each direction and have a population of about a million.

OPERATIONS.

I shall begin with litholapaxy, as in the light of recent experience this is the only justifiable operation for the removal of stone from the bladder of a male, a female, or a child when the operation is feasible, one of the cutting operations being admissible only when for one reason or another litholapaxy is impossible or unsuitable.

This operation, which consists in the crushing and removal of a stone from the bladder by the natural passages at one sitting, was introduced to the profession, named, and perfected by the late Professor Bigelow, of the United States, to whose genius and memory be all honour.

The operation was undoubtedly suggested, and led up to by the old but relatively most unsuccessful operation of lithotritry, but Bigelow's most ingenious device of the aspira-

tor for the speedy removal of fragments, his advocacy of the necessity for at once removing all fragments from the bladder, his demonstration that the urethra is more capacious than was believed, and that prolonged instrumentation of it is practically harmless, removed gigantic obstacles to progress, and practically revolutionised this department of surgery.

Notwithstanding considerable opposition at first the operation gradually asserted its superiority over the older methods, and by the exertions of a number of surgeons, conspicuous amongst whom have been some of my brother officers in India, has been brought to such a degree of perfection as to leave little to be desired.

The operation in experienced hands diminishes the mortality by over 7 per cent. as compared with lithotomy, the figures being for litholapaxy about 4 per cent., and for lateral lithotomy about 11 per cent. of deaths.

By the kindness of Brigade-Surgeon-Lieutenant-Colonel Keegan I am able to reproduce the following table, showing the number and result of litholapaxies, lateral lithotomies, and suprapubic lithotomies performed on patients of all ages in the Punjab, North-Western Provinces, and Oudh, and in the Bombay Presidency during five years ending December 31st, 1895:

Nature of Operation.	Number of Operations.	Cured.	Died.	Percentage of Mortality.
Litholapaxy	10,073	9,665	399	3.96
Lateral lithotomy	7,201	6,407	794	11.02
Suprapubic lithotomy...	147	86	61	42.17

This table has been compiled from data supplied by the official medical reports published in India. A considerable proportion of the lateral lithotomies in this table were doubtless in children, as litholapaxy in children was not so frequently performed some years ago as it is now, and the favourable result following lithotomy in this class of patient tended to reduce the general mortality of lateral lithotomy to the favourable figure of 11.02.

Freyer, in his book *Modern Treatment of Stone*, quotes the statistics of 2,592 lithotomy operations performed in Indian hospitals in 1882 before the days of litholapaxy, giving a mortality of about 13 per cent. Besides the lower mortality following litholapaxy, there is the important matter of avoiding a wound, and convalescence lasts a few days instead of a few weeks after lithotomy.

The first and most important consideration after experience in the operator is the question of instruments, and I am able to show here a set of the most recent yet devised made for me by Mr. Weiss.

The lithotrite should be fully fenestrated, and the largest and most powerful instrument that can be easily introduced should be used, the best pattern I believe to be this, a combination of Thompson's blades with Bigelow's handle and locking action.

The cannula should be slightly curved, and, as with the lithotrite, the largest size that will pass easily should be used; No. 18 English scale can be usually passed in people with normal passages. It is well to have a few straight cannulae, and for prostatic cases one with a long curve may be found serviceable.

Of aspirators in any surgical instrument catalogue quite a confusing array will be found. Nearly every operating surgeon of note apparently thinks it necessary to devise an aspirator to bear his name. Of all these creations the one I like best is Bigelow's latest aspirator, slightly modified by Freyer; it is simple in construction, easily filled and emptied, and most efficient in working. In this aspirator the fragments of stone, on entering the bulb with the return flow, fall at once by gravity into the glass receiver directly underneath, where they remain undisturbed by the current when the bulb is again compressed.

For this operation it is always advisable to have every needful instrument in duplicate; if one is broken or gets out of order, another should be at hand to take its place. It is also needful to have lithotrites and tubes of different sizes to suit

cases in which for one reason or another full-sized instruments cannot be passed.

Needless to say, the operation in children requires a special set of lithotrites and cannulae, which are not only of smaller calibre— $\frac{4}{3}$ to 10—but which are shorter than those used for adults.

CASES SUITABLE FOR LITHOLAPAXY.

In the hands of experienced operators a very small proportion of the cases met with will be found unsuitable for this operation—I should say not more than 3 per cent. in India, and even less in this country where patients are likely to come under skilled observation and treatment at an early stage in the disease.

Those cases that are not suitable for litholapaxy, and will require to be relieved otherwise, might be tabulated thus:

1. Those with such a condition of the passages that the lithotrite necessary for the crushing of the stone cannot be passed. I have met with a few children in whom the smallest lithotrite could not be passed, and in a paper published by Surgeon-Major Gimlette, I.M.S., in the *BRITISH MEDICAL JOURNAL* of May 9th, 1891, in which he gives the details of 40 cases of litholapaxy in children, he relates the cases of 6 other children in whom this operation was impracticable. In the adult, organic structure may decide against litholapaxy.

2. The stone itself may be so large that the largest lithotrite will not lock on it, or it may be so hard as to resist the greatest force that the instrument will bear or the operator be able to exert.

3. A stone in the bladder may be complicated with one or more in the membranous or prostatic portions of the urethra which cannot be pushed back into the bladder; or the stone may be encysted or may be complicated with a tumour of the bladder.

4. A state of affairs may exist which makes it desirable to provide complete drainage and rest for the bladder after the removal of the stone, such as extensive cystitis with ammoniacal urine, and especially if associated with stricture of the urethra.

5. Such a condition of irritability of the bladder that the organ will retain no fluid even under profound anaesthesia, the stone being clasped by its hypertrophied walls. In this latter case an expert might perform litholapaxy without increasing the patient's risks, but perineal lithotomy would have considerable advantages in such cases in allowing drainage and rest to the bladder.

CUTTING OPERATIONS.

In all such cases as these, one of the cutting operations should be resorted to; and I wish to state emphatically here that of the two varieties of lithotomy I infinitely prefer the perineal method to the suprapubic when the conditions admit of it.

The suprapubic method should be restricted to three classes of cases: (a) exceptionally large calculi, and these would probably be better dealt with by a new method—perineal lithotripsy; (b) encysted calculi; and (c) those associated with tumour of the bladder, which it is advisable to remove at the same time.

A new operation—perineal lithotripsy—has recently been devised and practised by which exceptionally large and hard calculi are crushed by a giant lithotrite introduced through a small perineal wound. This method would also be applicable to cases with bad urethral stricture.

Of this operation I have had little personal experience, but I anticipate that for the class of cases to which it is applicable it will be in future generally practised with great saving of life.

The danger to life in lateral lithotomy has a direct relationship to the size of the stone, a large wound in the prostate and extensive bruising in extracting the stone being the dangerous factors. Both of these will be avoided in perineal lithotripsy.¹

LITHOLAPAXY: STEPS OF THE OPERATION.

A stone having been detected in the bladder it is wise to subject the patient to a few days' preparatory treatment, with rest in bed to allay bladder irritability. The bowels should be unloaded by a purgative, followed by an enema on the morning of operation. If diarrhoea exists it may be necessary

to give astringents. All lowering treatment should be avoided, as the patient's vital powers, doubtless already low, will be subjected to considerable strain during prolonged anaesthesia.

The temperature of the operating room should be regulated, and as little of the patient's body as possible should be exposed; a pair of long warm woollen stockings reaching well up on the thighs should be worn. The anaesthetic which I generally use is chloroform till the patient goes under, and then A.C.E. mixture to maintain anaesthesia. A narrow operating table not too high is most convenient, and there should be a flat cushion placed beneath the buttocks. The instruments, placed on a flat dish, should be covered with a layer of hot carbolic lotion, and placed on a small table to the right of the patient near the operator's hand; a pot of oil should be at hand to lubricate instruments. It is well to draw off any urine that may be in the bladder, and to introduce a few ounces of warm boracic lotion. In a large number of cases it will be found necessary to slit up the meatus to admit the largest instruments the urethra is capable of accommodating.

It is needful to have an assistant who understands emptying and refilling the aspirator, for which warm water or boracic lotion should be used. Care should be taken not to begin crushing until the patient is quite under the influence of the anaesthetic or while there is any straining.

To avoid injury to the bladder great care is necessary during the application of the requisite force during the crushing process. This force in the case of a hard stone will sometimes be very great. Having caught the stone and locked the blades, the left hand, which holds the lithotrite, should be so placed as to keep the blades in the centre of the bladder, and to maintain them there the fixed elbow-joint should be pressed against the operator's side. During the application of force by the right hand the attention must never be removed from the left hand and the position of the blades of the lithotrite.

In picking up fragments of stone care must be taken not to grip portions of the bladder. If in any doubt on this point the operator can satisfy himself by rotating or drawing forward the lithotrite before locking it.

Until some experience in the use of the lithotrite is acquired it is no easy matter, even in a simple uncomplicated case, to crush a stone in a reasonable space of time without inflicting injury on the bladder, and for a beginner to be confronted with a difficult case, such as an irritable or sacculated bladder, a large prostate, a partially-encysted or a very large stone, is enough to make him wish that he had never seen a lithotrite. On the other hand, with experience it is wonderful with what facility and rapidity even a large stone can be crushed.

It is well to crush as much of the stone as possible before withdrawing the lithotrite so as to have as few reintroductions as possible, and it is desirable to proceed with the various steps of the operation as expeditiously as possible, so as to minimise the time under the anaesthetic.

In cases with large prostate, or an irritable urethra or bladder, a considerable amount of blood may be lost, but in simple cases there should be no bleeding.

In using the aspirator great force should be avoided, especially in children. The amount of fluid that should be thrown into the bladder at each compression will vary with every case, and no rule can be fixed. Beginners will usually be puzzled to know when the last pieces are evacuated, but to an experienced operator the sound and feel of the fluid as it flows through the tube tell him whether evacuation is complete.

There is no operation in the whole range of surgery more perfect or beautiful in conception and application than litholapaxy, and none requiring a higher degree of skill, dexterity, judgment, and patience for its successful performance. A beginner should not attempt to operate in a complicated or difficult case, and if possible should always have an experienced operator beside him to advise and, if needful, assist him.

In the *BRITISH MEDICAL JOURNAL* of May 9th, 1891, I published a series of 102 consecutive litholapaxies, without a death in patients of all ages from $2\frac{1}{2}$ to 80 years, and with calculi the fragments of which weighed from 4 grains to

4½ ozs. These included all my cases from January, 1890, to April, 5th 1891, that were capable of operation by litholapaxy. No case was refused operation no matter in what state of general health, so there was no selection of cases.

Moreover, subsequently to April 5th, 1891, I had a continuous series of 31 litholapaxies before I met with a fatal case in the person of an old man of 80 years, who, in addition to an oxalic stone of five years' duration, was suffering from fever and diarrhoea; he died of exhaustion two days after operation without any urinary symptoms. Litholapaxy could have no more eloquent advocacy than this continuous series of 133 cases without a death in the hands of one surgeon.

My friend, Surgeon-Lieutenant-Colonel Freyer, has published a series of 100 consecutive operations for stone without a death in his practice in India, and another brother officer, Surgeon-Major Stephen Little, has also recently completed a century of consecutive successful litholapaxies.

Of my 133 cases above alluded to, the specimens of which are amongst those on the table, I find that 39 were 60 years of age or over, 35 were 12 years or under, while 59 were of ages varying from 12 to 60.

As regards time under operation, eliminating 5 cases in which no time was recorded, the average was under thirteen minutes from the beginning of the use of instruments to the completion of the operation. The shortest time was four minutes and the longest sixty-three minutes.

A moment should never be wasted during the performance of a litholapaxy, and rapidity should always be aimed at, so as to minimise the amount of anæsthetic inhaled and the time under its influence.

NOTE.

¹ An illustration of the giant lithotrite recently modified on the suggestion of Dr. Keegan by Mr. Weiss was published in the JOURNAL of July 3rd, p. 23.

REMARKS ON A CASE OF NON-TYPICAL SYPHILIS (SYPHILIS GRAVIS) CURED BY THE AACHEN SPECIFIC METHOD COMBINED WITH SURGICAL TREATMENT.

BY DRs. B. BRANDIS AND T. THISSEN,
of Aachen (Aix-la-Chapelle).

A VIGOROUS man, 62 years old, without hereditary taint, had been suffering from frequent attacks of malarial fever as long as he lived in India; they quitted him only when he left that country and settled down in a healthy place in England. He lived a regular and abstemious life, and was thought to have rather overworked himself of late. In January, 1895, after having exposed himself to infection, he noticed a sore on the penis under the foreskin, with a slight gelatinous discharge. This sore soon healed under self-adopted treatment with calomel ointment.

In February he was laid up with severe influenza, followed by high fever and bronchitis. For two months more or less continuous fever and bronchial catarrh persisted, and his medical attendant at that time, unacquainted with what had passed in January, considering malaria might have something to do with the course of the illness, submitted him to a number of hypodermic injections of quinine. From these the patient derived no benefit, and in June he was sent a sea voyage to the North Cape. He returned no better, and in the beginning of August he was reduced to a very low state, having a continuous cough with copious purulent expectoration, and an evening rise of temperature to 102.7°.

On August 18th he was seen by Mr. H. B., who found him suffering from a septic bronchitis, but no tubercle bacilli could be found. There was also discovered a smooth rounded swelling situated on the right side of the thyroid cartilage projecting upwards below the vocal cords, and almost occluding the glottis. The nature of this growth was at first doubtful, as the patient denied all knowledge of having had syphilis. However, antisiphilitic treatment in the form of large doses of potassium iodide, together with intralaryngeal injections of a 20 per cent. solution of menthol in almond oil, and the use of creasote inhalations was adopted. Under this treatment the patient rapidly improved in every way. By the end of September he had regained much weight, and was

up and out most of the day, the cough having entirely disappeared.

On September 28th he complained of some painful swellings of the shins and forearms, which on examination proved to be periosteal nodes in an early stage of development. He was then ordered 20-grain doses of potassium iodide three times daily, with 4 grains of grey powder at night. Under this treatment the periosteal swellings subsided to a great extent. In November, 1895, the throat began to get worse again. The internal use of the specifics was not so efficacious this time. The swelling in the larynx reached the left side and both arytenoid eminences became much swollen and inflamed.

On January 10th, 1896, tracheotomy had to be performed for the relief of dyspnoea, and with the hope of benefiting the laryngeal disease by rest. In the course of some weeks two small pieces of cartilage, partially ossified, were expectorated. They evidently came from the sides of the thyroid cartilage. After this the tumefaction in the larynx subsided greatly, and the left vocal cord became free and movable. The right cord remained buried in the swollen mucous membrane of the false cord. In May the periosteal swelling on the left shin suppurated, and was opened, when a dense gumma extending through the bone to the medullary cavity was found. A distinct line of demarcation between the healthy and diseased bone being evident, the latter was removed by chiselling. During all this time (8 months) the patient had been taking iodide and mercury in varying quantities, but was far from being cured. In June, 1896, he was sent to Aachen to go through a regular course of baths and mercurial rubbings. So far the statements of the patient's medical attendant in England.

The patient on his arrival in Aachen put himself under Dr. Thissen's care, and was frequently seen by Dr. Brandis in consultation.

During the next two months mercurial inunctions were administered almost every day, combined with the use of the Aachen baths. All precautions were carefully used to prevent any ill effects of mercury. Iodide of potassium was also given for a short time. Enjoyment of fresh air, good food, plenty of milk were ordered. The leg was carefully dressed, otherwise it required not much treatment except once when the wound had to be enlarged on account of pain and fever, which both subsided almost immediately.

For local treatment of the laryngeal complaint, the patient was confided to the hands of Dr. Schmidhuysen, of Aachen, who on August 23rd succeeded in removing a large piece of necrotic ossified cartilage through the tracheal wound. Six days later another big piece of necrotic cartilage was taken out by means of a laryngeal forceps through the mouth. Those pieces proved to be parts of the right thyroid cartilage. The swelling of laryngeal mucous membrane quickly subsided, and on September 3rd the tracheal tube was removed for good. Breathing has been perfectly free ever since. Towards the middle of September the patient returned home, immensely improved in every way—in fact a different man.

When he returned on May 6th, 1897, for a short so-called safety cure, he had gained 1 st. 6 lbs. in weight, and showed all signs of recovered health and strength. All hoarseness had gone; his voice was good. Nothing abnormal was to be seen on laryngoscopic examination. The absence of the lost parts of cartilage could not be traced. The wound of the tibia was healed.

From the narrative of the case its pronounced peculiarity is easily noticed. A man past 60, without previous syphilitic history—a strong man—only in former days a victim of frequent attacks of malarial fever, contracts an ulcer on his penis which heals up by local treatment only. None of the well-known secondary symptoms appear, but instead of those, and apparently in combination with a severe attack of influenza, long and weakening fever comes on. The fever does not yield to quinine nor to change of climate, but is followed by necrosis of laryngeal cartilage and of tibia. Potassium iodide as well as grey powder are administered, not before seven months had elapsed after the infection, at first with strikingly favourable effect, but proving insufficient later on. Complete cure is at last brought on by the Aachen anti-syphilitic method as well as surgical treatment.