

THE TREATMENT OF SURGICAL TUBERCULOSIS BY KOCH'S METHOD.

Being a Discussion in the Surgical Section, January 23, 1891.

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IN answer to the invitation of the Council of the Surgical Section of the Royal Academy of Medicine to join in the discussion on Koch's treatment of surgical tuberculosis, I submit a very brief note of the cases which I have dealt with since returning from Berlin. I regret that this discussion has been opened so soon. Little more than a month has elapsed since any of us in this city have been able to apply the treatment, so that the announcement of any of our results must be regarded as precocious—a description I heard applied to Koch's own announcement by high scientific authority amongst the Germans of Berlin last month.

We have at present only scraps of evidence to produce on any of the vexed questions raised for our discussion. Those of us who are sanguine see in the method a powerful aid to diagnosis, and a means of avoiding or supplementing the use of the knife ; the sceptics, on the other hand, are beginning to say that soon lymph will be plenty after the charm of novelty has passed from the treatment, and its apparent success has been disproved by time, and its value in diagnosis put aside by the uncertainty in action of the remedy.

I commenced observations with a view to treatment on December 15th, by having note made of the fluctuations of temperature and of other details in a group of cases which appeared suitable. As many of the cases were children, I had also to communicate with

their parents, many living in distant parts of the country, and obtain permission for the treatment lest any untoward accident should occur.

Since then I have injected fifteen patients, and have at present many of these still under treatment, while others have been transferred to my colleagues, who have continued the treatment.

I have declined to treat by injection three patients who were evidently so far advanced in pulmonary phthisis that it seemed that there was risk of severe reaction proving fatal. Two patients have refused the treatment for the present, chiefly because of the fears inspired by some of the newspaper articles recently published.

I can as yet regard but one case as cured, an example of subcutaneous lupus in its acute form. This would have been amenable to Volkman's treatment by scraping; but in favour of Koch's method is the fact that a great loss of skin—which must have resulted had the former been adopted—has been prevented by the latter. In the treatment of strumous caries of the elbow, which had recurred after resection had been performed, and which was rapidly bringing about a state of affairs which would demand amputation, the progress of the disease has been arrested, and a rapid and, I think, permanent return to health has resulted. These are positive benefits obtained in a very short time among the patients who have shown reaction after the injections.

The reactions in the cases which responded to the lymph have been marked—in some a temperature of 105° has been reached with so small a dose as one milligram of a 1 per cent. solution of Koch's fluid. In none has any untoward accident occurred. I cannot complain of unfavourable progress in any, although, from the nature of the disease, the time necessary for a cure must be much longer than these few weeks.

Of the fifteen injected eleven reacted.

Four showed no effects from repeated injections.

These were as follows :—

Cirrhosis of the lung, simulating phthisis.

Serpiginous ulceration of tertiary syphilitic origin, simulating lupus.

Chronic laryngitis of ill-defined character, but quite unlike tubercular disease.

Abdominal tumour of doubtful character.

One of these four cases, that of lung disease, was proved by subsequent *post-mortem* examination to be free of tubercle. I know how often cases without reaction have been proved to be tubercular, but I praise the bridge as I pass, and see in these four cases, contrasted with the others, some help towards diagnosis.

T. MYLES, F.R.C.S.,
Surgeon to the Richmond Hospital.

THE remarks which I shall make to-night shall be very few and very brief. The cases in which I have been using the Koch's lymph are six in number. Two are cases of chronic tubercular disease of knee and wrist-joints. Two are cases of lupus, one a case of chronic glandular swelling in the neck with suppuration, and one a case diagnosed to be lupus, but in which there is clear evidence also of syphilis in the mother. In nearly every case there followed the characteristic febrile reaction, but in none of the cases, except one of lupus, was there evidence of the intense local reaction described by other operators. Take, for example, the case of glandular swellings in the neck; here, as the chart shows, was very intense general reaction, but, except that the patient complained of slightly increased pain in the glands, there was no local reaction, no marked redness or swelling, no increase in suppuration, and I must also confess there does not appear to me to be any decided diminution in size of the swellings; while, on the other hand, there is, I think, an obvious increase in the patient's debility and anæmia. Now let me show you the charts of the two cases of bone disease, concerning which I have a few remarks to make that I think will be of interest to surgeons. One of these—a young man—suffered from chronic tubercular osteitis involving the lower end of the radius, but, as far as I can judge not implicating the synovial membranes of the wrist-joint, inasmuch as free movement of the fingers and

wrist was present. Now this patient did not receive the injections till after the diseased bones had been treated in the usual surgical manner by drilling and erosion with the Volkmann's spoon, &c. The usual febrile reactions followed the injections, and the case has made, and is making, steady progress towards recovery—a progress that I think I am justified in saying has been more rapid than is usual in such cases. The other bone case is that of a young girl with advanced pulpy disease of knee-joint, the tibia being partially dislocated outwards and backwards, the muscles wasted to an extreme degree, and sinuses discharging pus both in inner and outer sides of joint. This patient on admission was put on the lymph treatment and kept on it for a considerable time, and when we believed that she had derived what benefit was possible from the lymph, with the approval and assistance of my colleagues, I excised the knee-joint. I have seen a fair number of knee-joints opened, but I never saw anything to resemble the condition that was present in this case; not only was there the usual pulpy thickening and rarifying osteitis constantly seen, but the end of the femur was filled completely with a tissue as soft as butter, and the bony trabeculæ could be scooped away with a finger-nail. In addition, there was extraordinary vascularity, and the oozing of blood which followed the operation gave cause for great anxiety. In a word, the condition present was almost exactly that which was so carefully described lately by Professor Virchow as being present in the lungs and intestines of patients dying after the injection. Evidently there had been produced by the injections intense hyperæmia and necrosis of tissue, with possibly active development of what had been hitherto latent tubercular processes. The question in such cases of paramount interest to surgeons is, should we in such cases operate before or after the injections have been administered? I am inclined to think, judging from perhaps a too limited experience, that operative measures should not be undertaken after the injections until such time shall have elapsed as will allow of subsidence of the intense reaction phenomena produced by the injections. To operate before such lapse of time is, I think, equivalent to operating on an acutely diseased joint—a procedure

which the experience of all surgeons has condemned. On the other hand, bearing in mind the necrotic changes produced by the lymph in diseased foci, it seems to me to be more promising to use the lymph after the surgeon has provided by the operation a means whereby the dead tissues may be readily cast off. I shall be very glad if other surgeons will give expression to their opinion on this point, which is, I think, of cardinal importance.

Of the two cases of lupus, one has certainly made more progress to recovery in the last month since she began the treatment than she did in the twelve months preceding it, during the greater part of which time she was under the care of the late Professor Corley. The other case is as yet only in the stage of scabbing, the scabs not yet separating, so that it would be premature to express any opinion of the result. The last case is of peculiar interest, as it questions what has been almost universally conceded to the advocates of the lymph—namely, its diagnostic power. The patient is a child with a clear history of syphilis, the mother having been under treatment in the hospital for that disease. The child's palate is perforated, the side of the nose is ulcerated, and the general appearance is that of the chronic tubercular type. In this case, which I believe to be solely congenital syphilis, a vigorous reaction followed the injection of even two milligrammes, but there is not the least sign of improvement in the child's condition. Now, if the history of syphilis were not conclusive, this case would by the injection method be considered as one of unquestioned tuberculosis. I do not wish to deny the possibility of syphilis and tuberculosis co-existing, but deep ulceration is sufficiently common in congenital syphilis to warrant me in refusing to consider this case as one of tuberculosis solely because the patient got a febrile seizure after an injection of a poisonous fluid.

In conclusion, I would only say that, while I think it is premature for any of us with as yet a limited experience to indulge in either extravagant laudation or condemnation of the method, I cannot help thinking that its virtues have been greatly overrated, and that, so far as surgery at least is concerned, the supervention of attacks of high fever, with the consequent anæmia, debility, and

emaciation, can hardly be considered conducive to recovery after capital operations.

SIR WILLIAM STOKES, M.D.,
Ch.M., Univ. Dubl., F.R.C.S.,
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HAVING regard to the limited time allowed to each member of this Section to state his views and experience as to the value of Koch's treatment of tuberculosis, I shall refrain from giving any detailed account of the cases I have treated by this method, and confine myself altogether to a general summary of the results obtained so far, and the impressions as to its value in a diagnostic and curative point of view that it has made upon me, not only from cases I witnessed in various hospitals in Berlin, but also those that have more particularly come under my observation here. And I must here acknowledge the courtesy of my colleagues, Sir George Porter, Dr. J. W. Moore, Mr. Smyly, and Mr. Hepburn for enabling me to carry out the treatment in several of the cases that were primarily under their care. The cases I have treated in the Meath Hospital during the past six weeks have been fifteen in number, of which seven were of pulmonary phthisis and eight of other forms of tubercular disease. Among the latter were three cases of glandular enlargement, two cases of tubercular disease of the knee-joint, one of the ankle-joint, two cases of lupus, and one of phthisis laryngea. As regards the first group—the cases of pulmonary tuberculosis—all of them, with one exception, were admitted into hospital under the care of my colleague, Dr. J. W. Moore, who will, I hope, subsequently publish a detailed account of them. I may mention that in four of them the disease was in an early stage and confined to one side. Among the others, in one the tubercular nature of the case was doubtful, and in the remainder both lungs were engaged, and in one of the cases there was a fistula in ano. The effects produced in these latter cases were not such as to make me desire to continue the treatment, and I was also induced to desist, from bearing in mind

the opinion of Prof. Koch as to the treatment being, in his belief, efficacious mainly in the early periods of the development of pulmonary tuberculosis. In the four apparently suitable cases above alluded to, the effects of the treatment observed are unquestionably satisfactory and encouraging. There has been a complete cessation of night-sweats, alteration in the character of the expectoration, which, as a rule, lost its nummular character and became more watery and frothy. The amount of it largely increased after the reactions, and during their height was occasionally copiously tinged with blood. Dr. Lennon, one of our assistant physicians, a very careful and accurate observer, made frequent examinations of the sputa, both before and after the injections, the results of which showed a very great increase in the number of tubercle bacilli during and immediately subsequent to the periods of reaction. In three of these cases a material increase in the patient's weight is also to be noted. In one case, a gain of $4\frac{1}{2}$ lbs. and a marked diminution in the pulse rate. In two of the cases the cough has sensibly decreased, and in one of them it may be said to have practically ceased.

The injections were, as a rule, larger than those usually given in pulmonary tuberculosis, the quantities ranging from 4 to 10 mils., of the lymph. In all the reactions were well-marked, and occurred with the utmost precision. The temperatures were, as a rule higher after the early injections than after the latter—in no case, however, going higher than 105° . F. In none of the cases did any local trouble occur of a serious nature as an immediate result of the injection. I should mention that in one a decided hoarseness resulted during the reaction, while a laryngoscopic examination, made by Mr. Smyly, proved it to be due to a congested hyperæmic condition of the larynx. On the subsidence of the reaction, these symptoms quickly disappeared.

Of the surgical cases, the first I would allude to are three of glandular enlargement. In the first, the glands in the groin were largely affected. In this case the effect of the injections was not apparently to bring about absorption but rather to favour suppuration. This result was not anticipated or desired. In a second

case, a female, aged twenty-two, an enlargement, which was of long standing, very firm and situated on the left side of the neck, midway between the angle of the jaw and the clavicle, appeared to be quite unaffected by the injections. In a third case, however, the result which has been obtained is very remarkable. The case is that of a boy, aged nineteen, who was admitted into hospital under Mr. Smyly's care. He had been suffering for more than two years. On the left side was a large glandular tumour, fully the size of an orange, very firm, hard, and fixed on the right side were numerous smaller glandular enlargements. The local and general reactions after the first injection were very well-marked, the enlargements in the neck becoming intensely red and painful, and the bodily temperature rising three hours after the injection to 106.2° . An effect in this case promptly produced by the first injection (10 mils.) was to bring out on the following day a copious scarlatinoid eruption, which covered his neck, chest, abdomen, arms, and thighs, and which, two days subsequently, was followed by profuse desquamation. In this case the patient had eleven injections, but never more than 10 mils. at a time. The condition of things now is that the patient has become very anæmic; the large glandular enlargement on the left side has subsided to so great an extent as to be now hardly noticeable, and on the right side it requires a careful search before the existence of anything abnormal can be determined. I deem the result obtained in this case of glandular enlargement, having regard to the condition of things before the treatment was commenced, to be very remarkable.

In three cases of tubercular disease of joints, two of the knee and one of the ankle-joint, the result obtained in one is noteworthy. It is a well-marked case of pulpy synovial thickening of two years' standing, occurring in a young girl of sixteen, who was admitted under Sir George Porter's care. The joint was very globular in form with great thickening at each side at and below the knee. The usual shooting-pains at, or towards, night were much complained of. This patient had nine injections, and the results were a complete cessation of the starting pains and a diminution in

the circumferential measurement of nearly $1\frac{1}{4}$ inch. As regards the other joint cases the treatment has not as yet been continued sufficiently long to justify any conclusion being come to about it. The statement made by Professor Koch that those carrying out his treatment should commence with cases of lupus I quite coincide with. As a rule, the changes induced by the injections in this disease are so clear, so rapid, and so well-marked, as to compel anyone who witnesses them, however unwilling he may be to do so, to acknowledge the extraordinary influence the lymph has on tissues affected with this disease. In none of Professor V. Bergmann's cases of lupus, or indeed in those of anyone else, have I seen one that has impressed me so much, more particularly in reference to the rapidity with which the remedy acts, as one now under treatment in the Meath Hospital. The patient, a young woman, aged twenty-two, has suffered from lupus of the face for many years. The case was a typical one. The first injection, one of five mils., was given on Dec. 23, and was followed by a very sharp local and general reaction. The face was much swollen and deeply congested, and when this subsided in a few days subsequently, the crusts and scales came away in great profusion, and the improvement was in every sense a signal one. This patient has had six injections, and the improvement has gone on steadily and uninterruptedly, and certainly everything points to the probability of the result being in every way satisfactory. In a second case of facial lupus the treatment has only just commenced, so that I am not in a position to speak definitely as yet of its effects.

I was extremely glad when the Council of this Section determined to devote an evening to the discussion of the merits or demerits of Koch's remedy. Assuredly, the time is still a far distant one when we shall be enabled to appraise at its true value the alleged remedy for tuberculosis we are now considering. But nothing will do more to hasten that day than meetings like this, where the knowledge and experience acquired by those making a careful trial of the remedy are unfolded to us. If there is a danger in over-praise there is an equal, perhaps a greater, danger in an

unjust depreciation, and either extreme should be guarded against. This can best be done by learning what has to be said both in favour of and against the remedy by competent observers. Undoubtedly, the treatment has recently received a staggering blow from Professor Virchow; but without presuming for a moment to criticise any utterance of one so distinguished, I would venture to mention a circumstance that struck not only me but many others who, like myself, went to Berlin to observe the effects of the treatment in the various hospitals there. What I allude to is the indiscriminate way in which in many instances the remedy was administered. It was certainly employed in many cases of pulmonary tuberculosis that had passed the initial stages of the disease. Under these circumstances, it is hardly surprising that Professor Virchow should have been enabled to make twenty-three *post mortem* examinations of cases that died while undergoing Koch's treatment. The marvel is that the number was not far in excess of the one mentioned. He is reported also to have said that the effect of the treatment is to disseminate the bacilli and give them facilities for making other settlements. This may be the case, but it is by no means clear to me how it could be proved. In some respects, my experience, necessarily a limited one, is disappointing. I have not seen any case here or elsewhere that I would regard as a satisfactory result. But, then, it must be remembered that the treatment may be said to be in its infancy; that it will probably be much improved upon and perfected, and that the marvellous and sometimes almost immediate effects of the remedy on tuberculous tissue, now circumstances of every day observance, are such as to make us reasonably anticipate from it in the future the greatest and most beneficial results.

H. C. TWEEDY, M.D., F.R.C.S.,

Physician to Steevens' Hospital.

WHEN I saw on the notice paper the somewhat formidable array of contributions to the debate of this evening, and the necessarily small amount of time that could be allowed for each paper, it seemed to me that I could better further the object of the discussion if, instead of burdening you with details regarding the cases at present undergoing treatment by Koch's method in Steevens' Hospital, and details which show a general uniformity in most of the cases which have come under observation, I should put together, as briefly as possible, such points as appeared to me most worthy of notice in the numerous cases I have had an opportunity of seeing within the last two months.

The first point I would ask you to consider is this—Under what limitations should this remedy be used?

In a clinical lecture, delivered early in December, Prof. Senator laid down certain propositions which subsequent investigations, and, I believe, the experience of most of us that have made trial of the remedy, have only tended to confirm—viz., “that the treatment is indicated in all cases in which it seems likely that the tissues killed by the injections will be eliminated easily. Under this category come lupus and tuberculosis of the larynx, nose, mouth, and intestine.”

This would practically exclude most, if not all cases, of tuberculosis occurring in closed cavities—as when the disease occurs in the brain or its coverings, and even in the joints and serous cavities—unless the surgeon be prepared for active operative interference.

But even in cases where the treatment is apparently indicated, there are dangers of a very grave character to be borne in mind. Passing over the obvious risk arising from an overdose of the lymph, there are two practical points to be considered when operating—one being an over-susceptibility on the part of the

patient, and another the cumulative effect of the lymph in repeated doses. With regard to the former danger, most observers are agreed that there is no absolute relation between the dose and the reaction, some cases reacting violently to the smallest doses, and others bearing large doses with only a moderate amount of local and constitutional disturbance, the age of the patient, the extent of tubercular disease present, or the organ affected, having no influence one way or the other, and leaving us only the lame and unsatisfactory explanation of idiosyncrasy to fall back upon for want of a better.

In respect of the cumulative effect of the remedy, M. Cornil, of the Hôpital Laennec, has drawn attention to the fact that a sufficient interval should be always allowed between the injections, more especially in cases where the rise and fall of the temperature varies from the usual characteristic type, as by so doing danger from this source may be avoided.

There are also other risks—namely, the danger of infection in cases of disseminated tuberculosis, as pointed out by Kromeyer, and also that resulting from the metastasis of bacillus in the watery non-gelatinous infiltration, which is stated by Prof. Virchow to take place in the so-called “Infection Pneumonia,” but as these may more fittingly be discussed in the Medical Section, I shall do no more than allude to them here.

There are a variety of points in connection with this mode of treatment which I should like to discuss did time permit, as, for example:—

1. Is Koch's lymph likely to afford permanent immunity from future attacks of tuberculosis?

2. Is the power of tolerating large doses of the lymph, which the system acquires after repeated injections, due to the force of habits, or is it in the inverse ratio of the tuberculous tissue which still remains to be acted upon?

3. What are the causes of the different variations in temperature after injection? Why, in some cases, the characteristic “Matterhorn peak,” as Fürbinger calls it, is present, in others the temperature may remain high for two or three days; in others, again, there

may be local reaction without fever, and, again, as in a case of lupus at present under treatment in Stevens' Hospital, a strong local reaction may precede the fever by some hours?

Once more, what are the causes of such occasional phenomena as cutaneous eruptions, violent epigastric pain after each injection, as experienced in another patient under treatment for lupus in Steevens' Hospital, and so forth.

I venture to hope that some light may be thrown on these points by those who come after me.

Permit me now to add a word or two regarding the action of the lymph in cases of lupus. I had the opportunity lately, when in Berlin, of seeing in the Jewish Hospital, through the kindness of Dr. Israel, the case of a middle aged woman with lupus patches on the right eyelid, right side of the face, and right arm, and with a cancerous growth on the left cheek. In this case the lymph clearly differentiated between the two diseases, as there was a strong local reaction in the tubercular affection, and none in the other.

Again, as I have seen in several cases, two of which I have under observation at the present time, the injection of the lymph not only brings into evidence foci of disease previously unobserved, but, by its failure to act upon old lupus cicatrices, clearly demonstrates that the disease has been eliminated from that particular situation.

And lastly, a word regarding the treatment of lupus. M. Cornil (*Semaine Médicale*, Dec. 24, 1890), has shown that when the serous exudation which takes place in such cases becomes crusted, between these crusts and the underlying tissues may be seen a layer of white corpuscles, brought thither by diapedesis, and amongst these corpuscles numerous tubercle bacilli. He thinks that the congestion induced by the remedy drives the bacilli outside, together with the discharge which it sets up. Assuming his statement to be correct, might we not take advantage of the circumstances, and by injection of antiseptics, or otherwise, endeavour to destroy the bacilli thus placed within our reach, and at least prevent them proving a source of infection to others.

AUSTIN MELDON, F.R.C.S.,

Surgeon to Jervis-street Hospital.

ALTHOUGH it is now just twelve month's since it was announced that Dr. Koch had discovered a cure for every form of tuberculosis, it is really only a couple of months since the plan was first put on its trial and an opportunity given to the profession of testing the value of the discovery. It is the duty of every practitioner who has tested it to give the result without loss of time, so that some data may be obtained on which a verdict can be founded. Professor Virchow's remarks on the effect of Koch's remedy on the internal organs of tubercular patients renders this more imperative. For this reason I tender my evidence, which shall be brief. I have now inoculated the lymph ninety times on seventeen patients. Ten of these were on cases of pulmonary phthisis, all having bacilli in the sputum. In every case reaction was well marked, but in only two can I see any improvement. One has increased 2 lbs. and the other 3 lbs. in weight. The bacilli have not decreased in a single case. To one of these cases alone will I direct attention. Since the early portion of December I have injected this patient ten times with from one to twelve milligrammes. His condition is now, as far as I can judge, just as it was before the treatment commenced, and Professor Scott recently examined the sputum and certified that it contained abundant tubercular bacilli. One case was of tubercular disease of the knee and one of the wrist; in both there was reaction, but no improvement. One of lupus has been improved, and it is now healing. Three of glandular swelling were followed by reaction and redness of the swollen glands. The last case was that of a child with symptoms which seemed to indicate the commencement of hip-joint disease, whom I injected on Wednesday last in Jervis-street Hospital with one milligramme of the lymph. This was not followed by the slightest rise of temperature, although a phthisical adult whom I injected on the same day with the same quantity had a very severe reaction, with

a temperature of 160°. Such is my experience. The only case in which I can definitely state I have seen any, even temporary, improvement has been the case of lupus.

W. THORNLEY STOKER, M.D., F.R.C.S.,
Surgeon to the Richmond Hospital.

WITHIN the length of time allowed for this communication I cannot enter into detail, or give the particulars of individual cases. I shall, therefore, classify the instances in which I have used Koch's lymph, and speak generally, so far as I can, of the incidents of each group; and finally, I shall venture to say a few words about such matters as I have observed which mark general principles of treatment, or exhibit novel or unusual features. In the earlier treatment of nearly all the cases I had the advantage of the advice and co-operation of Dr. M'Kee, and I feel that I have to thank the experience he gained in Berlin for the safety with which, up to the present, I have been favoured in the employment of a most dangerous, if a valuable remedy.

Since the 6th of December I have used the treatment with ten patients suffering from various forms of surgical tuberculosis, who have received twelve to fifteen injections each, and as a diagnostic in one case which proved to be other than tubercular. One of these patients had a plural engagement of skin, joint and gland tissue. Considering each class separately, I have treated six examples of lupus, three of joint disease, one of disease of bone without joint engagement, and two of glandular disease.

The case in which the lymph proved only of diagnostic value is that of a lad, aged thirteen, with chronic testicular disease, with regard to which I hesitated to pronounce as to its being tubercular or the result of inherited syphilis. The absence of any reaction led me to the latter conclusion, and apparently rightly; for under appropriate antisiphilitic treatment the case is progressing to recovery.

Lupus.—The lupus cases are all under observation at present.

Their treatment began at various periods between December 6th and 26th. The patients vary from three to forty years of age, and the disease from the slightest to the most grave character, and from three to thirty years in duration.

CASE I.—Circumscribed lupus exedens in a child aged three and a half years, in whom glandular and joint tuberculosis were also present, a cure seems to have been effected, all reactions have ceased, the sores are healed, and the child is apparently restored to vigorous health.

CASE II.—One of mixed lupus exedens and lupus non-exedens of two years' duration in a child eight years' of age, engaging the upper part of the neck and the whole of the face below the orbits.

CASE III.—Lupus erythematosus of twenty years' standing, engaging the whole of one cheek in a man aged twenty-five.

In cases II. and III. reactions have ceased to appear after the use of the lymph, and although portions of scab have still to separate, the bulk of the disease has cleared off, and seems to be nearly if not quite cured.

If not yet cured, these cases seem in a fair way to be so soon, and, at all events, as much effect has been produced in five or six weeks as I could have hoped to obtain by a year of medical and surgical treatment under ordinary circumstances.

CASE IV.—Is of the same nature as that last mentioned, extensive lupus non-exedens of one cheek and pinna, of thirty years' standing in a man aged forty. He is still undergoing reactions, but is greatly improved, and will evidently soon be as much cured as it is possible for us at present to say any of these patients is cured.

CASE V.—A lad aged twelve, with lupus of six years' standing, of the mixed form of exedens and erythematosus, has been under treatment since December 26th. He has materially improved, but his treatment has been interrupted by eye trouble, of which I shall speak presently.

CASE VI.—Is the most remarkable of all, for it is that of a lad aged twenty, who has suffered for seven years from the most intense form of lupus exedens, which has been repeatedly operated on without any apparent good result. The disease has

infiltrated the entire tissue of the lower half of the face, including one lower eyelid, and extending into the neck. This case was so severe and so advanced, that had it been brought to me before the new treatment became possible, I would have refused to touch it, believing it to be quite beyond the reach of operation. The improvement since December 10th is most striking, and it seems by no means impossible that a cure may be effected, but whether this be so or not, the patient has received great benefit, he no longer suffers, and the reactions have ceased to exhibit the violence which they did at first.

I next speak of the three cases of joint disease in which I have used the lymph.

CASE I.—Subacute morbus coxæ, of six months' duration, in a boy six years old, in whom I had previously trephined the great trochanter and neck of the femur for drainage purposes, the early injections of lymph were followed by most marked benefit, the pain and local and constitutional disturbance diminished to a minimum, and the child, who previously screamed when he was touched, moved about freely in bed and did not suffer during the dressing of his joint. The improvement has not, however, continued, the joint disease exhibits renewed activity, and, with a view to relieve effusion and give the lymph a chance of producing elimination, I intend to cut down in front of the capsule, and if necessary open the joint and remove the head of the femur.

CASE II.—Is one of old-standing disease of the knee-joint, probably confined to the soft structures. The patient is thirty-four years of age, and the case from its course and complexion one in which I am disposed to excise at present if the disorder is tubercular. Some doubt existing on this point, I have used the lymph, obtained reaction, and shall therefore perform an excision, and when the immediate disturbance following the operation has subsided, shall continue the Koch's treatment with a view to destroy any tubercular tissue which may remain.

CASE III.—The third joint case is that of a child, now aged three and a half years, on whom one and a half years ago I performed excision of the elbow for advanced tubercular disease, engaging all the structures, both soft and bony, of the joint. I have since excision repeatedly attacked the sinuses which remained and the neighbouring carious bone with the spoon and gouge, but

without satisfactory result. The sinuses would not heal, and the limb seemed bound to go to the bad. This child had two ulcerating lupoid patches over the parotid gland, and numerous enlarged glands in the neck. I had also removed masses of diseased gland on several occasions from the armpit and neck. Since December 8th this patient has had 12 injections, commencing with 2 mg. and rising to 7 mg. On the last three occasions there has been no reaction, the glands in the neck have become small and hard, the lupus has completely healed, the rebellious sinuses in the elbow have closed, and although from the nature of the case the elbow is ankylosed, it is otherwise apparently perfectly cured, and, finally, the general health, appearance, and spirits of the child are improved to a most remarkable extent.

The case of bone disease in which I have employed the treatment is one of necrosis of the entire shaft of the tibia, in a lad aged eight, who had been repeatedly operated on without cure in a Dublin hospital. The disease was extending into the lower epiphysis of the bone, which was inflamed and traversed by a sinus. Destruction of the ankle-joint appeared imminent, and on that account I expressed a most unfavourable opinion of the case. On December 1st, previously to the reception of the first supply of lymph, I had removed the whole of the anterior portion of the shaft of the tibia, and a quantity of the centre of the bone, which was in a necrotic state. The case was put under Koch's treatment on December 6th, and the immediate local effect was magical—granulations sprung up of the most abundant and healthy character, the epiphysitis rapidly disappeared, the cavity in the bone filled up as much in a week as it would do in three months under ordinary treatment, and the part is now nearly healed, and the boy, who has ceased to react to 8 mg. doses, is apparently in excellent health.

The last class of cases I have to speak of are those of enlarged glands. I have treated two cases—one that of a child aged three and a half years, in whom the glands in the side of the neck were softening but had not supplicated; the other that of a policeman, aged twenty-five years, who had a mass of suppurating glands below his jaw and another behind his ear. In the case of the child, who has been under treatment since December 8th, the

glands have resumed almost their normal size and have become hard. In the case of the policeman, the pus was evacuated with the knife, but continued to be secreted in undiminished quantity for some weeks. I then commenced to use the lymph. He experienced severe but favourable reactions, the immediate local effect being an increased pus formation, but in a day or two the pus diminished rapidly in quantity, soon disappeared, the sinuses closed, reactions ceased, and the case seems cured.

Reviewing these cases I may make certain claims for the treatment, which can scarcely be questioned or controverted. I will not attempt to argue that a cure has in any instance been effected; for a cure means an absolute disappearance of the disease, and no return except from a fresh source of infection. I am aware that only time, and a long time, can prove the permanency of results in tuberculosis, which, of all other diseases, has the dread quality of lying dormant for a period, which may be so long that even the duration of human life cannot bound it. But for myself I may express my conviction that a permanency of result may in many of the cases of apparent cure be looked for. But putting this, as yet doubtful, question aside, what do my cases show?

Lupus.—First, as regards lupus, that without pain I have apparently cured some cases, and have relieved and seem to be curing others; that one of these cases is of such a nature that I could attempt no other surgical treatment—it was appeared hopeless. In other words, in all of the cases at least as much has been done as could have been effected by the most active operative and medical treatment, and done in a fiftieth part of the time, and without the added horror of operation; and that in one case there is a hope where none appeared to exist. In connection with the lupus cases, I would not wish to be understood to throw aside the spoon. I think it will require still to be employed as an aid to the treatment by lymph.

Joint Disease.—With regard to joint diseases, it will be observed that in the hip case the result is purely negative as yet; in the knee case the injection has up to the present only been used as a diagnostic, and has proved of positive value; while, in the disease

of the elbow, a case has been apparently cured in five or six weeks which had for nearly two years resisted all previous surgical efforts.

Necrosis.—In the case of the third class—that of necrosis—the treatment could obviously only take effect thoroughly when the chisel had been used to make a way for diseased products; but here, even if it be thought doubtful what the ultimate result as regards obliteration of the diathesis may be, it has, I believe, saved the epiphysis, preserved the ankle-joint, and compressed a treatment of many months into one of a few weeks.

Gland Disease.—Finally, of the fourth class—the gland cases—I can say that, even if the tubercle be not permanently eliminated or destroyed, treatment is at least made short and easy; and if it be held that the disease remains locked up in the withered glands, and may become a source of subsequent mischief, why, even then we may claim that the ablation of the glands has by the treatment been rendered easy to the surgeon and safe to the patient. I am of opinion that in such cases the shrunken glands should be removed by operation, although it is quite within the bounds of physiological and pathological possibility that necrotic products can be eliminated by the effort of unassisted nature.

General points.—I think little if any risk attends the treatment if we make a careful selection of cases, begin with very small doses, and increase gradually. The dangers which seem to have attended it in Germany are not improbably due to want of selection, and the use of heroic doses of lymph. I have not found it necessary to go beyond 15 mg., and from several methods of observation, including that of going back to smaller doses and obtaining as high reactions as with full ones, I am disposed to think nothing except added risk is to be gained by very large injections. For all ordinary purposes 10 mg. seems a sufficient maximum, and 1 a safe minimum injection. I found several times that successive doses of the same amount produced consecutively higher reactions. Sometimes a reaction, instead of subsiding in twelve or eighteen hours, has lasted for three days. Again, secondary and even tertiary reactions are not unusual, and in one case a secondary reaction took place nine days after the primary one. This was in a case in which the

use of the lymph had been interrupted by active ulceration in an old corneal cicatrix. Such an event as this may explain why fatal results have followed very cautiously increased doses, as in one Continental case; a cumulative reaction may have proved fatal.

Occasionally a marked local reaction took place without any constitutional reaction, and this I observed in the first injection given in one case, and after the eleventh administered in another. The reverse condition—that of a constitutional without a local disturbance—is even more frequently seen.

I have had no temperature over 105° F., and no dangerous symptoms in any case. The scarlatinoid eruption was seen in about half of my cases.

I see the cicatrix in so-called “cured” cases of lupus described as “smooth;” I believe that a slightly wrinkled and foreated cicatrix is that most indicative of what seems to be cure. The smooth cicatrix is too much like the shining one in active lupus erythematosus.

In two of my lupus cases interesting eye reactions took place. In one an old opacity, the result of tubercular corneitis, became inflamed, and then on the subsidence of the reaction began, under successive doses of lymph, gradually to clear off, and the vision is now improved to a marked extent. In the other case, where five or six opacities, due to the cicatrization of old corneal ulcers, were present, the cicatrices broke down during the first reaction; the ulcers then became so active that I thought it best to intermit the lymph treatment. These ulcers are now all healed, or nearly healed, and, it is to be hoped, are free from bacilli and will resist the subsequent use of the lymph.

From the little I have been able to compress into this communication it will be seen—

1. That I hold a hopeful opinion of the value of the lymph as a diagnostic agent.
2. That as an aid to treatment by operation it has, even if it should otherwise fail, a wide and useful field.
3. That its power as a radical means of cure is probably great, but as yet undecided.
4. That too much caution cannot be exercised in its employment,

and that dangerous symptoms are generally due to want of such caution.

5. That our knowledge concerning it is in a merely embryonic state, that therefore observation and careful record are emphatically called for, and that it would be most unwise to dogmatise about it any way whatsoever.

As a supplement to the account of the foregoing cases, I may now, when going to press in September, 1891, mention their subsequent history:—

Lupus.—Case I. is well.

Case II. has not been cured by the lymph treatment, and is undergoing treatment at present by scraping and the application of acid nitrate of mercury. No benefit has been obtained which, in my opinion, would not have been got by the present treatment if pursued all through.

Cases III., IV. and V. As in the second case, I had to revert to the use of the spoon and caustic, the lymph giving no permanent results.

Case VI. continues satisfactory. It has made steady, good progress, the disease being arrested, if not cured. The entire diseased surface has cicatrised. This one case is an important defence of the treatment in some instances. I could have done nothing for it by the older methods, and even if the future should bring a relapse, time at least has been gained, suffering avoided, and the case placed within reach of other surgical treatment.

Joint disease.—Case I. derived no benefit from the lymph, except the temporary one recorded. I removed the head of the femur and part of the os innominatum with an ultimate good result.

Case II. received no benefit, and has lately returned to hospital for the purpose of having the joint excised.

Case III. The elbow remains perfectly well.

Bone disease.—This case relapsed, and I was obliged to fall back on the older surgical methods with ultimate good result. I think, however, I may credit the lymph with the saving of the epiphysis.

Gland tuberculosis.—In these cases the good effects of the lymph remains. The glands, though diminished in size, are somewhat larger than normal, but they are firm and seem to be free from any actual process of disease.

From these brief addenda to the early observation of the cases, it may fairly be deduced that the remedy has a future, although how far its value may extend is a matter of question. It has sometimes been useless, nearly always uncertain, occasionally of some benefit, once at least of great value. It does not seem in any instance in which I have employed it to have been hurtful.

MR. F. A. NIXON read a short paper, in which he directed attention to the temperature charts. Not only did the temperature fall after the injection, but having become normal it fell again slightly before reaction commenced; also to the condition of the urine, the sp. gr. of which increased from 1016 to 1023, and contained an excess of urates, with ropy mucus. He further observed that the effect of the injection upon the enlarged glands in the neck in a case of lupus was negative. They did not either increase or decrease in size. He thought that the cases in which there was exit for the discharge, such as lupus of the nose, pharynx, diseased bone, &c., were the most favourable for the method of treatment, but that it was dangerous when the discharges were pent up in an unyielding bony case, such as the cavity of the skull, or even the thorax. In tubercular disease of the abdominal cavity he would adopt the treatment by incision and flushing in preference to Koch's method.

MR. KENDAL FRANKS read a short paper. He said he would only deal with one portion of the subject under discussion—namely, the diagnostic power of Koch's lymph. Two objections to this had been raised:—1. It was stated that healthy individuals sometimes react perfectly; and, 2, that some undoubted cases of tuberculosis did not react. These cases, at any rate, were exceptional. As to the first objection, he would say that it was sometimes impossible to detect by examination a small tubercular focus hidden away in some corner of the body, but which would be brought to light by the lymph, and thus a seemingly healthy person would react. To the second objection it was not possible at present to reply, but it would probably be shown hereafter that certain conditions of the constitution, such as infection with syphilis, might have a very modifying effect on the action of the lymph. He mentioned four illustrative cases. The first was a boy aged thirteen and a half years, with pain in the knee and hip, and limping, who, however, presented no physical sign of hip dis-

ease, and was suspected of malingering. The injections were followed, however, by typical reaction, proving the case to be one of incipient hip disease. The boy had ceased to react to a decigramme, all pain had gone, and he could now walk perfectly well. The second case was that of a young lady who had had a persistent cough for two years, with profuse expectoration for the past nine months. She was losing flesh and colour, and was beginning to exhibit a markedly phthisical aspect. There were no physical signs in the chest and no bacilli in the sputum, but there was some infiltration of the inter-arytenoid mucous membrane. No remedies had given her any relief, and she was becoming worse. On the 23rd December, 0·001 gr. of the fluid was injected, without reaction following; 0·003 gr. produced a slight reaction, with soreness of the throat. She reacted well to the subsequent injection, and now scarcely reacts when 0·1 gr. is used. The throat was sore after each of the earlier injections, but though it showed some hyperæmia in the larynx there was no ulceration. After the fifth injection the cough disappeared, and has not since returned; the expectoration has almost quite ceased, and she has improved considerably in weight and appearance. Case 3 was a young man with an ulcer and eczema on his leg, injected as a control experiment. He, however, reacted when 0·004 gr. was reached, and after a subsequent injection of 0·01 gr. It was then discovered that he had a chain of small hard glands in his neck, which he explained he had himself noticed for a long time previously. The fourth case was that of a man under the care of Dr. Wallace Beatty, in whom a diagnosis of tuberculosis of the left apex, with thickened pleura at the left base was made. Mr. Franks was asked to employ Koch's treatment; but the man showed no reaction, even when 0·01 gr. was injected. No bacilli were found in the sputum, and now Dr. Beatty and Mr. Franks are agreed that the case is one of cirrhosis of the lung, and is not tubercular. The cases, Mr. Franks thought, were very suggestive as to the future value of the lymph in diagnosis. In conclusion, he stated he had employed the method in over 20 cases, and had administered 173 injections up to date. He had seen no untoward result follow its use, and the results so far were very encouraging, and sometimes very remarkable.

MR. TOBIN referred to some joint cases under treatment by rest—such rest as is afforded by plaster of Paris bandages to joints of the upper extremity, and by Thomas splints to those of the lower, by exercise in the open, by cod-liver oil, and by Koch's

lymph. These cases had reacted in the usual way to the injections, but it yet remained to be seen whether the cure would be made shorter or more permanent by this additional treatment. As yet there was nothing in their condition to warrant any forecast. A case of lupus 46 days under treatment, shown previous to the meeting, was referred to. The patient, a boy twelve years of age, had ceased to react to 10 millimetres of one per cent. solution. He looked quite as badly as he did previously to the treatment; but, judging from other cases, it was expected a cure would be reached at a later date. Putting together all that is known of the plan of treatment under consideration, it was better to confess that we are still in darkness, to advance carefully, and to avoid speculating till more facts, both clinical and pathological, had been observed and recorded.

MR. LENTAIGNE said his experience so far had led him to hope that the treatment would be of great value in early tuberculosis, and also when the disease was limited in extent; where the disease was extensive an outlet would have to be found for the necrotic tissues. He found that when the tuberculosis was inside the skull the treatment, as at present used, would be of no use, or more probably would be actually injurious. He also thought that we could not reasonably hope to do good when the tubercular tissue, already necrotic, was invaded by septic organisms, unless we could at the same time remove or destroy these organisms, as the tissues, made necrotic by the lymph, would also become invaded by these organisms, and would greatly increase the septic poisoning. He thought that this might explain the aggravation of symptoms in some of the cases of lung disease which had got worse after the injections. On this account he combined perpetual creasote inhalations with the injection treatment in the few cases of pulmonary tuberculosis under his care.

MR. M'ARDLE did not think the meeting premature; he believed that if it had been held earlier much pain and suffering would have been prevented. If the cases exhibited represented the bright side of the picture, he could not take it as indicating a brilliant future for this treatment. He thought it time to in some way stay the indiscriminate use of this material, if the writers of papers on this subject could show only such results as were represented by the following expressions:—Mr. Nixon saw no cure; Mr. Bennett, of 11 cases, saw only one of subcutaneous lupus cured; Mr. Myles saw no cure, but detailed a case in which great general debility and anæmia followed operation in a case which had been injected;

Mr. Franks cured a cough by injection, but did not know what disease caused it; Sir W. Stokes saw no case he could regard as a perfectly satisfactory result; Dr. Tweedy showed its diagnostic value, but mentioned no cure: Mr. Tobin could not say that his case of lupus had improved after six weeks' treatment; Dr. Meldon saw one case of lupus improved; Dr. Barton had a case of tarsal tuberculosis, apparently cured; Mr. Stoker detailed some cases which were improved, some supposed to be cured; Mr. Lentaigne said one case out of 23 seems to have been completely cured. Now this did not seem to him to be a result comparable with that obtained by ordinary surgical treatment in such cases. As a diagnostic agent, he thought the lymph useful. The first patient complained of stiffness and pain in the region of the hip, and he had some fulness round the great trochanter. Believing the case to be one of tuberculosis of the gluteal bursa, he injected 3 milligrammes of lymph. This was followed by relief of pain and increased mobility of thigh. After a second injection of 3 milligrammes a very marked local reaction occurred: a large fluctuating, gurgling swelling appeared over the trochanter; and on cutting down on this later he was able to remove the gluteal bursa, which he found the seat of extensive tubercular disease. The second case, simulating hip-joint disease, turned out to be one of tubercular disease, surrounding the sciatic nerve. In these cases the lymph was of material service in clearing up the diagnosis as to the condition of the lower end of the femur, described by Mr. Myles as resulting from the action of the lymph. He had seen the same softening occur in very many cases in which the lymph was not used. Mr. Lentaigne claimed that the lymph hastened the recovery of a case of erosion of the knee. Two of his recent cases, where he trephined the great trochanter, and scooped out the entire contents of the shaft of the femur, through the lower end, while resecting the knee, ran the ordinary course, which is usually unmarked by any febrile disturbance. He must say that he had not yet seen in the practice of anyone a cure, while he had seen many instances of distress arising from the injection.

MR. WILLIAM THOMSON said it appeared to him that the opinions conveyed in the papers might be classed as doubtful, hopeful, and sanguine. He thought the profession had been rather swept away by outside enthusiasm, and they had allowed themselves to have greater expectations of good results than were yet justified. But the sceptics who asked for cures in a few weeks after treatment did not apply the same rule to other forms of treatment; and he

thought it unreasonable that such a demand should be made in the case of Koch's lymph. Koch himself had certainly been more modest in his claims than others had been for him. He (Mr. Thomson) had no doubt that the lymph was of great value as a diagnostic, but they were not in a position yet to speak of cures in the vast majority of cases. The lymph had admittedly the power of searching out tuberculosis, and it remained to be seen how far that power would end in a curative result. The objection of Mr. M'Ardle that the remedy was dangerous might as well be urged against the use of morphin or any other poisonous drug. He regarded the position of the surgeons in Dublin as one of careful watchfulness with hopefulness. He believed they were on the right track in this matter, and, however deficient the treatment might be at present, he thought it probable that important developments would follow.

MR. F. ALCOCK NIXON said the authors of the various papers seemed to bear out the view which he expressed, that those cases did best under Koch's treatment in which there was exit for the discharge. Glands which were covered by unbroken skin did not, in cases which he observed, stand any chance whatever. Bone diseases in which there were sinuses were classified among the few cases of cure. Very few speakers referred to the symptom of cough, which he observed to be very constant. It was absent in the intervals of the injection, and careful physical examination failed to reveal any evidence of pulmonary tuberculosis to account for it. He regretted that he failed here, as he did at the International Medical Congress at Berlin, to elicit any expression of opinion as to the method in which tuberculosis in the abdominal cavity is cured by abdominal section. He had observed a fall of temperature after the injection, and again just before the commencement of reaction, the latter being much less marked than the former.

MR. KENDAL FRANKS said that he did not agree with Mr. Myles that a *primâ facie* case had been made out for operating on a tuberculous case previously to the employment of Koch's lymph, instead of subsequently to its use. Mr. Myles had based his argument mainly on the supposed lowering effects which the febrile disturbances caused by Koch's lymph would produce. His experience was entirely opposed to this. He found the large majority of his cases—he might almost say all—improved considerably under the treatment; they gained strength instead of losing it, and increased in weight, so that at the end of a four to six weeks' treatment by the lymph, they were much better able to bear an

operation than before it. On the other hand, operation was rendered much easier and simpler by the previous employment of the lymph. The diseased parts were necrosed and separated, so that, as it were, a well-defined "line of demarcation" was found between the healthy and diseased structures; the latter were much more easily removed and much less of the healthy structures need be sacrificed. In disease of the knee-joint, for instance, this would prove of the greatest importance, and treatment by erosion would be much more frequently available than hitherto. Mr. Franks thought a great deal too much stress had been laid upon the dangers attending the treatment, and the consequence was that people were afraid of trying it. The same cry had been raised against the use of antiseptics when they were first introduced, and cases of deaths attributed to the use of carbolic acid, or corrosive sublimate, or iodoform, were cited; but instead of giving up the use of these substances, such cases had only taught them caution. It was the same now with the Koch lymph; but there was this difference, that whereas the cases that died of carbolic acid poisoning might otherwise have recovered, all the cases that had succumbed after the use of Koch's fluid were foredoomed already. The great lesson he thought that they should learn from Prof. Virchow's paper was that certain cases, especially those of advanced tuberculosis, were injured and not improved by the injections; that it was necessary, in the future, to select our cases more carefully. From his own experience of over 20 cases, and after the use of over 170 injections, he had come to the conclusion that, with proper precautions—chief amongst which was careful selection—the employment of the method was unattended by risk. Again, he urged that at the beginning minimal doses (1–2 milligrammes) should always be adopted. Even in lupus cases, it was not wise to begin with centigramme doses, for he believed that it was not an over-estimate when it was stated that about 25 per cent. of cases of lupus of the face had lupus nodules in the pharynx and larynx, under which circumstances a large injection might produce dangerous swelling. He did not agree with the majority of those who limited the subsequent doses to a centigramme or thereabout. When he found a patient bore the injections well, he believed the best results were obtained by a gradual but rapid increase until the maximal dose of one decigramme was reached. When the patient ceased to react to this dose, the patient might be said to be *provisionally* cured. The ultimate results could only be ascertained by the lapse of time.