BRITISH MEDICAL JOURNAL.

SPECIAL HOSPITALS NUMBER.

LONDON: SATURDAY, JUNE 20TH, 1908.

An Address

ON

NINE HUNDRED CASES OF TUBERCULOUS DISEASE OF THE HIP,

TREATED AT THE ALEXANDRA HOSPITAL, WITH A MORTALITY OF LESS THAN 4 PER CENT.

DELIVERED TO THE NOTTINGHAM MEDICAL SOCIETY.

BY

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GENTLEMEN,—I propose to speak to you to-day upon my own experience in the treatment of hip disease in children under 12 years of age at the Alexandra Hospital.

The Alexandra Hospital was founded in February, 1867, with the object of treating tuberculous disease of the hip without operation other than the opening of abscesses, that is to say, by rest and by extension, and by good nursing and food, and it was stipulated that the length of time that the children were to remain in the hospital was to be in no way limited. The only ways in which limitations were imposed were in cases of children who were considered to be incurable, or who had had excisions of the hip done or had extensive spinal caries, for all these complications were originally a bar to admission.

EARLY STATISTICS.

I have been connected with the hospital for twenty-one years, and before I was connected with it there had been an inquiry instituted by the Clinical Society of London, in the year 1879, as to the relative advantages of treatment of hip disease by rest and other associated measures on the one hand, and by operation, notably by excision, on the other. The report of this committee was published in the fourteenth volume of the *Transactions of the Clinical Society* (1881). That report has been constantly alluded to by all writers on the subject ever since, and you will find reference to it in most books on surgery, and in all books which deal specially with hip disease. I will give very briefly and without entering into detail, the actual figures which were the subject of this report. It was found that in the Alexandra Hospital from the year 1867 to 1879 there were altogether 401 patients. Of these, 17 were removed from the hospital to be operated upon, and therefore we may put them aside. As a matter of fact, 9 of the 17 who were operated upon died. That leaves a total of 384 cases treated in the hospital without operation. Of these 384 children, 100 died, a mortality of 26 per cent. They died of these conditions: tuberculous meningitis, 23; extension of local disease and visceral complications, such as amyloid disease, tuberculous disease of the lung, and so on, 66; intercurrent disease, that is to say, other diseases which were not directly connected with the hip disease, 11; making the total 100. The patients, for com-

parison, who had been treated by excision, were patients whose cases had been placed before the Clinical Society by Mr. Croft, who at that time was one of the surgeons at St. Thomas's Hospital, and the total mortality of his cases was 40 per cent.

Since that time there has been one very great change in the practice of surgery. This report, as I have said, was dated 1881, and it only dealt with cases up to the end of 1879. It was just about that time that the antiseptic principles of treatment were generally adopted, and consequently since that time the patients who have been treated, not only in the Alexandra Hospital, but everywhere else, have had the advantage of antiseptic surgery. If you look at any books which have been published recently, or papers which have been written of recent years upon the results of excision of the hip for tuberculous disease, you will find that nothing like the number of patients now die who were reported to have died after excision at the time that the committee issued its report. As I have already said, the mortality of the cases investigated was 40 per cent. of those treated by excision; whereas, at the present time, there are many surgeons who have published reports of their own practice showing that the mortality after excision had been reduced, at any rate, as low as 15 per cent. But you may look in vain for any statistics which deal with large numbers, later than those of the Alexandra Hospital in 1879, referring to children treated, not by excision, but merely by rest and extension and general hygienic measures. And although the improvements in the results of such treatment have been even more marked, as I shall show you, than they have been in cases where excision has been practised, there are few, if any, available recent statistics which can guide you as to what is the probable mortality in cases of hip disease treated by modern methods, though without excision.

During the time I have been connected with the Alexandra Hospital, there have been under my care 900 patients, and of these only 33 have died, which gives a mortality of less than 4 per cent. The causes of death in these children have been as follows:—Meningitis, 12; local disease with visceral complications, 20; intercurrent disease, 1. It will be seen, therefore, whereas between the years 1867 and 1879 there were 384 cases treated with a mortality of 26 per cent., in my own practice there have been treated since 1885 900 cases with a mortality of less than 4 per cent.

THE HOSPITAL AND CONVALESCENT PROVISIONS.

In order that you should be in a position to appreciate what is done, and under what conditions these patients are treated, I will tell you briefly about the hospital, and the circumstances under which the children are treated.

In the first place, until the year 1899—that is to say, in all the earlier period which my figures cover—the children were treated in old houses, which could not be considered to be in any way suited for a hospital. But since 1899, when the new building was opened by the Queen, after whom the hospital is named, the children have been placed under much more favourable conditions as

far as their immediate surroundings are concerned than in the earlier years with which my figures deal. At first there was a convalescent home at Bournemouth, but about fifteen years ago a convalescent home was established on the Ootswold Hills at Painswick in its place, and since then there have always been ten children treated there. The total number of beds in the hospital in London has been 60. In the last four years, in addition to the 10 beds on the Ootswolds, there have been 20 beds in a convalescent home built by Mr. Wood at Olandon, near Guldord, and we thus have now one bed in the country for every two beds in town.

THE PATIENTS.

All the patients who have applied for admission under me have been admitted when there were vacant beds, and, whilst the worst cases have always been taken in, 266 out of the 900 have been treated in their own homes in London, being visited there by nurses, and brought to see me from time to time. In many cases the treatment has been continued throughout in this way, but all children who have developed abscesses have been admitted to the wards, as have also all patients who were not doing well at home. It should be added that many of the patients were children who had already benefited from treatment at other hospitals. In former years, as I have already said, there was a rule against admitting cases which were incurable, but since I have had to do with the hospital I have not refused admission to any case, because at the present time, even after twenty-one years' experience, I confess I do not think any cases are incurable, however bad the children are. So also the old rule requiring that children should be discharged if they proved to be incurable has again become a dead letter, because, personally, I fail to recognize that any case should be placed in that category. The only exception has been that two children were discharged to homes for incurables on account of extensive disease of the spine, and in these the hip disease had practically come to an end.

TREATMENT, COMPLICATIONS, AND CONDITION ON DISCHARGE.

During those twenty-one years of which I speak I have not treated any patient at all, either at the Alexandra or in St. Bartholomew's Hospital, or in private, by excision of the hip joint, so that all patients with hip disease who have come under my care have been treated by rest and extension and what may be called general hygienic measures. When I first took over the work at the Alexandra Hospital there were amongst the patients already in when I was appointed three small children who were very ill, and whose condition seemed to me then to preclude any possibility of recovery without amputation at the hip. Two of the three recovered after amputation, and one died. Since then I have not performed amputation in any case.

Now as to the conditions on discharge of the children who recovered. No child has been discharged from the Alexandra Hospital unless all the active disease appeared to me to be quite at an end, and all the children have been made to walk on crutches for at least a year after it was no longer necessary to confine them to bed. I soon found that one of the chief troubles was that when the child had improved and got over the acute stage of the disease, and there was no longer pain, if he were allowed to walk too soon he was very liable to have a return of the pain and other symptoms. So I gradually came to make a rule for myself that no child should walk on the bad leg for at least a year after he was well enough to be up and going about on crutches. These children, therefore, have been kept walking with crutches and with a high boot or patien on the sound foot, so that they could carry the affected limb clear of the ground, and thus avoid using it until it had had time to recover completely from the tubercle. For the same reason, no child has been discharged who has had to wear a splint. A Thomas's splint is a very useful appliance in a certain number of cases where for some reason you cannot keep the patient lying down, but I am quite clear that a Thomas's splint never takes the place efficiently of complete rest in the recumbent position and the application of extension. But if a child can be kept at rest lying down for a sufficient time, Thomas's splint seems to me to be never needed at all, because if a child is thought to need a Thomas's splint it ought not to be

got up. So none of these children have been treated with this splint, although, as I have said, it is a good substitute for rest, when rest cannot be obtained.

Next, with regard to keeping these children under observation. All those who were resident in London have been kept under observation by special nurses who have visited them in their own homes and by myself, and often for many years after their discharge, and children from the country have been seen at longer intervals. If, as sometimes happens, there has been any appearance of relapse, if there has been a return of pain or a residual abscess, they have been readmitted, so that, as far as I know, almost all the children who may be considered to have recovered have not only genuinely recovered from the disease, but have been left clear of any obvious active tuberculous affection of the hip. I will say more presently about the ultimate conditions of the limb after the disease.

Of the patients who have been in about 40 have had both hips affected, a condition which, of course, makes it exceedingly difficult to treat these patients satisfactorily, because, if both hips are affected, it is evident that you cannot get the child up nearly as soon as if it had one sound limb on which to walk with the aid of crutches; and I suppose it must be accepted that if a child has two tuberculous hips, it must not only indicate that it has double disease, but it also indicates that it is a child who is peculiarly susceptible to tubercle. In addition to the children with affection of both hips, a good many patients have had spinal caries. Others of them have had diseases of other large joints, such as the knee or the shoulder. Rarely children have had several joints affected at one time. I had a small boy in hospital who had disease of one hip, one knee, one ankle, one elbow, and one shoulder. Yet, in spite of this multiplicity of joint affections, that patient ultimately made a very good recovery as far as his general health was concerned, although, of course, more or less crippled by reason of the involvement of so many joints in the disease. It is, however, quite clear that in cases of hip disease it is far more common to have the second hip involved than for any other joint or joints to be attacked.

Tuberculous phthisis has hardly been met with, perhaps half a dozen cases in all. Another curious thing is that so few of these children have had tuberculous disease of the glands of the neck. Although there have been 634 children in the hospital in the period I have mentioned, it has happened that not one of them has required to have an operation done for the removal of glands in the neck. Perhaps not more than ten at the outside have suffered from lymphatic or glandular abscess of the neck. It is a curious fact—which I only state as a fact without laying any very great stress on it—that in children who have such a definite tuberculous affection as hip disease the tuberculous changes seem to expend themselves upon the osseous tissues rather than upon the glands of the neck. Many patients when admitted had already been suffering from tuberculous disease of the hip for several years; some of them had one, and some many open sinuses; a few of them had already well-marked amyloid disease; and, as indicating the importance of the length of time that has elapsed before a child is brought under proper conditions for treatment, I would point out that, of the 33 who died, 16 had suffered for more than a year from hip disease before they applied for admission. Some of these had suffered from it for several years, so that when they were admitted it was no longer a question of treating hip disease in an early stage, but rather a question of treating a child whose hip had been to a great extent destroyed, and who had already suffered very much from sepsis or amyloid disease.

When I came to get out the figures I have given you, by the assistance of the Matron, Miss Fitch, and of the Secretary, Mr. Stanley Smith, I was surprised myself to find what an enormous proportion of these children had recovered, and, although I was conscious that the conditions are now very much better and the results altogether more satisfactory than they used to be, still I was not prepared to find that over 96 per cent. of tuberculous children, taken from the poorer classes, many of them ill-nourished and ill-clothed, who often had had the disease in progress for a very long time, had recovered. If you ask what is the reason for such satisfactory results

I would say that the main object has always been to treat the child first and the disease second; and the next reason is antiseptic surgery. Those two conditions, of course, go hand in hand.

THE IMPORTANCE OF TREATING THE PATIENT.

It does not do to suppose for a moment that a child who has tuberculous disease of the hip has that tuberculous lesion only. If you were to make *post-mortem* examinations of children with tuberculous disease of the hip you would find that the vast majority of them had tuberculous disease elsewhere also. It is, indeed, probable that most cases of bone tubercle in children are due to infection of bone from some tuberculous focus in another part of the body; so these children may have their hips infected from tuberculous mesenteric glands, or tuberculous bronchial glands, or from tubercle in the lungs. Consequently, even if you knew you could remove the whole of the tuberculous disease in the hip, it would not be right to suppose that you had then restored the patient to complete health. The expectation and the probability is that there still is tubercle elsewhere. Under these conditions it is evident that you must try to treat the child himself, and not merely the hip disease, for you cannot remove by operation all the tubercle in different parts of the body, even if you knew that it was there. This makes out a strong case for directing the chief efforts towards the treatment of the child. There is no doubt in my own mind that tubercle in a great many cases is destroyed by the unaided efforts of the patient. Many of the children whom I treated were no doubt originally naturally resistant to the disease. On the other hand, a great majority of the patients were inherently tuberculous, and inherited a tuberculous tendency—that is to say, they had tissues which offered very little resistance to the tubercle bacillus. But if you can get those children into something like the condition of health enjoyed by children who are comparatively immune by means of good feeding and favourable surroundings and open-air treatment, they also may cure their tubercle in just the same way as children who are naturally more immune will cure it without a great deal of help from us. Consequently, I think the first thing that is necessary is to have a robust belief in the possibility of the patient being able to cure the tubercle that is in him if you will only give him sufficient help. And I think you must have in mind that they have not only to cure the tubercle which is evident in the hip, but that there is in all probability some tubercle elsewhere to be cured also, which cannot be got at by the surgeon at all.

THE VALUE OF ANTISEPTICS.

The next point is, that in the treatment of any local abscesses you should be exceedingly careful that antiseptic surgery has its fullest possible scope. There has been in years past a very great tendency to say "This patient has already got an abscess, why should we trouble about antiseptics?" "You are going to make an incision into a part which already contains pus, why trouble further about keeping micro-organisms out?" I am afraid there is a certain amount of that belief still prevalent; but, as a matter of fact, if there is one condition more than another which absolutely necessitates the most strict antiseptic precautions, it is these conditions of tuberculous disease. Think of it for a moment. Here is a patient who has a collection of fluid inside his body. That fluid is largely blood serum and pus. It is maintained at a temperature of about 100° F. Can you imagine any more favourable nidus for the growth of most of the pyogenic organisms? Is it not very much the same material which you would use if you were cultivating bacteria in the pathological laboratory? But there is something more than that. If you expose healthy cut tissues to the attack of pyogenic organisms, in a large number of the cases, unless the organisms are very virulent and present in undue numbers, the healthy tissues are quite capable of repelling that attack and casting them off and destroying them. But in the tuberculous patient there is a good deal of tissue which is very lowly organized, and which is to a certain extent devitalized; in it a large number of cells are undergoing fatty degeneration. It is a part in which blood vessels are notably deficient, because tubercle destroys large numbers of small blood

vessels. Therefore this tissue possesses very little resisting power, and if it be exposed to attacks of micro-organisms, it is very likely to succumb because it can offer very little resistance to their action. If pyogenic organisms obtain an entrance to a place where there is tuberculous disease, they have an infinitely greater opportunity of destroying the tissues than in healthy people. Can you wonder, then, that it is absolutely necessary to use the most strict antiseptic precautions in cases where there is tuberculous suppuration? And not only does tubercle predispose the tissues to this successful invasion, but the pyogenic organisms, in their turn, damage the tissues and allow them to be more easily invaded by the tubercle. A tissue which is being destroyed by a process of acute suppuration, of course, offers very little resistance to any other micro-organisms, and consequently to the tubercle bacillus. So once you have a mixed infection—that is to say, both tubercle on the one hand and pyogenic micro-organisms on the other—there is a vicious circle established. Tubercle favours the growth of pyogenic micro-organisms, and those organisms in their turn attack the tissues and render them more susceptible to tubercle. There can be no question about it that the advent of sepsis to a part which has hitherto been the seat of tubercle only immediately results in the absorption of septic material and in fever. It is because of these circumstances that antiseptics have become of such paramount importance in the treatment of tuberculous disease. At the Alexandra Hospital the high mortality-rate I have mentioned—26 per cent. of all the cases dying—was due largely to the advent of sepsis. In the same way, in the cases of excision the mortality of 40 per cent. was largely due to sepsis. The improvement, both in the results of excision and in the results when the children are treated without operation, is largely due to antiseptic surgery.

TREATMENT, LOCAL AND GENERAL.

Let me now state, in very general terms and briefly, the line of treatment which was adopted in the case of these 900 children at the Alexandra Hospital. There is nothing unusual or peculiar about it, for we have acted on those lines so well advocated for many years by Mr. Howard Marsh. First, there is absolute rest in the recumbent posture. This absolute rest means that the child must not even be allowed to sit up at all, because sitting up causes movement at the hip-joint. The joints involved are kept absolutely quiet and, if necessary, splints used to ensure this at first. Extension is applied in the long axis of the limb in the position in which that limb lies most easily. In many cases when a child is put to bed the joint may be kept flexed, in other cases it may be slightly adducted, and in other cases it may be abducted. But at first extension is applied in the axis of the displaced limb. As the muscles allow the limb to come into a better position the leg is got to lie flat on the bed, the object of this being to put the limb into the best position for subsequent progression, supposing that, as will happen in many cases, the joint is stiff ultimately. The amount of weight to be applied to the limb to effect extension is small. Very few children require more than 2 lb., and they are often comfortable with only 1 lb. A few cases have required 3 or 4 lb. I do not think any child under 12 years of age will require more than 4 lb. weight for the purposes of extension, and that only for a short time. Next as to the abscesses. I have mentioned the importance of antiseptics, and beyond that I should say that in the opening of abscesses there is nothing very special that is required. It has been suggested at different times that different antiseptic materials should be introduced into the abscess cavities and perhaps left there. For instance, iodoform emulsion was used for this purpose for a long time by many surgeons. I have used it myself, but I did not see any particular gain from it. Some surgeons have advocated the use of sulphur. I have also tried that, and again I did not see any benefit. So that my object in opening such an abscess is to open it aseptically, and, having cleared out the contents most completely and very gently, to see that it is adequately drained for, at any rate, a few days. In many cases the drainage tube can be taken from the cavity within a week or two. I think there is too much tendency to make numerous incisions. I am convinced of this, that in many cases where an abscess is already opened,

you should be very careful about deciding upon the advisability of making counter openings unless the abscess tracks to another place very near to the skin. If you make an incision into a deep-seated tuberculous abscess, and if in order to reach it you have to pass across several planes of cellular tissue, you necessarily introduce tubercle into these hitherto unaffected cellular planes, and when the pus drains through it will not only come out by your drainage tube, but it will infect different areas of tissue which are now exposed to it by your incision. So one result of opening a deep-seated abscess through several intermuscular spaces is that there may be an infection of each of those planes with tubercle, and there may be in consequence a wide extension of tubercle through the thigh and buttock. That is what often happens, either with or without incisions, and in a certain number of cases pus makes its way amongst the cellular tissue planes, and infects a great many of them before an opening is ever made. If it has not done so, it is very advisable that in operating you should avoid this complication. It is not always that you can avoid it, but you can always avoid making unnecessary incisions, and it is not always advisable to make the incision for an abscess in the most dependent part, for if you sacrifice everything to doing this it may result in making the patient worse by opening up a large area of hitherto uninfected cellular tissue.

As to the general treatment of these children, I have told you that they are placed under favourable conditions for getting well. That really means good food, careful nursing, very great care in the dressing of wounds, a certain amount of iron and cod-liver oil (especially in the winter), and sending them away to the country convalescent homes and treating them as much as possible in the open air. At present, and for some years past, there has been a great improvement in the treatment of patients with tuberculous phthisis by sending them to sanatoriums, where they can practically live in the open air. I do not think a sufficient amount of attention has been paid to the treatment of surgical cases of tubercle by exactly the same means, for whatever amount of improvement there may be in people who have tuberculous phthisis, I can assure you that there is a much larger improvement in patients with localized tuberculous lesions situated in a part of the body which is much more easily cured than the lungs. Consequently, three or four years ago we had two large balconies built at the Alexandra Hospital, and a large number of the worst of these children are kept night and day in these open balconies, with immense improvement in their condition. When they are sent into the country the same thing is done as much as possible, and many of them are kept out night and day. I have no doubt that this line of treatment has been responsible for bringing about very much benefit.

There is one other treatment, which is much more recent even than the open-air treatment for tubercle, and that is treatment by tuberculin, the so-called new tuberculin, to distinguish it from the tuberculin of Koch of some years ago. I may say, in passing, that I did not at that time adopt the treatment by Koch's tuberculin, because, from what I was able to find out before trying it, it appeared that it was very liable to cause illness in the patient and sometimes much pain. Consequently in these children whose figures I am placing before you it was never tried. But in the children we have had to deal with lately I think I have seen quite a definite improvement, in some of them at least, by the treatment with the new tuberculin, and regard it as a very useful remedy.

RESULTS.

I will say only very few words about the results of treatment. You may remark, "You tell us that out of 900 children with hip disease all but 33 recovered, but what was the condition of their limbs? Does recovery mean that they were able to walk perfectly well?" I think it must be evident at once that the extent or degree of completeness of recovery must be largely dependent upon the age at which the disease attacks the patient and upon the length of time it has been going on before treatment is commenced. Of course, if you have to do with a child the head of whose bone has already been largely destroyed, you cannot restore to it a normal limb. Still more is that true if you have to deal with a child whose bone has not

only been destroyed, but the truncated upper end of whose femur has been displaced on to the dorsum illi. You cannot alter that. If you have to deal with a child who has already one or two inches of shortening, you cannot restore the limb to its natural length. So, of course, it must be evident that in proportion as the parts have been destroyed by disease, the child must permanently suffer. On the other hand, it must be appreciated that in a very large number of cases where the hip disease is diagnosed sufficiently early; in which the disease is mainly inside the bone and has not yet spread into the joint itself; where there are no acute arthritic symptoms and the child only complains of slight aching and is noticed to limp; and when an x-ray photograph shows a caseous area inside the head of the bone surrounded still by some healthy bone, then the possibilities of complete recovery are very definite. I have myself the acquaintance of various people who are now fully grown up and healthy and strong, in whom one leg is as good as its fellow, and in whom, nevertheless, tuberculous disease attacked at one time in childhood the head of the femur.

The other thing which is of great importance is that the earlier the child is attacked by the disease the more likely it is to have some permanent lameness. In very small children of 1 or 2 years of age the whole head of the bone is, of course, only a tiny thing, and if the growing bone in the epiphysis of the head is attacked by tubercle, only a very moderate quantity of bone needs to be destroyed before the whole head of the bone is spoilt. My own observations tend to show not only that small children are much more likely to be lame, even when they are treated early, but that the disease is much more fatal in small children. Of the 33 children whom I mentioned to you as having died of this disease, no less than 24 of them had been attacked by the disease before they were 6 years of age. That implies that more than two-thirds of the whole of the children—all of them being under the age of 12—were children who were attacked in the first half of that age-period. So I think that the prognosis must be worse in proportion as the disease attacks the child very early in life.

As far as recovery is concerned, if the case is taken early, and especially if the patient is at the age of 7 or 8 years, or older, in a large proportion the child recovers with a thoroughly useful limb. This would be true of the great majority of the cases I am dealing with. I admit that there are only too many patients who recover with a limb which always causes a bad limp. In many this is due to the fact that while the disease has damaged the joint so as to prevent free movement, it has unfortunately not caused complete ankylosis. I say "unfortunately" because with firm ankylosis in a good position the patient walks very well. But in the cases I allude to the fibrous union is liable gradually to yield under the weight of the patient, and the limb becomes gradually adducted and flexed. There is little to be done for these children to enable them to walk well. If the upper end of the femur is displaced on to the ilium, as it often is, then the lameness is still more marked. Another cause of bad lameness is the arrest of growth of the whole limb which sometimes follows hip disease. In most cases this arrest is chiefly evident in the femur, and is always worst when very young children are attacked by the disease. But in the most extreme cases there is also arrest of growth in the tibia and fibula as well as in the femur, and I have seen the leg as well as the thigh shorter than its fellow by as much as an inch. This shortening is quite independent of the mode of treatment adopted, and also, as far as I have seen, of the severity of the attack. In the next place, and still with regard to the condition of the children after recovery, I would allude to the presence of sinuses or open wounds in children who have been discharged from hospital. It has been my practice to keep all patients until the wounds were soundly healed, and there have been very few exceptions to this rule. Indeed, I do not suppose that as many as 3 or 4 per cent. of all my patients in the Alexandra Hospital had unhealed wounds when they were discharged, and even these were very trifling. In many cases not brought under treatment sufficiently early, the patient recovers with a limb which is much flexed and adducted. This is not a serious complication if the joint ultimately becomes firmly ankylosed, as few operations are more satisfactory than an osteotomy

of the shaft of the femur. I have performed this operation in some fifty or sixty patients, with uniformly good results, and I look upon it as being always satisfactory so long as it is not done too soon after the tuberculous process has ceased.

EXCISION.

Now let me say a few words on the subject of the treatment of hip disease by excision. I have said that I have not performed the operation of excision in any child who has been under my care, and my practice is based upon the conclusion that the removal by operation of the head of the femur is practically never required for the cure of the patient. If reference be made to the report of the Clinical Society it will be found that it recommends operation under certain conditions, which may be briefly summarized thus:

1. Necrosis and separation of the head.
2. Firm sequestra in the bones.
3. Extensive caries.
4. Intra-pelvic abscess.
5. Persistent suppuration.
6. Dislocation on to the dorsum.

I would say of these, in the first place, that I have never seen a case of separation of the necrosed head. I am sure its occurrence is very rare, and even if it does occur, the removal of the sequestrum cannot well be called excision of the hip. In the second place, I am sure that small cancellous sequestra are either disintegrated in the process of suppuration, or else they easily separate from the soft bone, and make their own way out, or are removed from the sinuses. Extensive caries in itself is no bar to recovery, and I have found the whole head and neck bare and rough in patients who have afterwards done very well. Neither intrapelvic abscesses nor persistent suppuration are usefully treated by excision, for they can be recovered from better without it. And lastly, if the truncated upper end of the femur is dislocated, this, instead of being a hindrance to recovery, is often a material aid to repair, as the ulcerating bone surfaces are no longer kept in contact. Extensive necrosis of the pelvic bones is very rare in children, but though I think it is the most fatal of all the conditions of disease, unfortunately it is not remediable by the operation of excision. I conclude, therefore, that excision of the head of the bone is never required in the treatment of tuberculous disease of the hip, and I consider that I am justified in drawing this conclusion by the results I have seen without this operation.

But on mere operation grounds, also, I think excision can be shown to be unsound. In the first place, "excision of the hip joint" is practically never performed. The "joint" is formed by the innominate bone and the femur, but in so-called "excision" the only bone removed is the head of the femur. There is no possibility of sawing off the acetabulum, and at best it is only scraped. The joint, then, is not excised, but only one of the two bones forming the joint. The operation, therefore, is incomplete, and this is further evidenced by the fact that in a very large number of cases of excision the disease is not all removed, and the tuberculous process still continues. It is, in my opinion, an unscientific and inefficient operation, and its incompleteness is evident, for not only is the diseased bone not all removed, but in suppurating cases infected muscle and cellular tissue are all left behind. Compare such an operation with excision of the knee. It is analogous to removing the head of the tibia and leaving the condyles of the femur behind, whereas, as a matter of fact, in the knee in suitable cases the whole of the disease in bones and synovial membrane may very well be eradicated at the time of operation. Excision of the knee, after early childhood, is good, both theoretically and practically, because it is a complete operation, and gives a strong and useful limb; and while I think that excision of the hip is bad and should be given up as a routine method, I think that excision of the knee for tubercle is not often enough performed. The last objection I have to the excision of the hip is that, even when the disease has come to an end in cases that have recovered, the resulting limb cannot be compared for one moment in usefulness to the condition found on the average in those children in whom excision has not been performed. Not

only is this the opinion expressed in the report of the Clinical Society, but I have myself seen a great number of children operated upon by more recent methods with flail-like or contracted and shortened limbs, quite unable to bear the weight of the body.

But it may be said that if excision be performed in early cases the duration of the treatment can be shortened, for the disease can be completely removed in, at any rate, a certain percentage of the patients; and I admit that if the tubercle is still limited to the inside of the femoral head, this contention is true. But my objections to such an operation are twofold. In the first place, in order to get clear of all tubercle and to avoid infecting the tissues around, much more bone must be removed than is already diseased, or than would be ultimately destroyed by the disease itself in the long run. And in the second place, I am certain that if the children on whom these early excisions are performed were treated by rest and other general measures, there are very few of them who would not recover with an unusually good and useful limb. They are just the very cases which need excision least of all. If, on the other hand, the disease has extended beyond the head of the bone, and there is diffuse suppuration in the soft tissues, then the mere removal of the femoral head leaves much of the tubercle in the soft tissues and in the acetabulum. In addition to both these objections, it must still be remembered—a point on which I insisted in an earlier part of this address—that there is often other tubercle elsewhere, and that the child still needs treatment for this as well as for the hip.

CONCLUSION.

I will say but little in conclusion. I make no claim to treat tuberculous disease of the hip in a different way to that adopted by most other surgeons, and I put no new remedies before you; but I have for more than twenty years had large numbers of children under my care, and I have found that they are more capable of curing themselves of this disease than is, I believe, generally known. I began with no preconceived theories, and I have drawn no hurried conclusions; I have rather watched and waited and allowed the conclusions to force themselves upon me. Great patience is required on the part of parents, surgeons, and nurses, and in many cases where children are very ill and there is extensive suppuration it is not at first easy to believe that the conditions admit of recovery; but I claim that the cases I have put before you prove conclusively this at least—that hip disease is curable without excision in the vast majority of cases, if only the patient can be placed under favourable conditions.

Unfortunately, it must be admitted that the hospital accommodation in Great Britain is not at present adequate for the treatment of a sufficient number of these cases. Patients cannot ordinarily be kept in hospital for a sufficiently prolonged stay, but, as far as those who are not really poor are concerned, there is no material difficulty in carrying out the measures that I have indicated.

It seems to me that whilst there is no lack of generosity on the part of the public who support so many charities, in connexion with children's hospitals in particular it is liable to be somewhat misdirected. Considering the frequency of tubercle, I am sure that far more hospitals are required in Great Britain of the type of the Alexandra Hospital, hospitals where children can be kept for an indefinite length of time, and with suitable convalescent homes where treatment may be continued after discharge. The tuberculous lesions of children are, unfortunately, not limited to the hip, and most of what I have said about the treatment of tuberculous hip disease would be equally true if applied to spinal caries or disease of other bones. I would therefore urge that when considering the advisability of building or enlarging hospitals for children, the possibility of supplying such hospitals and convalescent homes as I have advocated should be more considered than it has been in the past. Whatever need there may be for sanatoriums for the treatment of patients with phthisis, I am convinced that there is at least as great a need for similar sanatoriums for the treatment of tuberculous children. In proportion as these can be supplied, the need of hospitals for children in large towns will be to a great extent lessened.