THE INFLUENCE OF HUGH OWEN THOMAS ON THE EVOLUTION OF THE TREATMENT OF SKELETAL TUBERCULOSIS

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My first duty is to thank you for the very great honour extended to me by your invitation to deliver the Hugh Owen Thomas Memorial Lecture. We do well to remind ourselves about this great man and to reflect on what he was able to achieve from general practice, without the facilities attaching to a hospital staff appointment. Much of what he taught has become fundamental in the treatment of skeletal injury and disease; he is now universally recognised as an outstanding pioneer in the early development of orthopaedic surgery.

Hugh Owen Thomas received a medical training in no way different from that of his contemporaries. He served a four years' apprenticeship at St Asaph with his maternal uncle, Dr Owen Roberts, before proceeding to Edinburgh University and University College, London. He qualified as a Member of the Royal College of Surgeons in 1857. But to this formal medical education there was added a knowledge of the treatment of skeletal disabilities which he derived from his own people. From them he learned to adopt a conservative attitude towards chronic joint disease, and in treating a fracture to aim at restoration of length and alignment, using pulleys for this purpose when necessary. It is this ancestral background that explains the uniqueness of Owen Thomas, for it instinctively led him to the study of injuries and diseases of the locomotor system. Furthermore he was able by his medical training to discriminate what was valuable in the practice of his family whilst preserving a critical attitude towards regular orthodox treatment. In the pursuit of his work he found it necessary to establish at Nelson Street an orthopaedic clinic, a small hospital, and a well equipped workshop. These three were complementary; they were essential for the care of his patients and the working out of his ideas. In this establishment one sees in embryo the pattern of the modern orthopaedic hospital—the out-patient clinic, the hospital, the instrument workshop. It was familiarity with this type of effective organisation for the study and treatment of skeletal disabilities that enabled Owen Thomas's apprentice and nephew, Sir Robert Jones, to set up a similar arrangement at Baschurch which became the model forerunner of country orthopaedic hospitals.

The study of skeletal tuberculosis was one of Owen Thomas's main interests in life and in view of the encouraging change that has taken place in the curative prospect of this crippling disease during these last few years I thought it might be appropriate to trace the evolution of its modern treatment which he did so much to initiate. In the cure of this disease Thomas had two guiding principles. The first was the inherent tendency to recovery which many patients exhibited. In this respect he closely followed John Hunter, who was deeply impressed by the natural resistance of the body to disease and by its struggle against anything impairing the function of one of its parts. The sole business of a surgeon was that of a helper, claiming no more for his operation than lending his aid in that struggle. Within our own experience some of us have met individuals with a kyphosis whose spinal radiograph revealed a healed destructive disease which could have been no other than tuberculosis and for which no treatment was received.

The second principle was rest. The idea of rest as a therapeutic agent Thomas discovered for himself but he was strongly supported in this belief by his study of the prize memoir of Jean-Pierre David "On Motion and Rest in relation to Surgery" which was published in Paris in 1778, and also John Hilton's lectures on "Rest and Pain" delivered at the Royal

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College of Surgeons from 1860 to 1862. Rest for Thomas had a precise meaning; it could only be obtained by striving for perfect immobility.

His way of treating a tuberculous joint paid obedience to these two principles—the promoting of the natural recuperative power of the patient and the securing of complete rest for the morbid part. His procedure was first described by him in 1875 in his book entitled Diseases of the Hip, Knee and Ankle Joints. He had given his method an extensive trial, checking his results on more than a thousand patients before proclaiming his principles of treatment. This publication at once revealed Thomas as an original thinker in surgery.

In the case of the hip joint the two signs that roused his suspicion of disease were pain and limping, but the sign that he regarded as almost diagnostic was shortening or contracture of the adductors and particularly if accompanied by gradually increasing flexion of the limb. The constancy of this last sign induced him to devise a simple means of both detecting and estimating the degree of flexion, a procedure that has become classical as Thomas’s flexion test for hip disease. The patient lies on his back on a plane surface whilst the sound thigh is flexed by the surgeon until the knee touches the chest, thus ensuring a straight spine. The presence and extent of flexion of the diseased hip is thereby revealed in spite of any voluntary attempt at extending the limb.

In the early stage of the disease Thomas kept his patients in bed, and encouraged good feeding and nursing in fresh air. Even in dwellings of the very poor he insisted on nursing crippled children out of doors on beds improvised for the purpose. He was fully alive to the value of rest, fresh air and sunshine in the cure of joint tuberculosis and was probably about the earliest surgeon to adopt, as common practice, this threefold therapeutic aid in the treatment of the malady. By his general care of his patient he undoubtedly helped to reduce the toxæmia that is present in a varying degree in the active stage of tuberculosis whatever the local manifestation may be. And in the protection of the diseased joint he was uncompromising, for nothing less sufficed than “enforced uninterrupted and prolonged rest”—to quote his oft repeated formula—procured by mechanical fixation with splints devised specially for the purpose. The most striking feature of his splints was their simplicity of design; they were so simple that any village smith and saddler could make them. They had reached their final form after much trial and error during which Thomas forged the iron with his own hands. The hip splint had several characteristics of its own; unlike other appliances it relied on posterior fixation and by extending from just below the level of the axilla to the calf it was more certain of securing joint immobility, and by preventing deformity it thereby placed the limb in a favourable functional position in the event of ankylosis. When greater control of joint or patient was desirable, as in the very young, a double splint was used during recumbency.

The double hip splint was also valuable in the correction of flexion deformity by slow stages; a procedure founded on Thomas’s doctrine of “unsoundness.” An unsound part was one in which inflammatory processes were occurring as the result of disease or injury; a joint or fracture in such a state was plastic and therefore pliable. On this doctrine he based much of his practice in correcting deformity. He treated a flexed tuberculous hip joint by first accommodating to the deformity the corresponding part of a double hip splint (Fig. 1). In the course of a few weeks this section of the splint, with the limb bound to it, was gradually straightened until flexion was abolished, after which treatment of the joint continued. An abscess sometimes prolonged the period of recumbency; it was frequently aspirated until it disappeared.

In the treatment of the disease of the knee joint Thomas applied the same principles as in that of the hip. He produced a splint for the purpose in 1865, the most famous of all his splints (Fig. 2). By it he was enabled to exercise control of the knee joint even more effectively than by the hip splint in the case of the hip and walking was permitted earlier in knee disease (Fig. 3). The splint consisted of an ovoid ring for the groin connected by
Fig. 1
A patient on a double hip splint showing Thomas’s method of gradual correction of a flexed hip.

Fig. 2
Thomas’s knee splint as it first appeared in a drawing in 1875.

Fig. 3
1875—Thomas’s ambulatory treatment of right knee disease (left). 1852—Ambulatory treatment of Perthes disease of hip (a patient of Mr. I. Sissen) (right).
two iron rods to a smaller ring below. The inner rod was attached to the upper ring at an angle of fifty-five degrees reduced to forty-five degrees after padding, which was thicker on the inner side. The outer rod was fixed to the apex of the ovoid ring and the inner was attached at a plane in front, the ring being flatter at the groin than at the back.

Nothing is more symbolic of the genius of Owen Thomas than his knee splint; surprisingly simple in construction but peculiarly adaptable in its uses. Introduced first for tuberculosis of the knee and used subsequently for fractures of the lower limb, it began as a splint of recumbency and later was found to permit of treatment with ambulation. Its astonishing use in two world wars is well known; the number of limbs it saved and the suffering it alleviated in transport are beyond reckoning. In civilian practice it is a basic equipment wherever fractures are treated.

Thomas started a new era in the treatment of tuberculous joints. He demonstrated clearly how a cure could be obtained and function restored to a limb by relying on inherent power of recovery, resting the patient, and absolute protection of the diseased joint surfaces from friction. When he first proclaimed the gratifying effect of this conservative procedure there was no certainty amongst surgeons as to what kind of treatment should be adopted; splints were used but amputation or joint excision was a frequent occurrence! At one university centre excision of the hip had a mortality of over 30 per cent and the recovery of many of those that survived was very prolonged.

The teaching of Owen Thomas was slow in spreading but there were some surgeons who immediately grasped the significance of what he taught and adopted his splints. Among them were Rushton Parker in Liverpool, Edmund Owen and Thomas Bryant in London, Professor Thiersch in Germany and John Ridlon in America. Ultimately the hip splint began to appear in the teaching hospitals. The good effect of prolonged immobilisation was so convincing that radical operations diminished and conservative control of skeletal tuberculosis came into favour.

**JOINT FUSION BY BONE GRAFTING**

In the first decade of this century surgeons became increasingly aware that a joint with osseous destruction, even if cured of the disease, was often stiff, painful, insecure and liable to relighting of the malady. In order to cure the patient of these symptoms and to restore comfortable function to the limb there appeared to be no alternative but to accept the destruction of the joint as a total loss and proceed by operation to produce ankylosis. Indeed this had often been the natural process of cure of a joint which was grossly destroyed. But the experience of previous generations in their operative attack on a tuberculous joint was gloomy and forbidding. Operation was therefore revived in another form by the use of a bone graft which avoiding the infected joint yet joined its osseous elements to each other. Human bone grafting was first introduced by Sir William Macmullen in 1879 when he helped in the restoration of the shaft of a humerus, destroyed by osteomyelitis, by sewing bone chips in the bed of the lost bone. His subsequent researches on bone growth led him to lay emphasis on the necessity of a good blood supply for the recipient bone and adjacent tissues.

In 1911 Russell Hibbs and Fred Albee, both of New York, independently introduced extra-articular spinal fusion for destructive disease of the spine. Albee, who was a master craftsman, made great use of a long bone graft removed from the inner surface of the tibia by electrically driven twin circular saws. The strip of bone, which extended from above to below the diseased vertebrae, was grafted into the clefts of split spinous processes which were ultimately fused into one continuous bone, thereby permanently immobilising the infected segments. The operation was performed after a period of recumbency on a Thomas or Bradford Frame, which allowed the disease to become quiescent. It had the advantage of reinforcing the weakened spine and prevented recurrence of the disease. The great virtue of Albee's operation was that it imposed as little strain as possible on a debilitated patient;
there was the least muscle stripping and a proper regard for the nutrition of the graft by its enveloping tissues. Bone grafting more often fails because of the inadequacy of the blood supply rather than from any fault of the graft.

Albee’s procedure can be extended to accommodate two grafts while paying due deference to graft nutrition (Figs. 4 to 6). The muscle is stripped off the spinous process on one side only, just enough to admit a secondary graft; the face of the process is chipped to expose cancellous bone in several places. About a third of each process is next split off, bearing with it its attached muscles; into the cleft the main graft is placed and a second graft into the opposite osteo-muscular groove with their compact periosteum-bearing surfaces uppermost. The grafts should fit snugly in their new abode and require no metallic aid for their security: the suturing of muscle and aponeurosis over them helps their fixation.

A similar procedure was adopted in tuberculosis of the hip joint. Albee used an extra-articular bone graft which extended from a prepared cleft in the ilium to one in the greater trochanter. In later years fusion of the femur to the ischium has found favour because the resulting ankylosis is better adapted to take the stress of weight bearing. This method was first adopted by Trumble in 1932 and was improved upon by Brittain (1943), who guided the graft between the raw bone surfaces of a McMurray’s osteotomy into a prepared cleft in the ischium.

Extra-articular fusion was a distinct landmark in the treatment of skeletal tuberculosis. In 1914 Mark Rogers of Boston, dissatisfied with the late results of many tuberculous knees treated by conservative means, revived excision; gradually this operation gained ground. When the femur or tibia is seriously eroded it is now the accepted practice, after the disease has become quiescent, to aim at fusion by a classical excision of the articular surfaces and diseased synovial membrane. A method of pressing the bone surfaces to each other and their fixation by pins transfixing the bones, introduced by Albert Key in 1932 and improved by Charnley’s apparatus, is a valuable contribution in facilitating ankylosis.
SPINAL CARIES WITH PARAPLEGIA

The next considerable advance in the treatment of skeletal tuberculosis has been that of spinal caries with paraplegia, a most distressing complication. The renewed attention to this aspect of the disease was stimulated by the extensive studies of Seddon and Butler. Although the spine is the commonest site for skeletal tuberculosis the vast majority of patients with spinal disease make a good recovery with prolonged immobilisation. But the presence of paralysis adds greatly to the gravity of the malady and is always a menace to the survival of the patient. The most frequent site of spinal cord pressure is the mid-thoracic region, where normal kyphosis is greatest and where the calibre of the spinal canal is smaller than elsewhere, thus allowing little accommodation for debris or exudate. The usual cause of paraplegia is an abscess which may be fluid or semi-solid due to caseation; confined behind

![Diagram](https://example.com/diagram)

FIG. 7
Costo-transversectomy. The right rib and transverse process have been removed. The abscess is contained between the eroded body of the vertebra and the stretched anterior common ligament. The exudate filtering back, through the crumbling vertebra, into the spinal canal presses on the cord. The abscess is approached between the exposed pleura and vertebra.

the anterior common ligament, it travels through the crumbling vertebral body into the spinal canal and exerts extra-dural pressure on the cord. Much less often the obstructing object is a displaced sequestrum or degenerated disc.

There are two clinical types of paraplegia, one occurring during the early active stage of the disease and the other—paraplegia of late onset—appearing in a patient cured of the malady who has been getting about comfortably but with an obvious kyphosis; the paralysis is usually due, as Butler contends, to a relighting of the disease.

The treatment in both types is immobilisation in a plaster-of-paris bed with a turning lid. The paralysis gradually disappears in the great majority of patients treated in this way. But there is a small minority of patients who do not respond to recumbency; the paralysis even increases and they steadily degenerate. The only hope for them is by operation. The question arises how long should a surgeon wait before operating. In the past there has been a tendency to wait too long, hoping against hope that at last a spontaneous recovery would occur, while the general condition of the patient gets steadily worse. It may be accepted that if a patient with paraplegia from spinal caries, who is being skillfully nursed in a plaster-
of-paris bed, shows no sign of recovery within eight weeks then operation is clearly indicated. These patients are bad subjects for operation and further deterioration in their physical state should be avoided. There are two operations that offer a good prospect of relief—costo-transversectomy and antero-lateral decompression.

**Costo-transversectomy**, introduced by Menard in 1900, aims at direct evacuation of the abscess (Fig. 7). A longitudinal incision is made about one inch lateral to the spinous processes with its centre opposite the collapsed vertebra. The muscles are incised and retracted, and a selected rib and transverse process are stripped carefully. The process is disarticulated from the rib and removed; three or four inches of rib are excised, care being taken in disarticulating it from the vertebral body. The real danger is perforation of the pleura which in these patients is sometimes adherent to the rib. The finger is next cautiously insinuated between the rhythmically moving pleura and the body of the vertebra until the abscess is reached whose wall usually perforates on slight pressure from the finger tip. Fluid pus is mopped up until the abscess is completely evacuated. If the contents of the cavity consist of solid caseation they can be removed by ladling them out with a large curette spoon. If there is fluid pus a drainage tube is left in for forty-eight hours, the muscles are sewn back and the skin incision closed. Healing usually occurs but occasionally complete healing is delayed by the formation of a sinus which may last for two or three weeks. It is therefore an advantage to continue nursing the patient on the back in a plaster-of-paris bed, rather than on a lid.

**Antero-lateral decompression** aims at relief of any pressure on the spinal cord by exploring the spinal canal (Fig. 8). It was first carried out by Capener at Exeter in 1933, and independently developed some years later by G. L. Alexander and Norman Dott at Edinburgh. The steps of the operation are the same as in costo-transversectomy but the pedicle, as well as the transverse process and rib, is excised and at least two ribs, processes and pedicles require removal. The dura mater is thereby exposed and by carefully

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*Fig. 8*

Antero-lateral decompression at the level of sixth thoracic vertebra. The right rib, transverse process and pedicle have been removed exposing the spinal canal and allowing direct access to whatever is extra-durally pressing on the cord.
lifting it the cause of the spinal cord pressure is revealed. More often it is due to a mass of granulation tissue or caseation but occasionally it is due to a sequestrum, a bone spur or degenerated disc. The offending tissue or exudate is removed and any abscess is evacuated.

Antero-lateral decompression is a much more serious procedure, for the lateral supports on one side of two or more diseased vertebrae are removed and there is the added risk of perforation of the dura mater which in the presence of fluid pus may produce tuberculous meningitis. If a radiograph reveals a well defined abscess there is good reason to assume that its drainage by costo-transversectomy will suffice. As to which side of the abscess should be approached some indication may be given by studying the radiograph and selecting the side whose lateral abscess shadow is the greater or, if the lateral shadows are equal, the side with the more profound paralysis, if there is any difference between the two sides. Should there be little evidence of an abscess or if it is small, antero-lateral decompression is probably indicated. Should it be found, during an antero-lateral decompression operation, that on removal of rib and transverse process an abscess with thin fluid pus is revealed it may be wiser to be content with a costo-transversectomy rather than perform a complete decompression and run the risk of tuberculous meningitis. It is well to remember that although the local obstruction may be removed by decompression the very procedure adopted for its removal may permit of a trickle of pus along the canal well beyond the natural barrier which had been formed before the operation.

Good lateral radiographs are essential so that the precise site and cause of obstruction may be determined as far as possible (Fig. 9). It is also important that the centre of the operation incision should be at the focal point of pressure. Often a patient with paraplegia of acute onset has no deformity and counting of the spinous processes is unreliable. The pressure site can be ascertained by taking a linen strip bearing a row of metal rings spaced three-quarters of an inch apart and fastening it by an adhesive to the skin over the spinous processes; the uppermost ring at vertebra prominens. A radiograph is taken and the ring nearest the point of obstruction noted (Fig. 10). At the operation the ring strip, sterilized by boiling, is held over the spinous processes as before and the level of the selected ring is marked on the skin with methylene blue.

Every patient who has recovered from paralysis should have a spinal fusion; this is particularly urgent for the patient who has had an antero-lateral decompression. The ring strip will be found helpful in plotting precisely the vertebrae that are to be grafted. It is not an uncommon experience that a radiograph after operation reveals a vertebra that the graft has missed or a vertebra grafted without intention.

CHEMOTHERAPY

Hitherto tuberculosis as it affects skeletal structures alone has been considered, but one should keep constantly in mind that a tuberculous bone or joint is a blood-borne metastatic focus of a primary disease elsewhere, particularly of the lungs and mediastinal glands. This fact was well proved by K. J. Mann in an investigation of five hundred patients with skeletal tuberculosis at Stanmore. He found that 57 per cent had active pulmonary disease. Chest radiography in skeletal tuberculosis is therefore important. It is worth recording that both at Stanmore and at Glen Ely it is now rare to find skeletal tuberculosis from infection by the bovine bacillus. The problem of infection is therefore mainly one of contagion between human beings.

The tuberculous invasion of a joint probably begins at the synovial membrane, a tissue comparable to the lining membrane of the thoracic and abdominal cavities where tuberculosis may declare itself as a pleurisy or peritonitis. A tuberculous joint beginning as a synovial membrane invasion may reveal itself clinically by synovitis, pain, heat and muscle contracture; the radiograph shows osteoporosis. In whatever organ or tissue tuberculosis may appear it is but one disease. Ever since Robert Koch in 1882 discovered the tubercle bacillus to be
the cause of scrofula and phthisis, thereby proving their unity, it has been felt that the ideal remedy would be that which would destroy the invading micro-organism in the living. The discovery by Waksman of streptomycin in 1943 was the first important step in this direct attack on the bacillus. Nine years later, in February 1952, Marcus Kogel of New York announced that a drug, isonicotinic acid hydrazine, an isomer of niacin (a member of vitamin B complex group), had been prepared and tried out on patients with advanced tuberculosis of the lungs at Seaview Hospital. The reaction of the patients to the drug was favourable; their pyrexia decreased and their appetite and sense of well being improved. The drug, now known as isoniazid, has been given an extensive trial in many hospitals in this country under the guidance of the Medical Research Council.

Streptomycin has proved its value in all manifestations of tuberculosis, probably by producing an inhibitory or bacteriostatic action on the tubercle bacillus. But a primary focus in the chest may be walled off by an avascular capsule of fibrous tissue and be inaccessible to any drug, the bacilli sleeping indefinitely unless some circumstances rouse them to activity. Again the bacillus can, like other bacteria, become resistant to an antibiotic; the resistance however is diminished by the administration of sodium para-amino salicylate (P.A.S.) with streptomycin. In the treatment of skeletal tuberculosis at Glan Ely Hospital it has been the practice to give an adult patient one gramme of streptomycin and fifteen grammes of P.A.S. daily for ninety days followed by an interval of a month during which no drug is given. After this rest period drug treatment is resumed for another ninety days so that 180 grammes of streptomycin are given in all. The experience of the use of
streptomycin is similar to that recorded at other hospitals; it retards the destructive process of the disease, hastens reossification and shortens the duration of the malady. An average length of time for conservative treatment of intra-articular disease of the hip combined with streptomycin and P.A.S. is about twelve months as compared with twenty months without an antibiotic. Furthermore earlier quiescence of the disease allows a fusion operation sooner if such is contemplated. But before arthrodesis is undertaken there should be an interval during which no antibiotic is given, thereby diminishing drug resistance by the micro-organism and helping to make the resumption of streptomycin with isoniazid or P.A.S., immediately before operation, more effective in its protection in the post-operative period.

The Medical Research Council report of clinical trials on the use of isoniazid in pulmonary tuberculosis affirms its value in improving the general condition of the patient as judged by gain in weight, fall in temperature and reduction of blood sedimentation rate. But resistance to the drug is rapidly established over a three-months period of administration. It should therefore never be given alone; combined with a small quantity of streptomycin its bactericidal power is considerably increased because of the diminished resistance of the tubercle bacillus thereby induced.

The limited experience with isoniazid in combination with streptomycin in the treatment of skeletal tuberculosis has so far produced a similar improvement in the general condition of the patient to that already reported about its use in pulmonary tuberculosis. It is tempting to combine isoniazid, streptomycin and P.A.S., the most powerful anti-tuberculous agent of all, but in so doing there is a disadvantage of having all eggs in one basket; if in such usage resistance does appear there is left no remedy against it. A more prudent plan is to give one gramme a day of streptomycin and 150 milligrams of isoniazid over a period of ninety days, rest for thirty days and resume again with streptomycin and P.A.S. alone. Whenever possible the same preliminary testing for drug sensitivity should be followed in the case of chemotherapy in tuberculosis as is already being done for the choosing of a suitable antibiotic in pyogenic infection.

When invasion of a joint is comparatively early and still confined to the synovial membrane, streptomycin may be expected to arrest further progress of the disease and prevent bone erosion with restoration of mechanical efficiency of the joint. In this clinical type the limb may have no splint, the patient performing such active movements of the diseased joint as recumbency will permit. The very young can be controlled and movement restrained sufficiently by applying a plaster-of-paris cast on the sound side from waist to mid-calf.

But when bone is already eroded the joint should be immobilised by splinting in order to limit the area of disruption. A broken articular surface usually ends in a stiff joint on recovery and is a potential source of osteoarthritis. A natural bony ankylosis may be the best outcome, for it ensures an absolute cure of the local disease and a comfortable useful limb. When the articular surfaces of a joint are destroyed and the acute or progressive stage of the disease is over, as revealed by commencing bone recalcification, it is possible to perform a fusion earlier by operating under a streptomycin protection. This applies particularly to the knee joint.

Streptomycin and other antibiotics are of great value in the treatment of a tuberculous sinus, for it allows local application of the drug. For the rational treatment of a chronic sinus a knowledge of the prevailing micro-organism and its sensitivity is important. A culture from a swab of the sinus exudate will reveal the predominant micro-organism. The antibiotic to which it is least resistant is packed into the sinus and the mouth sealed with collodion gauze. The same procedure is repeated daily whilst the patient is put on a course of streptomycin and P.A.S. If tubercle bacilli are grown from the swab streptomycin is also applied locally to the sinus but no other antibiotic. Occasionally antibiotic and surgery are indicated.

To support chemotherapy in its attack on the invading bacillus it is desirable that pools
of infection should be evacuated, if reasonably possible without menace to the patient. All accessible abscesses should be aspirated. Sometimes a deeply hidden focus of infection may send out recurring metastatic deposits. This applies particularly to primary infection of mediastinal glands where the defensive barrier is inadequate.

The application of chemotherapy for the cure of tuberculosis is a very great advance but the need for increasing the natural resistance of the patient to the disease should not be neglected. Rest, fresh air, good feeding and every means of promoting the contentment of the patient must be maintained (Fig. 11). Rest itself is important in reducing toxaemia.

Tuberculosis in its pulmonary and crippling skeletal manifestations has been a scourge of the Western World throughout the centuries. The literature of the middle ages makes gloomy reference to the King's Evil. The number of the men of talent alone who have died young because of this foul disease is appalling. But at last, by wise legislation, education, temporary isolation and a specific therapy the disease is on the wane. The struggle has been hard, long and costly but to see the enemy in retreat is one of the rare exhilarating episodes reserved for our generation.

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