In June, 1905, an abscess formed from disease in the upper end of shaft. The joint was not affected, and the abscess healed in a few months. But a letter written this year elicited the information that after I lost sight of her she had two further "operations," and was never able to walk, and died last year (1911), that is, nine years after the excision. On examination two years after the operation, the patient could then flex to right angle, but there was very little lateral movement. There was $\frac{1}{2}$ in. shortening.

17. L. H., aged 10. This was a case in which septic sinus and fresh abscess were present before operation in March, 1903. The sinus persisted when last seen that summer.

18. A. M., aged 4, was operated on in July, 1903. The wound did not heal until the beginning of 1904. In 1907 there was abscess from disease of the ilium, which healed in 1908 but left the joint fixed. A letter of inquiry in 1912 was returned through the Dead Letter Office.

19. A. F., aged 8; operated on in May, 1903. The patient died in August with pneumothorax.

20. G. H., aged 8; operated on in August, 1903. Healing had taken place by October. The wound broke down and discharged twice after it healed, but when last seen it was only a superficial granulation patch. A letter of inquiry sent in 1912 was returned through the Dead Letter Office.

21. M. P. was operated on in May, 1903. Wound healed in July. In January, 1904, a gluteal abscess was operated upon, and as a sinus persisted was again operated on in 1905. No further relapse had occurred when examined eight years later. In 1905 the patient had fair movement in hip without pain, and sinus could not be traced to hip or to any bone here. Examined in 1912, nine years after operation, he limped down on affected side very much; there was 4 in. shortening, and only compensated for $\frac{1}{2}$ in.; movement of flexion and adduction very good, but abduction very limited. Trochanter raised to level of anterior spine.

22. B. H., aged 6; operated on in February, 1904. Wound healed by March. There was no further note of this case. A letter written in 1912 was returned through the Dead Letter Office.

23. Mr. B., aged 35, suffered from phthisis. He was operated on in July, 1904. In August there was only a small granulation patch on scar, but later a sinus formed and persisted. The patient died from hæmoptysis in 1905.

24. P. A., a child, operated on in August, 1904. The wound had healed, all but superficial area, in September, and had quite healed in October. An abscess formed later in autumn and sinus persisted. The patient was again operated on in May, 1905, and bare bone found in the shaft of the femur several inches below the joint. The joint deformity recurred in 1907, and the limb had to be straightened by weight extension, and then an abscess formed, and sequestra were removed from the acetabulum; there was then no sign of disease about the neck of the femur. In August, 1906—that is, two years after the operation—she could flex to right angle, and there was some lateral movement and rotation; $\frac{1}{2}$ in. shortening; there was not much limp. The patient died from general tuberculosis one month after operation on acetabulum, the symptoms of general tuberculosis starting a fortnight after operation.

25. G., aged 16, operated on in July, 1904. The wound had healed in August, 1904, but some deformity persisted. A sinus subsequently formed, healed, and then recurred, and in October, 1906, sequestra discharged. The sinus persisted for several years. The mother wrote in 1912 to say the sinus had been healed for two years, and that with a high-soled boot she does not limp much.

26. E. P., aged 27, operated on in November, 1906. The wound had healed in December. When examined eighteen months after operation there was fair movement in all directions. On examination in 1912, six years after operation, there was very free flexion and fair lateral movement, but she limped down on the affected side very much. There was $2\frac{1}{2}$ in. shortening, but this was compensated by a high sole. She required a crutch for outdoor walking.

27. E. S., aged 9; operated on in April, 1907. The wound had healed in June. A sinus formed in the scar in July, 1908, and a soft patch of bare bone was found in the acetabulum; the stump of the neck was well covered in. In February, 1910, nearly three years after the last operation, the joint was quite sound and movements almost as free as usual. There was $2\frac{1}{2}$ in. shortening. The mother wrote in 1912 that the child was in good health and only limped slightly, but that two abscesses had formed since 1910.

28. A. T., a child, was operated on in July, 1907, and healing had taken place in August. The mother wrote, in reply to a letter in 1912, that the child had had no relapse; she walked with a stick. In February, 1910, she died, after an illness of nine days, with some affection of the "back passage."

29. J. W., aged 9; operated on in August, 1907. The wound healed in September. There was no further note of this case. A letter of inquiry in 1912 was returned through the Dead Letter Office.

30. F. E., aged 12; operated on in April, 1907. The wound healed in June. In June, 1908, there was superficial ulceration in the scar. A note made in May, 1908, says: "Moderate movement in all directions. Some eversion; $2\frac{1}{2}$ in. shortening." There is no note when the ulcer in scar healed; but the mother wrote in answer to a letter in 1912 that the patient was very well, and often did a 6-mile walk easily, but limped a little.

31. B. H., aged 3; operated on in December, 1907. The wound "healed rapidly." The patient had an attack of scarlet fever with breaking down of the wound, which did not heal

until May, 1908. By October, 1908, there was almost perfectly free movement in all directions; 1 in. shortening. An abscess formed in the scar in December, 1908, and sequestrum discharged, but healing had taken place by January, 1909. Examined in 1912—that is, five years after operation—there was quite a normal range of movements, but limps much down on the affected side from instability of hip. There was 2 in. shortening, compensated for by high sole.

32. G. D., aged 12, was operated on in February, 1909. There was a septic sinus present. Healing had taken place in May, 1909. When seen again in April, 1910, the scar was sound, and there was fairly free movement in all directions; 2 in. shortening. In answer to a letter in 1912 the patient's relations reported that he could walk "wonderfully well," and climb trees like other boys, and was "not very lame," by which was probably meant that he did not limp very much.

33. E. C., aged 13, was operated on in April, 1910. The wound healed without any suppuration. The patient died with symptoms of tuberculous meningitis in June, 1910.

34. M. B., aged 57; operated on in February, 1912. Primary union took place, but a superficial ulcer formed in the scar: there were no complications.

CASE OF EXCISION OF HEAD OF FEMUR FOR ACUTE NECROSIS.

M. F., aged 12, was operated upon in August, 1908; sequestration of head and neck after acute necrosis. In March fair movement of joint. A sinus near trochanter had recently healed after scraping.

TWO CASES OF ARTHRECTOMY OF HIP FOR TUBERCULOUS DISEASE.

1. G. B., aged 5, was operated on in August, 1904. Healing had taken place in September. The patient was readmitted in December, 1904, with some swelling about the joint, but no abscess, and was discharged in Thomas's splint in February. An abscess was found three months later, which was opened by a doctor, and eventually a piece of bone was discharged. The patient died with symptoms of tuberculous meningitis three and a half years after arthrectomy.

2. M. S., aged 6, was operated on in March, 1906; soft tuberculous tissue was scraped away from around head and acetabulum. In May the wound was quite superficial, but an abscess formed in the gluteal region, which was opened and scraped out. In June a tuberculous abscess formed in the arm, and was operated on, and in August the same condition was present in the other arm. There was then a persisting sinus into the hip. There was no further note of this case.

REFERENCE.

¹ *Lancet*, 1900, vol. i, page 1493.

NOTE ON A SERIES OF FIFTY-FIVE CASES OF SUPRAPUBIC PROSTATECTOMY, WITH FOUR DEATHS.*

By ANDREW FULLERTON, M.D., F.R.C.S.I.,

Surgeon in Charge of Out-Patients to the Royal Victoria Hospital and to the Belfast Hospital for Sick Children.

THE operation of prostatectomy has done so much to relieve the distress of a large section of elderly men that it is well to review the risks that they run in subjecting themselves to the ordeal. Many of my medical friends have told me that they hesitate to recommend what may, perhaps, prove to be an execution rather than a cure. The object of this paper is to bring forward the results of my own experience. In the June number of the *Practitioner* Mr. Hugh Lett, of the London Hospital, makes the following statement:

The operation of prostatectomy cannot be looked upon as a trivial one, and I am strongly of opinion that, if statistics of this operation were compiled from the registers of a large number of hospitals, the mortality would prove to be not far short of 20 per cent., and possibly higher.

I am of opinion that a much lower percentage must be attained if the operation is to be more generally accepted by the profession and the public. I have up to the present operated on 55 cases with 4 deaths—a percentage of 7.2. The patients have not been specially chosen, but have been taken as they came, excepting only those who were obviously unfit for any operative procedure, however slight. The list includes patients from the age of 53 to the borders of 80—patients well preserved and relatively strong and patients broken down and exhausted, patients who were obese and patients who were emaciated, patients with fair

* Read at a meeting of the Ulster Branch, British Medical Association, in Belfast.

arteries and good hearts, and patients with marked degeneration of vessels and advanced cardiac disease.

The condition of the kidneys is perhaps the most important consideration, and marked renal inadequacy would prove an insuperable barrier to operation.

Some years ago I operated on a man, aged 53, for severe prostatic hæmorrhage. He weighed 20 st., and most of the fat was in the omentum and abdominal wall. I had to have a footstool to reach his abdomen, and I had to put my whole hand into the bladder to reach the prostate. He had had several attacks—called "weak turns"—said by his medical adviser to be due to his heart. Notwithstanding all this he made an excellent recovery, and is at present in full employment in a responsible position in a mill.

In 1908, I operated on an old man—a sexton—aged 78 years, for recurrent attacks of hæmorrhage with excruciating pain due to the clots. His arteries were hard and tortuous and he had a double aortic murmur. In addition, he had cystitis with a good deal of muco-pus in the urine. His doctor was very anxious that something should be done to relieve him, so in fear and trembling I removed his prostate, the operation from the skin incision to the delivery of the prostate lasting one and a half minutes. He made a good recovery and is now, at the age of 82, in good urinary health.

In 1909 a gentleman, aged 73, had, ten days before I saw him, a severe cardiac attack in which the pulse fell from its normal rate of 72 to 40 per minute. During this attack he became pale, blue, and collapsed, and his hands and feet were "dead" as far as the wrists and ankles. He recovered from this attack, but the pulse-rate remained at 40. When I saw him, ten days after this seizure, he had complete retention, and any attempt to pass a catheter was attended with bleeding and blocking of the eye of the instrument. Suprapubic puncture failed to relieve him, no urine being obtained, though the bladder was obviously full. On the same day I removed a huge sugar-loaf shaped prostate weighing 17½ oz. under ethyl chloride given by Dr. Fielden; the operation lasted fifteen minutes. After some anxious days, during which shock, hæmorrhage, and hypostatic congestion of the lungs almost claimed their victim, the patient began slowly to recover, and he is to-day free from all urinary trouble, though his heart still beats at the rate of 40, and he suffers much from dyspnoea on exertion. With the prostate I removed a beautiful specimen of mulberry calculus.

This case was published in the BRITISH MEDICAL JOURNAL of May 22nd, 1909, and I was rather severely taken to task by a correspondent for my conduct of it, but "the proof of the pudding is in the eating," and my patient has had three years of comparative health and complete freedom from urinary trouble. He takes a lively interest in his own case, and occasionally invites a passing student to view his prostate in a glass jar at the Queen's University. I have given these few examples to show that grave general trouble need not necessarily be a barrier to operation.

The causes of the deaths in my series were as follows:

The first, an old gentleman aged 75 years, apparently in good health, with clear urine of good specific gravity, free from pus and albumen, died on the third day with symptoms of uræmia. I was not prepared for this result as I had had him examined as to his general condition by one of my medical colleagues before operating on him. There was more than the usual amount of bleeding, and, as a precaution, I packed the prostatic cavity with gauze.

In the second case, a gentleman aged 54, who had had repeated attacks of hæmorrhage with great pain, death took place six weeks after operation from perinephritic abscess.

This I attributed to an unsuspected collection of phosphates and débris in the bladder which failed to come away with the irrigation. I now make it a practice, if in doubt, to insert my finger down to the base of the bladder and the prostatic pouch to satisfy myself that all foreign matter has been got rid of. In the third case death was due to spinal anaesthesia.

The patient, a man aged 68, had a weak heart and a double aortic murmur. His medical attendant declined to take the risk of giving him a general anaesthetic. I was asked to give him spinal anaesthesia, which I did with disastrous results. 1 c.cm. of a 15 per cent. solution of novocain with 1 mg. of strychnine was injected. Anaesthesia was excellent, but the patient immediately began to vomit and became grey, cold and collapsed. After a slight rally the prostate was removed, but the patient continued to vomit and died the same night.

I have included this as a death from prostatectomy, though I feel sure I should be justified in attributing it to the anaesthetic.

The fourth case was a gentleman aged 66. He had been up to his last illness an alcoholic subject. He was taught to pass the catheter and had been doing this for some months every two hours day and night. The urine at the time of my seeing him was very foul and the bladder was intensely inflamed and irritable. I kept him in a nursing home and washed out his bladder for ten days with practically no improvement. As a last resort I removed the prostate and a phosphatic calculus.

The former weighed 6 drachms and the latter was about the size and shape of a pigeon's egg. For some days the patient did well, but soon the surface of the wound became foul and sloughy, the pulse increased in rate, the tongue became furred and covered with aphthae, which also appeared on the mucous membrane of his lips, cheeks, and gums; his temperature rose a little in the evening, he complained of thirst, and he lost flesh and colour. He died at the end of twelve days with all the symptoms of an acute septic intoxication, with pinched face, sunken eyes, cold extremities, and rapid thready pulse, retaining his faculties almost to the last, the picture recalling that of a patient dying from acute general peritonitis.

On reviewing this case I do not know whether it would not have been better to have simply drained the bladder, reserving the prostatectomy for a later date. I have no doubt that he infected his bladder with the catheter, and I always feel that this is the great risk in allowing a patient to enter catheter life. On the other hand, some of my patients have been dependent on the catheter for years, as in the following case, who, but for an accident, would probably have gone on with the use of the instrument to the end of his days.

A farmer, aged 73, had had trouble with his water for fifteen years. For ten years he had had to use the catheter several times a day, being unable to pass urine without. About six weeks before I saw him he was using a well-worn gum-elastic catheter, when, as he describes it, the skin came off and remained inside. After this he had great pain, and when I saw him he was passing the catheter every fifteen minutes. With the cystoscope the outer shell of a catheter could be seen curled up inside the bladder, which was much inflamed. I made an attempt to remove the foreign body with a small lithotrite, but it was so friable that I could not remove it completely. I then did a prostatectomy, and at the same time rid him of his foreign body. The patient was up in a fortnight's time, and his wound was dry on the sixteenth day. He now passes water with the courage and success of a boy.

The results in the cases that recovered have been, in the overwhelming majority, gratifying in the extreme. In most the patients can lie all night without being disturbed. A few report that they rise once in the night, and of these some say that this is due more to force of habit than any uncontrollable desire. In a few cases I have not been able to quite get rid of a certain amount of cystitis. Like other infections elsewhere in the body, infections of the bladder are hard to eradicate completely, notwithstanding careful irrigation carried on long after the wounds in the bladder have healed up. Two of the prostates removed, though apparently benign, proved on section to be malignant, and the patients died some months after from recurrence. In one case the tumour fungated through the abdominal wound after the latter had been soundly healed.

In one case a permanent suprapubic fistula remained. The operation was performed in the early days of prostatectomy before the exact anatomy of the procedure had been worked out. I must have removed a portion of the pelvic fascia in addition to the prostate. If violent efforts are necessary to remove the obstruction the surgeon may feel sure he is in the wrong layer and should desist lest damage be done to the neck of the bladder. The prostate must be enucleated, not torn out.

In two cases incontinence resulted after the operation. In one this was due to a drainage opening in the perineum, which was kept open for a long time. The compressor urethrae was, no doubt, damaged by the incision and the prolonged use of the drainage tube, which was rendered necessary by the absence of any attempt at healing of the suprapubic wound. Due respect should be paid to the integrity of at least a portion of the compressor. The anterior portion should be left to act as a sphincter in case the sphincter vesicae does not resume its functions. In the second case, the prostate was of the hard fibrous type. In my attempts to remove this I must have gone beyond the limits of the prostate. The first complication was a stricture, which I divided, with the result that the patient now has incontinence. In future I do not propose to make any attempt to remove such a prostate. It is beyond the art of surgery to remove completely a hard fibrous prostate with impunity. Prostatotomy, as recommended by Pardoe, or the use of the prostatic punch of Young, may prove to be of service in these cases.

The most serious complications that I have had to deal with have been as follows:

Hæmorrhage.—This has usually been primary, occurring during the first forty-eight hours. It is always present to

a certain extent, and it requires some judgement to determine when it has passed safe limits and when interference is necessary. In some cases it is due to wounding of a vessel in the bladder wall when opening into it, and in some to tearing of the mucous membrane during the removal of the prostate. I use no instrument to tear through the mucous membrane over the prostate, but with the tip of the index finger rupture the internal meatus in an upward direction. The proper layer is soon felt. At the junction of the prostate with the base of the bladder posteriorly, separation ought to be carefully carried out, else a long strip of mucous membrane is liable to be torn away with the prostate, giving rise to haemorrhage. In most cases the bleeding comes from the plexus of veins around the prostate. In a few cases I have found it necessary to pack the cavity from which the prostate had been removed with a narrow sterilized bandage. This arrests the haemorrhage and is easily removed in a few days. I have tried a plug of gauze tied on to the end of a catheter and pulled through the urethra without success. I had one case of secondary haemorrhage of an alarming character on the seventh day after operation. This was due to separation of sloughs and was at first very hard to arrest. The narrow bandage packing was ultimately successful. Raising the foot of the bed on chairs has proved of value in some of the slighter cases. It cannot, of course, be continued for long in the case of old people.

Shock.—In most of my cases a fair amount of shock has been present. I have noticed it most when strenuous efforts are being made to enucleate the gland. This complication can, however, be reduced to a minimum by proper preparation of the patient and rapidity of operation. I have my patient's bladder washed out and all preparations, including those of the surgeon and his assistant, completed before the anaesthetic is given. If possible, I secure the services of an anaesthetist skilled in the administration of ethyl chloride as a general anaesthetic. I have completed the removal of the prostate in sixty-seven seconds from the beginning of the skin incision until the prostate was delivered. A few additional moments are spent in rapidly washing out the bladder and suturing the wound. A large drainage tube is left in the bladder. The patient is got back to bed as soon as possible and warmth applied. Salines by rectum should be administered until the shock has disappeared, which it generally does in a few hours. If it continues, subcutaneous infusion is resorted to. I do not use strychnine. I believe lives are sometimes lost by slow and too deliberate operating. The patients are often old and worn out, and the less they are handled the better. The least that can be done must be done with as much rapidity as is consistent with safety.

Hypostatic congestion of the lungs has more than once caused me considerable anxiety. The patient with the very large prostate, referred to above, developed it after a few days, but ultimately recovered. Change of posture and the use of the usual well-known remedies are indicated.

Sepsis is one of the most troublesome and dangerous complications I have had to deal with. If the bladder is septic I have it washed out before operation for some days, and in a few cases I have drained suprapubically as a preliminary measure. The drainage provided by the suprapubic wound is, however, not ideal. In one or two cases after operation I have tried, as an additional safeguard, perineal puncture, as suggested by Lynn Thomas, with satisfactory results. I would advise, however, that the drainage tube in the perineal wound be not kept in too long. I wash out the bladder every day while the patient is in the home or hospital, or until the urine is quite clear. While the suprapubic wound is still open this is done by inserting the nozzle of the syringe into the external meatus and forcing the fluid through the urethra into the bladder. Débris from the cavity vacated by the prostate is thus stirred up from below, and thorough cleansing is more certain thus to be obtained. I have no experience of vaccines in these cases, but I am very willing to give them a trial, and should expect benefit from them.

Epididymitis and epididymo-orchitis have given me a good deal of trouble. The torn ends of the ejaculatory ducts are liable to be infected, while the raw surface left after removal of the prostate remains unhealed. Every effort must be made to keep this surface as aseptic as pos-

sible in the hope of preventing this complication. It is often accompanied by a milk-white discharge from the meatus. It may be unilateral or bilateral, and is attended with a good deal of pain and constitutional disturbance. During the treatment of this condition the testicles ought to be supported on a broad strip of strapping from thigh to thigh placed as near the fork as possible. Glycerine and belladonna will relieve the pain, due care being exercised to prevent absorption of the belladonna.

Suprapubic fistula is an occasional complication. If this shows any tendency to persist I tie in a catheter, if I am satisfied that all sloughs have separated and the interior of the bladder is free from foreign matter. I have been in no hurry to remove the suprapubic drainage tube. It acts as an exit for phosphatic deposit and tags of mucous membrane, which might otherwise form nuclei for calculi. I have only had one case of permanent fistula. Touching the edges of the fistula with nitric acid or the actual cautery has proved successful in some, while in others I have been obliged to curette once, and occasionally twice, under a local or general anaesthetic. I have also faith in the occasional passage of a full-sized dilator. In one case I found that the cavity left after the removal of the prostate was maintained as a separate cavity, communicating by a small opening with the bladder. Radial incisions in the diaphragm threw the two cavities into one and cured the fistula.

Phosphatic deposit on the suprapubic wound and in the bladder is most annoying, and I have tried almost everything suggested to prevent it. I am at present trying the application of a few drops of acetic acid to the wound and dropped into the bladder through the drainage tube. I have not sufficient evidence to warrant me in recommending this procedure, but it can do no harm, and seems to me to be a likely remedy. In addition an attempt may be made, by suitable diet and excess of fluid, to prevent the deposition of salts.

Stone in the Bladder.—I have not had a case in which I have had to operate for a stone of any size. In one case the patient had attacks of pain and retention shortly after his wound was healed. With the cystoscope I detected a small calculus, which I crushed with a small lithotrite, without an anaesthetic. His symptoms immediately disappeared. In another case I picked out through the urethroscope a small stone which had blocked the urethra. Attention to the details I have given above will go far to prevent this complication.

Uraemia occurring immediately after operation generally ends fatally. In a more chronic form it may appear in the weeks or months following. The outlook is not good, but the patients may be kept going for a while by diuretics and aperients. One of my patients succumbed on the third day from this complication.

Stricture of the urethra ought not, I think, to occur with proper methods of operating and the choice of suitable cases. It is liable to occur after attempts to remove hard, fibrous prostates. As I have stated, it was present in one of my earlier cases.

Incontinence of urine occurs in some cases for a short time after the operation. In a very small proportion it persists. I have had two cases of permanent incontinence. From the experience I have had in these two cases I believe it can be avoided by keeping to the proper layer in removing the gland and in paying due respect to the compressor urethrae muscle.

Abscess in the kidney region occurred in one of my cases, as I have mentioned. Probably the patient had pyelonephritis. He began to have rigors about a fortnight after the operation, and, although I opened the abscess, he never rallied, but sank a few days later, and six weeks from the time of his operation.

Haematemesis occurred in one of my cases. It only lasted a few days, however, and the patient left the hospital apparently quite well. He was a worn-out old man of 80. I hear that he died some months later, but I do not know the cause.

Ventral Hernia.—I have had at least two cases in which the scar stretched to an uncomfortable extent. This must be a sequela in a certain number of cases, especially if the bladder is septic at the time of operation. It is wise, having regard to the possibility of this complication, not to make the wound in the abdominal wall too large, and to bring the cut margins of the sheath of the rectus together

with deep sutures. A suitable bandage is all that is necessary in the way of treatment.

Mental symptoms of a mild type have been present in several of my patients. One old man used to weep like a child without any apparent reason. My nurses say that a prostate patient is always a little "queer," and many of them are very difficult to deal with. I have not met with an acute outbreak requiring restraint.

Notwithstanding the low mortality in this series of cases I cannot say that I look lightly upon the operation of prostatectomy. Many are the pitfalls before the patient can be pronounced free from danger, and the medical attendant must give the closest attention to the after-treatment if he is to bring the case to a successful issue.

The patient, from his point of view, usually indicates to his medical attendant when his sufferings have reached the limit of endurance, and it is for the surgeon to determine whether the case is suitable for operation or not. In the future, I believe, cases will be subjected to operation earlier, before permanent damage is done to the urinary organs, with a corresponding diminution in the mortality.

SOME PROBLEMS CONNECTED WITH RHEUMATOID ARTHRITIS.

By F. G. THOMSON, M.A.CANTAB., M.D.,
M.R.C.P.LOND.,

PHYSICIAN TO THE ROYAL MINERAL WATER HOSPITAL, BATH.

THOUGH we are now able to distinguish rheumatoid arthritis from other forms of arthritis, and definite criteria have been established upon which to base a reasonably sound diagnosis, little corresponding advance has been made with reference to the pathogeny of the disease, and in consequence our methods of treatment are still almost entirely empirical. Attempts have been made towards a rational form of treatment—first, by the administration of intestinal antiseptics, on the assumption that the disease is a result of intestinal toxæmia; and secondly, by vaccine-therapy, on the assumption that the disease is a general infection. Neither of these assumptions is proved, and our present somewhat blindly directed methods of treatment are anything but uniformly successful in cutting short the disease, and it only too frequently happens that the victims of this relentless disorder get steadily worse. The swollen and tender joints become progressively more ugly, the wasted and distorted limbs more burdensome and useless. The false hopes engendered by remission are promptly quenched by the inevitable relapse. In no case, however slight, can we look upon the disease as otherwise than serious, and it is incumbent on all who see much of the disorder to consider carefully the bearings of such knowledge as we now possess relative to the intrinsic nature of the disease, and to see in what direction further investigations might profitably be undertaken to establish an accurate and complete pathological basis.

Rheumatoid arthritis may be defined as a disease, characterized by the occurrence of more or less symmetrical, spindle shaped, inflammatory swellings of the peri-articular structures, affecting first the smaller joints of the hands and feet, and accompanied by wasting, cramps, and contractures of muscles. The more severe cases are marked by moderate fever, anaemia, and occasional swelling of lymphatic glands and spleen, and most cases show more or less well marked sensory abnormalities and vasomotor changes. The disease tends to last for many years, with occasional intermissions of varying duration. Nearly every joint in the body may be ultimately affected, and the later stages may be complicated by osteophytic outgrowths resembling the condition found in osteoarthritis. The intensity of the disease varies within wide limits, and the clinical picture may be correspondingly diverse. The fact that various local foci of infection may be associated with the disorder has given rise to the suggestion that the cases presenting the above-mentioned characteristics do not constitute one disease. The tendency in some quarters is to limit the term "rheumatoid arthritis" to the more acute type occurring in young women, more particularly after childbirth, the less severe and less typical cases being considered in a different category under

the term "infective arthritis." The proof that the associated infective foci are the direct cause of the disorder is insufficient, and clinically one is able to trace a complete series of cases, from the severe type mentioned above to those in which the characteristic joint lesions, themselves slight, constitute almost the only evidence of the disease. It would appear more correct in the present state of our knowledge to confine the term "infective arthritis" to those conditions such as pneumonic, tuberculous, pyogenic, and gonococcal infections, in which there is indubitable proof of the microbic origin of the joint lesions. The term "rheumatoid arthritis" indicates by common consent a certain combination of clinical phenomena, and, as regards doubtful etiological factors, is entirely non-committal. On the other hand, the term "infective arthritis," as applied to conditions conforming more or less closely to the rheumatoid type, implies knowledge which we can hardly claim and conveys no indication of clinical features.

The more closely we become acquainted with this condition, the more patent does it become that we are dealing, not with a localized condition of arthritis, but with a general disorder by which the whole system is profoundly affected. The anaemia, wasting, glandular enlargements, vasomotor symptoms, cramps, and trophic disorders, all point the same way, though in the slighter cases these symptoms are less prominent and apt to be overlooked.

Apart from the joint lesions, one of the most noticeable and constant phenomena in true rheumatoid arthritis is a remarkable condition of vasomotor instability of the extremities.

No one who is frequently brought into contact with the disease can fail to notice the constancy of these associated vasomotor changes, from which patients suffer great discomfort and considerable pain. A condition in which the extremities look blue, congested, and puffy, giving rise to a tense, swollen sensation, alternates with a form of spasmodic ischaemia, in which the fingers are cold, pallid, waxy, and numb. The intensity of these vascular changes varies within considerable limits, but may be so great as to suggest the presence of Raynaud's disease. In illustration of this I may be allowed to quote the case of a well-known member of our own profession with typical rheumatoid lesions of both hands, who at the commencement of his illness, before joint lesions became manifest, diagnosed his own condition as Raynaud's disease.

The vasomotor abnormalities may exist in greater or lesser degree for long periods before other symptoms of rheumatoid arthritis supervene. Patients will frequently state that they have been subject to "bad circulation" or "dead fingers" for many years before the onset of joint lesions. One middle-aged patient stated that for something like thirty years there had been such a severe tendency for the fingers to become "numbed and dead" that ordinary housework was almost impossible, and it is not uncommon for patients to give a history of five or more years during which they have noticed similar symptoms.

A study of the histories of a considerable number of cases suggests that the tendency to marked vasomotor instability is an index of some personal idiosyncrasy predisposing to the disease, rather than a direct result of the exciting cause.

Associated with the vasomotor changes are the muscular cramps, which are very characteristic of the disease, and occur with great frequency. They do not necessarily occur in the muscles directly connected with the affected joints, and may occur entirely in the legs when the hands and arms are the site of the more severe articular lesions. In such a case I have known walking to be entirely prevented owing to the pain occasioned by violent cramps in the calves directly the patient attempted to get about. The coexistence, in both rheumatoid arthritis and Raynaud's disease, of spasmodic ischaemia of the extremities and cramp of the limbs, suggests that the latter is due in both conditions to spasms of the arteries supplying the muscles, with resultant accumulation of metabolic end products.

The early incidence of rheumatoid arthritis on the nervous system is indicated by the marked increase of reflexes, early wasting, and definite sensory disorders, which together go to make up a large part of the clinical