Sixty-Ninth Annual Meeting
Of the
British Medical Association.

Held at Cheltenham, July 30th, 31st, August 1st, and 2nd, 1901.

Proceedings of Sections.

The Section of Surgery.

Reginald Harrison, F.R.C.S., President.

A Discussion on Renal Tension and its Treatment by Surgical Means.

I.—Reginald Harrison, F.R.C.S., Surgeon, St. Peter's Hospital for Stone and Genito-urinary Diseases; President of the Section.

It may be remembered that in 1846 I drew attention to some cases where patients suffering from albuminuria and other renal symptoms, which might have been produced by a stone or other removable cause, had completely recovered after an exploratory operation on the kidney; by puncture or incision, though no calculus or recognisable cause was discovered. It seemed reasonable to infer from these results, as well as from the examination of the parts operated upon, that this satisfactory termination might be ascribed to the relief of tension and congestion, thus allowing the escape of that which caused these conditions and permitting the return of a natural circulation in the organ. Further, I urged that the recognition of tension as a factor in kidney disease had hitherto received adequate attention, and that its consideration might lead to some revision in our views relative to renal pathology and treatment.

The publication of my paper was followed by many favourable criticisms in the medical press both at home and abroad, and clearly indicated that others shared my views and regarded them as original and worthy of attention. For reasons it has been thought that this subject, now sufficiently ventilated and further matured, might for the first time in its history as far as I can gather, be submitted for discussion, and it is this object that I have prepared this summary. I propose to deal with it briefly under three headings.

1. What grounds are there for believing that the immediate effects of tension may be, amongst other causes, the starting-point for some of those pathological changes in the kidney which are included under the term of Bright's disease or nephritis?

2. In what class of cases are there reasons for thinking that direct surgical intervention for the relief of tension and its effects is applicable, and how are we to arrive at this conclusion?

3. In what manner should the latter be practised?

In reference to the first point it must be borne in mind that the more recent information we possess about certain pathological states of the kidney has been mainly derived from the actual inspection of the organ during life, and from the impressions conveyed by touching or handling it. What, in 1827, Dr. Bright recognised the association of albuminuria with various disordered conditions of the kidney which still bear his name, our knowledge of some of the latter states was then, and up to a recent date, almost entirely gained, so far as their morbid anatomy was concerned, from post-mortem examinations, and under circumstances where the means for recognising the degrees of consistency during life were imperfect and unreliable. It is hardly remarkable, therefore, that the effects of tension as a factor in these diseases could not at the time be fully appreciated. Now a living kidney may be seen and explored with ease and safety in situ.

In going through descriptions of the pathological states connected with various forms of nephritis, such as may be found in the more recent textbooks, it is difficult to reconcile, on the one hand, the following phrases used by eminent and accurate authors with an entire absence of all reference to tension as a cause of subsequent lesion and disease, and the necessity that may arise for its removal artificially.

If we turn, for instance, to Dr. Delafield's admirable article in the 'Weekly Notes' published in 1895, we shall find numerous references, such as the following, to kidney states in connection with nephritis: "commencing exudation," "commencing transformation of the exudation," "extravasations of blood in the Malpighian bodies, the tubes, and the kidney tissue, and by filling of the tubes with coagulated fibrin," "the tubes are filled with degenerated epithelium, granular matter, and fat globules, or with homogeneous exudation," "if the exudation between the tubes has become organised we find masses of connective-tissue cells and fibres," and so on.

Still more striking and suggestive is the following passage: "Sometimes, particularly when the attack is the result of a definite exposure to cold, and the subject middle-aged and intemperate, an acute form of nephritis manifests itself, which is characterised by extravagant congestion, even to chocolate or purple, and great and rapid swelling of the gland so that, as I have seen in at least one instance, the kidneys have burst their capsules. Short of this exceptional result the whole organ, but chiefly the cortical tissue, is enormously swollen, the cortex changed to a deep coffee colour, and the cornes to purple, whilst the tubes are distended chiefly with epithelium and blood." It is difficult to understand how, under all these circumstances, repair can be carried through to a successful issue without occasionally requiring some mechanical assistance; on the other hand, it is not always easy to draw a line where these extremes are anticipated by death.

The question has been raised, how is it that the tension of acute nephritis never or rarely proceeds to suppuration or gangrene, as happens elsewhere in the body? The answer is obvious. These extremes are anticipated by death.

There is another phase connected with pathological lesions of the kidney which should not be lost sight of. In my Lectures delivered before the Medical Society of London (1888), I showed that it was not uncommon to find, either as a consequence of direct injury or disease, that the lining membrane of the urethra had, at one or more points, lost its power of transmitting urine without some degree of slow leakage or exudation of certain of its constituents in the direction of the periurethral tissues occurring. I attributed this to the destruction of the epithelial coat, which was found to be absent at these points, as shown in the drawing (Fig. 1, p. 1126). This led to lymph barriers being thrown out in the periurethral tissue, which by their subsequent organisation and contraction formed strictures and indurations, and sometimes by their extent involved the perineum.

The same, I believe, may happen in the inflamed kidney as a consequence of tension, and, by the slow exudation of urine, the tissue being the more vascular which it has been shown is not sufficiently appreciated, that in transmitting a fluid so damaging as healthy urine may prove, Nature specially provides against such a contingency in the construction of the tubes and reservoir employed for this purpose. We recognise this from the very point where the urine is first formed and collected. Thus, as with all of the hypertrophies, these processes may bring with them their own liabilities.

Apart from evidence to be obtained from clinical and digital exploration of the kidney, which will be referred to later on, there are some important analogies bearing upon internal tensions which must not be passed by unnoticed.

Probably the most striking one is the relation of intra-ocular tension to certain discharges of the eye. The recognition of the true pathology of glaucoma and the adoption of mechanical treatment by iridectomy, or an allied operation for the removal of tension and the prevention of the degenerative changes thus initiated, as once resulted in the saving of a large number of eyes, which previous to this discovery would undoubtedly have been lost. By this means von Graefe converted an incurable disease into a curable one, and at the same time demonstrated the true nature of the disorder.

It has been suggested that the term "renal glaucoma" is not an inappropriate one.
Again, in the testicle, when it becomes inflamed, we have not infrequently transient as well as permanent evidence of the damage that inflammation and tension are capable of effecting in an organ which, relative to its secreting and investing structures, is not unlike the kidney. The late Mr. Henry Smith was the first to draw attention to the advantages that followed puncture or limited incision through the capsule in acute forms of orchitis. It was correctly alleged that not only was the pain of tension in a highly-sensitive organ relieved, but structural damage averted. In fact, sterility, so far as this organ was concerned, was by this simple means rendered unlikely to occur.

It is, however, to the oculur and digital examination of the kidney during life that I would attach most importance relative to the subject that is now before us. This is a procedure which may be regarded as an outcome of the general use of anaesthetics and antiseptics for almost all surgical procedures. Before these were introduced the living human kidney was only seen on rare occasions in connection with abdominal wounds accidentally inflicted and when the organ involved was in a healthy state. Now, the operating surgeon may be said to be familiar with its appearance and consistence in all stages of disease and injury.

The patient was suspected to have had scarlet fever three weeks before but had since suffered intense pain. He had had a slight rash, some desquamation, a sore throat, and albuminous discharge of urine; and I undertook the operation with a view to suppression, and limited my incision so as just to enable me to put my finger on the kidney. It felt so tense that I extended my incision and opened it with my finger. This was not the case, and I closed the proceeding with the feeling that I had made an error in diagnosis. I noted a discharge of blood from some minute kidney tubules for some days. The latter was lightly plugged with lint, and in the course of ten days or so healed soundly. After the incision was made the excretion of urine became more abundant and the albuminous parts disappeared.

CASE II.—In March, 1899, a man was operated upon, aged 50, who, by nature of his occupation, spent a large amount of his time underground. Occasionally he suffered from hematuria in conjunction with colicky pains about the kidney, and came to the conclusion that he had kidney calculus. As, however, the symptoms were neither urgent nor confined to the kidney, the considerations of operation were postponed. In the course of a few months after I first saw him, and whilst he was continuing his work underground, the urine became largely and constantly albuminous and blood, and he was sent to the Royal Infirmary at Liverpool, where I was then residing, and examined by Mr. Ewey. The urine was obtained by catheter, and the above symptoms were then present. An incision of an inch in length was made through the cortex, and the pelvis was explored with the finger, but careful examination no stone could be found. There was a considerable discharge of blood and urine, which continued for a fortnight or so, a drainage tube being retained in the wound; and the wound healed, and the urine became quite normal. I heard some time afterwards that the patient was in excellent health, and was able to resume his ordinary occupation.

CASE III.—This case is one that came under my observation in 1892. It was that of a woman aged 44, who had suffered from slight hematuria at times for a year previously; occasionally the urine was albuminous. Shortly after she had a severe attack of influenza, which was followed by an aggravation of her renal symptoms. She complained of pain on pressure over the left kidney, and the albumen not only increased in quantity, but was present in the urine. She had passed a small calculus some months previously. I thought it a proper case for operation, and this was accordingly made, the left kidney was operated upon, and the patient was discharged in a short time afterwards. The left kidney was found to be swollen and very tense. It was opened and explored with the finger, but no calculus could be discovered. There was a tree drain of urine with some blood which continued for a fortnight, when the wound healed. The patient is now quite well, and the urine normal.

CASE IV.—The following case appeared to be one of contusion to a kidney passing through—probably with its fellow—a stage of nephritis.

It happened in a man aged 42, of decidedly intemperate habits, whom I saw in 1893-97 for recurring pain about the right kidney, with albuminuria of two months standing, to my knowledge. The amount of the latter was considerably more than a trace, and the urine contained a sediment of renal epithelium and tube casts. It sometimes showed a trace of blood. The pain was lumbar and not referred. There were indications present which pointed to cardiac hypertrophy and arterial lesion. The patient, informed me that he had been rejected for life assurance. I looked upon the case as one of nephritis, and not stone.

Some weeks after I first saw him, he told me that he had either fallen or been thrown from a cab during the night, which had considerably increased his pain in the lumbar region. There was a trace of blood in the urine, but I could find no external mark of injury except on the knees. The urine was much seantier than usual, and was very high coloured, but not differing from the account previously given.

As the pain complained of was rendered acute, I opened the right loin a few days after the injury, and explored the kidney. The latter was examined, was purple, and patchy, and swollen. I divided the capsule by incision along the convexity to the extent of about 3 inches, and explored for stone, but could find none.

There was some extravasated blood beneath the capsule, and on gently pressing the kidney with my hand there was an exudation through the renal wound of much thin-prune looking fluid, which was probably broken-down clot, urine, and some of the products of the concurrent nephritis. A drainage tube was introduced and retained for ten days, when it was finally removed, and the wound gradually healed.

I lost sight of the patient until a few weeks ago, when I saw him about another matter. He had quite recovered his health, and his urine was found to be normal. He had been so alarmed by the injury and what followed, that he had forsaken alcohol in all forms. I suggested that he should apply to the insurance office for re-examination, but I have not heard whether he has done so or not.

This case certainly appears to be rapidly drifting in the direction of chronic nephritis, cardiac hypertrophy with arterial tension, and probably general dropsey, until arrested by, so to speak, fortuitous circumstances.

CASE V.—In 1895 I saw a man, aged 50, who six days previously had fallen downstairs, and struck his right side with much violence. The part was ecchymosed, swollen, and tender to the touch. The excretion of urine had been reduced to so low a state. The temperature had risen, and was variable. Thinking that suppuration was imminent, I made an incision into the loin, and explored the corresponding kidney. From the former I removed some extravasated blood clots. The kidney was found very tense and congested. I punctured it in several places with an exploring trocar and incised it. Apparently only blood and serum escaped. The wound was packed lightly with antiseptic gauze and left to drain. There was a free discharge of blood and urine for some days. It was calculated that over double the amount of the latter was excreted in the twenty-four hours after the incision. The patient made a good and rapid recovery, and the tendency towards suppression of urine was apparently connected with the intense congestion following the injury, in which probably both organs were involved.
The first is the common type, where there are varying degrees of fever, rash, and desquamation, with nephritis indicated by blood in the urine, albumen, casts, and epithelium. The fever may be high and the kidney complication severe, and the tendency is towards recovery and complete restoration of the organs involved.

Cases included in this large class certainly do not require surgical attention, for recovery is steadily progressive, and after a few weeks interval of illness and convalescence the chances that the organs return to their normal condition.

The second group of cases, though apparently belonging at the commencement of the attack to the preceding class, does not end in the same way. The previously healthy adult or child passes through the early stage of the disorder much as in the former instance, but convalescence is delayed and the signs of the nephritis, as evidenced by albuminuria and casts in the urine, do not disappear. The disease does not progress towards recovery, but is stationary or trends in the opposite direction.

These are the instances which furnish a considerable proportion of the cases of chronic nephritis or Bright's disease, and a more or less invalid life is the prospect. It is to this class and the following that the relief of tension by a surgical proceeding, which will be discussed later on, may be said to be applicable.

My third illustration is taken from what has been described as acute scarlatina, and the kidney intensity of a case of Bright's disease. The kidneys appear to be at once overwhelmed in the pathological changes that supervene, suppression of urine occurs, and death rapidly follows from uremia, coma and convulsions. After death under these circumstances it is usual to find the kidneys intensely congested, the capsule tense and shiny, and over-filled with blood.

However capable of gradual distension the capsule of the kidney may be, there is no doubt that it is very intolerant of any sudden increase of intrarenal tension, and experience gained in operating on that organ teaches that in certain conditions of congestion the capsule is so tightly stretched and its substance exposed to such pressure as quite to explain any interference with its function. The results of operation also tend to show the importance of increased tension, for sometimes after mere incision the quantity of urine excretion is found to have doubled within twenty-four hours.

Here, then, we have two states of nephritis where little can be expected from the medicinal treatment alone which hitherto has been tried, the one being indicated by the persistence or increase of albumen in the urine and further evidences of impending disorganisation at a stage in the disease when relief by surgery is steadily progressive, and the other where the kidney is, so to speak, suddenly paralysed by the extreme tension to which it is submitted.

There is another indication of tension in connection with renal inflammations and congestions which is not infrequently determined by the pressure to meet the pressing emergencies so occasioned. I allude to the tension which is thus thrown on the heart and the circulatory apparatus generally.

This form of tension is generally recognised in connection with renal disease, though the explanation of it is not, I believe, so universally appreciated. I have often used for demonstration a comparison between the generation of tension as applied for motor purposes of the excretion of urine. In the former case to secure the rapid production of steam a circulatory apparatus is required and a boiler made up of a number of tubes by means of which the water can be quickly heated and transformed. Should a number of the tubes become damaged and inoperative, their temporary loss is provided for by a more rapid circulation of the water through those tubes that remain. This is brought about by a mere mechanism.

In the same way with the kidneys, when their uniraneous tubes become damaged or rendered inoperative by pressure or blockage an increased circulatory force becomes excited. In the human subject this means cardiac hypertrophy and vascular tension throughout. If a certain amount of blood has to be driven through the kidneys in twenty-four hours for the excretory purposes of the body, it stands to reason that the force to effect this must be relative to the resistance offered.

4 Urinary and Renal Diseases.
5 Urinary and Renal Diseases.
6 British Medical Journal, December 6th, 1884.
Cardiac effort may, therefore, be regarded as only proportionate to and determinable by the latter.

If the kidneys were as immediately situated relative to the heart as the lungs are, no one would question the direct influence of the congestion and blockage of the former in producing cardiac hypertrophy in this way. The increased distance, however, that these organs occupy relative to the circulation rather adds to the probability of this. I can make no accurate statement of the incidence of increased arterial tension generally and of its varied local manifestations and effects.

In relieving kidney tension surgically, I have frequently noted its general effects upon the circulation and the increased urinary excretion that has almost immediately followed. Dr. Dickinson1 observes: "I have distinctly recognised hypertrophy of the heart as a result of nephritis of not more than six weeks duration."

The following may be regarded as some indications for relieving tension surgically in cases of nephritis, however arising: (1) Progressive signs of kidney deterioration, as shown by the persistence or increase of albumen when it should be diminishing or disappearing from the urine, as in the natural course of inflammatory disorders ending in resolution; (2) suppression of urine or approaching this state; (3) where a marked disturbance of the heart and circulatory apparatus arises in the course of inflammatory renal disorders.

How far the mechanical removal of kidney tension may be utilised in connection with the prevention and treatment of some heart hypertrophies is an aspect of the subject which is not without its own interest.

In the third and last place I will pass on to consider the precise method of giving relief to kidney tension under the conditions referred to. The simplification of all surgical processes by the use of anaesthetics such as gas and ether in preference to chloroform, and the introduction of antiseptics, makes one approach a reference to wound-making for purely therapeutical purposes with very different feelings to those which prevailed before the discovery and application of these agencies.

The operation of exposing and, if necessary, incising a kidney is one attended with but a small degree of risk, and should be entertained where there is a fair prospect of saving a person from imminent death or from the invalid life which is inseparable from a chronic albuminuria arising out of a nephritis. It is a less proceeding than those abdominal sections where the peritoneal cavity is opened with so much safety and advantage for exploratory and other purposes.

In a statement, published apparently on good authority, a calculation had been arrived at that out of one million deaths that occurred, scarlet fever was responsible for 48,000, a number considerably in excess of all other causes. Doubtless a large proportion of these were directly occasioned by nephritis.

In my earlier investigations relative to the subject of kidney tension and the application of well-recognised surgical principles to this condition, in several instances I confined myself to puncturing the distended organ in one or more places, and at the suggestion of the late Sir William Roberts, who was deeply interested in the subject, I made use of the term "reni-puncture" as descriptive of what was done. Though this proved sufficient in cases where it was unnecessary to explore the interior of the organ for any other cause of congestion, there were others where a further search rendered a limited incision through the capsule advisable. On the whole, I think that in the majority of cases the latter proceeding is to be preferred. I speak of it as a capsular nephrotomy, indicating by this term the limit I would, as a rule, put upon the proceeding.

The patient being anaesthetised and placed in the position for a lumbar nephrotomy, the kidney is exposed by an oblique incision through the loin about parallel with, and a little lower than, the last rib (Fig 2). The length of the incision varies relative to the consistence of the patient and the individual connections of the kidney to be searched. In some subjects an incision of 3 inches probably suffices. The various musculo-fascial layers are divided until the suprarenal fat is seen. The connective tissue covering this should be opened up with probe and forceps, when the kidney may be recognised. It is held being rendered by an assistant pushing up the organ in the direction of the operator. There is seldom much bleeding or even necessity for tying a vessel.

If the organ is to be further explored, as, for instance, for a possible stone, the kidney may be withdrawn through the wound for more thorough examination with the finger. This, however, is not necessary where tension alone exists. Sufficient prominence for a limited incision through the capsule so as to relieve tension and secure drainage, or even to puncture the organ, as for reni-puncture, can be given by an assistant in the way already mentioned.

Fig. 2.

In incising the capsule of the kidney for relieving tension I prefer doing so along the convex border. Occasionally the incision may be indicated to one side or other of the free border, as congestions and extravasations of blood are not necessarily evenly disposed throughout. Punctures may be made almost anywhere where the engorgement seems greatest, but it is as well to avoid the pelvis of the organ, either in the case of these or of incision. I have frequently seen, on puncturing the capsule for the purpose of exploring, blood spurt out in jets, as if projected under considerable contractile pressure, and eager to escape.

The desired object being effected, whether it is limited to the partial division of the tense capsule or the more thorough exploration of the organ, as for stone, a drainage tube is carefully inserted so as to remain in contact with the kidney, and the wound is closed round the rubber outlet with silk sutures (Fig 3). The incision is dressed with gauze antiseptically.

Fig. 3.

As drainage is an essential part of the process and may be continued for some days, or even weeks, before the tube is removed, an ample supply of absorbent dressings should be used and renewed as often as is necessary. The drainage tube usually remains in situ from a week to ten days, but this entirely depends upon the nature and degree of the sanguineous discharge, which is sometimes profuse and continuous. On the removal of the drainage tube the wound


TREATMENT OF RENAL TENSION. [Oct. 19, 1901.
usually heals rapidly. I have never seen a permanent urinary fistula follow this proceeding.

The question of nephritis sometimes arises as to which organ should be selected for exploration. Unless there is something to indicate it, such as the presence of pain, my experience would lead me to believe that this is not a matter of much importance. Both the right and left kidneys are in the inflammatory condition, though perhaps it may turn out to the same degree. In double nephritis the relief of tension in one organ aids the other, and, as I have noticed on several occasions, the normal amount and constitution of the urine becomes re-established. Similarly, aid to an injured kidney by the removal of direct pressure caused by the accidental extravasation of blood, either within or around it, has been shown to assist the opposite one, and to restore the balance of the urinary when this has been diminished or entirely suppressed.

In this statement I have endeavoured to give prominence to those points which seem most deserving of consideration, relying mainly upon direct testimony rather than upon inferences drawn from lines of practice which can hardly be said to cover all varieties of this disordered condition.

Nor have I made any attempt to elaborate my argument at this stage from such sidelights as chemistry, physics, or pathology might furnish, but have confined myself chiefly to that which is clinical. Propositions involving changes in well-worn pathologies and practices must be approached with deliberation, and no one is more conscious of this than myself.

"How far," to use the words of a recent writer, "the operation of incision of the kidney can prevent or relieve the effects of congestion time alone can show, but the subject deserves the careful attention of all surgeons." I think enough has been said by this time to show that the incision in the kidney should not be made as an operation; the urine was coffee-coloured, but better when quiet. These symptoms were aggravated by a football kick which he received six months before I saw him. His general health appeared good; he was overgrown and pale. Dr. Bull had passed a sound, and various remedies were tried, including a support, with negative result. Urine: Specific gravity 1.028. There were no crystals of oxalate of lime, some free blood corpuscles, and about as much albumin as to be represented by epithelium. Over the right kidney there was tenderness on pressure; the kidney felt movable, with a sense of weight in the right loin. On July 29th, I operated, and finding upon the right kidney a case of fistula, I made a small incision in the kidney: no calculus found, but the kidney tissues were very thickened and heavy. Cauter sutures were used to close the wound in the kidney, a drainage tube inserted in the loin, and the wound closed with silk. The patient was up and well until June 24th; the urine took place from the wound. It was opened up and plugged with iodine, and in the meantime the case did not recur. This is an instructive case from the cutting through the wound, which was practically healed when the patient left on August 14th. The patient has been seen several times since, and has remained perfectly well.

In both these cases, which closely resemble two related by Mr. Harrison, the procedure adopted was, I think, fully justified by the result. If by such operative measures we can arrest the acute stage of an intractable, almost incurable, disease as chronic nephritis, a little risk is surely justifiable.

Nephrotomy in such cases is the more warranted, inasmuch as it is itself a comparatively simple operation, and in my own practice I cannot recall a single instance followed by a fatal result.

II.—W. D. SPANTON, F.R.C.S.,
Senior Surgeon, North Staffordshire Infirmary.

Mr. SPANTON said: The subject of tension is one which has attracted much attention from surgeons in various forms, but it was not until Mr. Reginald Harrison pointed out its bearing on certain conditions of the kidney that its importance in relation to that organ became recognised. Now that it has been demonstrated that many seem simple enough. Reasoning from analogy, we are of course all familiar with the effect of tension on such fibrous covered organs as the testis, the liver, the eye, bone, and so on, and recently attention has been directed more particularly by Mayo Rob- son to the pancreas in the same connection.

One can quite appreciate, as Mr. Harrison has shown, how impossible it is for a congested kidney to relieve itself in any other way than by leading to hemorrhage or some destruction of its delicate tissues by compression. Until comparatively such cases as those of ordinary nephritis, especially the toxic forms, were looked upon as belonging solely to the province of the physician. Now it would appear that in many of them the aid of the surgeon may be sought with advantage to the patient, where the ordinary remedies fail to give relief. Many years ago I was much struck by the immediate relief afforded in cases of acute post-scarlatinal nephritis by free cupping of the back. In some instances where the kidneys had practically ceased to act, where the minute quantity of urine passed was little else than albumen, a free cupping would act most beneficially. I have seen where uraemic symptoms of a definite kind had set in. Here we have an illustration of the beneficial effects of rapid relief of tension based on the same principle which Mr. Harrison advocates in dealing with like conditions. In treating less acute cases, especially where further changes have already set in, we shall find those most suitable for what may be termed direct treatment—that is, relieving tension by division of the dense fibrous investment and diminishing any localised congestion which may exist. I am induced to make these remarks because I have been much impressed by the excellent results in two instances which I will now briefly narrate:

CASE I.—E. H., aged 17, was seen in September, 1900. He was apparently a healthy young man, one of a family of four children, the
Now renal tension occurring during acute nephritis and infective fever, in which the patient is steadily becoming worse, appears to me the condition especially favourable for the adoption of surgical measures.

Like many other surgeons I have been astonished at the relief which has followed in many cases simple exploration where nothing definite was discovered, and in which the actual operation actually was accomplished. Severe symptoms have been relieved by incision, and it is my opinion that whenever there has been prolonged suffering, irritability of the urinary tract, scanty secretion and hematuria, the operation is certainly in seated. A number of cases where this was so demonstrated. After all lumbar pain which prevented him from following any occupation. I explored the painful region, but no organ could be found, and strange to say he completely recovered and is now following his employment as engineer.

Similar results have followed the incision of other organs. Acute inflammation of the testicle has been relieved by timely incision. In the late Dr. Harley practised a puncture of Glisson's capsule to relieve tension in cases of hepatic engorgement.

"I do it," he remarks, "on the same principle as the surgeon who punctures the tense and unyielding tunica albuginea to relieve pressure in the secreting structure of the testicle in cases of hematoceles of the testicle. Eclampsia, jaundice, albuminuria, and occasionally obstetrical cases of the placenta previa, in which the pelvis is so tense that there is some form of obstruction and having found none—nothing but the abdomen has been closed, after breaking down a few adhesions and making a few punctures, and my patients have made excellent recoveries.

The most favourable cases for surgical measures appear to me to be associated with acute nephritis and infection through the blood. But there are other forms of renal tension.

Renal tension is caused in partial or complete retention of urine; from infection caused by the introduction of microbes in old cases of prostatic and urethral disease. These microbes which effect the decomposition of urea change the urine into a septic and irritating fluid. In a large proportion of these cases the kidneys have undergone secondary degeneration: they are deficient in excretory power; and the blood has probably for a long time been only partially freed from excretory products. A sudden shock of any kind will soon be followed by fever, scanty secretion or suppression, vomiting, and, finally, coma. I saw a gentleman aged 70 a few days ago who had lived a catheter life more or less for some years. He was unwise married, and thirty-six hours after total suppression of urine set in, and he rapidly sank.

Another form of renal tension occurs as the result of chronic alcoholism. After some sudden exposure and fatigue the damaged organs suddenly fail to cast out the complex poisons from the blood. This form has long been recognised as associated with disturbance of the nervous system and convulsions. Slowly advancing interstitial changes rapidly terminate in suppression of urine, and this has been attributed to the presence of urea in the blood or to the breaking up of this substance into carbonate of ammonia and water. These urgent symptoms must, however, be caused by the poisonous influence of other materials which the kidney has failed to discharge. Now, in such cases the hope of success by surgical means must be in direct relation to the competency or incompetency of the kidneys themselves.

In conclusion, there can be no question, I think, as to the value of the operation; at the same time it is quite evident that such cases for the treatment have yet to be defined. It is not likely to benefit in the tension caused by chronic urethral, vesical, and renal diseases; but rather in those forms which are associated with disorders of the system in which the kidney fails to excrete those toxic and microbic products from the blood, and in acute cases of nephritis in which life is seriously threatened. There must be a limit to surgical interference, and we can hope for little success when the heart and other organs as well as the kidneys have undergone degenerative changes and the viability of the whole system is greatly impaired.

IV.—GILBERT BARLING, F.R.C.S., Surgeon, Birmingham General Hospital; Professor of Surgery, University of Birmingham.

Professor Barling said: Everyone who has had experience of operations on the kidneys has met with disappointment in that the conditions anticipated before operation have not been found when the kidney is explored. Whilst disappointment has been felt by both surgeons and by patient as to the immediate result of operation, yet in some cases the final result has been very satisfactory, the patient being relieved of his symptoms. What is the explanation of the relief given? In many cases doubtless the fixation of the organ from adhesions which follow exploration, in other cases division and separation of nerve filaments may be the cause of relief; and, perhaps, in a third group, relief of renal tension in accordance with the President's idea may be the factor which causes improvement. Unfortunately, every surgeon is liable to meet with the misfortune that sometimes follows the use of a catheter. [Details were given by the speaker of a case of this kind, in which there was the most enormous congestion of both kidneys, with extravasations of blood between the tubules. The condition followed the use of a catheter for the relief of stricture in which death occurred in a little more than twelve hours.] Such cases are, of course, not fit for surgical exploration, and even if they were, which kidney is to be explored, or are both? The treatment in such cases will be by medical means and wet cupping. [Mr. Barling related two cases of unilateral renal hemorrhage of a profound nature which he had explored by the cystoscope, in which perhaps great congestion of the organs for involvement was the explanation of the bleeding. In one of the cases growth was diagnosed owing to the profuseness of the hemorrhage, the kidney was explored and eventually freely opened, but no diseased condition whatever was discovered. The organ was therefore closed by sutures and replaced, and since that time, three years ago, there had been no return of the hemorrhage, and the patient, a lady, was in robust health.] What the explanation may be of such cases is not uncertain. But possibly renal tension is the cause; if so, what induces a one-sided renal tension? It is to be hoped that Mr. Reginald Harrison will pursue the question he has raised, and submit further evidence of the condition he describes, and of any further experience he may make for its operative relief. That renal tension often exists there can be no doubt, but that it is bilateral as a rule there can be equally no doubt. A limited number of cases of unilateral tension may exist, but they are not yet well defined. Some of the latter class are probably relieved by incision of the organ involved, but the majority of cases of renal tension belongs to the former class, and can only be relieved by medical means and by local treatment applicable to both sides, such as cupping, wet or dry.

V.—R. C. CHICKEN, F.R.C.S., Surgeon, General Hospital, Nottingham.

Mr. Chicken said: The circulation of the kidney being in close relationship to the circulation of the perirenal tissues, renal tension can be adequately relieved by scarification of the subaramellar region. The opening of the kidney capsule for simple relief of high arterial tension is to be deprecated. It is a matter for regret that the term "Bright's disease" is frequently applied to a variety of conditions causing albuminuria rather than confined to the small granular kidney described by Bright. Nervous shock is occasionally accountable for suppression of urine, and the latter in these cases will pass away under rest. In renal disease cantharides should not be used as a vesicant; either dry or moist heat are to be preferred.

ON CERTAIN POINTS IN THE OPERATIVE TREATMENT OF RENAL CALCULUS.

By J. HUTCHINSON, jun., F.R.C.S., Surgeon to the London Hospital.

The guiding principle in the extraction of stone from the bladder has been the infliction of the least possible injury to the tissues occurring the operation. Considering the intricate structure of the kidney its complicated arrangement of nerves, and its abundant vascular supply, the same principle...
in the removal of renal calculus would appear to be even more important. It may be questioned whether it has not sometimes been lost sight of.

Thus, to take one example, Professor Küster, who admits that improved results in renal surgery largely depend on ‘protection of the kidney,” states in extracting calculi “the organ should be split up from its convex surface.” Other writers, whilst admitting that this proceeding may be attended with alarming haemorrhage, state that this can be avoided if the organ is split up, or if the main renal vessels be clamped during the division. It is needless to say that these methods can only be carried out if the organ is separated from all its relations and brought out to the surface. In fact, in a recent description of ordinary nephrolithotomy it is expressly stated that “through an oblique lumbar incision the kidney is isolated, brought out into the wound,” etc. This manoeuvre is, however, in many cases neither easy nor safe: it is certainly in the majority unnecessary. One has only to remember the shortness of the right renal pedicle to understand that occasionally it has resulted in rupture of an important vein or artery with fatal results.

The free incision through a thickness of renal tissue amounting to 2 or 3 inches in an adult has sometimes caused serious haemorrhage, has led to urinary fistula, and in either case nephrectomy has occasionally become necessary. It will, I think, be admitted that a wound through the whole substance of the kidney is not well adapted for the examination of the infundibulum and ureter as a direct incision into the pelvis, and can only be justified by the theory—largely erroneous—that the latter will not heal so readily. To practically dissect after separating it from its normal connections in the search for calculi may, perhaps, be excused if the surgeon is convinced that the latter are present but is incomplete in the ignorance of their number and position. This, however, thanks to the x-rays, need no longer be the case.

It is to be noted that without the help of skiagraphy the risk of leaving stones behind in an extensive exploratory incision is considerable. M. Tuffer, one of the chief authorities on renal surgery, admits that in such operations the stone, if single, is not found, or, if it is multiple, some are left behind in at least 10 per cent.

In 1898 Mr. Henry Morris wrote that “hopes were entertained that the Roentgen rays would be of service in determining the presence or absence of renal calculus, but hitherto they have afforded but little help in this direction.”

Improvements in method have entirely altered this view, and the skilled use of the Roentgen rays will now rarely fail to demonstrate both the exact position and the size of any renal stones, especially if they are of the early and positive type. The fact made that a not only secure resort to operation before the calculus has led to secondary degeneration of the kidney, but the proof afforded by the Roentgen rays in certain doubtful cases that no stone exists will save the patient from a possibly dangerous exploratory operation. In no department of surgery has the discovery been of more practical use than in that of the kidney. It is especially with regard to the kind and severity of the operation required that the x-rays are so valuable. They will, for example, in a given case tell the surgeon that there is a single stone 1 inch long placed transversely three inches from the first lumbar spine and the same distance from the iliac crest. The operation becomes then merely the extraction of a somewhat deep-placed foreign body. There is no object for an incision longer than is required to give free access, and still less for disturbing the relations of the kidney or forcibly dragging it into the light of day, or for prodding in all directions with needles. As my friend Professor Harris observes, “the policy of pin-pricks becomes needleless!” The stone is extracted with the least degree of instrumentation, and the surgeon knows he has not to hunt in the recesses of all the calices for a possible second stone.

For an extensive division of the kidney is substituted a small clean wound of the pelvis or adjacent cortex which rapidly heals. A drainage tube is inserted down to the perirenal area, against temporary leakage, is sutured and skin wound is sewn up, the whole operation having probably taken less than thirty minutes to perform. Here it should be noted that the prejudice against incising the pelvis or ureteral wall is wearing away. From personal experience of several cases I can state positively that such wounds, if only the urine be kept aseptic by urotropine or salol, and if no roughness has been employed in extracting the stone, heal soundly and quickly.

Mr. Henry Morris, in his latest writings, has come round to this view. ‘I formerly was of opinion that there was less chance of urine escaping and quicker healing of the wound, when the incision involved the parenchyma only. But since about two years ago, I have not found that wounds in the renal pelvis or ureter heal any the less readily.” It must be noted that it is sometimes impracticable to suture this wound, and that it will probably heal more firmly if left open.

In a case of considerable interest I had the opportunity of examining the process of healing of a cutaneous wound into the renal pelvis.

A middle-aged woman came under care for right hydronephrosis—intermittent—attended with severe pain. There was no evidence of stone, and the kidney, though mobile, could hardly be called a floating one. The exploratory incision showed that the pelvis was greatly dilated, but that there was a fair thickness of healthy renal tissue around the cyst, which bulged downwards alongside the ureter. I made a transverse incision of about 1½ inch into the pelvis sufficiently large to allow of digital exploration and let out a quantity of pus and urine. Through this it was ascertained that no stone was within reach, and that the ureteral orifice was at the lowest point of the pelvis and was somewhat difficult to reach. However, it was possible to feel the bladder and to exclude the presence of a calculus into the ureter. By means of the bougies a ureteral orifice could be dilated. Nothing seemed practicable, and the wound was closed with due allowance for drainage (the wound into the pelvis was not sewn up). For a few days the incision went on well and presently disappeared, and there was no escape of urine after the first fortnight. Ultimately the wound healed, and the old symptoms of pain and sickness came back again. Lumbar nephrectomy was performed and the patient left the hospital about a month later. She remained well at her home in the country for a few months more, and then a strange thing happened. She was suddenly seized with suppression of urine—which caused death from extravasation of blood into the perinephric space after six days. The incision was then relieved for three days—and again become complete until her death at the end of another three days. Dr. Francis Scott, of Coleford, Gloucestershire, who died in 1894, examined the body, and wrote a account of the cause of death, which was considered that the wound was the result of an operation to remove the ureteral orifice of the kidney, as the pelvis of the kidney had been invaded by a calculus which had plugged the ureter.

In Dr. Scott’s words:

I examined her kidney after death, and found the enclosed calculus in the upper part of the ureter, on a level with the lower margin of the kidney, where the ureter seemed to be somewhat narrowed for an inch or so, and I could not press the stone along the canal, but below this the ureter was larger and more elastic. The ureter must be smaller than usual, I should think, not to admit of the passage of such a small stone. There was no other stone in the kidney, which was enormously enlarged, and, beyond being congested, looked quite healthy. There was a little milky urine in the kidney but not more than a traceful, if so much.

It will be noticed that Dr. Scott found the left ureter to be of small calibre, and this is exactly what had been observed in the case of the right. The important fact, however, made that a calculus had previously existed on this side, and, after irritating the ureter, had passed without ever being noticed by the patient. (In the excised kidney there was no sign of stone or of calculus, and it, in part, had been removed and the patient might have been alive now.

The condition of the pelvis in the excised kidney was as follows:—Its distended wall was considerably thickened and congested in patches. Externally the site of the wound presented a clean scar, one edge of which was in part slightly raised, was seen. The ureteral orifice was above the lowest point of the sac, and the ureter bent upwards before descending. No local renal vessel or other cause of the bend could be found.

Mr. Morris has drawn our attention forcibly to the danger of small rounded calculus, and the late Sir William Roberts
recorded three instances under his own observation of death directly and solely due to calculi, each of which weighed under 2 grams. It is almost an axiom of renal and vesical surgery that the smaller the stone the greater the suffering produced, and surprise was therefore occasioned when Mr. Lucy, in a long-continued operation in the private house of Mr. C., one of his well-known patients, and who had been suffering from severe renal colic for weeks, described the ease, pain, and swelling that accompanied the removal of a calculus, weighing half an ounce, almost exactly the same as the stone removed by Mr. F. F. Fenwick, a stone impacted a short distance above the bladder was well localized beforehand by the Roentgen rays. It is, however, impossible to detect a stone when it is fixed directly in front of the iliac bone, but this is a rare position for impaction to occur.

It occasionally happens that whilst a renal calculus has been present on one side the patient has referred his pain to the opposite side. Some weeks ago I was asked to proceed as to this ever occurring, but nothing could be more conclusive than the case recorded by Mr. Edmund Owen. In this case the patient was an adult who stated that “for two years the pain had been entirely confined to the right side.” Turpentine and poultices had been frequently applied to this loin, yet on incision a normal kidney was found, and only a later operation on the left kidney removed the cause—a number of stones in a suppurating pelvis.

Mr. Chir. V. inserted into me during the operation. I am well aware that it is not a very unusual occurrence for a surgeon to operate upon the wrong kidney in his search for a stone.” Certainly it was only the evidence of the x-rays that prevented me making this mistake in one case.

Mr. V., a boy, was admitted with symptoms strongly pointing to renal calculus, the pain being, according to his statement, much the most severe in the right loin. It was on this side, but gave two well-marked shadows, one large and the other small, corresponding to different positions in the right pelvis. (See Fig. 1, p. 113.) I cut down on the latter and extracted one fair-sized oxalate calculus and a number of minute ones. The latter being placed close together had taken a death of one given but one stone to the operation; this case is most interesting. The boy had been the subject of severe bronchitis in former years, and always looked bine and unhealthy. Two years after my operation, F. L. S., with symptoms of renal calculus. The x-rays showed that this time it was situated in the left kidney, whilst the right side (the one I had operated on) was normal. That this latter calculus had formed since the first operation there is not the slightest doubt, and it is probable, seeing the imperfect action of his lungs, that he will go on forming fresh ones in the future.

It cannot be urged too strongly that surgical aid should be sought as early as possible in every case of sudden suppression of urine.

The use of the x-rays in such a case will, if the calculus be impacted calculus, probably localize the exact site of obstruction and determine the safest and shortest route by which to remove it. Of late years calculus have been removed from every part of the ureter with success; Messrs. Clement Lucas, Henry Morris, Freyer, Harry Fenwick, and other surgeons have recorded cases.

It was my ill-fortune to have to operate for complete suppression of urine in a patient who had been informed of enormous size, in whom there was only one kidney, the ureter of which became plugged. The stone (a small ovoid one) was reached at the depth of some 5 inches from the skin, but it slipped from the grasp of the longest forceps. The suppression was overcome for a few days, but the case ended fatally by the solitary calculus again becoming impacted.

In such very fat subjects the x-rays will be valueless, and this is almost their only contraindication. It is true that ureic acid calculi do not throw such dark shadows as the phosphatic and still more the oxalate ones. Mr. James Swain illustrated this in an admirable paper in 1897. But by varying the time of exposure to the rays any calculus can be detected in an ordinary patient. It has been urged against the successful use of skiagraphy that the mobility of the kidney, and especially the influence of respiratory movements, may prevent a good result being obtained. The reply is that an exposure of fifteen seconds or more will, and during this space of time it is easy for the patient to hold his breath. It will be found that so accurate is the method that the exact size, within one-eighth of an inch, of the calculus can be determined before the operation. This I have done several times, and feel sure that even in my strongest grip no stone could thus be detected. In the following case the two conditions coexisted.

A young woman came under care on account of paroxysmal lumbar pain that had been present for several weeks. Though not down upon it and examined by puncture, etc., for a stone: not finding any I fixed the kidney from the side of the case it was left to the hospital: relieved, and was lost sight of for four years during which time the pain returned with increased intensity. At the end of this time she was again
admitted and the first examination by the $x$ rays showed a calculus two-thirds of an inch long to be present. This was removed from the renal pelvis, and at the operation the kidney was found to be perfectly fixed in place. I have little doubt that a small stone was present at the first operation but was overlooked. At that time the $x$ rays had not come into use.

There is one fallacy in connection with the use of the $x$ rays, namely, that in chronic pyelitis—usually of the tuberculous form—the renal pelvis or ureter may be lined with calcareous matter, which would give a shadow suggesting that of a large stone.

**The Technique of the Use of $X$ Rays in Diagnosing Renal Calculus.**

There is a good paper on this subject by Mr. C. L. Leonard in the *Annals of Surgery* for 1900, p. 162. He examined 58 suspected cases, with a negative result in 47. In only one of these was it subsequently proved that a calculus was present, and in this the failure was due to a plate having been used that was too small. Positive indications were given in 12 cases, all of which were confirmed by operation later. It must be understood that an experienced radiographer is required to obtain satisfactory results, and in giving the following notes on the subject by Mr. Ernest H. Harnack I take the opportunity of acknowledging the great assistance that his skill at the London Hospital had been to the surgeons there.

'Renal calculi of the oxalate variety are the most favourable for radiographic diagnosis, the phosphaic next, and uric acid last. The question of the length of exposure to a photographic dry plate must be determined after seeing your subject. For example, when dealing with fairly thin patients (weight not exceeding $10\frac{1}{2}$ st.) I use a fairly 'soft' tube—that is, one that will show the heart shadow and ribs of the thorax on the fluorescent screen clearly defined, but of dark outline. With this type of tube and in this class of subject a short exposure, fifteen to thirty-five seconds, should determine the presence of every variety of renal stone. In dealing with stout subjects, a tube of 'higher' resistance is necessary—4-in. to 5-in. spark gap on a 10-in. or 12-in. coil; and in these cases I usually take three or four exposures, varying from thirty seconds to two minutes, and by this means all varieties should present themselves in the following order: Short exposure, uric acid; medium, phosphatic; whilst oxalate calculi will give a good shadow with all lengths of exposure.
In every instance care should be taken to have the patient's bowels well opened. The shortest exposure that I have ever given to obtain a satisfactory radiograph was in a boy—namely, ten seconds. This is the case that you operated on last year for calculi in the opposite kidney to the side on which the boy had colic. The shortest, in an adult, was also one of your cases—fifteen seconds. These short exposures may be, until further developments occur, considered in comparison with photography as instantaneous. All these results have been got with a nominal 10-in. coil, mercural interrupted voltage, 18 to 24, and a current varying from 6 to 10 amperes. As a final note, I should like to add that great care should be taken in developing the plates during hot weather by using very cold solutions, as the plates are liable to chemical fogging due to the heat. The pyro-sodo, or pyro-ammonia formulae are the ones I recommend. The plates should be very thickly coated with the photographic medium.

The difficulties of diagnosis with regard to renal symptoms are only too well known. Mr. Edmund Owen narrates one case in which a former President of the College of Surgeons operated for supposed floating kidney on a patient really suffering from cancer of the colon, and another in which a President of the College of Physicians diagnosed a case of what proved to be renal calculus as one of disease of the intestine. Probably Mr. Owen does not believe that such mistakes are confined to Presidents of the Colleges. Much humbler individuals are apt to make them, and I may here plead guilty to having excised a normal vermiform appendix in a young man for attacks of what I, in common with two physicians, took for appendicitis. Ten days after the operation he passed a small renal calculus. No doubt the anaesthetic assisted its descent, and anyhow he was better without his appendix.

Nephrotomy in the Absence of a Stone.

The use of the x-rays in every suspicious case will greatly lessen the number of cases in which the surgeon performs exploratory nephrotomy in the belief that a stone is present and finds nothing. The question whether such an operation for so-called nephralgia is justifiable when skiaography in skilled hands has given a negative result is one of much interest. I would not presume to dogmatise on the subject, but may be allowed to note the following from the examination of a series of records of exploratory nephrotomy under various surgeons:

1. The operation is not wholly without risk, and has sometimes ended in the excision of a healthy kidney.
2. The lumbar pain and other symptoms which have led to the operation may be relieved by it permanently, but as a rule they return speedily.

3. In a fair proportion of cases the patient is distinctly worse after the nephrotomy than he was before.
4. Amongst the conditions leading to "nephralgia" and suggesting calculus are the following: Pyelitis or nephritis, often localised and following an injury; commencing tuberculous disease of the kidney; an abnormal secretion of uric acid or oxalate crystals causing renal irritation; sometimes biliary calculi or appendicitis (especially when the appendix runs up vertically to the region of the kidney). It is difficult to see what good a nephrotomy can do for any of these conditions.

In many cases of renal calculus the urine secreted by the affected kidney contains pus and bacteria. In order to obtain prompt healing of the wound it is desirable that this septic state of the urine should as far as possible be removed. The

---

Fig. 2.—(Calciui (exact size) removed by nephrolithotomy in December, 1879, by Mr. John Couper at the London Hospital. This was one of the earliest operations of the kind performed.

Fig. 3.—Exact size of calculus removed; it was a very hard oxalate one, probably of over five years duration.

Fig. 4.—Skiaograph (reduced rather more than one-half) taken with only 15 seconds exposure, showing single oxalate calculus, removed by operation (see Fig. 3).
A CASE OF MOVABLE KIDNEY PRODUCING PYLORIC STENOSIS AND CONTRACTION OF THE DUODENUM BY PERITONEAL BANDS.

By HERBERT BRAWWELL, M.D., F.R.C.S.Edin.
Cheltenham.

The case I am about to describe is no illustration of the surgical skill of the present age, but rather an example of a failure in affording relief by means of the surgical art. But my reasons for considering it of sufficient interest, before a full account of it, are first, that the clinical features and post-mortem appearances do illustrate or actually prove a link in a chain of facts closely bearing upon two important subjects in the surgery of the stomach which are even now somewhat undecided.

In the first place, the history of the case I am about to record, with the results of the post-mortem examination, is strong evidence that such a thing as spasmodic stricture of the pylorus does occur during life, and may by its persistent though intermittent action lead to dilatation of the stomach, followed in turn by complete atony of its walls.

Secondly, that intermittent spasm and hypertrophy of the pyloric sphincter with secondary stenosis of the orifice may be caused by adenoma of the mesocolon, covering, in this case being dragged upon by a movable kidney, quite independently of any other cause.

And thirdly, that a movable kidney does not form a channel of its own under the peritoneum, as is commonly described, but moves downwards, carrying its peritoneal covering with it, and thus stretches the superior and internal reflections of the peritoneum, which pass upwards over the pylorus and duodenum and inwards over the vena cava and aorta, until, in aggravated cases, distinct firm bands are formed.

In a most interesting paper published in the British Medical Journal of February 3rd, 1900, Sir W. H. Bennett of St. George's Hospital related a series of cases of which 57 were somatid of 'pyloric stenosis and contraction of the duodenum produced by a movable kidney.' His paper has been somewhat uncertain, but there are strong reasons for assuming that this condition is one of spasm of the pyloric sphincter. Mr. Bennett relates the case of a young married woman who suffered from attacks of great distress, with flatulence and crampy pains in the epigastrium, and relief from the cramps by vomiting.

The President inquired whether the colouration of a stone by such dyes as indigo or methylene blue would facilitate in any way the taking of a sketch.

Mr. R. B., aged 40, a widow with two children, the youngest 14 years of age.
age, was first seen in August, 1892, on account of repeated attacks of severe indigestion. Her previous history showed that she had suffered from attacks of acute dyspepsia since the age of about 20, but much more so during the last fifteen years. She had consulted many physicians, including the late Sir Andrew Clark, but with no permanent benefit at all. She was troubled with these attacks during pregnancy, and was always quite well during her puerperum. The attacks were always of more or less sudden onset and of an acute character, with pain and uneasiness in the epigastrium and a feeling of great distension, which was not relieved until vomiting had occurred.

The cause of the attacks was never very definite, as often when she had felt very well and gone about a little more than usual a severe attack would follow. The most rigid dieting and careful general hygiene failed to prevent their frequency and duration being increased. The hyperpneic condition was distinctly influenced by whether she gave in at once and went to bed, or attempted to continue her day's work. She always felt better going about her daily routine when first seen by me in August, 1892, she was very thin, pale, and of small proportions. Her tongue was red and irritable looking at the tip and margins, but flourished at the back. There was no abdominal distention, and the only perceptible abnormal signs were slight dilatation of the stomach and some indefinite tenderness over the pylorus. The bowels were kept regular by aperients, and all the other organs appeared normal.

During the following eighteen months I had repeatedly to attend her during such attacks, which were soon relieved by rest in bed, with bismuth and a bland diet. In 1895, however, it was found that bowel exercises were causing exercise or over-exertion of any kind. In 1896, while she was confined to bed for a more than usually severe attack, I discovered a freely movable kidney on the right side, which on deep inspiration was concluded down that the upper margin could be felt. This was at once considered to be the cause of the attacks of gastric distress, and a pair of stays and pad were procured. Some benefit resulted, as she certainly did not suffer so much during the whole of the following year.

In November, 1895, a severe attack occurred, accompanied by extreme prostration. The pain was great distension, epigastric pain, and vomiting, followed immediately on the exertion of the whole of the day's work, while she claimed that the attack was more severe and prolonged than any former ones, and that she had greater and more persistent distension of the stomach. She was kept completely in bed, with a firm pad and bandage over the right lumbar region. The question of nephropexy was discussed and strongly urged, but the patient and her friends greatly demurred and begged for a longer trial of medication and mechanical means of treatment. She did not get over this illness as she had done formerly, and there was persistent uneasiness in the epigastrium with daily recurrent periods of excessive dilatation of the stomach. On January 16th there was a slight attack of hemorrhage, about one and a half pints of blood-stained gastric contents being vomited. On no other occasion was there ever any signs of hemorrhage into the stomach.

In spite of continued rest in bed or on a couch with most careful nursing and dieting, she continued to lose ground. Various medicinal agents were tried to allay the gastric irritation and assist digestion, including the daily lavage of the stomach by means of a siphon tube. About this time some induration was felt in the pylorus, and two irregular ill-defined swellings, which appeared to lie behind it, were also observed.

The stomach continued in a most irritable state and intermittently dilated, so that a balloon-shaped tympanitic swelling was at times present to the left of the middle line. The gastric secretions were repeatedly examined by the Clinical Research Association, by no evidences of malignant disease or want of hydrochloric acid were reported.

The question of an exploratory incision with a view to pyloroplasty or gastro-enterotomy was discussed at a consultation with two surgeons, but the presence of the induration round the pylorus and the patient's weak condition were considered sufficient to negative any such procedure.

Towards the end of February an attack of syncope, owing to sudden excessive distension of the stomach, was ended fatally.

A post-mortem examination was obtained, and on opening the abdomen the whole of the left hypochondriac, epigastric, and umbilical regions were found to be occupied by an opalescent sac, reaching down to within two inches of the pubes. It looked exactly like a thin flaccid ovarian cyst. This was found to be an enormously dilated stomach hanging down like a large bag. The cardiac end filled the whole of the left diaphragmatic vault and was as thin as wet wax paper, tearing with the least traction, while being brought to the surface.

The pylorus was distinctly lower than normal and surrounded by thickened and matted peritoneum. It was distinctly thickened and contracted. The swellings felt behind the pylorus during life proved to be the head of the pancreas and lymph glands surrounded by thickened fibrous tissue, but in which no malignant disease was present.

The duodenum was much distended, forming a sausage-shaped sac. The bowel, with the jejunum, and ileum, was of considerable thickness and firmly held down by a band of thickened peritoneal tissue, which extended downwards on the iliac region and spread out into the mesentery. It appeared to be the right border of the large mesentery.

Extending from the surface of the pylorus downwards and to the right were three distinct cords of thickened peritoneal tissue which gradually spread outwards over the whole of the right side, the latter was firmly fixed, and then passed down for the space of three inches, and with it moved its peritoneal coverings. When the kidney was pulled down to its full extent the three peritoneal bands were very distinct, and clearly dragged upon the pylorus.

Before anything was removed from the abdomen it was distinctly seen how the descent of the kidney tightened and dragged upon the peritoneal covering of the pylorus. Also the natural covering of the kidney moved with it, and its lower margin did not glide under the peritoneum, but moved over the peritoneum on the surface of the posterior abdominal wall causing a palpable mass. This mass was movable, lying upon the mucous membrane covering it being healthy. Microscopic examination of portions of the splenium and also the thickenings round the pylorus, made by the Clinical Research Association, proved the absence of any malignant disease.

I think the features of this ease, clinical and post mortem, tend to show that:

1. Recurrent intermittent spasm of the pylorus may proceed to such an extent as to lead to a mechanical stenosis causing the most aggravated form of gastric dilatation.

2. That such a pyloric stenosis may be the direct result of intermittent traction of a movable kidney.

3. That an acquired movable kidney does not move up and down in a space under the peritoneum, but carries its peritoneal covering with it, stretching the inferior reflection of the peritoneum to some extent and gliding over the angle of this reflection, while at the same time it stretches and drawn upon its superior and internal reflections, drawing these into distinct bands which directly drag upon the pylorus. And the only true remedy for such a condition is to fix the kidney in its normal situation by means of stitching.

RADICAL CURE OF FEMORAL HERNIA.


The operations for the radical cure of femoral hernia which have been so effectively carried out by the following operators have given the most satisfactory results: Watson Cheyne's, Bassini's and Lockwood's. Watson Cheyne raises a flap from the pectineus over the crural ring, and attaches it to Poupart's ligament. Bassini unites the inner end of Poupart's ligament and the false fold or band of tissues over the fascia covering the pectineus. Lockwood introduces a needle through the crural ring and joins Hey's ligament to Cooper's ligament. The practice so far has been followed by Cooper's ligament, but it is open to the following objection:

1. An efficient support cannot be provided by the approximation of structures outside Poupart's ligament.

2. The femoral vein is in danger of being injured or compressed.

3. A depression is left above the crural ring.

The method which I bring before you to-day consists briefly in closing the crural ring from above, and attaching the conjoint tendon to Cooper's ligament; thus the entrance to the ring is effectively blocked by a structure which can be ready displaced to do this, and can also be adjusted to avoid pressure on the vein.
This plan first occurred to me about four years ago while I was performing an operation for the radical cure of inguinal hernia by a new method, my object being the complete obliteration of the inguinal canal and the rings. To accomplish this it was necessary to remove the spermatic cord from its normal position, and to find another route for it. Accordingly the canal was opened and the cord separated and reduced in bulk by the removal of accessory veins. Poupart's ligament was then divided obliquely just above the crural ring, and the fat and gland in that space removed. Next the lower margin of the conjoint tendon was defined, the transversalis fascia exposed and incised parallel to the lower margin of Poupart's ligament, and the deep epigastric vessels ligatured and divided.

The cord was now placed behind the conjoint tendon and transversalis fascia, overlying the femoral vein, and was made to lay the crural ring, and fascia were drawn down and fixed to Cooper's ligament—a strong band of fibrous tissue which joins the fascia over the pectineus close to its attachment at the ilio-pubic line—by strong catgut sutures, thus covering the crural ring and preventing the possibility of a femoral hernia. The rest of the operation consisted in bringing the divided ends of Poupart's ligament together, inserting a row of catgut sutures between the conjoint tendon and the Poupart's ligament along the whole extent of the canal, and finally closing the skin wound. Union took place without a trace of suppuratation.

During the following year the patient was examined frequently, and the report at the end of that period was that the wound had remained perfectly sound, and that there was no sign of either an inguinal or a femoral hernia.

This case afforded an exceptionally severe test of the operation, since Poupart's ligament had been divided and the crural ring made to accommodate the cord, and I felt, consequently, that I had discovered a new and satisfactory method of closing the crural ring. Since then 15 cases of femoral hernia have been operated on; of these, 6 were under treatment over three years ago and 5 over two years ago, and so far no sign of weakness at the ring has been discovered in any of them.

Operation.

Skin Incision.—A curved incision with the convexity downwards is made from a point a little external to the pubic spine to the middle of Poupart's ligament. A flap of skin is raised, the superficial epigastric vessels ligatured and divided, and Poupart's ligament being within the wound thoroughly exposed.

Separation and Opening of Sac.—The femoral sheath is opened near Poupart's ligament and the sac and fat adherent to it turned out as far as possible by the aid of the finger. By this method the sapheneous vein is not disturbed, nor is it as much as is the case in operation. The sac is now opened and adherent omentum separated or ligatured and removed. With a probe on the fat on its outer surface, the sac is usually much smaller than the case in inguinal hernia, and the rules applicable to its treatment in the latter cannot be adhered to in all cases of femoral hernia. When it is small and its walls are thin and torn, it should be removed and the opening into the peritoneum carefully closed.

Exposure of Crural Ring.—An incision is made through the aponeurosis of the external oblique immediately above and parallel to the inner half of Poupart's ligament, the inguinal canal is opened, and its contents drawn in order to define the lower margin of the conjoint tendon. The transversalis fascia is next divided where it passes beneath Poupart's ligament to form the anterior layer of the femoral sheath. The peritoneum is left intact, except when necessary to ligature and remove omentum which cannot be returned through the crural ring. In retracting the parts now, an excellent view is obtained of the upper surface of the ring, the femoral vein, and Cooper's ligament.

Fixation of Sac.—A catgut suture is passed through the fadus, where it is tied, and then through the neck close to the parietal peritoneum, and finally carried through the transversalis fascia and conjoint tendon. When the suture is tightened the sac doubles up and disappears beneath the abdominal wall: the suture is then knotted.

Attachment of Conjont Tendon to Cooper's Ligament.—A strong catgut suture is carried by a sharp curved needle on a handle through the conjoint tendon and transversalis fascia, at a point opposite to the outer margin of Gimbernat's ligament, passed horizontally beneath the muscle and fascia for about half inch, and then brought through them. The inner end of the suture is now passed through Gimbernat's ligament, the outer through Cooper's ligament, and both are brought out in the groin. The second suture is applied in the same way, but while the outer end is being passed through Cooper's ligament close to the femoral vein care must be exercised lest the accessory obturator artery be punctured. Traction on the end of the sutures brings down the conjoint tendon and transversalis fascia over the crural ring, and after it has been determined that no undue pressure is made on the vein the sutures are tied. Two or three medium catgut sutures connect the conjoint tendon with Poupart's ligament to assist in keeping down the tendon, and to strengthen the inguinal canal. The rest of the operation is completed in the usual way, two or three silk worn-out stitches keeping the edges of the skin together, while approximation of the rest of the wound is secured by a continuous horsehair stitch. No drainage of any kind is used.

It will be gathered that the operation is not a severe one, when it is mentioned that five of the patients were suffering from strangulated hernia at the time of the operation. All the cases (fifteen) recovered, union taking place by first intention, and in ten the wounds were examined for the first time in the third week, and no subsequent dressing was applied.

Strangulated Hernia.

The same procedure has been adopted in cases of strangulated hernia. The sac is similarly opened, and the bowel carefully examined. If found in a fit state to be returned, and the condition of the patient is favourable, the operation as detailed above is performed.
In the last two cases the peritoneum was opened above the ring, and gentle traction was made on the bowel aided by pressure from below, with the result that the hernia was reduced without dividing Gimbirne's ligament. No difficulty, however, would be experienced in dividing the ligament from above, and, in the event of resection of the bowel being necessary, more freedom for work and better control over the parts is obtained than would be the case were the same operation attempted below Poupart's ligament.

Mr. JORDAN LLOYD advocated the general principle of simplicity in the technique of all radical cure operations, and thought that the removal of the sac was preferable to other methods of dealing with it, and the following arrangement: So soon as the patient is under ether, a competent surgeon opens a selected vein, and begins to transfuse as the major operation proceeds, so pari passu does the intravenous injection, the amount injected being governed by the state of the pulse and the loss of blood consequent upon the removal of the tumour. I have used as a rule about five pints of fluid. The advantages I suggest are, first, the patient does not at any time during the operation feel the loss of blood; secondly, nothing is done in panic; the transfusion begins slowly and steadily, and full precautions can be taken as to asepsis and the prevention of the involuntary introduction of air in the vein. When transfusion is suddenly called for, the apparatus, if at hand, is not in proper order to attempt to remove the causes, transfusion should be made a part of two attempts, and commenced so soon as the surgeon essays his effort, not hurriedly called for when the failing pulse and the dilated pupil foreshadow catastrophe on the table. It may be asked, Can this be readily done out of hospital? Yes, given a competent assistant other than those engaged in the actual operation, with his own instruments necessary to open the vein, a glass nozzle, and a few feet of sterilised rubber tubing and a glass funnel. Transfusion by gravitation is a simple and safe procedure, but a joint responsibility, a common instrument table; a panic call, and disaster is likely to occur.

Mr. J. HUTCHINSON, jun., asked what was done to the cord in Mr. Parry's case.

Mr. Parry replied that the cord was simply displaced to define the conjoint tendon. As to the treatment of the sac, to which Mr. McAdam Eccles had referred, he thought the matter might be left to each individual surgeon to do what he liked.

THE PREVENTION OF SHOCK DURING PROLONGED OPERATIONS.


The employment of transfusion as a remedy is of great antiquity, and there are many instances of life saved on record. Transfusion, either by the direct or indirect method, has of late years given place, and, I think, rightly so, to the injection of saline fluid into the veins. The value of this method of counteracting the baneful effect of loss of blood and of shock have been proved time after time, and no one who has had full cause to effect an operation in a seemingly hopeless case can fail to have been impressed.

In machinery smashes, after railway accidents, and the like, I have repeatedly been witness to the marvellously rapid rally which has taken place after the injection of three or four pints of saline solution, often enabling one to effect an operation which but an hour before seemed absolutely hopeless. It is not, however, with cases of sudden hemorrhage or shock that I desire to deal to-day, the condition is obvious, the remedy to be tried universally accepted, but rather to draw attention to a class of case far removed from the category of accident or emergency, in which the addition of large quantities of saline fluid to the blood in circulation, may, I think, be employed with advantage.

The surgery of to-day covers a vast area of enterprise, and operations are undertaken in conditions which a few years ago would have been looked upon as impossible, nay, and almost criminal. The general advancing recognition of asceptism enables surgeons to do with equanimity that which but a few years ago meant almost certain death to the patient. I think I shall be able to show that the intravenous injections of saline fluid is, in a certain degree, as great an aid to the surgeon in assisting him to deal successfully with desperate cases as is the banishment of the streptococcus from the wounds which he infects.

The class of cases I have specially in my mind are those where the patient is suffering from the effects of prolonged bleeding, whose after care and radiating measures have failed it has been decided to attempt to save life by means of some major operation. We are all familiar with the patients who have "hold off" the surgeon until the vital powers have diminished almost to a vanishing point, and as a last resource they want some attempt to be made. Take as an example a woman with a bleeding myoma—one who has been waiting vainly for the benign relief of the menopause to put an end to the ceaseless hemorrhage.

This one instance will be sufficient to illustrate the point I wish to bring before the meeting. I have on several occasions operated upon such cases, making use of the saline procedure, and quoting the following arrangement: As soon as the patient is under ether, a competent surgeon opens a selected vein and begins to transfuse as the major operation proceeds, so pari passu does the intravenous injection, the amount injected being governed by the state of the pulse and the loss of blood consequent upon the removal of the tumour. I have used as a rule about five pints of fluid. The advantages I suggest are, first, the patient does not at any time during the operation feel the loss of blood; secondly, nothing is done in panic; the transfusion begins slowly and steadily, and full precautions can be taken as to asepsis and the prevention of the involuntary introduction of air in the vein. When transfusion is suddenly called for, the apparatus, if at hand, is not in proper order to attempt to remove the causes, transfusion should be made a part of two attempts, and commenced so soon as the surgeon essays his effort, not hurriedly called for when the failing pulse and the dilated pupil foreshadow catastrophe on the table. It may be asked, Can this be readily done out of hospital? Yes, given a competent assistant other than those engaged in the actual operation, with his own instruments necessary to open the vein, a glass nozzle, and a few feet of sterilised rubber tubing and a glass funnel. Transfusion by gravitation is a simple and safe procedure, but a joint responsibility, a common instrument table; a panic call, and disaster is likely to occur.

From my own experience, both in private and in hospital, I am quite satisfied that hitherto too little use has been made of this means of enabling the exhausted patient to withstand the effects of operations which must otherwise result in death, and looking back I can recall only too many who perished before the value of saline transfusion was recognised. I am not, for one moment, suggesting that transfusion never fails. Such an assertion would be impertinent to your common sense and experience, but I am affirming that, employed in the manner I have described, it will many times enable one to bring to a successful issue cases which otherwise would have succumbed to the extra shock of operation.

Mr. T. R. JESSOP desired to thank Mr. Brown for drawing attention to such a potent means of avoiding or counteracting the effects of shock. For some years he had been in the habit of carrying about with him a supply of normal saline fluid preserved in concentrated form in sealed capsules. Along with strychnine he used saline transfusion prior to, or during any operation likely to be attended by, or attended by, dangerous shock. A tenth, or even a fifth, of a grain of strychnine subcutaneously injected, together with the transfusion of 3 to 5 pints of saline solution, constitutes, in his opinion, the relieved the surgeon of more than half his fears of surgical shock.

A DISCUSSION ON GASTRO-JEJUNOSTOMY IN ULCER OF THE STOMACH AND DUODENUM AND IN PYLORIC STENOSIS.

I.—GILBERT BARLING, F.R.C.S., B.S., Surgeon, Birmingham General Hospital; Professor of Surgery, University of Birmingham.

Professor Barling said: The responsibility which devolves upon me this morning is one, I fear, which I brought upon myself some months ago when, after a meeting of the surgical committee, I suggested that I would gladly have operated some one else better able to discharge the duty; but I must even do the
best I can in the absence of another willing to undertake the task.

It is quite impossible in the time at our disposal to consider all the questions that might be raised in connection with gastric and duodenal ulcer and their sequelae and complications; and I prevent the discussion becoming too diffuse by proposing at once to exclude from discussion perforation of gastric ulcers, as the lines of treatment for this accident are now fairly well settled.

I propose, also, to exclude cancer of the stomach, which would require a separate meeting for its due consideration.

It is, however, I think advisable to say a few words upon the mortality of ulcer of the stomach—a mortality due mainly to perforation, to hemorrhage, to inanition with some intercurrent acute illness, and to cancer supervening upon ulcer.

Some French observers have placed this mortality as high as 50 per cent., and this appears to have the support of Doyen, who quotes it in his book on the stomach. Others in this country and abroad have made a lower estimate, ranging from 20 per cent. down to 20 per cent. From my own observation, from information gained in conversation with others, and from medical literature, I have come to the conclusion that even 20 per cent. exaggerates the mortality of this disease, and I estimate that a mortality of 20 per cent. is nearer to the truth. I am confirmed in this opinion by the observations made by my colleague Dr. Russell upon cases treated in the General Hospital which he has traced some time afterwards.

One particular point which I wish to exaggerate as a cause of the mortality is the supervision of cancer upon simple ulcer. I have never seen a case myself in which this could be conclusively shown, and some search into medical literature convinces me that it is a rare sequence, which accords with what we observe in other similar conditions in the body.

It is important not to exaggerate the mortality of the disease under discussion, for if we do it creates a feeling of mistrust in the minds of physicians and practitioners which defeats the purpose we have in view, namely, that they will earlier seek the assistance of the surgeon in the treatment of ulcer of the stomach. Whilst it is easy to exaggerate the death-rate it is not so easy to overestimate the enormous amount of disability due to these ulcers.

With the diagnosis of gastric and duodenal ulcers I do not propose to deal at length, nor to differentiate between ulcer in the two situations; I should, however, like to say a very few words upon the question of hemorrhage in the diagnosis. This seems to be insisted upon as a sine quâ non by many physicians before they will accept the diagnosis of ulcer of the stomach, and yet experience shows that there are two possible fallacies.

It is certain that many severe stomach ulcers run their course without external evidence of bleeding, and this not only in the acute perforating variety of the anterior wall but in some of the ulcers which are chronic in their course and occupy other parts of the stomach. The converse is also true that we may get severe hemorrhage from the stomach which is not due to or associated with the lesion recognised as the round ulcer, but the cause of which is not yet absolutely indentified.

Attention has been called to cases of this kind, especially by my colleague, Dr. Stacey Wilson, by Dr. Hale White, and by Mr. Mayo Robson.

I propose to divide what I now have to say into two heads:
1. Conditions which may call for operation.
2. The methods by which surgery can hope to relieve and cure.

1. Conditions which may call for operation: (a) Fulminating hemorrhage; (b) recurrent hemorrhage occurring on several occasions; (c) ulcer in which hemorrhage is an unimportant feature, but in which pain, vomiting, loss of weight, and repeated inability to work are common features; (d) stenosis of the pylorus as shown by dilatation of the stomach and duodenum, and by the gastric stasis associated with the motility of the stomach or narrowing its outlet.

(a) It appears to me at present that there is little to encourage surgeons to operate for severe fulminating hemorrhages. On two occasions I have been tempted to intervene in such cases, but, whilst waiting during a few hours for some recovery, both my patients had a return of the hemorrhage and died. This has been the experience, I find, of other surgeons, and in some cases where operation has been attempted the source of the hemorrhage has been undiscoverable, and no good has resulted. I incline, therefore, to rely upon the known general efficacy of medical measures in such cases.

If a recurrent smaller hemorrhage surgery has, I believe, more benefit to offer, for immediate operation is not as a rule required, and the diagnosis of ulcer of the stomach as the cause of the hemorrhage is generally pretty clear. As justification for operation in these cases I may refer to the fact that there has been intercurrent interference with the patient's occupation, the state of anxiety in which he or she lives, and the diminished resistance to disease.

In contemplated operations in these cases we have different courses before us which we may pursue: we may either perform a gastro-jejunostomy, trusting to the rest from dis-tension of the stomach and from bruising from food, to allow the vessel which is bleeding to close and the ulcer to heal; or the ulcer may be directly attacked by excision or cauterity with or without a subsequent gastro jejunostomy. It is yet undecided which course is best to adopt, and I am certainly not in a position to speak dogmatically, but an experience of my own bearing upon this point is worth quoting. A man upon whom an operation of the aforementioned for gall stones was readmitted to the General Hospital in an extremely ill condition. At the first operation some years before, the gall stones which had been diagnosed were not removed, and the pylorus and adjacent parts, and when these adhesions were separated no explanation of their presence was discovered. The patient was under observation from time to time, and when readmitted was thin and emaciated, suffering great pain and quite cachectic in appearance. For this at first no explanation was forthcoming, but in the first action of the bowels which followed admission to the hospital a large quantity of altered blood was found. On further inquiry it was elicited that during the foregoing time there had been no vomiting of blood, yet similar altered blood had frequently been passed by the rectum. On reopening the abdomen and reseparating adhesions a hard based ulcer was found in the second portion of the duodenum. The patient's condition quite forbade the excision of the ulcer, and gastro-jejunos-tomy was therefore resorted to. A slow but excellent recovery followed, and there has been no return of the bleeding. It is evident, therefore, that gastro-jejunos-tomy alone may suffice for the relief of these cases of recurrent hemorrhage.

(c) This includes a very large number of cases in which the utility, or, perhaps I had better say, the advisability of operative interference is not yet definitely recognised. Operation, if it is to be resorted to, is required not for the relief from work than because of the mortality which the ulcer brings about directly. One of the difficulties in considering these cases is that the diagnosis from mere chronic dyspepsia, especially in nervous patients, is difficult to make, and perhaps can only be cleared up by an exploratory incision. If undoubted induration or thickening can be detected, then operation is the more called for.

(d) Stenosis of the pylorus, with dilatation of the stomach, vomiting of food taken some time before, and powerful peristalsis of the stomach recognisable through the abdominal wall forms altogether a clinical picture which is now readily recognised, and which is the clearest indication we have for surgical interference. We generally have a history of previous gastric ulcer to help in the diagnosis, and the only condition which is likely to be mistaken for pyloric stenosis is atomic dilatation of the stomach with propertis, due presumably in the main to gastric catharrh and associated with a marked neurotic temperament and general muscular feebility and malnutrition. It is hardly necessary to state that these latter cases are not to be treated on the same lines as those with pyloric stenosis. For this stenosis three operations have been suggested: the pyloromyotomy, and gastro-jejunostomy. I do not propose at this moment to discuss the merits of these further than to say that the first, in my opinion, should be discarded, and that whether the second or third should be adopted will depend upon the local condition of the pylorus.
pylorus. These may exist either in the form of broad bands very much tying down parts of the organs, or of narrower strips constantly adhesions. In the conditions we may either separate the adhesions, taking such precautions as we can to prevent their recurrence, a sequence not unlikely to occur, and which is apt to bring about disappointing results. Anyone attempting to divide and separate these adhesions must be prepared if occasion requires to excise the ulcer which lies at the base of them. As an alternative to the mere separation of adhesions, gastro-jejunostomy offers itself, and in some cases, I think, the operation of selection.

2. The methods of relief:
(a) Pylorodiosis, or Loretta's operation, was the first operation offered to us apart from pyloroplasty, and we shall always feel indebted to Loretta for his pioneer work in this direction. The operation consists in opening the stomach and stretching the strictured pylorus. It has, of course, the disadvantage that stretching of strictured passages has in other parts of the body—the liability to relapse. An experience of my own makes me chary of ever resorting to the operation again, because of the result which followed, which I will briefly relate. I operated upon a patient in the General Hospital under the care of my colleague, Dr. Saundby, with a typical example of pyloric stenosis, and its accompanying dilatation. The narrowing would only admit a No. 11 catheter, and the stricture was gradually stretched until it admitted the tips of two fingers. The patient straight away went to the bed and died within two days of a septic peritonitis, due to a perforation at the base of the coiled coats of its coats. No doubt in my anxiety to prevent recurrence of the narrowing, I had overstretched the tissues, but the surgeon will always be in this dilemma, of doing too little or too much stretching when employing this operation. In my opinion, therefore, Loretta's operation has been displaced by the next which I propose to consider.

(b) Pyloroplasty. This is an admirable operation in suitable cases of pyloric stenosis; that is, in stenosis which is not accompanied by any great thickening of the bands, shall occasionally simulate malignant growth; I do not think it a good operation when there is much adhesion over and around the pylorus binding the parts down. In simple uncomplicated stenosis I regard it as the operation of choice, less risky, probably, than gastro-jejunostomy, and acting directly on the lesion. It is, however, an operation inapplicable in the conditions described previously under the headings a, c, and d.

(c) Gastro-jejunostomy may be considered as follows:
1. Anterior or posterior.
2. Suture or apparatus.
3. Simple approximation or special approximation.

Personally, I have always performed anterior gastro-jejunostomy and never the posterior operation, and I am bound to say that I have often been tempted to resort to the anterior because of the frequent anxiety during the first few days following the anterior method, due chiefly to regurgitation into the stomach from the duodenum. No doubt this is to some extent to be controlled by the length of intestine intervening between the commencement of the jejunal and the anastomosis. It is also to be influenced by the position of the patient, but probably it is more depend upon the condition of the colon as to distension than upon any other factor. I think I shall be tempted in the future to employ the posterior method, but it must always be borne in mind that whether it be the anterior or the posterior methods shall be employed is not always under the control of the surgeon who may be compelled by adhesions or fixation to resort to one or the other of these methods according to the conditions found.

Whether simple suture or some form of apparatus shall be employed will depend, perhaps, to some extent, upon the experience of the individual surgeon. The tendency at present is to resort to the simpler method of suturing rather than to apparatus, but we owe a debt of gratitude to Senn, Murphy, Rokitansky, and others in providing means for the operation, which, at all events in the early days, encouraged surgeons to undertake it. Personally, I have generally used Murphy's button without any drawback, such as leakage around it or later ulceration, but in all cases the button has been retained, and this seems to be a general experience, but only rarely is there any ill result from the retention. My one fatal case after the use of the button was due to pneumonia and not to any fault of the apparatus, and the operation of anastomosis was completed in fifteen minutes.

In suturing, I have in the past used Halsted's interrupted suture for sero-muscular union with a continuous suture in all the other parts of the opening to stop bleeding, and for extra security, but in future I propose to employ the double row of continuous suture with occasional interruptions commended by Terrier and Hartmann.

The simpler the procedure in approximating the jejunum to the stomach the better in my opinion. If we resort to such a method as that of Roux, known as the "méthode-en-Y" by implantation, or to the valvular method introduced by Kocher, we undoubtedly run an increased risk of septic infection, and in some cases an additional risk of leakage afterwards. These observations do not apply to Doyen's method, and, as far as I know, his results are the best attained by the anterior approximation and by his special method of anastomosis, but they are not better than the results recently described by Mr. Mayo Robson with the posterior method, in which he uses the bone bobbin which he has devised. Study of the series of cases by posterior methods of the dozen surgeons, and the one into which we have—I quote from memory only—an exactly similar result. The curious thing is that the two operators who show this success have attained it by different methods—Robson by the posterior method and the use of his bone bobbins; Doyen, who has—had—indebted in the one, and the other.

It seems to me only possible to form the conclusion that one of the great factors in success is the experience of an individual operator in a particular method of operating. This is what has been observed in operative measures for other conditions.

The other great factor in success is the condition of the patients at the time of operation. If they come to us worn with ulcers of pain and indigestion, anemic, with hugely dilated stomachs, how can we expect to perform gastro-jejunostomy with a small mortality when the subjects are often obviously bad ones for any surgical procedure? History repeats itself. The mortality of colotomy twenty-five years ago was one hundred and three per cent of operations, with a mortality of probably not more than 5 per cent. Gastrostomy for stricture of the esophagus has a similar history. In both cases the greatly diminished mortality is due to the relief given by earlier operations. To what is the mortality of operation for gall stone due? Mainly to delay in submitting the patient to surgical measures. It is the mortality of delay—delay which brings about suppuration in the gall bladder, impaction of stone in the ducts, ulceration of the hepatic duodenal and cystic ducts, and this is with gastric ulcer and its complications and sequelae.

Discouraging as the earlier results of gastro-jejunostomy were, they must not be accepted as representing the present position of the operation. By improved methods of attaining asepsis, and by improvements in the technique of the operation itself, the mean mortality collected from various operators is now about 20 per cent. When gastro-jejunostomy is performed for ulcer and its sequelae. In the hands of individual surgeons who have had unusual experience of the operation, the mortality is considerably lower than this, and may be reckoned at something between 5 and 10 per cent. If we do not wish to labour this question of the mortality of the operation, I will quote the experience of my own case, by which it will be judged, for it has been placed beyond all question of doubt that the results in patients who recover are generally excellent; hemorrhage, pain, and vomiting are brought to an end, nutrition is restored, and the most valuable of all to the majority of people—the power to take part in the
affairs of life, called, when we are pessimistic, the struggle for existence; at other and more equable times valued as one the highest privileges of existence. The reduction of the mortality is, therefore, I submit, the great matter before us, and the main purpose I had in view in suggestion the subject for this discussion was that I would call the attention of different surgeons working on different lines we might formulate some more definite for future guidance, first, as to when, and, secondly, as to how to operate.

To conclude, I would like to bring some other matters to your notice. As regards the operation, I should like to say two words. First, as to the position for making the artificial opening. By von Haecker's posterior method, it is true that the opening is more dependent whilst the patient is at rest in bed, and the jejunum is not brought round the great omentum and transverse colon. But, on the other hand, it is an operation which involves a much greater exposure of the parts, and I think that in cases where the stomach is at all fixed and where it would be brought out of the abdomen it is the only method possible.

Mikulicz, after an extensive trial of von Haecker's method, has resorted to the anterior method. In the erect position of the patient the jejunal opening can be dependent upon it; by it as by the posterior method, and in my own gastro-jejunostomies I have never seen any kinking of the jejunal loop.

As regards the mode of union I have to say that the present method of union always employed Murphy's metallic button. It has, I know, disadvantages. The button frequently drops into the stomach. The opening made is necessarily a small one, and it may cause trouble in its passage down the intestine; but on the other hand it is a very rapid, simple, and easy method. There is little or no shock, and there is less liability to constriction of the artificial opening than after simple suture, because of the way the spaces between the jejunal and gastric walls have been de-}

affairs of life, called, when we are pessimistic, the struggle for existence; at other and more equable times valued as one the highest privileges of existence. The reduction of the mortality is, therefore, I submit, the great matter before us, and the main purpose I had in view in suggestion the subject for this discussion was that I would call the attention of different surgeons working on different lines we might formulate some more definite for future guidance, first, as to when, and, secondly, as to how to operate.

To conclude, I would like to bring some other matters to your notice. As regards the operation, I should like to say two words. First, as to the position for making the artificial opening. By von Haecker's posterior method, it is true that the opening is more dependent whilst the patient is at rest in bed, and the jejunum is not brought round the great omentum and transverse colon. But, on the other hand, it is an operation which involves a much greater exposure of the parts, and I think that in cases where the stomach is at all fixed and where it would be brought out of the abdomen it is the only method possible.

Mikulicz, after an extensive trial of von Haecker's method, has resorted to the anterior method. In the erect position of the patient the jejunal opening can be dependent upon it; by it as by the posterior method, and in my own gastro-jejunostomies I have never seen any kinking of the jejunal loop.

As regards the mode of union I have to say that the present method of union always employed Murphy's metallic button. It has, I know, disadvantages. The button frequently drops into the stomach. The opening made is necessarily a small one, and it may cause trouble in its passage down the intestine; but on the other hand it is a very rapid, simple, and easy method. There is little or no shock, and there is less liability to constriction of the artificial opening than after simple suture, because of the way the spaces between the jejunal and gastric walls have been de-}

affairs of life, called, when we are pessimistic, the struggle for existence; at other and more equable times valued as one the highest privileges of existence. The reduction of the mortality is, therefore, I submit, the great matter before us, and the main purpose I had in view in suggestion the subject for this discussion was that I would call the attention of different surgeons working on different lines we might formulate some more definite for future guidance, first, as to when, and, secondly, as to how to operate.

To conclude, I would like to bring some other matters to your notice. As regards the operation, I should like to say two words. First, as to the position for making the artificial opening. By von Haecker's posterior method, it is true that the opening is more dependent whilst the patient is at rest in bed, and the jejunum is not brought round the great omentum and transverse colon. But, on the other hand, it is an operation which involves a much greater exposure of the parts, and I think that in cases where the stomach is at all fixed and where it would be brought out of the abdomen it is the only method possible.

Mikulicz, after an extensive trial of von Haecker's method, has resorted to the anterior method. In the erect position of the patient the jejunal opening can be dependent upon it; by it as by the posterior method, and in my own gastro-jejunostomies I have never seen any kinking of the jejunal loop.

As regards the mode of union I have to say that the present method of union always employed Murphy's metallic button. It has, I know, disadvantages. The button frequently drops into the stomach. The opening made is necessarily a small one, and it may cause trouble in its passage down the intestine; but on the other hand it is a very rapid, simple, and easy method. There is little or no shock, and there is less liability to constriction of the artificial opening than after simple suture, because of the way the spaces between the jejunal and gastric walls have been de-}

affairs of life, called, when we are pessimistic, the struggle for existence; at other and more equable times valued as one the highest privileges of existence. The reduction of the mortality is, therefore, I submit, the great matter before us, and the main purpose I had in view in suggestion the subject for this discussion was that I would call the attention of different surgeons working on different lines we might formulate some more definite for future guidance, first, as to when, and, secondly, as to how to operate.

To conclude, I would like to bring some other matters to your notice. As regards the operation, I should like to say two words. First, as to the position for making the artificial opening. By von Haecker's posterior method, it is true that the opening is more dependent whilst the patient is at rest in bed, and the jejunum is not brought round the great omentum and transverse colon. But, on the other hand, it is an operation which involves a much greater exposure of the parts, and I think that in cases where the stomach is at all fixed and where it would be brought out of the abdomen it is the only method possible.

Mikulicz, after an extensive trial of von Haecker's method, has resorted to the anterior method. In the erect position of the patient the jejunal opening can be dependent upon it; by it as by the posterior method, and in my own gastro-jejunostomies I have never seen any kinking of the jejunal loop.

As regards the mode of union I have to say that the present method of union always employed Murphy's metallic button. It has, I know, disadvantages. The button frequently drops into the stomach. The opening made is necessarily a small one, and it may cause trouble in its passage down the intestine; but on the other hand it is a very rapid, simple, and easy method. There is little or no shock, and there is less liability to constriction of the artificial opening than after simple suture, because of the way the spaces between the jejunal and gastric walls have been de-}

affairs of life, called, when we are pessimistic, the struggle for existence; at other and more equable times valued as one the highest privileges of existence. The reduction of the mortality is, therefore, I submit, the great matter before us, and the main purpose I had in view in suggestion the subject for this discussion was that I would call the attention of different surgeons working on different lines we might formulate some more definite for future guidance, first, as to when, and, secondly, as to how to operate.

To conclude, I would like to bring some other matters to your notice. As regards the operation, I should like to say two words. First, as to the position for making the artificial opening. By von Haecker's posterior method, it is true that the opening is more dependent whilst the patient is at rest in bed, and the jejunum is not brought round the great omentum and transverse colon. But, on the other hand, it is an operation which involves a much greater exposure of the parts, and I think that in cases where the stomach is at all fixed and where it would be brought out of the abdomen it is the only method possible.

Mikulicz, after an extensive trial of von Haecker's method, has resorted to the anterior method. In the erect position of the patient the jejunal opening can be dependent upon it; by it as by the posterior method, and in my own gastro-jejunostomies I have never seen any kinking of the jejunal loop.

As regards the mode of union I have to say that the present method of union always employed Murphy's metallic button. It has, I know, disadvantages. The button frequently drops into the stomach. The opening made is necessarily a small one, and it may cause trouble in its passage down the intestine; but on the other hand it is a very rapid, simple, and easy method. There is little or no shock, and there is less liability to constriction of the artificial opening than after simple suture, because of the way the spaces between the jejunal and gastric walls have been de-
GASTRO-JEJUNOSTOMY.

MR. BIDWELL, Surgeon, West London Hospital.

The necessity for operation in cases of stenosis of the pylorus from cicatrization contraction does not now admit of discussion, the only point is that it should not be left till too late. This should not, however, to draw attention to a class of cases in which the dilatation is due to spasm of the pylorus, whether the result of gastric ulcer or not. In all my four cases an ulcer was present, but precisely the same condition may occur independently of ulcer. It is now, I think, generally admitted that the presence of a gastric ulcer, in whatever part of the stomach it may be situated, causes an increase in the amount of free hydrochloric acid in the gastric juice, and that this excess of acid can produce spasm of the pylorus. The continuance of the spasm is sufficient to cause the initial stage of dilatation, and when this has occurred, the inability of the stomach to empty itself causes decomposition of the residual contents with consequent chronic gastritis and further dilatation, which will continue even after the original spasm and its cause have passed off. This will explain those cases of so-called idiopathic dilatation of the stomach, where there is no cicatrization contraction of the pylorus, and where at an operation only a cicatricised ulcer in some remote part of the stomach is found.

Of course it is a difficult matter to decide when an operation should be done in cases of gastric ulcer; much depends upon the surroundings of a patient—whether in comfortable circumstances, medical treatment which will probably be effective in the original number of cases, but amongst hospital patients who cannot lie up, and who are unable to take proper precautions as regards diet, a gastric ulcer is frequently incurable without operation. I have found that the operator should not hesitate to submit a patient to operation than to undergo two or three weeks starvation and nutrient feeding. The class of case in which I recommend operation is one in which there is considerable and long-standing dilatation and pain, which is not relieved by medical means, including lavage, and in which an excess of free hydrochloric acid is found in the stomach contents; more especially in a case where the symptoms abate after hospital treatment, but recur immediately the patient leaves the hospital.

The choice of operation rests between gastro-enterostomy, pyloroplasty, and digital dilatation of the pylorus. In cases where the operation is undertaken during actual ulceration, I prefer a gastro-enterostomy when the ulcer is situated close to the pylorus, and a pyloroplasty when the ulcer is situated in a distant part of the stomach. When the dilatation has been caused by spasm of the pylorus, and is not of long standing, and especially when the contraction of the pylorus is not considerable, a cure may be effected by dilating the pylorus by invaginating the anterior wall of the stomach through the pylorus with the finger. It is wonderful how small a pylorus can be dilated by this method. I have done this operation in two cases with success. When the stenosis is considerable and the pylorus is practically replaced by cicatrictial tissue, I do not think that either digital dilatation or pyloroplasty should be performed, but that gastro-enterostomy is the best operation.

Although last year I spoke strongly in favour of pyloroplasty, my views have been rather modified by seeing a lady who had undergone the operation of pyloroplasty a year before, and in whom the dilatation of the stomach had recurred. On exploring the abdomen, the operation of pyloroplasty had contracted so much that a probe could scarcely pass through it; accordingly I performed a gastro-enterostomy with a successful result. One alleged objection to pyloroplasty is that vanishing of the antrum which is a real one, is that in cases of long-standing dilatation the new opening will not be at the lowest point of the stomach, and so the organ will not empty itself.

With regard to the technique of gastro-enterostomy, at first I employed the procedure of Halsted; in the belief that the anastomotic opening would be at the lowest point of the stomach; as a matter of fact, however, after an anterior operation, if the opening has been made near to the lower border of the stomach, the anastomosis, being movable, will become the lowest point of the stomach by dragging the anterior wall of the organ downwards; on the other hand, the posterior anastomosis being fixed to the transverse mesocolon, will not be the lowest point of the stomach in the erect position when the organ is distended; I found this point pretty clearly demonstrated in a case in which I performed a second operation. My last eight cases have been done by the anterior method, care being taken to attach the jejunum in a slanting direction to the inferior wall of the stomach and to ensure that the gastric contents shall enter into the efferent portion of the gut; I also encourage the patient to sit up at an early period. In performing the anastomosis, I have used not slightly omentum but the method recommended by Halsted; in no case has there been any leakage at the anastomosis. I should like to enter a protest against the use of Murphy's button in gastro-enterostomy, since under the anterior operation be performed, it is almost certain the button will back into the stomach, and I have myself seen several subsequent operations undertaken for the removal of the retained button; in a case of active ulceration, it is difficult to imagine anything more likely to irritate the ulcer than a Murphy's button being continually churned against it. Finally, I do not think that the opening left after a button is so large as that left after a Halsted's operation.

Results: The mortality after operations in these cases varies between rather wide limits, namely, between 5 and 20 per cent. in my cases and between 20 and 25 per cent. in the cases of other observers. When comparing the mortality after operation with that of gastric ulcer generally, I think we must remember that a considerable number of cases, discharged by the physicians, are not cured; thus we may reckon that the mortality of the cases operated upon is probably not more than 2.4 per cent. still a further 21.6 per cent. of the cases were not cured.

With regard to the subsequent results of these operations I will briefly refer to those cases which have been operated upon during the last six years. One case of Loretta's operation, performed six years ago, is still quite well, and has had no further dilatation of the stomach, nor any pain. Of the four cases of pyloroplasty...
Table of 14 Cases of Pyloric Stenosis.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Name</th>
<th>Age</th>
<th>Oper.</th>
<th>Disease</th>
<th>Operation</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan. 3, 1897</td>
<td>Mrs. M</td>
<td>30</td>
<td>W. L. H.</td>
<td>Gastro-enterostomy</td>
<td>Gastro-enterostomy</td>
<td>R</td>
<td>Vido No. 5</td>
</tr>
<tr>
<td>2</td>
<td>June 4, 1897</td>
<td>Mr. Thos. S.</td>
<td>50</td>
<td>W. L. F.</td>
<td>Celiac stenosis of pylorus</td>
<td>Separation of adhesions</td>
<td>C</td>
<td>Vido No. 1</td>
</tr>
<tr>
<td>3</td>
<td>Oct. 24, 1897</td>
<td>Mrs. E.</td>
<td>60</td>
<td>W. L. H.</td>
<td>Celiac stenosis of pylorus</td>
<td>&quot;</td>
<td>C</td>
<td>&quot;</td>
</tr>
<tr>
<td>4</td>
<td>May 13, 1899</td>
<td>Mrs. M.</td>
<td>70</td>
<td>W. L. H.</td>
<td>Spasm of pylorus and gastric ulcer</td>
<td>Celiac stenosis from adhesion to gummum of liver</td>
<td>C</td>
<td>&quot;</td>
</tr>
<tr>
<td>5</td>
<td>Jan. 30, 1899</td>
<td>Mrs. G.</td>
<td>80</td>
<td>W. L. H.</td>
<td>&quot;</td>
<td>Celiac stenosis after pyloroplasty</td>
<td>C</td>
<td>&quot;</td>
</tr>
<tr>
<td>6</td>
<td>May 15, 1900</td>
<td>Mr. A. V. K.</td>
<td>90</td>
<td>W. L. H.</td>
<td>Large ulcer of stomach; spasm of pylorus</td>
<td>Gastro-enterostomy</td>
<td>R</td>
<td>Vido No. 5</td>
</tr>
<tr>
<td>7</td>
<td>Oct. 10, 1900</td>
<td>Mrs. P. F. S.</td>
<td>100</td>
<td>W. L. H.</td>
<td>&quot;</td>
<td>Ditilation by invagination</td>
<td>C</td>
<td>Described</td>
</tr>
<tr>
<td>8</td>
<td>Oct. 12, 1900</td>
<td>Mr. H.</td>
<td>110</td>
<td>W. L. H.</td>
<td>&quot;</td>
<td>&quot;</td>
<td>C</td>
<td>3 weeks later</td>
</tr>
<tr>
<td>9</td>
<td>Feb. 22, 1901</td>
<td>Miss R.</td>
<td>120</td>
<td>W. L. H.</td>
<td>&quot;</td>
<td>Gastro-enterostomy</td>
<td>R</td>
<td>Died 3 weeks later</td>
</tr>
<tr>
<td>10</td>
<td>April 2, 1901</td>
<td>Mrs. C.</td>
<td>130</td>
<td>W. L. H.</td>
<td>&quot;</td>
<td>Gastro-enterostomy</td>
<td>R</td>
<td>Died 3 weeks later</td>
</tr>
<tr>
<td>11</td>
<td>May 6, 1901</td>
<td>Mr. D. B.</td>
<td>140</td>
<td>W. L. H.</td>
<td>&quot;</td>
<td>Gastro-enterostomy</td>
<td>R</td>
<td>Died 3 weeks later</td>
</tr>
<tr>
<td>12</td>
<td>Dec. 20, 1900</td>
<td>Mr. M.</td>
<td>150</td>
<td>W. L. H.</td>
<td>&quot;</td>
<td>Gastro-enterostomy</td>
<td>R</td>
<td>Died 3 weeks later</td>
</tr>
<tr>
<td>13</td>
<td>Feb. 28, 1901</td>
<td>Mr. M.</td>
<td>160</td>
<td>W. L. H.</td>
<td>&quot;</td>
<td>Gastro-enterostomy</td>
<td>R</td>
<td>Died 3 weeks later</td>
</tr>
</tbody>
</table>

described last year, two have remained perfectly well, a third suffered from pain after food for a few months after the operation, but is now quite well, while the last case, in which the operation had been performed in consequence of the obstruction of a previous gastro-enterostomy, again developed dilatation of the stomach, and after reopening the abdomen the trouble was found to be due to adhesions between the stomach and the abdominal wall, these were divided and a flap, dissected from the parietal peritoneum, was sutured over the raw surface of the stomach; the case has since done well.

In only one case was gastro-enterostomy for gastric ulcer performed previous to 1900, and in this case the dilatation returned after two years good health.

IV.—Sinclair White, F.R.C.S.,
Surgeon, Sheffield Royal Hospital.

Mr. Sinclair White said: My experience extends to seven cases and eight operations for non-malignant pyloric obstruction. All were chronic cases of many years duration, and two of them had suffered from gastric tetany of the vomiting type. Pyloroplasty was performed on two patients in one with complete success and in the other with failure to relieve the symptoms, the cause of failure being a rudimentary duodenum which barely admitted the tip of the finger after the bowel had been slit up for 1¾ inches. Gastro-jejunostomy was resorted to six times, one of the cases being the unsuccessful pyloroplasty. All six recovered from the operation and were greatly benefitted. The anterior method of implantation was adopted in every case, and in two patients whose condition was critical and the time element of importance the anastomosis was effected by the aid of a Murphy's button, which was not subsequently recovered in either case. In four cases the anastomosis was made by simple suturing, each operation, in its entirety, occupying one hour, while the button cases were completed in half this time. Where the pylorus is the seat of an annular constriction without much thickening, and where with this condition it is possible to bring the pyloric end of the stomach and the commencement of the duodenum outside the abdominal wound, pyloroplasty is and must remain the ideal operation.

On the other hand, experience has shown that it is quite inapplicable to some forms of pyloric obstruction, such as kinking from intractable adhesions and deformed conditions of the duodenum, while in a still larger group it is difficult to perform and liable to be followed by relapse. Gastro-jejunostomy—and it is only with this pyloroplasty that company is applicable to every case of pyloric obstruction, can always be effected through healthy tissues, with the parts concerned withdrawn from the abdomen and carefully isolated from the general peritoneal cavity by suitably-placed gauze, gives quite good results when successful, has fewer failures and no higher death-rate than pyloroplasty, and for the majority of cases of pyloric obstruction is the better operation.

V.—C. A. Morton, F.R.C.S.,
Professor of Surgery, University College, Bristol; Surgeon, Bristol General Hospital and Bristol Royal Hospital for Sick Children and Women.

Mr. Morton said that although he had only one case of gastric ulcer to bring forward in connection with the discussion, the benefit from gastro-jejunostomy had been so striking that he thought it was worth recording. For seven years a man, aged 42, had suffered from symptoms of gastric ulcer. Months of gastric pain and vomiting had alternated with months in which only a little pain had been present. Hematemesis first occurred five years ago, and twice since. The patient had been greatly emaciated and quite unable to carry on his business. He had had the best possible treatment short of operation, for he had been under the care of a physician in a large hospital. Mr. Morton found an ulcer involving the lesser curvature and posterior aspect of the stomach, too large to resect, and did posterior gastro-jejunostomy with Murphy's button. The patient made a good recovery from the operation, and now, eighteen months after the operation, had no return of his gastric symptoms.

VI.—Rutherford Morison, F.R.C.S.,
Surgeon, Newcastle Infirmary.

Mr. Rutherford Morison said that Mr. Gilbert Barling's views were so entirely his own that little had been left for him to say. In stating the causes of death in gastric lesions, Mr. Barling had omitted mention of sudden heart failure. Dr. Bramwell's case related the previous day died suddenly. Mr. Morison had performed pyloroplasty 22 times before any death occurred from the operation; but 2 of his patients, so far as could be judged in no way worse than many others, suddenly died the day before that fixed for operation—a fortunate experience.

The question of when and how to operate in gastric hemorrhage was a difficult one. In an ordinary septic wound, such as a gastric ulcer might be, if bleeding occurred a serious state of matters was suggested. If bleeding recurred a radical attempt for its arrest was demanded. That rule did not apply to gastric hemorrhage, but why it did not was difficult to say.

Mr. Angus, his colleague, who had operated with success, concluded that if after vomiting a quantity of bright red blood (showing lesion of a large vessel), as soon as the patient was recovering from shock more bleeding took place, the stomach should be opened without delay, and the bleeding area, if possible, dealt with by ligature. This was the only useful suggestion he had heard of, but it was not always easy to effect. In such a case one had opened the stomach freely, and failing to find the bleeding point had done pyloroplasty. The patient did well for two days, then died of perforation peritonitis. Post-mortem examination showed two small ulcers the size of threepenny-pieces, one of which had perforated: both were in the posterior wall of the stomach, near the cardiac orifice, and they were practically inaccessible. Everyone, he thought, would accept the conditions laid down as calling for operation.

He was interested to hear from Mr. Barling of the case in which a diagnosis of gall stones had been made so definitely that operation was undertaken, for he had met with similar mistakes. He thought from examination during operation that patients with these symptoms had an active ulcer at the pyloric orifice which was sufficiently obstructed to produce hypertrophy of the stomach walls and contraction rather than dilatation of its cavity.
With regard to adhesions as a cause of symptoms he entirely agreed with Mr. Barling that operations for their relief were likely to be disappointing. Some cause for them—usually gall stones or gastric ulcer—should be looked for, and when found dealt with, otherwise the operation should be regarded as incomplete.

With regard to dilatation of the pylorus he agreed with Mr. Barling that the operation from within had served a useful purpose, but was now obsolete. If any operation was required the stomach should be opened to allow of examination of its interior, and the propriety of pyloroplasty or gastro-jejunostomy should then be determined upon.

With regard to the choice of an operation his feeling was even more in favour of pyloroplasty than that expressed by Mr. Barling, for the special danger of gastro-enterostomy, regurgitation of intestinal contents into the stomach, with some form of toxemia, made him chary of performing it unless this was unavoidable. So strongly had this factor, which made the result independent of the operator, impressed him that he had invented an operation to overcome it. This

had been successful so far as regurgitation was concerned, but was followed by a high mortality from shock (3 cases, 4 deaths). He had not found that either anterior or posterior operations escaped regurgitation, and it had occurred to him after the use of buttons, plates, and sutures, so that he avoided gastro-jejunostomy when he could. His preference was for sutures, and he thought the most simple and sure was of his own invention—namely, a continuous suture through all the coats inside and an interrupted suture of Lembert sutures outside, both of catgut.

Mr. Bush expressed the opinion that the operation of simply stretching the pylorus would gradually be less frequently performed. In the case of gastro-jejunostomy which he had performed he had chosen the posterior operation, although it took considerably more time than the anterior. He did not advocate the use of Murphy's button in cases where there was ulceration of the stomach. He attached great importance to early operation.
The great difficulty is to get the operation done soon enough. The accident is often rapidly fatal, and several times I have been called in to find the patients dying or dead; and it is quite a common accident, though I feel sure that with greater promptitude and decision many lives might have been saved and many will be hereafter.

The operation is to be paid to be properly established as yet, though it is high time that it should be. The British Medical Journal contained no cases of the kind in 1838, and only two by Mr. Robert Jones, of Liverpool, in 1899. One of these, done three hours after the accident, was the other, done fourteen hours afterwards, was unsuccessful. The whole of 1900 supplied only 4 cases to the Journal, three of them by Mr. Lace, of Bath, and all happily successful. No doubt there have been many other cases that have never been published, and in fact I know of at least a dozen. Taking the surgery of the whole world for 1897, as detailed in Hildebrand's Year Book, I find only 18 cases, 12 successes and 6 deaths. The most remarkable of this series are the three cases of Le Dentu, who finding twice that his stitches would not hold contented himself with simple tamponning and draining, and saved both his patients, losing in fact that one only where the stitches did hold, and in which he consequently closed the wound. This tallyes with analogous experiences of my own, where meeting with peritonial and intestinal perforation I have kept a large wound open, and have been more than once rewarded by perfect, if slow, recovery. There seems to be a common idea that gastric perforation is specially common behind. The truth is that ulceration is specially common behind, but not perforation. According to Brinton 70 per cent. of the perforing ulcers are in front, 21 per cent. near the lesser curvature, and only 9 per cent. behind. It will be conceded that ulceration of the stomach is very common. Mr. Walters writes that he has seen 1000 cases in the last ten years, and twice as many women with it as men. These figures agree with those of Brinton, though Crisp gives the proportion of women as three to one, and Willigk as six to one. The mortality of von Leube's cases was slightly over 2 per cent., rather under 1 per cent. from bleeding, and rather over 1 per cent. from perforation. Willigk gives the mortality as 3 per cent. (308 cases), and Dr. Walter Broadway 4 at 6 per cent. (also from 308 cases). We may say, therefore, that the mortality of gastric ulcer varies from 2 to 6 per cent., the latter being a formidable figure.

Certainly perforating cases are quite numerous and the object of this paper is to urge that not one of these should be allowed to sink without an effort being made to save it. In my presidential address to our local branch not long ago I wrote, "We must not, if we can help it, allow any more of our patients to die of perforated gastric ulcer," and it is a matter of great satisfaction to me to think that this was not long afterwards permitted to practise my own precept.

In case of doubt a careful incision can do no harm and will probably relieve pain, even if no perforation is found, and I have twice known such a diagnostic incision made and no harm was done, though unperforating ulcers were located in both instances.

If an operation is done the patient's chances are really excellent. Summing up all the cases and tables known to me they yield no fewer than 41 recoveries in 110 cases, or rather less than 2 in 5. If we in Gloucestershire have operated on 4 cases in between two and three years and saved 2 of them, we may very fairly say that there are many more cases occurring every year than the British Medical Journal gives us any cognisance of, which are either overlooked or left to take their chance, through the mistaken fear that the operation is difficult or dangerous. Only delay is dangerous and simple incision and gauze packing, if nothing more can be effected, must save many a life, and it is in the hope that our recent experience in Gloucestershire may encourage country members to go and do likewise that I have contributed this short paper.

Since writing the preceding I have been at pains to inquire as to the date of the operation, for the first, common supposition was that local removal of the disease was out of the question, but I regarded the case as one favourable for this purpose by oophorectomy. On asking the patient's age and the absence of any apparent visceral complications. After full consideration of the matter by the patient and her immediate relations the operation of the treatment was proposed, it was decided by her to undergo the operation, which was done on October 8th, immediately after a menstrual period. Both ovaries were found to be cystic.
At the operation a small portion of the breast tumour was removed and microscopic examination showed it to be an actively growing carcinoma. The patient made a good recovery from the operation, and was fit for dietetic treatment. This was of the utmost importance, and was completed the following week, and was maintained for a further three weeks. The results of this treatment were excellent, and the patient made a rapid recovery.

In conclusion, it should be noted that the combination of surgery and dietetic treatment is of great importance in the management of mammary cancer. The results obtained in this case are a good illustration of the value of this approach, and it is to be hoped that other similar cases will be reported in the future. The information contained in this case report is of great value to those engaged in the study of mammary cancer, and it is to be hoped that this report will be of assistance to others in the management of similar cases.
has been a difference of opinion as to its employment. Some favour it, others regard it as deleterious. I admit its administration is founded on theoretical grounds, but clinically I think the evidence is in favour of it, and I believe I have seen its value in cases where it was given without oophorectomy having been done. Everyone cannot take it, but in the large number where it is well borne it powerfully affects the metabolism generally of the body cells, raising their tone and improving their vigour, while it acts, of course, on the lymphatic system, lessening the chances of dissemination by it. I have tried it in doses as large as 250 grs. daily, but I have not observed any special benefit from such large quantities, and I prefer to give it in small doses, gradually increased, until 15 grs. are taken daily.

I now come to the very important question as to what class of cases of mammary carcinoma are benefited by oophorectomy and thyroid, for the experience of five years has shown that while in some patients very decided improvement and benefit have followed, in a good many others little or no effect has been produced. From what I have seen in my own work and from the cases of others I am quite sure that the ultimate result depends on the existence or non-existence at the time of the operation of secondary organic metastatic deposits. If lungs, liver, or any other organ have become the seat of a secondary growth, I do not think that oophorectomy and thyroid will influence the progress of that secondary deposit. Sooner or later a fatal issue will be reached and eventually to such an extent as to completely overshadow any beneficial effects of the oophorectomy on the local disease. One rule, then, that I think should be laid down is that the operation of oophorectomy is not advisable in cases where secondary organic deposits are present or suspected. It may be said that this limitation in operating is a serious drawback, as it may be impossible to detect secondary deposits in a very early stage. I grant that, but the same objection may be urged against the ordinary recognised operation of primary removal of the mamma. Who can foretell with certainty beforehand what cases are free from early secondary organic mischief, let the local conditions be as favourable as could be wished? Every surgeon will admit that this is the unknown factor with which he has to contend, and that controls the ultimate success of many of his operative work. As regards, then, the chances of permanent cure, oophorectomy and the ordinary operation for local removal are very much on the same footing. At the same time, aware though the surgeon may be of the possible danger of early secondary infection, if careful examination does not reveal its existence, he very properly gives his patient the benefit of that extensive local removal that is the leading principle of the operative treatment of mammary cancer in the present day. And, this area of operative measures is widening year by year, so that at the present moment Halsted's most recent operation for follow up and completely eradicating mammary carcinoma occupies several hours. This shows that he has not been satisfied with the results of his previously recommended procedure; and it is very generally admitted that its harmful effects will be felt, while the cases treated have been marked by an absence of local recurrence, they have also been distinguished by a heavy mortality from subsequent visceral complications. No doubt this extension of the field of operation is the logical outcome of our improved surgical technique, and is also founded on the teaching that, laid down by Banks in 1882, that, if carcinoma is a local disease, the only hope of success in mammary cancer lies in a "clean sweep," not only of the mamma, but of the adjacent auxiliary glands, whether distinctly enlarged or not. I am not going to take up the debatable question as to whether surgery is or is not a cure for cancer. All of us will admit, I think, that our chief difficulty in an operation is to get beyond the disease, and that our main anxiety is about the existence of secondary deposits, for we are utterly ignorant in every case as to whether or not cells have hived off even in the very earliest stage of the growth to declare their existence afterwards when everything else is promising well. And, we may add, too, that at least our operative measures in many a way favour cell dissemination by the opened lymphatic spaces and severed blood vessels that must necessarily exist in the wound, and by the increased vascula-
tory and cell activity that may take place in the reparative process. This latter possible source of danger is not present in the treatment by oophorectomy.

Before closing this communication, I am anxious to ask from you an expression of opinion as to what I consider a very crucial point. From what I have told you of my own experience and that of others of the ability of oophorectomy and thyroid to remove carcinomatous tissue in the mamma, in the skin, and in the lymphatic glands—an experience now confirmed by a considerable number of cases—do you consider that sufficient evidence has been furnished to justify the adoption of this procedure as a primary method of treatment in the early stages of mammary carcinoma, either by itself or in conjunction with the present recognised operation? Personally I think the time has come to raise this question. Up to the present I have loyally carried out the teaching of the profession, and have only adopted the oophorectomy and thyroid plan in inoperable cases. Even in these cases, as has been shown you, it has accomplished some remarkable results. Is it unfair to argue that in more favourable cases it would do still more? I feel the responsibility of deciding a matter in which I may naturally be regarded as having a bias, and therefore any appeal to you must be made on a point that intimately concerns the interests of a large class of sufferers.

Mr. Gilbert Barling said that he had not yet performed this operation. He did not think that the time had come when it could be legitimately substituted for the ordinary operative procedure. It did not seem to him that the ovaries had any special influence on carcinoma of the breast, and that favourable results were probably attributable to a general increase of tissue resistance following in some unexplained way their removal.

Mr. R. C. Chicken strongly upheld the value of the procedure in some cases of mammary cancer. He narrated instances in which he had observed its success. He suggested that the experience gained up to the present was sufficient to justify a recommendation of removal of the ovaries coincidentally with the primary growth, and that oophorectomy, once decided upon, as hitherto, be confined to those cases considered otherwise inoperable.

Mr. McAdam Eccles thought that there were two principal conditions in which the operation should be proposed; first, cases of inoperable mammary carcinoma; and, secondly, where there were secondary but not yet local growths. He asked whether in Dr. Beacons opinion it was likely to be beneficial in cases where there was glandular infection within the thorax. He did not think that there was any certainty of result in any given case, but undoubted cases of cure were on record, and the public were becoming aware of
the occurrence of these. He thought that oophorectomy was more likely to be of benefit before than after the menopause.

In his own cases he had not found any microscopical changes of significance in the ovaries removed.

Mr. Harold Stiles desired to thank Dr. Beatson for the very fair and temperate manner in which he had placed his results before the profession. He considered that the further results related by Dr. Beatson, and others, were sufficiently encouraging to warrant surgeons in recommending oophorectomy as a method of recognised value in inoperable cases of mammary cancer, especially before the menopause. He had also been impressed with the privilege of seeing a microscopical section from the case narrated by Dr. Beatson and of its carcinomatous nature there was no doubt. The further history of the case would aid in answering the question as to whether or not the time had come to recommend oophorectomy plus the ordinary operation in the early stages of the disease. It was impossible to say in any case whether the disease had already extended beyond the reach of the knife, and if oophorectomy influenced secondary growths in the glands and internal parts, it ought to be recommended in both operable and inoperable cases, so called.

Mr. Rutherford Morison related the histories of two cases which he thought were evidence against Dr. Beatson's theory. He had operated on a patient who had had her right breast twenty-five years before, had had an operation performed by Mr. Teale in Leeds for "ovarian tumours." Previous to this she had had children, but since the operation she had had no more children nor had she menstruated. A second patient on whom he operated, a woman of fifty, had been operated on five years previously for cancer of the breast. Along with Dr. George Murray he had recently had a case which strongly supported Dr. Beatson's practice, and he thought that surgeons should be guided in this matter by Dr. Beatson's advice.

Dr. Beatson, in reply, quite agreed with the remarks of the Vice-President (Mr. Barling) and of Mr. Stiles on the value of tissue diagnosis in cancer. He had not grown so far as to advocate the administration of thyroid extract, a substance which undoubtedly affects the metabolism of the tissues, and gave tone to the body cells. The value, in his opinion, of these undoubted cases of mammary cancer that had been benefited in so striking a manner by oophorectomy and thyroid extract lay in the bearing they had on the etiology of the disease. They seemed to point to ovarian influence as a cause of carcinoma in the female. The cases quoted by Mr. Morison were not, in his opinion, reliable evidence against this view. The first one was very indefinite and incomplete. In the other, the occurrence of mammary cancer six years after removal of diseased ovaries might simply have been a secondary manifestation of primary malignant disease existing at those organs but not recognised. As regards disappearance of malignant disease in the mediastinal glands, to which Mr. Eccles referred, he had seen one case in which that seemed to have taken place, and as it could happen in the axillary and other glands, there seemed no reason why it should not also happen there. He had only had a limited experience of oophorectomy in cases after the menopause, and no marked beneficial effects had been observed in the cases so treated. He was glad to have such a decided expression of opinion from Mr. Chicken, Mr. Stiles, and others to the effect that there was sufficient clinical evidence to justify a primary combined operation of local removal and oophorectomy in mammary carcinoma.

AMPUTATION OF LEG FOR SENILE GNARLENE.

By James Rankin, L.F.P.S.G., L.M.,
Kilmarnock.

I wish to record a case of amputation of the right leg at the knee for senile gangrene in a patient 72 years of age. The operation was completely successful, and the patient recovered with unexampled rapidity. A. R., aged 72 years, pattern maker, a man of thin, spare habit, consulted me in December, 1900, for what he considered an in-growing toenail of the right great toe, and thought of particular about the part to cause so much pain as the patient complained of.

In the beginning of January a spot appeared on the top of the toe, of a somewhat bluish, suspicious-looking appearance. Appropriate treatment was administered, and attention was paid to the general state of the body which appeared to be somewhat run down. The patient had a great deal of trouble at work, but had only been in the toe that slept began to interfere with; by the end of January he was completely knocked off work. The bluish condition of the toe began to spread rapidly, till the whole toe was involved both anteriorly and posteriorly, the foot became considerably swollen, and later the toe next to the ulcerated area was involved. Profuse gangrene made rapid progress notwithstanding every effort which was made to stop it. At this stage of the disease consultation was held with Dr. Williams, who suggested the operation of some active treatment in the form of an operation. At first we considered to amputate the part which might have been but the seat of the disease, but we found that the disease was making rapid advances, so much so that we considered if anything was to be done it would require immediate action.

The patient and friends were consulted, and the matter was ultimately left in the hands of the patient, but the disease was then turned to making a bold effort to build up the wasted state of the man's body, which from want of sleep, want of food, and severe suffering from the pain of the dying part, was by this time nearly spread over the half of the foot. Consultation was again held, and an amputation was decided on for April 1. Final arrangements were entered on, and the patient and friends then warned as to the very serious risk of amputation at the right knee-joint by Stephen Smith's operation of disarticulation at the knee by lateral flaps. I was assisted by Dr. William McAlister at the operation, and Dr. John Laurie acted as chloroformist. I must also acknowledge the very excellent assistance both at the time of the operation, and subsequently all through the dressing, and attention by two of the Queen's nurses—Miss Palton and Miss Miller—who were exceedingly attentive to the patient.

The operation consisted in disarticulating the joint; the flaps were hoisted over this part and closed, and the foot was closed so as to have the cicatrix lying between the prominences of the condyles and out of the way of pressure. The only variation which had to be made was subcutaneous section of the patella tendon on account of retraction of the muscles causing a curling up of the foot over the knee. The dressing changed in forty-eight hours to the caked boric acid, and at the end of a week for the removal of epidermal scales which had gathered round the edge of the wound. The most important thing was that hardly any trace of pus was observable, as everything was absorbed by the constant application of boracic acid. Third and last change was made at the end of the second week, when the sutures were removed and the wound was found completely healed. Meanwhile, the old man's health began to improve; his appetite increased; he became more natural; during the whole time, both at the operation and subsequently, the patient was not laid up a single day. In May, I think, 6th, the stump was healed completely, and the patient was able to be up, sitting at the fireside nearly the whole day; the result of the operation in a very dear part, was that the old man being a practical man, he began to lift himself off the floor, and his weight was so much that he was able to support his weight upon the sole of the foot, and go about, and the old patient is able to support his weight upon. The old man being a practical man, he began to lift himself off the floor, and his weight was so much that he was able to support his weight upon the sole of the foot, and go about, and the old patient is able to support his weight upon it as soon as he can get it ready for amputation at the right knee-joint by Stephen Smith's operation of disarticulation at the knee by lateral flaps. I was assisted by Dr. William McAlister at the operation, and Dr. John Laurie acted as chloroformist. I must also acknowledge the very excellent assistance both at the time of the operation, and subsequently all through the dressing, and attention by two of the Queen's nurses—Miss Palton and Miss Miller—who were exceedingly attentive to the patient.

The salient points in the case may be summed up as follows:

1. The usually fatal result of senile gangrene and the ill-success of attempts at a cure or even palliative treatment.

2. The age. When the operation was attempted the man was in his 72nd year and not possessed of the usual recuperative powers which might be expected in a person of younger years.

3. The result: An excellent stump. The prospect of the man going back to his work, and, according to his own testimony, that he had not been so well for at least ten years as he now was.

4. The value of antiseptic treatment: hardly a drop of pus was present through the whole treatment, consequently there was very little loss of tissue or of strength in the patient.

NOTES ON THE AFTER-HISTORY OF A SERIES OF CASES OF PYLOROPLASTY FOR PYLORIC STRICURE AND ULCER.

By Rutherford Morison, F.R.C.S., Surgeon, Newcastle Infirmary.

Pyloro-plasty has, in my experience, been the most satisfactory operation in abdominal surgery. Taking into consideration the feeble condition of the patients, the mortality of the operation has been less than that of any other, and the results, immediate and remote, are equally successful.

With this in view, it is not unnatural to the present condition of my first 20 cases operated upon. The first was done six years and eight months and the last two years ago. These inquiries show that 14 of the patients are in good health and take ordinary food; I cannot be found, but was well when last seen; 2 are dead; and 3, though much improved, still have occasional stomach troubles.
### Summary of the Results of Twenty Consecutive Cases of Pyloroplasty at Periods varying from Six Years and Eight Months to Two Years after Operation.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lancet, Feb. 26th, 1898 (Case 1)</td>
<td>M.</td>
<td>Very thin and ill; frequent vomiting; after much pain</td>
<td>Stomach dilated; lump at pylorus</td>
<td>5 7 5 years</td>
<td>Oct. 16, 1894</td>
<td>Perfect health</td>
<td>5 10 7 6 years, 8 months</td>
<td>Good; none of old symptoms; takes ordinary food.</td>
</tr>
<tr>
<td>2</td>
<td>(Case 2)</td>
<td>M.</td>
<td>Thin; frequent vomiting; pain</td>
<td>Stomach dilated; indefinite mass at pylorus</td>
<td>8 12 8 years</td>
<td>Oct. 17, 1895</td>
<td>Good health; an alimentation trouble</td>
<td>7 11 5 years, 3 months</td>
<td>Fairly good; none of old symptoms; takes ordinary food.</td>
</tr>
<tr>
<td>3</td>
<td>(Case 3)</td>
<td>M.</td>
<td>Thin; frequent vomiting; pain</td>
<td>Stomach dilated; indefinite mass at pylorus</td>
<td>7 6 3 years</td>
<td>Jan. 3, 1896</td>
<td>Good health; none much trouble</td>
<td>11 5 0 years, 5 months</td>
<td>Good; none of old symptoms; takes ordinary food.</td>
</tr>
<tr>
<td>4</td>
<td>(Case 4)</td>
<td>F.</td>
<td>Very thin and vomiting and pain</td>
<td>Enormous distension of stomach, tumour at pylorus</td>
<td>5 7 14 months</td>
<td>April 13, 1896</td>
<td>Perfect health; can eat anything</td>
<td>11 5 0 4 years, 10 months</td>
<td>Good; none of old symptoms; takes ordinary food.</td>
</tr>
<tr>
<td>5</td>
<td>(Case 5)</td>
<td>M.</td>
<td>Very thin; vomiting frequently; severe pain</td>
<td>Stomach dilated; small nodule felt</td>
<td>6 4 2 years</td>
<td>Aug. 11, 1896</td>
<td>Excellent health; can eat anything</td>
<td>13 5 0 4 years, 7 months</td>
<td>Good; none of old symptoms; takes ordinary food.</td>
</tr>
<tr>
<td>6</td>
<td>(Case 6)</td>
<td>M.</td>
<td>Very thin; vomiting frequently; severe pain</td>
<td>Stomach dilated</td>
<td>6 1 12 years</td>
<td>Oct. 10, 1896</td>
<td>Everything agrees with him; his general health is excellent; has been at work for months</td>
<td>9 0 0 4 years, 8 months</td>
<td>Good; none of old symptoms; takes ordinary food.</td>
</tr>
<tr>
<td>7</td>
<td>(Case 7)</td>
<td>M.</td>
<td>Thin; severe pain; vomiting after meals; has full, heavy feeling; vomiting twice</td>
<td>Stomach dilated; indefinite nodule</td>
<td>8 7 15 years</td>
<td>Dec. 3, 1896</td>
<td>Died of phthisis in April, 1897</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>(Case 8)</td>
<td>M.</td>
<td>Thin; frequent vomiting; dull heavy feeling after food</td>
<td>Stomach dilated</td>
<td>10 5 9 years</td>
<td>Mar. 27, 1897</td>
<td>Is in good health; is careful to diet; digests and sleeps well; stomach still somewhat large</td>
<td>11 7 4 years, 3 months</td>
<td>Good; at times has old symptoms; has to be careful with his diet.</td>
</tr>
<tr>
<td>9</td>
<td>(Case 9)</td>
<td>M.</td>
<td>Very thin; frequent vomiting; severe pain</td>
<td>Stomach dilated</td>
<td>7 5 6 years</td>
<td>March 3, 1897</td>
<td>Could eat and digest anything; working regularly as stonemason in the pit; can eat and digest anything; is getting fat</td>
<td>11 8 4 years, 8 months</td>
<td>Good: takes ordinary food; working as a miner.</td>
</tr>
<tr>
<td>10</td>
<td>(Case 10)</td>
<td>M.</td>
<td>Thin; constant uneasy pain; severe after food; vomiting</td>
<td>Stomach dilated</td>
<td>8 6 12 months</td>
<td>Sept. 25, 1897</td>
<td>Could eat and digest anything; working regularly as stonemason in the pit; can eat and digest anything; is getting fat</td>
<td>10 1 2 10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>(Case 11)</td>
<td>F.</td>
<td>Very thin; frequent vomiting; much pain</td>
<td>Stomach dilated</td>
<td>8 7 9 years</td>
<td>Sept. 23, 1897</td>
<td>No trouble of any kind with the stomach</td>
<td>8 7 3 years, 8 months</td>
<td>Good health; none of old symptoms; takes ordinary food.</td>
</tr>
<tr>
<td>12</td>
<td>Not published</td>
<td>M.</td>
<td>Thin; frequent vomiting; pain</td>
<td>Stomach dilated</td>
<td>Not noted</td>
<td>Nov. 24, 1897</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>M.</td>
<td>Very thin; frequent vomiting; pain</td>
<td>Stomach dilated</td>
<td>7 5 6 years</td>
<td>June, 1898</td>
<td>-</td>
<td>3 years</td>
<td>Good health; none of old symptoms.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>M.</td>
<td>Very thin; intense pain</td>
<td>Stomach dilated; great distension of stomach</td>
<td>Not noted</td>
<td>9 years</td>
<td>July 13, 1898</td>
<td>-</td>
<td>2 years and 6 months</td>
<td>Good health; none of old symptoms; takes ordinary food.</td>
</tr>
</tbody>
</table>

*In this case the age was wrongly stated in the Lancet, February 26th, 1896, as 70.*

**In this case the age was wrongly stated in the Lancet, February 26th, 1896.**

Dr. Sutherland reports: "Patient looks well and is in good health; he says that in the way of food 'nothing ever comes wrong to him.'" Died October 26th, 1896, of cancer of the stomach. Has gone through the South African campaign without any trouble.

Dr. Tiplady reports: "Up to the time he developed phthisis he increased in health and strength. He took ordinary food and had no stomach symptoms up to his death. There was no necropsy." Patient looks very well; he is able to go about and do his ordinary work. (says the operation no lesion of the pylorus was found. It was supposed to have been spasmodiically contracted.)

In April, 1900, had a stomach attack, with vomiting after medicine; he was well in two weeks; has been perfectly well since.
OOPHORECTOMY IN MAMMARY CANCER.

By G. Ernest Herman, M.B. Lond., F.R.C.P., F.R.C.S.,
Senior Obstetrician to the London Hospital.

In this communication I report my experience up to the present time of oophorectomy in mammary cancer:

CASE I is fully reported in the LRACE of June 12th, 1898, p. 1622. Oophorectomy was performed on March 22nd, 1898, for recurrent mammary cancer. The patient is still alive and well and free from cancer (July, 1903).

CASE II is fully reported in the Lancet of April 29th, 1899, p. 1088. Oophorectomy was performed on July 15th, 1899, for recurrent mammary cancer; a large ulcer in one breast, a lump in the other. It was followed by healing of the ulcer, softening and shrinking of the lump, and eighteen months good health. Then the ulcer reopened and the lumps again began to grow. The patient died on December 23rd, 1900.

Net result: Prolongation of life by eighteen months of good health.

CASE III is fully reported in the British Medical Journal of October 26th, 1900, p. 1167. Oophorectomy was performed for recurrent mammary cancer on May 23rd, 1899. The immediate result of the operation was shrinking of the cancerous growth, relief of pain, and improved nutrition.

A later report from her medical man, Dr. C. M. Leakey, of Caistor, Lincs., dated July 10th, 1901, is: "The patient is now going downhill. She has a growth pressing on the nerves of the right leg, which is paralysed, and enlarged glands in the groin. She is very thin. There is a large fresh growth, very red and angry looking, on the pectoral scar. Numerous glands, the biggest as large as walnuts, all over the chest. In the right axilla there is a growth which is open. She does not regret the operation, and still believes, as I do, that it has given her a year or two more life."

Net result: Prolongation of life by about eighteen months of good health.

CASE IV.—This case is fully reported in the British Medical Journal of October 26th, 1900, p. 1167. Oophorectomy was performed for recurrent mammary cancer on June 2nd, 1899. The immediate effect was disappearance of the growths and improvement in health. In July, 1900, the patient was apparently in good health. For the information enabling me to complete the record of her case I have to thank Dr. Percy J. F. Eshle, of Hampstead. She was admitted into Friedeniheim (home for the dyed on May 2nd, 1901. The diagnosis made was recurrent cancer in the scar, in stomach, and in liver. She seemed from her account to have begun to get worse soon after she was last seen. She died on May 21st, 1901.

Net result: Prolongation of life by about a year of good health.
A DISCUSSION ON INJURIES TO JOINTS, WITH SPECIAL REFERENCE TO THEIR IMMEDIATE AND REMOTE TREATMENT BY MASSAGE AND MOVEMENT.

1. - HOWARD MARSH, F.R.C.S.
Surgeon and Lecturer on Surgery, St. Bartholomew’s Hospital.

Mr. HOWARD MARSH said: Both massage and exercises have long been known and employed in English surgery; but they have lately come into much more general use. Both, undoubtedly, are valuable remedies, and are often required; but, if employed by rule of thumb, or as a matter of routine, and before a careful diagnosis has been made, they may do great harm. They are both forms of surgical treatment, and as such they should be employed only under adequate surgical supervision in respect to the skill and experience of those to whom they are entrusted, the duration of each sitting, the effect they are producing, and the assurance that the case in hand is undergoing a course which it necessarily must.

When these precautions are neglected pain may be rendered severe and persistent, muscles may become irritated and spasmodic, or jaded and weak, sometimes considerably wasted, joints may become painful and stiff, and there may be considerable synovial effusion. In one case a sharp attack of gout, owing to massage of the knee, was overlooked for some days; massage was continued “to order,” and the pain the patient suffered can readily be imagined. In another case, on being persuaded in six weeks some swelling was observed about the internal condyle of the femur, which proved to be due to sarcoma, for which the limb was amputated a few days later. It must be remembered that such occurrences can be avoided only if the surgeon keeps a close eye on what is going on.

Physiology of Massage.—It is necessary to have clear ideas as to what has been termed the physiology of massage—as to the different ways, that is, in which it acts on the structures to which it is applied.

1. It enlarges the amount of blood circulating through the part concerned. This is obviously apparent in the skin, which instead of remaining cold and pale becomes warm and more red.

The same result was experimentally demonstrated in regard to the muscles by Brunton and Tunnicliffe, who showed that the amount of blood passing through them, both during massage and after its cessation, was increased.

2. It maintains or improves the nutrition of all the various tissues; it promotes the restoration of the functional activity of injured muscles, and it plays an important part in the absorption of lymph and extravasated blood.

3. Its action is mechanical. By kneading and percussion extravasated blood and lymph which have been coagulated in the tissues and have led to brown oedema are broken up and dislodged, while by stroking from below upwards they are swept upwards, and brought within the limits of healthy lymphatics and a normal venous circulation, so that they can more readily be absorbed.

4. It is an efficient stimulus to denuded muscles through its influence on the nervous system. In such minor injuries as sprains and contusions probably the small nerves ramifying in the injured part are seldom torn across, for they are tough rather than brittle: they are well protected in the subcutaneous tissue and the deeper structures; and brought within the limits of healthy lymphatics and a normal venous circulation, so that they can more readily be absorbed.

5. It is an efficient stimulant to denuded muscles through its influence on the nervous system. In such minor injuries as sprains and contusions probably the small nerves ramifying in the injured part are seldom torn across, for they are tough rather than brittle: they are well protected in the subcutaneous tissue and the deeper structures; and brought within the limits of healthy lymphatics and a normal venous circulation, so that they can more readily be absorbed.
in reducing muscular spasm and relieving pain. In such instances it must be used very gently, and be limited to stroking and light friction, for short periods three or four times a day.

Probably massage promotes the absorption of recently formed adhesions, provided they are not too extensive and firm. This is a matter of considerable interest. Just as provisional callus, formed in the repair of fractures is absorbed, so is much of the new connective tissue which is developed after injuries of the soft parts. Perhaps the most obvious instance of this is met with in the cases of adhesions following peritonitis. Even extensive adhesions gradually, yet completely, disappear, probably as the result of constant disturbance and traction which take place during the different movements employed in massage.

As to movements, it is necessary to allude to the sense in which this term is used. Three forms of movements present themselves for notice—movements of joints under an anesthetic, passive movements, and movements performed by the patient often against resistance, that is, when the patient, for instance, tries to flex his knee, while the masser, with appropriate force, resists his doing so. As to movements under an anesthetic, they can be safely applied only after a very careful diagnosis has been made. If he uses them haphazard a surgeon may do as much harm as or more than a none etter. It must be remembered that their direct influence on the joints themselves is comparatively limited. They break down slight synovial adhesions, reduce displaced semilunar cartilages, and alter the angle at which a joint has become fixed. If these good results are to be obtained, however, the joints concerned must be practically healthy. In joints which have, as a result of disease such as tuberculosis, gout, or septicemia, or such degenerative conditions as Charcot's disease, or some forms of osteo-arthritis, undergone material structural changes, forcible movements are a very general rule inappropriate or mischievous. The cases in which forcible movements are able to effect very important and striking results are those in which a joint—for instance, the shoulder, which is in itself structurally normal, is hampered by adhesions in the parts around. It is a fact, which is often overlooked in practice, that it is useless and mischievous to employ forcible movements to diseased joints, except to remove or diminish deformity, and that therefore accurate diagnosis must invariably precede their use. Recalling cases in which forcible movements have failed, I should say not that the general estimate of their true value in appropriate cases is exaggerated, but that the results are often disappointing, or even positively unfavourable, because they are used with too little discrimination.

Passive movements are useful after adhesions have been broken down, or in removing or preventing stiffness of healthy joints which after the temporary disease has been decided on, it is necessary to make as accurate a diagnosis as possible. It must be remembered that the great majority of simple injuries of the joints of moderate severity—that is, in which there is no fracture or dislocation, no extensive laceration of important structures, and no diathetic condition, such as tuberculosis or gout—tend to speedily or more gradual recovery, so that the mere fact that recovery from what at the time appeared a simple strain or wrench has not taken place, makes it essential to find out by what condition the recovery has been prevented. In a large number of cases adhesions are formed; these limit movement, and cause pain, as in the cases mentioned above. When once the surgeon can convince himself that this is the nature of the case before him, he has, in movement under an anesthetic, massage and passive, and later, active movements against resistance, to which hot douching may be added, sufficient means of treatment which with skill lead to recovery. These are some of the most instructive cases in the whole range of minor surgery; but in many instances of delayed recovery after injuries of the joints, other conditions, either local or general, put, so to say, another complexion on the case, and render mere movement and massage insufficient or even definitely wrong.

Tuberculosis may follow an ordinary sprain. Thus a boy of 10 or 15 falls and wrenches his elbow; the joint, at first stiff,
painless, and swollen, remains for five or six weeks still stiff and a little enlarged, while it is now also noticed that the muscles are wasting and the surface is a little over-warm. Tense tubercle of this has probably (hence very quickly) on an injury; or, in older people, osteo-arthritis may follow injury, especially in the shoulder and the hip, or there may be a substratum of gout. There are also two other conditions to be mentioned; both are rare—event it may be said, very rare; yet both must be kept in mind unless grave mistakes are sometimes to be made—I mean malignant disease and hemophilia. More than once I have seen sarcoma follow in a few weeks a wrench of a knee or an elbow. It appears that, with neither, or the other, this is really cancer, which we do not know, and mere speculation here would be out of place. Often, no doubt, it is a mere coincidence, but the main point is that the possibility of the supervision of a growth after an injury should not be forgotten.

I have seen three cases in which prolonged stiffness and swelling, which really depended on hemorrhage due to hemophilia, were attributed to chronic synovitis of traumatic origin.

These observations, which could easily be extended, will suffice to show that in old-standing cases critical diagnosis must precede active treatment. It is only thus that a clear line can be drawn between bonesetters, who move everything, and the surgeon, who acts on what, I hope with experience, may be termed scientific discrimination. When complications of the kind I have briefly alluded to can be excluded, when, that is, the conditions which retard or prevent consolidation of adhesions, feeble circulation, chronic lymphatic obstruction, torpid muscular action, or the fears or neurotic behaviour of the patient, movement and massage are not only useless, but they are by far the most efficient means of treatment at present known. But to be successful massage and movements must be thoroughly carried out, and it is in many cases futile to suppose that a single movement under an anaesthetic of a disabled shoulder or knee will suffice. The original movement must be followed, starting the next day, by passive massage and a set of movements employed every day, care and good judgment being used in determining the proper limit as to the time for each sitting and all other details. Some surgeons I have noticed, having determined upon a course of massage and movement, prescribe the treatment four times a week. To be useful, however, it must usually be employed regularly for a fortnight or three weeks once every day.

The chief symptoms which suggest the movement of a joint under an anaesthetic are stiffness and pain. Yet before movement is employed, the cause on which these symptoms depend in any particular case must be very carefully estimated. It must be ascertained whether they are due to conditions (a) of adhesions, (b) of the bone, (c) of the nerve, and (d) of the disc. The simple and careful examination may be necessary. Take the shoulder: The movements of the arm may be almost entirely lost, there may be muscular wasting, and the patient may complain of severe pain, worse at night, and increased if he tries to lie on the affected side. Is this a case of disease of the joint itself or of adhesions outside? I believe there is only one test which can be relied on to settle this question. The surgeon must ascertain whether the joint is as stiff as it at first sight appears to be; or whether it is only some movements that are restricted or lost, while movements within a limited range are still present. In a shoulder which at first seems quite stiff, it may be found that within a very limited range the humerus rotates with absolute freedom and smoothness in the盂 cavity, and that the elbow can be moved forwards and backwards, within a limited range, as freely as in a sound limb. If these smooth and normal movements—limited though they be—are present, the fact is a very strong indication that the trouble is not within the joint but in the parts around.

As to pain: It is very important to bear in mind that, taken alone, pain affords no reliable evidence as to whether the trouble is in the bone or on the bone, one who acts on this hope without it:—nformation, and that the elbow can be moved forwards and backwards, within a limited range, as freely as in a sound limb. If these smooth and normal movements—limited though they be—are present, the fact is a very strong indication that the trouble is not within the joint but in the parts around.

2. As to pain: It is very important to bear in mind that, taken alone, pain affords no reliable evidence as to whether the trouble is in the bone or on the bone, one who acts on this hope without it:—nformation, and that the elbow can be moved forwards and backwards, within a limited range, as freely as in a sound limb. If these smooth and normal movements—limited though they be—are present, the fact is a very strong indication that the trouble is not within the joint but in the parts around.


Mr. White Locke said that Mr. Marsh had covered the ground so thoroughly that he would confine his remarks to the treatment of the injuries of healthy joints in young athletes. At Oxford he had ample opportunity of being brought into contact with the treatment of sprains and dislocations. His method was first of all to make an accurate diagnosis of the exact state of affairs, with the aid of an anaesthetic if necessary; then the joint was thoroughly taken through all its normal movements and the ligaments, etc. If there was no fracture he applied elastic pressure...
INJURIES TO JOINTS.

by means of a very thick layer of absorbent cotton wool over which a strong webbing or domette bandage was accurately applied, the principle of elastic pressure being not only to limit further effusion taking place within and around the joint, but to support the vessels and tissues and to aid absorption of the fluid which has already taken place. The advantage of this use of elastic pressure might well be exemplified by its use in such a contusion as a black eye. Within twelve hours the pressure was removed, the joint passively moved by himself and then the plaster splint was applied, and gentle massage were carried out daily for the first week, and the elastic pressure kept up until the effusion was apparently gone, which was usually by the seventh day. During all this time the patient was kept in bed or upon the sofa, and no active movement was allowed. In from ten to fourteen days the time the patient was allowed to begin gentle active exercise; by this time there should be little or no pain. The joint was all this time supported with a domette or other bandage, which was removed twice daily to allow of massage and passive movements. In twenty one days the patient ought to have complete use of the joint, and be able even to engage in his usual athletic exercises, such as football and running. The speaker never used a fixed apparatus in the shape of a plaster splint or other apparatus, and a painful and weakened joint resulting. In the exhibition of the salicylates for sprains, severe subluxations and dislocations of the shoulder by early movement and massage instead of by an attempt to immobilise the limb for the first three weeks, the patient was not only unnecessary, but likely to result in adhesions taking place and a painful and weakened joint resulting. In old cases anæsthetising the patient, breaking down all adhesions, and carrying out the various movements of the joint at the time, and subsequently treating as in a recent injury, would generally be successful. Some old cases were in rheumatic patients, and the exhibition of the salicylates for three or four days would often remove the pain like a charm. He had had experience of several such cases where the pain was caused by rheumatism. In complicated cases, especially where there had been much blood effused into the joint, the prognosis was not so good; still the same principles of treatment were applicable.

Mr. Burghard dealt with the treatment of dislocations of the shoulder by early movement and massage instead of by an attempt to immobilise the limb for the first three weeks, the patient was not only unnecessary, but likely to result in adhesions taking place and a painful and weakened joint resulting. He pointed out the great risk of adhesions occurring in the shoulder-joints of elderly subjects, and the difficulty of overcoming them, and the good results obtained by massage and passive movement employed from the first. He also dealt with the question of adhesions by the frequency of massage and movements, and advocated daily massage with most careful and gradual movement under gas once a week if necessary. He insisted on the importance of proceeding gradually in breaking down adhesions. He remarked that recently he had been inclined to use more massage and less elastic pressure than formerly.

Dr. Ward Cousins said: In subcutaneous injuries of joints with unbroken skin there is pain from the injury of nerves and from the tension caused by extravasation. Rest and position tend to reduce swelling and relieve pain. Tissues which have been injured are very sensitive to infective agents, therefore it is always well to thoroughly disinfect the skin, even when there is no apparent lesion, as suppurrative inflammation can be easily excited. Early massage of an innoculated joint and no infection, will hasten absorption and prove especially useful in the neighbourhood of joints. The thorough disinfection of the skin is always indicated when external injuries of joints are complicated with extensive damage to the soft parts, and care in this direction will greatly aid complete recovery.

But there is another matter in connection with slight in-

juries of joints of great importance, and that is their liability to arouse various constitutional tendencies and to excite serious complications. Slight contusions will sometimes develop gouty inflammation, and serious tuberculous disease can be sometimes traced to local injury. Pain and swelling and thickening are very obstinate, and the joint inflammation very severe. When the local injury takes on tuberculous trouble, sometimes the existence of old mischief in other centres can be detected, and then the disease becomes a desperate affair. Constitutional tendencies will always delay early and free movement and massage.

Injuries to joints, in which the normal range of movement is exceeded, often prove very painful and troublesome. Ligamentous and vascular structures are ruptured, synovial fringes contused, and even small fragments of bone broken off, attended with effusion in both the joint and tendon-sheaths. Severe sprains often make very dissatisfied patients. Severe cases should have rest for a few days, followed by early movement and massage, and I have often given an anaesthetic with great success. Sometimes the rupture of ligamentous structures is followed by abnormal mobility or displacement; it is then desirable to support the limb in a splint or plaster, as soon, however, as the pain and swelling subside, the muscles should be stimulated by daily massage. It is my plan in contusions and sprains, especially in injuries of the ankle-joint, to begin friction and massage of the muscles and tendon-sheaths long before the joint is painless, and I am convinced that these preliminary measures have sufficiently recovered to bear manipulation.

In all wounds of joints the principles of treatment are complete dissection of the whole limb, aseptic dressing, splint, support, and pressure. The joint wound must be carefully closed. If the wound is extensive, drainage may be necessary. If after all suppuration follows, the articulation must be incised and drained with intermittent irrigation or anti-septic baths. The healing may not be soddened. Of course troublesome stiffness and more or less ankylosis is generally the result. I use my excision splint in knee wounds as it permits complete examination of every part of the joint and the adoption of every precaution. Severe injuries of this joint which require operation, are generally too extensive to allow successful excision.

The treatment of injured joints by manipulation and massage has now, I trust, passed from the hands of irregular practitioners into the practice of surgeons. It is now a recognised principle that joints disabled by disease or injury can often be completely restored by judicious handling. Rest is often an essential part of treatment, but in a large number of cases it is possible to have too much of it. If this leads to the formation of adhesions, the early use of passive movement within the joint, and the exudation of more or less plastic fluid in the tendon sheaths and surrounding tissues, followed by consolidation and contraction, the glueing together of structures which normally move freely, and the coalescence of intermuscular and subcutaneous connective tissue.

How marked are the changes in any joint which has been inflamed, or injured, or long restrained from motion. The movements are limited, and every effort to exceed these limits is accompanied with pain. The joint is more or less swollen, the skin covering it is congested and glossy, and the whole limb exhibits some muscular wasting. It is often possible to discover by pressure some tender spots. The treatment of partial or complete dissections is cases is very satisfactory, but there are still many practitioners who very imperfectly carry it out. The mere extension of adhesions always gives pain. The complete rupture is always followed by immediate relief. The patient should be placed under an anaesthetic, not only to prevent pain, but to overcome the resistance of opposing muscles. The operation requires care, and the complete range of mobility can often be restored in a few minutes. When the joint has been successfully treated, the patient can use it directly, and there ought to be no return to splints or bandages.

Prevention is, however, better than cure, and in the treatment of all kinds of injury we must not omit the means by which it can be prevented. Too much rest is still too commonly employed; movement and manipulation must be employed as early as possible. Cases of fracture into joints enforced rest is necessary. We
must not, however, forget the results which rest induces, and that massage and passive movements are the best means of promoting rapid recovery.

V.—GILBERT BARLING, F.R.C.S.,
Professor of Surgery, University of Birmingham; Surgeon, General Hospital, Birmingham.

Professor Barling said he had been in the habit of following out the same line of treatment as that recommended by Mr. Whitelocke but had not found recovery so rapid, and thought that care should be taken not to overestimate the period of convalescence. He had found that in such cases the muscular system was usually out of condition, and did not allow active exercise early. In Colles's fracture he was in the habit of discarding splints unless the deformity was great; he commence passive movements two days after the injury. He thought that in many cases of painful joints after injury there was some diastatic cause.

VI.—J. PAUL BUSH, C.M.G., M.R.C.S.,
Surgeon, Bristol Royal Infirmary; Lecturer on Operative Surgery, University College, Bristol.

Mr. Bush thought that twenty-one days was often too short a period to expect complete restoration of the functions of a joint in cases of severe injury, however perfect the treatment by massage alone. In South Africa he had seen the great benefit of this treatment, which had without doubt greatly shortened the period of stay in hospital. Mr. Bush thought that the movement under the first anesthetic should be complete, and not partial as advocated by some speakers.

VII.—J. RUTHERFORD MORISON, F.R.C.S.,
Surgeon, Newcastle Royal Infirmary.

Mr. Rutherford Morison thought that in considering treatment pathology should not be forgotten. It seemed incredible that a severe laceration of joint structures was best, and most properly treated by immediate passive movements and massage. Injuries to muscles and tendons were more likely to be benefited by such. Organic stiffness of joints was probably due to inflammation following injury, and in certain a mount of rest at first seemed to be essential. Many joint pains were merely joint neuroses.

THE TREATMENT (NON-OPERATIVE AND OPERATIVE) OF CONGENITAL DISLOCATION OF THE HIP.

By F. F. BURGHARD, M.S.Lond., F.R.C.S.,
Surgeon, King's College Hospital and the Children's Hospital, Paddington, London.

My only excuse for bringing forward this subject is the uncertainty that surrounded it when first I began to be interested in these cases. Certain surgeons advocated particular methods; on the one hand, the bloodless method was practised exclusively by some in every type of case; others denied that anything short of severe operative interference was likely to succeed even in the simplest cases; whilst others, again, held that little permanent good was likely to result from either plan and the patients were condemned to wear some form of apparatus. A careful examination of the cases that have come under my notice has convinced me that certain of them are more suited for one method and certain for others, and that success in treatment is most calculated to follow a careful discrimination between the different classes.

Before going further, it will be well to mention the more important anatomical peculiarities that are met with in these cases. Although dislocation on to the dorsum ili is most frequent, it is not invariable. In younger children the head of the bone is often simply displaced directly upwards beneath the anterior superior iliac spine (the so-called "supra-cotylid" form). Later on, the body weight and muscular action convert this dislocation into the true dorsal form. In very early life the chief change is in the acetabulum, which is shallow and triangular, with its apex directed upwards. The outline of the head of the femur, which is always relatively too large for the acetabulum, undergoes few changes in early life; later on, it alters considerably. Apart from these changes, there are certain anatomical factors which have a most important bearing on treatment. Foremost amongst these is the increase in the angle made by the neck of the femur with the transverse axis of the femoral condyles; in the normal femur this angle varies from 25° to 35°, but in every case of congenital dislocation this angle is markedly increased, and in some it may be as great as 50°. This increase is due to the adduction of the great trochanter which generally takes place forwards, so that the lower limb is rotated forwards when the head is properly in the acetabulum.

The second important anatomical point is the diminution in the angle formed by the neck with the shaft of the femur. In normal cases this usually measures about 120°, varying from 110° to 140°. In congenital dislocation, however, it may measure as little as 90°. The diminution is extremely slight before the child begins to walk, and its degree is to a certain extent proportionate to the length of time that has elapsed since walking has commenced.

The third point is the arrangement of the joint capsule, and to this I would draw special attention, as it does not seem to have attracted its due amount of notice. It seems to me that it serves to explain the large number of cases that succeed with the bloodless operation, although apparently successful at the time, fail eventually. An examination of museum specimens, confirmed by observations on the cases upon which I have operated, has strengthened me in the view enunciated by Hoffa, and recently confirmed by Bradford, that it plays a most important part in the treatment. The following account from Hoffa puts the matter concisely:

The capsule undergoes modifications in shape, and assumes a somewhat hour-glass form. Starting from the posterior edge of the acetabulum, it passes over the head, and is accurately outlined: it then runs forwards and downwards, and becomes firmly adherent to the acetabulum, the head being firmly attached to the socalled "acetabular pocket" of Lorenz—from which the ligamentum teres, when present, emerges to reach its insertion into the head. This lower portion of the capsule thus forms a sort of diverticulum, which only communicates with the upper spacious capsular cavity in which lies the head of the bone by an almost invisible duct, the so-called "rétrécissement" of Bouvier. This narrowing is really caused by the passage of the ilio-psoas tendon across the capsule at this spot. It is not only in its form that the capsule undergoes changes, but also in consistence. The entire anterior and inferior portion becomes abnormally thickened, so that the portion lying like a lid over the acetabulum becomes exceedingly dense and unyielding. In this the various capsular bands, more especially the ligamentum teres, play an important part.

Treatment by Apparatus.—No really efficient apparatus has yet been constructed. Hoffa has a pelvic band for the unilateral form of dislocation and a special corset for the bilateral one, but neither is satisfactory. The Hoffa-Mikulicz apparatus is designed for children under two years of age and keeps the limbs extended, abducted, and rotated as a preliminary to further treatment. It is worn by night and for some hours during the day, while the reminder of the time the child is taught to walk and has massage and passive movement. Schied's apparatus consists essentially of a boot fitted with lateral irons which terminate above in an oblique pelvis ring similar to that of Thomas's knee splint, through which the weight of the body is transmitted. The apparatus is connected with a pelvic band fitted with a perineal strap on the sound side, and is so arranged that any requisite amount of abduction can be kept up.

The Bloodless Method of Reduction.—The elaboration of the bloodless method is due to the work of Paci and Schied, and has been improved by Lorenz. Paci's method is very similar to that of Lorenz, except that the former attempted merely to form a stable joint beneath the anterior superior iliac spine, whilst Lorenz aims at true re-position. Schied employs direct lever traction, in place of the more scientific manipulation of Paci and Lorenz. It will be sufficient to describe the latter's method in detail:

Lorenz's Bloodless Method.—Powerful extension is applied until the trochanter reaches Nelaton's line. This may need
more than one sitting, during which any tense muscles, such as the adductors or hamstrings, are firmly kneaded and stretched or, if necessary, subcutaneously divided. It is inadvisable to attempt re-position until the head is got down sufficiently. In order to replace the head in the acetabulum the entrance of the joint cavity is first opened, and this is done by relaxing the extension, strongly flexing the thigh, rotating it inwards, and then fully abducting the limb in this position through at least 90 degrees. This makes the head cross the posterior wall of the acetabulum and enter the joint cavity, an event marked by a loud click or a definite sensation that cannot be mistaken. The head of the bone is driven still further into the acetabulum, and the tight anterior inferior part of the capsule is still further stretched by outwardly rotating the fully abducted and flexed limb, and pressing it firmly backwards towards the table, whilst the assistant fixes the pelvis. As long as this position is maintained the head usually remains in place; directly the abduction is diminished it slips out.

A firm plaster spica, taking in the slightly flexed knee, is then applied to the limb in the above position, and is kept on for three months so as to allow the lax structures on the posterior and outer aspect of the capsule to shrink, whilst those on the anterior and inner are stretched. The plaster is then taken off, the abduction is diminished as far as is consistent with the head of the bone remaining in place, and a fresh spica is applied, the knee this time being extended. This plaster is kept on for another three months. From the ninth to the twelfth month the patient walks without any apparatus except a thick sole on the sound side, and has massage and passive movements, especially abduction. The aim of the treatment is to deepen the acetabulum by the pressure of the head against it in walking, and it is essential for success that the child should be able to get about.

Results.—In the majority of cases reduction of the dislocation, as shown by sound, sensation, and the x-rays, is fairly easy. In the vast majority, however, the head leaves the acetabulum afterwards, travels upwards and forwards beneath the anterior superior iliac spine, where it finds a firm resting place. In reality Lorenz's operation is only a true reposition in a few cases. In the majority it is a mere transposition, and is only an improved form of Paci's and Schede's methods. It is, however, a distinct advance on all other non-operative methods in its functional results, but in no sense is it a cure, even in the large majority of cases a means by which the head can be retained securely in position.

Re-position by Operation.—The operation at present in vogue is that known as the Hoffa-Lorenz method and is done as follows: Full extension is made until the trochanter is nearly on a level with Nelaton's line. Whilst this is kept up, an incision is made along the upper edge of the trochanter, from the upper extremity of the greater trochanter to the anterior superior iliac spine, and the soft parts are cut through till a thick sole on the sound side, and has massage and passive movements, especially abduction. The aim of the treatment is to deep

the bone in the acetabulum, and its object is to form a secure joint beneath the anterior inferior spine of the ilium in front of the transverse axis of pelvic rotation. It is done as follows:

- An incision is made backwards from the anterior inferior spine process along the upper limit of the femur. The structures superficial to the capsular ligament are cut through, and the edges of the iliofemoral ligament are divided in front. The capsule is then opened. This ligament is then divided at its attachment to the innominata bone, and the area of the long strong plane is exposed. The iliofemoral ligament is cut away from the head of the femur.

- The soft parts are cut through till it is possible to rotate the articular surfaces of the femur outwards, so as to bring the same horizontal plane as the anterior inferior spine. The upper end is thus shaped with a chisel and file to form a smooth joint surface.

- A cavity is cut by means of a gouge in and beneath the anterior inferior spine process, and the newly constructed head is placed in it. It is retained there by sewing the anterior ligament to the bone and the rectus tendon, and to the soft parts in the vicinity, wire being usually used for the purpose. This is done very thoroughly and carefully, so that the fibres of the ligament will be directed to the best advantage. It is harder to place the head cannot be secured firmly in this manner, as is occasionally the case, a thick silver wire is passed through the trochanter, neck, and head of the femur, and through the floor of the concavity cut in the ilium, and so fixed as to allow of free movement of the bones on one another around the wire as an axis. The wire is removed subsequently after the joint has reached a satisfactory state in its evolution. Wire is not required, for the reason that the anterior ligament affords in the large majority of cases a means by which the head can be retained securely in position.

The Author's Experience.—Up to the present date I have notes of 20 cases in all, of which 15 occurred within about the last two years. Up to two years ago I had tried Hoffa's, Lane's, and Paci's methods with indifferent success. It is only during the last two years, since x-ray photography has enabled one to ascertain clearly the results produced, that I have been seriously attempting to secure a permanent cure. From the cases treated previous to this period, however, one has been able, owing to the time that has elapsed since the operations, to gain information as to the permanence of the results.

Experience of Bloodless Methods.—Of Schede's method I have no experience, nor am I inclined to try it. The traction is too great for young children; it is unscientific, and I cannot feel that the results obtained are likely to be permanent. Of Paci's method I have had two cases under my own care, and I have tried it under circumstances I was most disappointed with the functional result.

Lane's Method.—Lane's operation is founded on the presumption that it is impossible to actually replace the head of the acetabulum, and its object is to form a secure joint beneath the anterior inferior spine of the ilium in front of the transverse axis of pelvic rotation. It is done as follows:

- An incision is made backwards from the anterior inferior spine process along the upper limit of the femur. The structures superficial to the capsule are cut through, and the edges of the iliofemoral ligament are divided in front. The capsule is then opened. This ligament is then divided at its attachment to the innominata bone, and the area of the long strong plane is exposed. The iliofemoral ligament is cut away from the head of the femur.

- The soft parts are cut through till it is possible to rotate the articular surfaces of the femur outwards, so as to bring the same horizontal plane as the anterior inferior spine. The upper end is thus shaped with a chisel and file to form a smooth joint surface.

- A cavity is cut by means of a gouge in and beneath the anterior inferior spine process, and the newly constructed head is placed in it. It is retained there by sewing the anterior ligament to the bone and the rectus tendon, and to the soft parts in the vicinity, wire being usually used for the purpose. This is done very thoroughly and carefully, so that the fibres of the ligament will be directed to the best advantage. It is harder to place the head cannot be secured firmly in this manner, as is occasionally the case, a thick silver wire is passed through the trochanter, neck, and head of the femur, and through the floor of the concavity cut in the ilium, and so fixed as to allow of free movement of the bones on one another around the wire as an axis. The wire is removed subsequently after the joint has reached a satisfactory state in its evolution. Wire is not required, for the reason that the anterior ligament affords in the large majority of cases a means by which the head can be retained securely in position.

The Author's Experience.—Up to the present date I have notes of 20 cases in all, of which 15 occurred within about the last two years. Up to two years ago I had tried Hoffa's, Lane's, and Paci's methods with indifferent success. It is only during the last two years, since x-ray photography has enabled one to ascertain clearly the results produced, that I have been seriously attempting to secure a permanent cure. From the cases treated previous to this period, however, one has been able, owing to the time that has elapsed since the operations, to gain information as to the permanence of the results.

Experience of Bloodless Methods.—Of Schede's method I have no experience, nor am I inclined to try it. The traction is too great for young children; it is unscientific, and I cannot feel that the results obtained are likely to be permanent. Of Paci's method I have had two cases under my own care, and I have tried it under circumstances I was most disappointed with the functional result.

Lane's Method.—Lane's operation is founded on the presumption that it is impossible to actually replace the head of the acetabulum, and its object is to form a secure joint beneath the anterior inferior spine of the ilium in front of the transverse axis of pelvic rotation. It is done as follows:

- An incision is made backwards from the anterior inferior spine process along the upper limit of the femur. The structures superficial to the capsule are cut through, and the edges of the iliofemoral ligament are divided in front. The capsule is then opened. This ligament is then divided at its attachment to the innominata bone, and the area of the long strong plane is exposed. The iliofemoral ligament is cut away from the head of the femur.

- The soft parts are cut through till it is possible to rotate the articular surfaces of the femur outwards, so as to bring the same horizontal plane as the anterior inferior spine. The upper end is thus shaped with a chisel and file to form a smooth joint surface.

- A cavity is cut by means of a gouge in and beneath the anterior inferior spine process, and the newly constructed head is placed in it. It is retained there by sewing the anterior ligament to the bone and the rectus tendon, and to the soft parts in the vicinity, wire being usually used for the purpose. This is done very thoroughly and carefully, so that the fibres of the ligament will be directed to the best advantage. It is harder to place the head cannot be secured firmly in this manner, as is occasionally the case, a thick silver wire is passed through the trochanter, neck, and head of the femur, and through the floor of the concavity cut in the ilium, and so fixed as to allow of free movement of the bones on one another around the wire as an axis. The wire is removed subsequently after the joint has reached a satisfactory state in its evolution. Wire is not required, for the reason that the anterior ligament affords in the large majority of cases a means by which the head can be retained securely in position.
consider the results of the operation, a clear demarcation has to be made between the cases in which it actually cures and those in which it merely produces improved functional results. Of my own cases, which amount to 15 in number, 9, representing 10 hips in all, were treated by Lorenz's method, and out of these only 1 succeeded in the sense that the dislocation was permanently put to rights. In 5 others the functional result was distinctly good, whilst in two others, and in the single bilateral case in which it was tried it failed utterly. The only case cured by this method was the first in which I adopted it, and even this did not succeed at first, as a skiasgraph taken in the sixth week showed the head of the bone out of place, and the manipulation was therefore again carried out, this time with permanent success. The child discarded all apparatus at the end of nine months, and now, more than eighteen months after the operation, is absolutely well, and a skiasgraph shows no difference in the joints on the two sides. As a result of this case I persevered with all the other cases, but there was another true cure, and I am very doubtful, from the experience I have gained of the after-results of Paci's method, whether relapse will not occur in the functionally improved cases as the children grow older, and more weight is thrown upon the limb. All my cases were treated in the same way. As the first three months the limb was kept in Lorenz's position, with the knee flexed and included in the bandage. In the second three months the abduction was diminished to some extent, and the knee was extended but included in the plaster, whilst in the later abductions were still more diminished, and the plaster only carried down as low as the lower third of the thigh, the patient being encouraged to walk.

This method does actually succeed in getting the head of the bone partially or entirely into the acetabulum in many cases cannot be doubted by anyone who has tried it carefully. Its retention in position and the formation of a normal acetabulum afterwards are, however, quite a different matter. With every kind of abduction, and every kind of fixation in which I have operated it is impossible to gauge the probability of beforehand. There is little doubt in my mind from the experience gained from the open operation that in many cases the head of the bone must lie over the acetabulum with a portion of the capsule or even the ligamentum teres interposed between it and the bone—a position of an unstable state of the joint. In these cases on which I have operated it was impossible, even after opening the capsule, to force the head of the bone through the narrow constriction between the upper and lower parts of the capsule already alluded to, so as to get the head of the bone into the acetabulum without enlarging this orifice of communication. If the head really enters the capsule of the joint the resulting position should be much more stable and true success should be much more frequent, as it is clear from experience of the open operation that when once the head of the bone has been got properly into the acetabulum it is in a very stable position indeed, so long as the capsule is not slit up too widely.

The cases most obviously suited for Lorenz's method are those of young children from 2 to 3 years of age who have learned to walk, in whom there is little or no change in the bones, in whom the dislocation is not on to the dorsum lili, and in whom the changes in the anterior part of the capsule above referred to are not present. On the other hand, the cases in which there is much difficulty in getting the head of the bone down into position are obviously unsuited for it, and it may roughly be said that no case after the age of 3 years and over is likely to be cured by a preliminary trial should be made of it in all cases except those obviously unsuited for it.

Experience of Operative Measures.—I have already dealt with my experience of Lane's operation as exemplified in the five cases of which I have only one to add to seven which have been performed once, but I have seen several in the practice of others. In my own case there was very considerable stiffness, which practically amounted to ankylosis, and did not improve in the least. In the practice of others I have seen either stiffness follow the operation or gradual recurrence of the dislocation.

In the beginning of last year, as the result of a prolonged and unsuccessful trial of Lorenz's method in a child of 6, I have abandoned the joint in favor of the Croft's method, which have since employed in five other cases: At a preliminary sitting all tight structures, such as the adductors and hamstrings, were either divided subcutaneously or stretched sufficiently to enable the trochanter to be got down to Nélaton's line, and for abduction to be carried out to at least 90 degrees without difficulty. An incision was then made from just outside the anterior superior spine of the ilium downwards and slightly forwards for about four inches, parallel to and in front of the anterior margin of the tensor fasciae latae. The upper end of this incision was curved somewhat backwards for three-quarters of an inch along the crest of the ilium, and the deep fascia and the tensor fasciae femoris to which is attached the ilio-psoas was incised. The muscle was then divided. The capsule of the joint incised parallel to and a quarter of an inch internal to the anterior intertrochanteric line. This capsule must be divided on the whole extent of the cavity above and below, and the head of the bone was protruded. The tendon of the ilio-psoas was next detached from the lesser trochanter and the finger was slipped into the acetabulum. The reason for the failure of Lorenz's method was at first obvious, as in order to pass into the shallow acetabulum the head of the bone had to go through a narrow slit-like opening which was insufficient to admit it. With a rongeur the attachment of the capsule to the front of the head of the bone, with the rectus femoris, were detached from the bone for a sufficient extent to enable the head to pass into the acetabulum. On manipulating the limb by Lorenz's method this at once occurred, and the limb assumed spontaneously the abducted, outwardly rotated, and slightly flexed position; as long as it remained in this position there was no tendency to recurrence of the dislocation. Two points were thus made obvious: first, that there was no need to deepen the acetabulum according to Hoffa's method; and, secondly, the position of maximum stability was that associated with Lorenz's method, and not, as in the case of Hoffa's operation, that of slight abduction with inward rotation. All that now remained was to excise an appropriate amount of the rim of the capsule, and bring the bony edge of the acetabulum up to the capsule, so as to bring the edges of the incision into apposition and tighten up the front part of the capsule, which was tightly sutured by catgut. The joint then was perfectly stable, and did not require any artificial aid in maintaining its position. The deep tissues were brought together by one or two catgut stitches, the wound closed with a continuous silk suture, and the usual dressings applied.

To maintain this position satisfactorily, and at the same time to provide for inspection of the wound, a form of Croft's plaster splint was adapted, consisting of a posterior portion embracing the buttocks and posterior two-thirds of the pelvis and the posterior two-thirds of the thigh and leg, whilst a second half similarly embraced the anterior portion of the front half could be taken like a lid for the inspection of the wound. The knee in the flexed position was included in the plaster. The after-progress was uneventful. The stitches were taken out on the fourteenth day, when the wound was sound healed and the splint reapplied. At the end of a month, when the parts had become fairly firm, an anæsthetic was given and a large plaster spica was substituted, the abduction being slightly diminished; at the close of the wound had healed and the splint reapplied. The child is now perfectly cured and the head of the bone is in place.
Since then I have operated on four other cases, one being a case of bilateral dislocation, and I have been surprised at the facility with which the dislocation is reduced and the position maintained. In no case has the acetabulum required deepening or the bone cut down, and in two cases the reduction was easily accomplished without the necessity of detaching the capsule from the rim of the acetabulum, and it may be presumed that in these cases Lorenz's method theoretically should have been the one to use. In all three cases it was necessary to enlarge the constriction between the upper and lower portions of the capsule before the head would go into place. In all these cases, with the exception of one, a child of 6 years in whom there was great difficulty in getting the bone to come into position, the position of the acetabulum, Lorenz's method had been previously tried and had failed, to the extent, that is to say, that the head of the bone could not be retained in position. All these cases were under 7 years of age.

The points I would emphasize in conclusion are these: In the first place, experience has abundantly shown that true care can only be expected in suitably-selected cases, and it is to the early recognition of the affection and the selection of these cases that future improvement must be looked for. Personally I should refuse to treat any case over 6 years of age unless it was possible to draw the trochanter down to Nelaton's line with the application of very slight force. I am aware that Mr. Hoffa, and Lorenz, in some cases both by the bloodless and by operative measures up to the age of 14 and even 16, but the few cases I have had beyond the age I have mentioned do not induce me to advocate any active treatment; they have been treated by either the methods described or preceded by necessary extension on Schede's or Paci's lines. If this judicious selection of cases is made, I believe that we shall have in future a more pain-taking and thorough trial of the methods that have given satisfactory results. It is common to hear dissatisfaction expressed with the results obtained, when really the cases are beyond the age at which good results are likely to be got.

A point of some weight is the slight operative interference that is necessary. The operation I have described entails little or no loss of blood or shock, and is quite safe even in children of 3 years of age. Another point that is equally satisfactory is the readiness with which I have always found reductions can be accomplished in children under 7 years of age.

Perhaps the most satisfactory point is the case with which the reduction has been maintained, and this may be attributed to the following causes: First, all shortened tendons are thoroughly stretched or divided beforehand; the separation of the iliopsoas is always, I believe, a valuable adjunct. Secondly, the limb is put up in the position of greatest stability—a point that is easily ascertained upon the operating table—and is kept there until repair has fairly taken place. Hence, I think, the ability of the body to reposition itself if necessary on the table, and the great restriction of the displacement, which it is to say, that the head of the bone cannot be retained in position. All these cases were under 7 years of age.

The points I would emphasize in conclusion are these: In the first place, experience has abundantly shown that true care can only be expected in suitably-selected cases, and it is to the early recognition of the affection and the selection of these cases that future improvement must be looked for. Personally I should refuse to treat any case over 6 years of age unless it was possible to draw the trochanter down to Nelaton's line with the application of very slight force. I am aware that Mr. Hoffa, and Lorenz, in some cases both by the bloodless and by operative measures up to the age of 14 and even 16, but the few cases I have had beyond the age I have mentioned do not induce me to advocate any active treatment; they have been treated by either the methods described or preceded by necessary extension on Schede's or Paci's lines. If this judicious selection of cases is made, I believe that we shall have in future a more pain-taking and thorough trial of the methods that have given satisfactory results. It is common to hear dissatisfaction expressed with the results obtained, when really the cases are beyond the age at which good results are likely to be got.

A point of some weight is the slight operative interference that is necessary. The operation I have described entails little or no loss of blood or shock, and is quite safe even in children of 3 years of age. Another point that is equally satisfactory is the readiness with which I have always found reductions can be accomplished in children under 7 years of age.

Perhaps the most satisfactory point is the case with which the reduction has been maintained, and this may be attributed to the following causes: First, all shortened tendons are thoroughly stretched or divided beforehand; the separation of the iliopsoas is always, I believe, a valuable adjunct. Secondly, the limb is put up in the position of greatest stability—a point that is easily ascertained upon the operating table—and is kept there until repair has fairly taken place. Hence, I think, the ability of the body to reposition itself if necessary on the table, and the great restriction of the displacement, which it is to say, that the head of the bone cannot be retained in position. All these cases were under 7 years of age.

The points I would emphasize in conclusion are these: In the first place, experience has abundantly shown that true care can only be expected in suitably-selected cases, and it is to the early recognition of the affection and the selection of these cases that future improvement must be looked for. Personally I should refuse to treat any case over 6 years of age unless it was possible to draw the trochanter down to Nelaton's line with the application of very slight force. I am aware that Mr. Hoffa, and Lorenz, in some cases both by the bloodless and by operative measures up to the age of 14 and even 16, but the few cases I have had beyond the age I have mentioned do not induce me to advocate any active treatment; they have been treated by either the methods described or preceded by necessary extension on Schede's or Paci's lines. If this judicious selection of cases is made, I believe that we shall have in future a more pain-taking and thorough trial of the methods that have given satisfactory results. It is common to hear dissatisfaction expressed with the results obtained, when really the cases are beyond the age at which good results are likely to be got.

A point of some weight is the slight operative interference that is necessary. The operation I have described entails little or no loss of blood or shock, and is quite safe even in children of 3 years of age. Another point that is equally satisfactory is the readiness with which I have always found reductions can be accomplished in children under 7 years of age.

Perhaps the most satisfactory point is the case with which the reduction has been maintained, and this may be attributed to the following causes: First, all shortened tendons are thoroughly stretched or divided beforehand; the separation of the iliopsoas is always, I believe, a valuable adjunct. Secondly, the limb is put up in the position of greatest stability—a point that is easily ascertained upon the operating table—and is kept there until repair has fairly taken place. Hence, I think, the ability of the body to reposition itself if necessary on the table, and the great restriction of the displacement, which it is to say, that the head of the bone cannot be retained in position. All these cases were under 7 years of age.

The points I would emphasize in conclusion are these: In the first place, experience has abundantly shown that true care can only be expected in suitably-selected cases, and it is to the early recognition of the affection and the selection of these cases that future improvement must be looked for. Personally I should refuse to treat any case over 6 years of age unless it was possible to draw the trochanter down to Nelaton's line with the application of very slight force. I am aware that Mr. Hoffa, and Lorenz, in some cases both by the bloodless and by operative measures up to the age of 14 and even 16, but the few cases I have had beyond the age I have mentioned do not induce me to advocate any active treatment; they have been treated by either the methods described or preceded by necessary extension on Schede's or Paci's lines. If this judicious selection of cases is made, I believe that we shall have in future a more pain-taking and thorough trial of the methods that have given satisfactory results. It is common to hear dissatisfaction expressed with the results obtained, when really the cases are beyond the age at which good results are likely to be got.

A point of some weight is the slight operative interference that is necessary. The operation I have described entails little or no loss of blood or shock, and is quite safe even in children of 3 years of age. Another point that is equally satisfactory is the readiness with which I have always found reductions can be accomplished in children under 7 years of age.

Perhaps the most satisfactory point is the case with which the reduction has been maintained, and this may be attributed to the following causes: First, all shortened tendons are thoroughly stretched or divided beforehand; the separation of the iliopsoas is always, I believe, a valuable adjunct. Secondly, the limb is put up in the position of greatest stability—a point that is easily ascertained upon the operating table—and is kept there until repair has fairly taken place. Hence, I think, the ability of the body to reposition itself if necessary on the table, and the great restriction of the displacement, which it is to say, that the head of the bone cannot be retained in position. All these cases were under 7 years of age.

The points I would emphasize in conclusion are these: In the first place, experience has abundantly shown that true care can only be expected in suitably-selected cases, and it is to the early recognition of the affection and the selection of these cases that future improvement must be looked for. Personally I should refuse to treat any case over 6 years of age unless it was possible to draw the trochanter down to Nelaton's line with the application of very slight force. I am aware that Mr. Hoffa, and Lorenz, in some cases both by the bloodless and by operative measures up to the age of 14 and even 16, but the few cases I have had beyond the age I have mentioned do not induce me to advocate any active treatment; they have been treated by either the methods described or preceded by necessary extension on Schede's or Paci's lines. If this judicious selection of cases is made, I believe that we shall have in future a more pain-taking and thorough trial of the methods that have given satisfactory results. It is common to hear dissatisfaction expressed with the results obtained, when really the cases are beyond the age at which good results are likely to be got.
walk with security, could run up and downstairs, and could carry out all
normal movements of the limbs.

Some months afterwards Miss B. was threatened with a relapse while
kneeling and strapping a trunk. Pain in the joint warned her to desist
and she did. Though the pain did settle within a day or two, the move-
ment was reported to be right, I thought it best to see her, and I
found all in order. She had, however, had rather much difficulty, and
sometimes accompanied by a sensation of pins and needles. She was
then proposed by Dr. Martin that the exploring needle should be used, but she
asked that she might be sent to the Radcliffe Infirmary. On admission
a swelling about the size of an average orange was seen over the pos-
terior and lateral portions of the eighth right intercostal space. This
fluctuated, was tender to the touch, but showed no redness.

Percussion elicited dulness over an area corresponding to the lower
third of the right pleural space; there was no vocal fremitus, and the
breath sounds were inaudible. These physical characteristics were ap-
propriate for a clinical diagnosis of a hydatid cyst, in the right side, and
the symptoms of pain, weight, dulness, and a swelling in the
area, were considered very strongly in its favor.

I visited the patient on May 30th. She seemed to have considerable
pain on inspiration, and there was dulness over the area, and below it. I
found the chest to be rather free and the breath sounds were low, as
though lower ribs were absent, and the pleura was thickened.

On May 31st, Miss B. was sent to the Radcliffe Infirmary, and I had
the pleasure of undergoing the operation of thoracic section.

The patient was well and looked well, but the pain in the chest was
very severe, and the dulness in the chest was very marked. The
dissection was commenced, and the cyst was in the right side, and
was evidently a large one, as a large amount of fluid was present in
the pleura. The cyst was dissected out, and found to be quite large,
and was a good deal adherent to the ribs and pleura.

The patient was well and looked well, but the pain in the chest was
very severe, and the dulness in the chest was very marked. The
dissection was commenced, and the cyst was in the right side, and
was evidently a large one, as a large amount of fluid was present in
the pleura. The cyst was dissected out, and found to be quite large,
and was a good deal adherent to the ribs and pleura.

The patient was well and looked well, but the pain in the chest was
very severe, and the dulness in the chest was very marked. The
dissection was commenced, and the cyst was in the right side, and
was evidently a large one, as a large amount of fluid was present in
the pleura. The cyst was dissected out, and found to be quite large,
and was a good deal adherent to the ribs and pleura.

The patient was well and looked well, but the pain in the chest was
very severe, and the dulness in the chest was very marked. The
dissection was commenced, and the cyst was in the right side, and
was evidently a large one, as a large amount of fluid was present in
the pleura. The cyst was dissected out, and found to be quite large,
and was a good deal adherent to the ribs and pleura.

The patient was well and looked well, but the pain in the chest was
very severe, and the dulness in the chest was very marked. The
dissection was commenced, and the cyst was in the right side, and
was evidently a large one, as a large amount of fluid was present in
the pleura. The cyst was dissected out, and found to be quite large,
and was a good deal adherent to the ribs and pleura.

The patient was well and looked well, but the pain in the chest was
very severe, and the dulness in the chest was very marked. The
dissection was commenced, and the cyst was in the right side, and
was evidently a large one, as a large amount of fluid was present in
the pleura. The cyst was dissected out, and found to be quite large,
and was a good deal adherent to the ribs and pleura.

The patient was well and looked well, but the pain in the chest was
very severe, and the dulness in the chest was very marked. The
dissection was commenced, and the cyst was in the right side, and
was evidently a large one, as a large amount of fluid was present in
the pleura. The cyst was dissected out, and found to be quite large,
and was a good deal adherent to the ribs and pleura.

The patient was well and looked well, but the pain in the chest was
very severe, and the dulness in the chest was very marked. The
dissection was commenced, and the cyst was in the right side, and
was evidently a large one, as a large amount of fluid was present in
the pleura. The cyst was dissected out, and found to be quite large,
and was a good deal adherent to the ribs and pleura.

The patient was well and looked well, but the pain in the chest was
very severe, and the dulness in the chest was very marked. The
dissection was commenced, and the cyst was in the right side, and
was evidently a large one, as a large amount of fluid was present in
the pleura. The cyst was dissected out, and found to be quite large,
and was a good deal adherent to the ribs and pleura.
PARTIAL EXCISION OF PANCREAS.

[OCT. 19, 1901.]

after the operation a few more daughter cysts escaped much to our surprise, and for some time after this date an occasional one was to be found on the dressing. The lung gradually expanded until the cavity remained with a narrow sinus leading to it. It would not heal, however, and as the patient refused to allow of any further operative procedure she was discharged upon her own responsibility a further operation, but she would not allow of it, and so the sinus continued to discharge. At last one day in December Dr. Martin, when dressing the wound, observed the free end of the more prominent of the sinus escaped with forceps upon which he wound it, and with a good deal of care and some trouble it came away apparently entire—measuring when floated out about five inches in diameter. From this date no more bladders escaped, the lung expanded more fully, and the sinus gradually closed, the patient being completely well by the first week in February.

The features of the case which lend themselves most to comment are the rarity of cases of hydatid disease in persons who have always resided in England, the still greater rarity of pulmonary hydatid, and, rarer still, those affecting primarily the pleura.

Thus, Neisser in his analysis of 500 cases occurring in man says the liver was affected in 50 per cent, of cases, the lungs only in 10 per cent, and the pleura, in 2. He also states that the right pleura is more frequently affected than the left, in the proportion of 25 to 11, and the lower lobe than the upper.

It has been stated that it is almost impossible to distinguish between a primary affection of the pleura and a superficially placed cyst in the lung invading the pleural cavity secondarily.

The belief that this was a case of primary affection is based on the absence of any communication having been found at the time of the operation with either the liver below or the lung above after a very diligent search; from the fact that the liver was at no time increased in size, as ascertained by careful physical examination; nor were there at any time any of the usual pulmonary symptoms such as cough, expectoration of blood, or cysts, etc., complained of.

There was nothing in the subsequent history of the case to alter this opinion. There seems to have been a very unusual amount of pain from the very outset of the symptoms until the section was made; the distribution was clearly that of the intercostal nerve, but such severe pain is unusual in ordinary cases of pulmonary empyema coming to the surface, or in abscesses arising from tuberculous ribs in similar location.

The patient's health was fair, as seems to be usual in these cases, and the symptoms were those of a localised effusion into the pleura. Another point of interest was the marked persistency in the production of daughter cysts even after the cavity had been laid open and the mother cyst roughly handled, both at the time of operation and almost daily subsequently. The great difficulty, also, of removing the parent cyst was an important feature.

It would appear that the treatment of similar cases by the operation of thoracic section, with resection of adjacent ribs and free opening and draining of the cyst, is a sound, and one might say almost the obvious one. If left to itself the cyst is just as likely to burst into a bronchus, with all its serious consequences as to point externally. There are many fatal cases of pulmonary hydatid on record; besides if, as this case shows, it is such a difficult matter to kill and eradicate the cyst even when it is freely laid open and stuffed, how much must it be when it is entirely buried in a bronchus or other indirect channel? That aspiration for this reason is also likely to be unsuccessful seems probable. In addition to this it must be borne in mind that a peculiar train of symptoms, even fatal in their consequences, has followed upon the simple tapping of those cysts in other organs.

On the positive side of the question we possess the record of a case reported by Dr. T. Smith, of Walkertown, Ontario, of a girl, aged 15, who had been unwell for two years, and to whom had been attributed a chronic intercostal space. This was freely opened, and in the discharge which flowed were a number of echinococcyous cysts of various sizes. The patient recovered.

In the summary of the operations performed for hydatid disease at the Adelaide Hospital from 1888 to 1894 there is a record of 9 cases with no deaths after the operation of thoracic section had been performed for the pleura, and 12 cases with only 1 death where the lung was affected. It has occurred to me that in a similar case where thoracic section is performed, giving the patient an iodine bath two or three times a week, as is done in cases of pulmonary empyema, may be of some service in more readily destroying the cyst and allowing of its more speedy discharge.

REFERENCES.


A CASE OF SUPRAPUBIC LITHOTOMY FOR A VESICAL CALCULUS WEIGHING 200 GRAINS IN A BOY AGED 11 YEARS.

By E. MANSEL SYMOND, M.A., M.D., B.C.Cantab., M.R.C.S., Surgeon, Lincoln County Hospital; Vice-President of the Section.

This is a case of urinary calculus weighing 200 grains in a boy aged 11 years.

The history was as follows:

On April 14th, 1900, a boy, aged 11, entered the Surgical Ward of the Lincoln County Hospital with an enlargement of the back which had been noticed for some months past, and which it was thought might be due to a tumour in the bladder.

The patient's history was as follows:

He was the only child of a moderately well-to-do family, and was sent to a public school. He had not been under observation during his school years, as he was of a very bright and clever child. He was not under observation at home, as his parents were ignorant of the symptoms of urinary disease, and were not aware of the fact that he had an enlargement of the back.

The patient was examined by Dr. J. M. Michie, and was found to be a boy of 11 years of age, with an enlargement of the back, which was noticed for some months past. The patient was examined by Dr. J. M. Michie, and was found to be a boy of 11 years of age, with an enlargement of the back, which was noticed for some months past.

The operation was performed under chloroform, and with the utmost care, and was a complete success. The stone was removed, and the patient discharged cured on December 3rd, 1900.

A CASE OF PARTIAL EXCISION OF THE PANCREAS FOR MULTICALCULAR CYSTIC TUMOUR.

By GEORGE HEATON, M.B., F.R.C.S., Surgeon, General Hospital, Birmingham and the Birmingham and Midland Counties Hospital.

I. D., a single woman, aged 27, was transferred to my care at the General Hospital, Birmingham, by my colleague, Dr. E. Mallis, suffering from an abdominal tumour which had been growing in size for two years. Dr. Mallis examined the patient and found a large, firm, fixed mass in the left hypochondrium, which was tender on pressure.

Since the age of 8 or 10 years she had never been able to run about as other girls of her age owing to pain in the back, which any violent exertion, such as running or jumping, had increased. She had had a number of attacks of acute appendicitis, and had been treated for this condition on different occasions.

She had had two attacks of scarlet fever—one at the age of six years and a second at the age of 10. After each attack of fever she had been laid up for some months with pain in the back. She had had chorea twice—one attack when she was 8 and again when she was 10. Since the last two years the pains in the back had been worse than formerly, and had frequently prevented her doing any kind of work.

Condition on Admission.—She is a thin, spare woman of medium height. Complexion sallow. Eyes.—She has a soft cataract in the left eye. Appetite, etc.—Her appetite whilst under observation was good. She had no pain after food and her powers of digestion were apparently very good. The stools were somewhat constipated. The urine was examined on several occasions, but showed no excess of undigested fatty food. She was in a very good condition generally, and had no symptoms of other disease.

Chest.—There was nothing abnormal to be discovered in the chest.

Abdomen.—The abdomen moves freely on respiration; there is a distinct pulsation in the region of the supravesical portion of the abdominal cavity. There is a pulsating tumour of about the size of a small apple, which throbbed in time with the heart's action, and was felt just below the umbilicus. There is no abdominal pain while the patient lies at rest in bed. On palpating the abdomen the visible swelling was found to be part of a tumour which occupied the right hypochondrium and part of the epigastric region. The tumour was dull on percussion in its most pro-
The cyst, which passes deeply into the substance of the mass, and which held some pith and a-half of fluid. The fluid in this cyst was of a dark brown colour, and contained some altered blood. It had no digestive powers, and had sunk to the bottom of the organ. Movements of the head and in some of the other cases, normal spincter dulusness could be made out in the left side separated by an area of resonance, and whilst the fluid remaining in bed under observation, the swelling apparently altered con-
siderably in size and form. It was considerably larger and
tender on some days than on others.

Urinary System.-Micturition painless and natural. Urine: Spe-
cific gravity, 1.034. Acetone, 1.010. Sediment consisted of a few albumin.

2. November 4th, 1900. The patient was anesthetised, and a
long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.

Operation.—November 4th, 1900. The patient was anesthetised, and
a long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.

Operation.—November 4th, 1900. The patient was anesthetised, and
a long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.

Operation.—November 4th, 1900. The patient was anesthetised, and
a long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.

EXTRACTS FROM THE MEDICAL JOURNAL. OCT. 19, 1901.

Cyst, which passes deeply into the substance of the mass, and which held some pith and a-half of fluid. The fluid in this cyst was of a dark brown colour, and contained some altered blood. It had no digestive powers, and had sunk to the bottom of the organ. Movements of the head and in some of the other cases, normal spincter dulusness could be made out in the left side separated by an area of resonance, and whilst the fluid remaining in bed under observation, the swelling apparently altered con-
siderably in size and form. It was considerably larger and
tender on some days than on others.

Urinary System.—Micturition painless and natural. Urine: Spe-
cific gravity, 1.034. Acetone, 1.010. Sediment consisted of a few albumin.

2. November 4th, 1900. The patient was anesthetised, and
a long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.

Operation.—November 4th, 1900. The patient was anesthetised, and
a long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.

Operation.—November 4th, 1900. The patient was anesthetised, and
a long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.

EXTRACTS FROM THE MEDICAL JOURNAL. OCT. 19, 1901.

Cyst, which passes deeply into the substance of the mass, and which held some pith and a-half of fluid. The fluid in this cyst was of a dark brown colour, and contained some altered blood. It had no digestive powers, and had sunk to the bottom of the organ. Movements of the head and in some of the other cases, normal spincter dulusness could be made out in the left side separated by an area of resonance, and whilst the fluid remaining in bed under observation, the swelling apparently altered con-
siderably in size and form. It was considerably larger and
tender on some days than on others.

Urinary System.—Micturition painless and natural. Urine: Spe-
cific gravity, 1.034. Acetone, 1.010. Sediment consisted of a few albumin.

2. November 4th, 1900. The patient was anesthetised, and
a long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.

Operation.—November 4th, 1900. The patient was anesthetised, and
a long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.

Operation.—November 4th, 1900. The patient was anesthetised, and
a long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.

EXTRACTS FROM THE MEDICAL JOURNAL. OCT. 19, 1901.

Cyst, which passes deeply into the substance of the mass, and which held some pith and a-half of fluid. The fluid in this cyst was of a dark brown colour, and contained some altered blood. It had no digestive powers, and had sunk to the bottom of the organ. Movements of the head and in some of the other cases, normal spincter dulusness could be made out in the left side separated by an area of resonance, and whilst the fluid remaining in bed under observation, the swelling apparently altered con-
siderably in size and form. It was considerably larger and
tender on some days than on others.

Urinary System.—Micturition painless and natural. Urine: Spe-
cific gravity, 1.034. Acetone, 1.010. Sediment consisted of a few albumin.

2. November 4th, 1900. The patient was anesthetised, and
a long oblique incision was made in this condition, and the
swelling proved to be a hydropneumosis dependent upon any abnormal
condition of the left ureter, to attempt by some plastic operation to
remedy it.
SECTION OF OPHTHALMOLOGY.

DISCUSSION ON THE DIAGNOSIS, PROGNOSIS, AND TREATMENT OF PERNICIOUS MYOPIA.

L.—PRIESTLEY SMITH, M.R.C.S.
Ophthalmic Surgeon, Queen's Hospital, Birmingham; Professor of Ophthalmology, University of Birmingham.

Mr. PRIESTLEY SMITH said: We know by experience that myopia in many persons is an innocent condition, which continues through many years without much change, causing some inconvenience, it is true, but not leading to disaster of any kind. We know, on the other hand, that in some persons myopia is a pernicious condition which reaches a higher and higher degree as time goes on, is accompanied by damage to the tunics of the eye, and leads sooner or later to serious impairment or loss of sight. By what means and to what extent can we distinguish between these different forms of the disorder in their early stages? What can we do to arrest or hinder the progress of a pernicious myopia? These are the practical questions which we have been invited to discuss.

The chart of which copies are in your hands demonstrates several important points, and I will ask your attention to it at once. It shows the changes of refraction which occurred during periods of five years and longer in 100 cases of myopia observed by myself. The cases were taken consecutively from my private casebooks, and were not selected in any way beyond this: only those cases were used which had a myopia of at least 1 D, were free from disease of cornea, iris, and lens, and had been examined at least twice with an interval of five years; many of the cases covered much longer periods. The refraction was determined by the shadow test and Snellen's letters, usually without atropine. Errors due to spasm of accommodation are present, no doubt, on which any forecast must be based are, I think, the following:

1. The age of the patient.
2. The grade of the myopia.
3. The condition of the choroid and retina.
4. The constitutional condition.
5. The evidence relating to heredity.
6. The occupation of the patient.

I propose to deal briefly with each point, and must speak dogmatically, for time will not permit of cautious arguments and reservations. I hope by so doing to provoke the more discussion.

Age.—Other things being equal, the younger the patient the more likely is the myopia to increase in degree. In childhood and early youth myopia is rarely stationary. It usually increases during the period of bodily growth, and the rate of increase diminishes with the approach of adult life. In a large number of cases, perhaps in a majority, it comes to a standstill between the ages of 15 and 25. Age, alone, however, justifies no inference.

2. Degree of the Myopia.—Other things being equal, the

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Refraction change</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>Negligible</td>
</tr>
<tr>
<td>5-10</td>
<td>Mild decrease</td>
</tr>
<tr>
<td>10-20</td>
<td>Moderate decrease</td>
</tr>
<tr>
<td>20+</td>
<td>Severe decrease</td>
</tr>
</tbody>
</table>

This chart shows the percentage of cases in each age group with each grade of myopia.
higher the myopia the more likely is it to increase. For example, if fifty children, all of one age, have various degrees of myopia, the future increase of their myopia will, on the whole, be greater among those who are more myopic than among those who are less myopic. The same rule holds in adult life, but in adult life a greater proportion of the increase is less than in early life. It follows that a high myopia in a child is of very evil augury. A child who has 10 D when he is 10 years old is likely to have 20 D when he is 20. Fortunate are those cases in which the myopia, though not reversed, does not increase beyond the grade of myopia and the age taken together, unless we take also into account the actual state of the choroid and retina.

3. Condition of the Choroid and Retina.—The average vision of myopes sinks as the grade of the myopia rises. Richardson Cross has given striking statistics on this point.1 The higher grades are to be feared far less for the error of refraction which glasses can correct than for the loss of vision due to choroidal and retinal changes for which there is no remedy. In general these changes vary in gravity with the grade of the myopia, but they bear no fixed proportion to it. With equal grades of myopia they are more extensive in the older persons than in the younger, and may be complicated by little or no choroidal change, but we must not regard him as permanently exempt; it is likely to develop later. An adult with 8 D will generally show considerable choroidal change; should he exceptionally show none, he is safe; at any rate, much safer than the child.

What is the essential nature of these changes? They are, in their usual order of occurrence, first, the typical myopic crescent, then the more diffuse and patchy thinning of the choroid in the adjacent region, then pigmented and hemorrhagic changes in the retina at or near the macula, and in some cases detachment of the retina. The nature of the crescent is beyond dispute: it is due to stretching and displacement of the choroid in relation to the disc, brought about by yielding and extension of the sclera. Weiss, and lately Heine, have demonstrated the fact of this displacement by traction in the clearest manner. The more diffuse changes which occur later appear to be due to further stretching accompanied by vascular and degenerative changes in the damaged membranes. But this statement does not cover the whole ground. In certain cases myopia develops rapidly in connexion with obvious inflammation of the choroid, as in some cases of syphilitic choroiditis. Here the choroiditis seems to be the primary disorder, the yielding of the sclera the consequence. Further, in the region of the posterior staphyloma, we find, on occasion, and sciera are abnormally adherent to each other. Here is evidence of sclerotic choroiditis. Is myopia, then, in general, a result of an insidious choroiditis? Apparently not, for in the earlier stages there is usually no discoverable inflammation, and the choroid is not likely to be involved if the underlying membrane were inflamed. On the other hand, it is clear that congestion and inflammation do play an important part in certain stages and certain forms of this disorder, and chiefly in the pernicious forms. To what extent the yielding of the sclera and the vascular and degenerative changes in the choroid and retina depend on constitutional causes, rather than on the mechanical effects of muscular action, dragging on the optic nerve, pressure of the orbital contents, and such, is an important question. It will be one of the topics of the present time. 4

4. Constitutional Condition of the Patient.—We all see cases in which a rapidly progressive myopia is associated with malnutrition from one cause or another. Nettleship, speaking of myopia, says: "General enfeeblement of health, as after severe illness or prolonged suckling, seriously increases the risk of its progress, even after middle life." 2 Wray found in several cases that where one member of a family had a high myopia while the brothers and sisters had none, the myope had suffered from protracted infantile marasmus, the others not. 3 Schwabe, from extensive observations in Leipzig, concludes that men and women acquire high myopia with equal frequency, but at all ages the reduction of vision is greater in the women than in the men. The complications of high myopia, he says, are twice as common in women, and begin to appear in the lower grades, 6 to 10 D, while in men they are uncommon under 10 D. He attributes the difference to the greater liability to illness in women, their lack of exertion, and the fact that in the men the grave complications, the cataract, the glaucoma, etc., are delayed.

I may here repeat a suggestion made at one of our annual meetings eleven years ago, that the yielding and deformation of the sclera in some forms of myopia are due to the yielding and deformation of the bones in rickets. Special attention to the question has been given by Batten. He has advanced evidence to show that the development of myopia is frequently connected with chronic constitutional disturbance, and especially with high arterial tension. But of his observations I will leave him to speak. It is clear that constitutional disease may be a factor in any case of myopia. It may account for the abnormal yielding of the sclera; it certainly often aggravates the morbid changes in the choroid and retina.

5. Evidence Relating to Heredity.—The tendency to myopia is very frequently hereditary. Some observers hold that inherited myopia is commonly an innocent disorder, while others believe it is hereditary and hereditary. Have we any statistics in proof of this? It would be difficult to obtain them, for we cannot exclude heredity merely by examining the father and the mother. Moreover, at the time of life when the complications of high myopia chiefly occur the father and mother are likely to be superannuated. They are probably inaccessibie. Hereditary or family myopia, even of high degree, is sometimes of remarkably innocent type. Maceliose has published a striking instance of this. 5

I know a family where the father has myopia of 10 and 6 D, and two daughters each lost the use of one eye through complications of high myopia which occurred during adult life. The other three children are all, or nearly all, free from eye trouble. No doubt it is better to have a myopia inherited from one's parents and an otherwise sound organism, than a myopia acquired for oneself by reason of debility or disease, but we must not pronounce a myope to be safe simply because his parents were myopic before him.

6. Occupation.—The future of many myopic eyes depends on the way in which they are used. Prolonged and habitual close work does harm. We see the effect in overworked schoolchildren, clerks, schoolmistresses, literatry men, seamstresses, jewelers, typesetters, and others. We see it not only in the greater prevalence of complications among such persons, but in individual cases. Excessive close work in early life is often accompanied by rapid increase of refraction, and in later life it often aggravates complications. Patients who must, or will, continue such work in excess, especially those whose working distance is already too short, and who decline to lengthen it by the aid of glasses, are encouraging the disease. The amount of risk must be estimated from the grade of the myopia, the age of the patient, and the amount of choroidal change already present. To give a bad prognosis by way of warning is sometimes the best or only way to prevent its fulfilment.

Time forbids me to enter upon the question of the treatment, and I have no desire to do so, for I had my say on that subject at the annual meeting of our Association held in Birmingham last year, and it is little to add at the present time. I will only repeat one leading principle, namely, to suspect every myopia, and especially every youthful myopia, of a tendency to increase, until time has proved it to be stationary; to be doubly suspicious in presence of congestion or atrophy; and to re-examine at intervals of six months, twelve months, or longer, according to the nature of the case. Only in this way can we decide on the rational measures of precaution which are necessary in each case, and which are the essence of treatment. We can do far more important service to our short-sighted patients, if they will let us do it, by helping them to avoid a pernicious development of their disorder, than by any attempt at remedial treatment after the fact.

2 Nettleship, Diseases of the Eye.
4 Schwabe, Nagel's Yearbook, 1894, p. 147.
II.—ARCHIBALD STANLEY PERNIVAL, M.A., M.B., B.C., M.R.C.S.
Senior Surgeon, Northumberland and Durham Eye Infirmary.

Mr. PERCIVAL, after entering into an account of the action of the oblique muscles, contended that when the eyes were converged and depressed as in ordinary reading, together with the internal recti, the couple of superior recti was chiefly called into play, and to a much smaller extent the inferior recti, in order to overcome the slight residual torsional action of the superior oblique. This, he considered, had an important bearing on the development of posterior staphylomas and ptalophas of retained-d detrusor, as the two oblique muscles of the eye fall under tension near the posterior pole which would give way first. He stated that he was in the habit of attaching a bandage against depressing their eyes, and he advised them to read in an armchair, so that the book could be conveniently held at the level of the head by resting their elbows on the arms of the chair. By these and similar methods he had been able to arrest the myopia, notably in 4 bad cases.

III.—HENRY POWER, M.B., F.R.C.S.,
Consulting Ophthalmic Surgeon, St. Bartholomew's Hospital; Consulting Surgeon, Royal Westminster Ophthalmic Hospital.

Mr. HENRY POWER warmly complimented Mr. Priestley Smith on his interesting paper. He could only approach the subject from a purely practical point of view. In the case of a myopic child, he would try the ordinary glasses which should be seated in a position near a window from which good light would fall upon the book. Secondly, great attention should be paid to prevent the patient from acquiring the habit of holding the head too near the book, and, thirdly, the utmost care should be taken to ensure that the diet was full and sufficient, and particularly that no work should be done before breakfast. The diet as a rule in schools he was satisfied was insufficient.

IV.—A. DARIER, M.D.,
President de la Société d'Ophthalmologie, Paris.

Dr. DARIER said that after the excellent paper by Mr. Priestley Smith, there was but little to add except to point out the benefit which sometimes followed massage of the globe in myopia. Judging from cases of traumatic myopia in which a blow considerably increased the myopia present, one would expect that massage would do more good in cases of hypermetropia or presbyopia. This was also found to be true, but at the same time cases of myopia were greatly benefited by it, difficult as it might be to explain. He had seen both boys and girls suffer from myopia, and he had been able to see as well without glasses as with their former glasses of -1.0 D or -1.50 D, and in higher cases the vision with glasses could be much improved by massage. He considered that this was caused by its strengthening the ciliary muscle, increasing the nutrition of the membranes, and lessening the tension.

V.—ARTHUR HUGH THOMPSON, M.A., M.D.,
Assistant Surgeon, Western Ophthalmic Hospital.

Mr. THOMPSON said that Mr. Priestley Smith's chart was especially valuable, and confirmed what had been said that no hard-and-fast line could be drawn between stationary and progressive myopia. With regard to chorioiditis, a useful distinction could be made between cases with a well-defined crescent, whether single, double, or even treble, and those with some changes beyond the crescent. The former cases, if they saw well, might safely be ordered full correction for general use if the myopia did not exceed -6 or -8 D. Hereditary cases even as high as -12 D or more were often seen without any crescent, and monocular cases often belonged to this class.

VI.—HENRY EALES, M.R.C.S.,
Senior Honorary Surgeon, Birmingham and Midland Eye Hospital.

Mr. EALES agreed in the general views laid down by Mr. Priestley Smith. He found it convenient to classify the cases into two classes—first, those whose power of accommodation was good or excessive; and secondly, those whose accommodation was feeble. In the former cases he always ordered full correction for all purposes, even in high degrees of myopia, reserving weaker glasses for reading purposes, etc., for the latter only. He attached considerable importance to the presence of exophoria so often seen in myopes, and for these the addition of prisms often gave relief not previously obtained. Another point of great importance was the correct action of the lenses, especially in higher degrees, and by attention to those conditions much discomfort was frequently avoided.

VII.—ERNEST DYKES BOWES, F.R.C.S.,
Surgeon and Ophthalmic Surgeon, Gloucester General Infirmary.

Mr. Dykes Bowes said that being a myope himself he was much interested in the discussion. He considered that reading with insufficient light was a most important factor in developing myopia. Nearly all myopes liked and required accommodation, or the gnosaphy experienced by emmetropes and hypermetropes was very seldom seen in cases of myopia. He strongly disapproved of myopes indulging in gymnastic exercises which involved the muscles of the eye, and he drew attention to the fact that Mr. Priestley Smith had said nothing about the prognostic significance of muscae volitantes. Were they of evil moment? Was detachment of the retina more frequent in such cases, and did such eyes as had them require special care and attention?

VIII.—ERNEST E. MADDOX, M.D., F.R.C.S.Ed.,
Ophthalmic Surgeon, Royal Victoria Hospital, Bournemouth.

Mr. E. E. MADDOX thought that the increase of myopia was due more to fatigue and working under bad conditions than to accommodation, and he had been able to show that chief evil of convergence was the stooping it generally involved. When patients looked obliquely through their glasses to enable them to see better, the muscular strain involved was bad and the refraction should be carefully corrected. He considered that one great reason for the increase of myopia of high degree was the large area exposed to the liquid pressure proportional to the number of unit areas, which was very great in an eye of abnormally large size.

IX.—ADOLPH BRONNER, M.D.,
Senior Surgeon, Bradford Eye and Ear Hospital; Laryngologist, Bradford Royal Infirmary.

Dr. BRONNER had found fundus changes much more common in women than in men, and this, he thought, was due to menstrual vasomotor disturbances. In men choroidal changes were more common if they had suffered from syphilis. If a myope removed to a more sunny and brighter climate, an increase was very likely to take place, due to retinal congestion. Monocular myopia was more liable to increase if a correcting glass was not worn, and this spoke in favour of correcting all cases of myopia.

X.—RAYNER D. BATTEN, M.D., B.S., M.R.C.S.,
Surgeon, Western Ophthalmic Hospital.

Dr. RAYNER BATTEN said that he considered all acquired myopia as liable to progress under any unfavourable circumstances. In addition to the points mentioned by Mr. Priestley Smith, as regards the condition of the fundus, he laid special stress on the distortion and stretching of the retinal vessels as giving the earliest and most certain evidence of the occurrence, position, and progress of a staphycoma, and of the tilting of the optic disc, accompanied by oedema of one side of the disc, as an indication of progressive myopia. He considered that the treatment depended on the cause, and held this was usually due to deficient tone and supporting power in the muscles of the eye. This lack of tone was frequently due to constitu-
A NEW REFRACTOMETER.

D signed by CHARLES S. BLAIR, F.R.C.S.,
Assistant Surgeon, Western Ophthalmic Hospital.

This instrument has been designed for the purpose of facilitating the estimation of errors of refraction. It consists of a reversible frame, which is placed on the patient's face like an ordinary spectacle frame, and carries a series of revolving lenses, so arranged that ninety-four different powers can be placed before each eye. These + and — spheres range by quarter-dioptres up to 6 D, and above this by half-dioptres up to 17.5 D.

It is useful (1) in retinoscopy; (2) in subjective testing before test types in hypermetropia, myopia, and presbyopia, and also in astigmatism, by the addition of ordinary trial-cylinder cylinders, placed in the graduated cell and rotated in the ordinary way.

Details of Instrument.—There is a primary wheel and a secondary sector of a wheel before each eye, carrying convex lenses on one side and concave on the other, so that by reversing, either the plus or minus side can be brought before either eye. Arrangement is, however, also made to get the same result without reversing by means of superimposing, and thus to obtain binocular correction. Correct centreing is easy by means of a sliding adjustment at the centre of each wheel. The graduated cell for cylinders is removable. The instrument is light, weighing only 5 ozs., and is small enough with its case to be carried in the pocket. The lenses are 7 inch in diameter. There is no necessary superimposing of lenses for errors of refraction not exceeding + or — 6 D sph. The refractometer is made by Messrs. Curry and Paxton, 195, Great Portland Street.

SUPERFICIAL PUNCTATE KERATITIS IN BOMBAY.

By H. HERBERT, F.R.C.S., Major I.M.S.

[Abstract]

A FORM of superficial punctate keratitis has been found very prevalent here since the close of the last rainy season, especially so in the cold and early hot weather. The spots are minute and only slightly opaque, and need to be stained with fluorescein to be clearly seen. They appear slightly raised, with few being really opacities in the epithelium, more than filled up with lacrimal fluid. They often collect towards the centre of the cornea in the later stages, and may there form a ring flattened from above downwards. Fluorescin-staining lines or small patches may be found in the terminal stage. Occasionally there are a few spots on the limbus; the same, or a streak or patch, on the upper tarsal conjunctiva. The duration of a case is generally two to three weeks, and no corneal opacity is left. There is usually slight ciliary injection or conjunctivitis, though these may be almost absent; the latter tends to the formation of very small follicles on the upper tarsal membrane. There is generally some thickening of limbus, which aids in the detection of cases. The disease is seen in young adults chiefly. Almost invariably one eye only attacked.

Bacteriology.—Scrapings of affected epithelium contain collections of encapsulated bacilli, numerous and closely packed. The bacilli are rather short, with rounded ends; they have feeble staining properties, and do not colour by Gram's method. The groups of organisms are sparsely scattered and troublesome to find except in cases where the corneal spots are numerous. The cultural peculiarities of the microbe cannot yet be given, owing to a confusion with the bacillus pyocyaneus, which was grown from a considerable number of affected corneas. Scrapings of affected epithelium introduced into the healthy conjunctive of the patient's fellow eye on several occasions produced no result. Inoculation of a normal conjunctiva with an agar culture of bacillus pyocyaneus led to the formation of two small deep pustules on the upper tarsal membrane, besides a moderate diffuse conjunctivitis. More than a month later a few fluorescin-staining spots developed on the limbus and neighbouring cornea of this eye.

Note.

1 This statement may require qualification. Some incompletely de-coloured bits of tissue show the organism, and more especially the capsule, well stained. For a more definite statement on this point specimens will have to be stained as opportunity offers.

Mr. DEVEREUX MARSHALL stated that much confusion resulted from the term “keratitis punctata” being used for so many different conditions, and he did not think that the organism found by Major Herbert was proved conclusively to be the one causing the disease.

Mr. O. BLAIR thought the condition resembled Fuchs's keratitis. The President did not feel at all sure about the organism shown. He also thought that the term keratitis punctata, which was applied to the dots sometimes seen on Descemet's membrane, should be abolished.

A CASE OF SYMMETRICAL BULLOUS KERATITIS.

By J. THATHAM THOMPSON, M.B., C.M.,
Ophthalmic Surgeon, Cardiff Infirmary.

A CASE came under my notice in September last which appeared to me to be of sufficient interest and rarity to justify my bringing a brief record before this meeting. The patient was a male, aged 50, employed in the goods department of the London and North-Western Railway. He complained of intense photophobia which had been present for about three weeks. He stated that his general health was good, and that he had previously suffered from no other eye trouble. The present condition had commenced in both eyes simultaneously with a sensation as of dust, burning pain, and then photophobia and lacrimation on the
second day. No sticking of the lids. He had been using some lotion obtained from a chemist.

The photophobia was intense that I could make no examination until calamine had been freely used. Then I found that there was slight general congestion of conjunctiva, and that on both corneas was a ring of oval bullae radiating from about one centimetre from the corneal and its periphery, about 12 or 14 in number and oval, a pale pearly colour. The central corneal tissue was quite clear. V. 4/5. R. and L. and I read Jaeger No. 1.

On pricking one of these apparent bullae it seemed as if little fluid escaped, as the spot still remained elevated and apparently little less in size. I employed in turn warm solution of boric acid and mercury perchloride, boric acid, and alum, etc., but with no improvement; then I used sol. formol. 20% and calamine and atropine. Under this treatment the photophobia gradually subsided, and he was able to resume work about four months from the onset. I saw him last three months ago: there had been no return of the photophobia. V. 4/5 J.1, there was a ring of semi-opaque spots exactly corresponding with the bullae in each eye.

During the earlier part of his trouble there had been a good deal of frontal neuralgia, which suggests a possible herpetic origin, otherwise I am entirely at a loss to account for it.

AN UNUSUAL FORM OF KERATITIS ASSOCIATED WITH A GENERAL SKIN ERUPTION.

By Charles S. Blair, F.R.C.S.,
Assistant Surgeon, Western Ophthalmic Hospital.

The patient, a young man of 18, shows on the inner and outer side of each cornea a markedly raised, vascular, opaque, and firm swelling, more marked on the outer than the inner side, involving the limbus and the adjacent part of the cornea. On the outer side it is so much raised and defined as to be suggestive of a new growth. It is, however, stationary: these apparently increased for last two years, and is symmetrical. There has been no ulceration, and the rest of the cornea has remained all through quite clear, and is free from any signs of former keratitis. There have been no signs of any lesion of the palpebral conjunctiva. There has also been no iritis or cyclitis, and the vision has remained throughout perfect in each eye. The course has been marked by exacerbations, which have occurred at irregular intervals when the eyes have become painful, and the swelling increased.

At the same time as these exacerbations have taken place the face, and to a less extent the whole body, has become covered with a papular and pustular eruption, causing the patient such irritation as quite to prevent sleep. This has lasted as a rule for a few weeks and then subsided, to again recur after an indefinite period, about two such attacks occurring each year. These recurrences of skin eruption have always been coincident with the exacerbations of the eye lesions, and has been marked as to make it quite clear that they were in intimate connection.

In some respects these growths on the limbus resemble those described as occurring occasionally in the affection clinically known as "spring catarrh," but differ from this description in the entire absence of the characteristic condition of the palpebral conjunctiva, in the exacerbations not occurring only or even generally in the warm weather, and in its close connection with a general eruption.

I consider that this eye lesion, whether related to spring catarrh or not, is a part of the general skin affection, and that both are the result of a common cause, some constitutional dyscrasia or trophic disturbance.

Mr. Devereux Marshall thought the appearance of the case as depicted by the drawing suggested that the lesion might be of a tuberculous nature.

Mr. Blair, in reply, thought that this was possible, although during the four years he had watched it little or no change had taken place.

Q U A D R I U M P L ET S.—M. Etchechin recently reported before the Société d'Obstétrique, de Gynécologie et de Pédiatrie de Paris a case of stillbirth. The mother conceived her first child nineteen months before she was delivered prematurely at the fifth month of four infants, two males and two females. There were four placenta adherent in pairs.

M E M O R A N D A.

MEMORANDA.


THE PIGMENT OF AN IRIS ALTERED BY OPERATION.

C. C., aged 49 years, skilled labourer in a royal dockyard, received a blow from a crowbar over the left eyebrow nine months before his admission. It caused a scalp wound (scar still present), for which he was on the hurt list for one month. A year afterwards the chief of the left eye began to fail, and gradually got worse, until he could only distinguish between day and night. Five years after the accident an operation was performed in a civil hospital—presumably the removal of a cataract by the modified linear peripheral method. Both eyes were of a hazel colour before the operation; of this he is quite certain. I verified this fact by going to his home and questioning his wife. His present condition is:

Right Eye:
- Vision: Normal.
- Iris: Hazel colour.

Left Eye:
- Vision: 2/6, with a test type of 5 dioptres.
- Iris: Light blue in colour, like the eye of a wax doll.
- Iris does not react to accommodation or light.
- Shape of iris is very irregular, and prolapse had taken place into the end of the pupil.
- In the neighbourhood of the capsule of the lens there were two scars like white fibrous tissue, the results, I think, of a necrosis and this has become waxy.
- The blood vessels of the fundus could be made out, running towards a fibrous papilla.

The change in colour of the iris, the result of the operation and disease, is, I should think, a very rare occurrence. It is met with now and then in healthy eyes, as a brown patch in a blue iris or the reverse, and, in the case of the "witch of Prague," the irides were of a different colour.

I had this man under treatment for a contusion of the right shoulder, and not for his eyes.

ROBERT J. MACBROWN, M.B., D.P.H., Surgeon, R.N.

PARALYSIS FOLLOWING INFLUENZA IN YOUNG CHILDREN.

This year many children have been attacked by influenza in this district. The cases seem to have run a usual course, but in 5 of these I have noticed that in periods varying from ten to twenty-one days paralysis has set in. In 3 the legs only were affected, while in the other 2 cases both the legs and arms were involved. There was muscular wasting and inactivity to move the limbs. One child was sent to the seaside: the parents became alarmed, and consulted a specialist, who told them the child had inflammatory meningitis, and would probably be paralysed for life. This case, however, followed exactly the same course as the others. In about two months all the cases got well and the paralysis entirely disappeared. The treatment employed was tonics and massage.

Catherine Smith, M.B., Ch.B. North Collingham, near Newark.

H Y S T E R I C A L H I P.

The following case is of interest as showing an exaggerated instance of hysterical hip, and of the value of the negative evidence at times afforded by the Roentgen rays. The patient was sent to me by Dr. F. E. Fenton, of Ealing, in order to have a radiograph taken of the hip. She was then wearing a high-heeled shoe, and walked lamely, but the Roentgen photograph showed a perfectly normal hip-joint. Further examination showed that the shortening was apparent only, and there was no pain or tenderness in the joint: no prominence of the trochanter, and no flattening or widening of the obturator. It appears that two years previously to consulting Dr. Fenton she felt pain at times in the right side from the hip downwards as far as the knee. She was then attended by an orthopaedist, who treated her for hip-joint disease. She had the heel of her boot built up from time to time to compensate for the supposed shortening. On coming under Dr. Fenton's care he failed to find the usual signs of hip-joint disease, and the true nature of the condition as go was confirmed by the radiograph. The patient came of a markedly phthisical family, and was of a neurotic temperament.

London, W. D. WALSH, M.D.