AN ADDRESS

ON

SOME OF THE ANATOMICAL ASSOCIATIONS OF THE KIDNEYS, FROM A SURGICAL POINT OF VIEW.

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By EDMUND OWEN, F.R.C.S.,

Surgeon to St. Mary's Hospital, London.

MR. PRESIDENT AND GENTLEMEN,—If it were the custom for the reader of a Surgical Address to select a text before beginning his discourse, I should venture to remind you that, just previous to giving his beautiful description of Charity, St. Paul boldly wandered into the fields of Anatomy and Pathology in order to obtain some striking comparative illustrations for the subject then in hand. He was speaking of the various members of the body being mutually dependent upon each other, and, comparing one part with another, he insisted on the absolute necessity even of those members of the body which might possibly seem at first sight to be "feeble" or "uncomely." He does not tell us to which viscera or parts he is referring, and it certainly is not for me to offer a speculative suggestion as to which he meant, but, taking up his pathological parable, I should like to express my entire agreement with his statement that when one member suffers the other members suffer with it.

Such a comprehensive affirmation offers abundant material for thought for a half-educated medical man who sets out to occupy himself in working a linear speciality, and for the complaisant gentleman whose practice is, for the most part, based upon the shifting sands of *symptoms*. Yes; and also for the physician or surgeon with views as wide, may be, as the horizon—who rightly hesitates to prescribe for a patient until he has established his diagnosis upon the very rock-bed itself, or upon what he takes to be the rock-bed—which, however, is not always the same thing.

NERVE ASSOCIATIONS OF THE KIDNEYS.

In a large proportion of cases of renal disease the most prominent symptom is the subjective one of *pain*. At any rate, it is usually this which brings the patient to the surgeon, and makes the latter set to work to discover objective signs which may lead him to a correct conclusion as regards its cause. In speaking of the anatomical associations of the kidney, therefore, early and prominent attention must be paid to the nerves, which not only associate the kidney with the neighbouring parts, but also keep the kidneys in harmonious working with each other.

The nerves are derived from the sympathetic plexus in front of the upper part of the abdominal aorta, and into this plexus run branches of the splanchnics, the pneumogastrics, and also, indirectly, of the spinal nerves. These various filaments join in an entanglement from which the finest instruments of the most skilled dissector are unable to sort or unravel them, and each abdominal viscus takes filaments from this interlacement according to its needs.

Remembering that the testis was developed in close association with and proximity to the kidney, it is not surprising that the nerves of the renal plexus are intimately connected with those of the spermatic plexus. And to this association of nerves is due the explanation of the pain in the testicle to which renal calculus often gives rise.

With an innervation-scheme in which medullated and sympathetic filaments are thrown with ganglia into a central pool from which each viscus helps itself, as it were, it can hardly be a matter of surprise if the result does not always work out quite satisfactorily in a clinical sense. Of course such an arrangement of nerve-tissue could not possibly suffice for supplying motor influences to the voluntary muscles of the body which have to contract with energy and precision, nor would it serve for the prompt and precise conveyance of sensory stimuli to the brain, but for quiet-going viscera in smooth working-order the scheme answers perfectly. Still, when disturbance arises in the affairs of any individual viscus,

confusion is apt to occur, and errors of diagnosis and treatment are apt to ensue in consequence.

A man ought never to be made conscious of the fact that he has kidneys. Nature has done her best in this respect by hiding them safely away under the protection of the solid spinal column, the ribs and the diaphragm. They carry on their work without ostentation, and often in the face of bad treatment and great difficulties, and when at last one of them complains, its modest cry is apt to be unheard, to be misunderstood, or to be passed over unheeded. It may have been the kidneys which St. Paul spoke of as being "feeble but necessary;" if so, he might have gone on to describe them as "long-suffering." Surely there are no members of the body which are worse treated than they. And when they suffer the other members suffer with them—the heart, the arteries, the brain, the retina—everything.

Inasmuch as a man's age depends upon the condition of his kidneys rather upon the number of years that he has lived, it is, perhaps, on the whole, better for the sum of human happiness that they, the kidneys, should be hidden away than that the individual should be daily made aware of their gradually-increasing degeneracy.

Supposing that a calculus is forming in one kidney, a somewhat urgent and disquieting message is transmitted to the solar plexus. This is an unwonted occurrence, and the plexus is as unprepared for its reception and as incompetent to deal with it as, in somewhat similar circumstances, was that mixed Department in Pall Mall known as the War Office. All is muddle and confusion; and when an explanation is demanded—in the brain—(shall we say "in the Upper House?") as to where the disturbance arose, and as to the precise cause of it, answer comes that it was on this side or on that side—it may be right and it may be wrong. In the clinical case which I am about to relate the answer was as incorrect as it could be:—

A healthy-looking man, 36 years of age, was admitted to St. Mary's Hospital on October 7th, 1897. The notes say that he first felt dull pains in his back ten years previously, and that about five years ago he had a bad attack of renal colic on the left side; that he had several like attacks each year (which were always associated with vomiting), and that he had passed blood and many small calculi on various occasions. Here-follow some important remarks which I give, word for word, as they were taken down by the Surgical Registrar, Mr. V. W. Low: "During the two years previous to admission the pain had been entirely confined to the right side." For the purpose of this paper, I wrote the other day to the patient for his own account, and this is what he said: "These latter attacks of the previous two years were very severe and always confined to the right side, and relief was only procurable by applying linseed poultices and turpentine to the back, and then to the front, the marks of which were on one when I was examined."

Yes, this was so; at the time of his admission the skin of the front and back of the right renal region was deeply stained by the marks of fomentations, and the patient was quite satisfied in his mind that the small calculi, which he had passed from time to time, had come from the *right* kidney. Objective signs gave no help in the matter of localisation.

On October 13th the bladder was sounded, with a negative result, and a few days afterwards I explored the right kidney from behind, finding it larger than normal but otherwise healthy. The patient, a highly intelligent man, was, like myself, a good deal disappointed at this blank operation, but he promised to come into hospital again in a few weeks so that I might explore the other kidney. He was a bank clerk, and he fully understood that he had on this occasion, at any rate, made a mistake in his calculation.

Faithful to his promise, he came back towards the end of the following month, saying that since the operation he had been "perfectly comfortable," but that on one occasion he had passed some blood. On November 29th, I cut down upon the posterior surface of the *left* kidney, extracting a branching, coral-like calculus and several small calculi, and also evacuating a renal abscess of considerable size. The stone was phosphatic, and it weighed over 400 grains. Seeing how extensively this kidney was diseased, I hesitated for a little while whether I should take it away or not, but eventually

decided to give it a chance. So I deluged its interior with hot sterilised water, and in this way washed out some more small stones. A drainage tube was introduced into the kidney and the surface wound was closed.

Whilst in the Hospital the man occasionally passed small calculi *per urethram*; his urine contained some pus, and at times a little blood. There was, moreover, constant leakage from a sinus which persisted in the loin. He left the Hospital in January fairly well, except for the annoying sinus.

This sinus continued to leak; so he came into the Hospital again on St. Valentine's Day, 1898, in order that I might relieve him of that annoyance by removing the kidney. But when I examined him under an anæsthetic, and had explored the kidney with my finger, I had not the heart to perform the nephrectomy, as I found that a considerable amount of firm and apparently healthy tissue still remained. So I chased out a few more small stones, and determined to give the damaged organ yet another chance, though I felt that in so doing I was, to use a sporting expression, riding for a fall. The man stayed only a few days in the Hospital, and when he, shortly afterwards, resumed work at the bank, the sinus was still leaking. He continued at business for a little over a year, the sinus oozing all the time into pads of absorbent dressings. To use his own words, "After the Easter holidays, 1898, I continued daily to travel up and down to the City, without a single exception, changing the bandage at midday, and on going to bed my wife used to thoroughly wash and irrigate the wound and to pass a probe down. I never became offensive, and I had fairly good health until April, 1899. (I had a good deal of internal pain drawing me down on one side.) Then I came to see you when you immediately operated, and removed the kidney April 17th, 1899, after which the wound healed completely." He is now perfectly well, his large right kidney being quite up to the work thrown upon it—even after a 25-mile bicycle ride.

A particularly interesting feature of this case is that though the man was working in a crowded City office through the hot summer months, his fellow-clerks never noticed any unpleasant odour. Thus, it is evident that if an intelligent man with a renal fistula takes care of himself, his wound need not become septic nor his leaking urine offensive. Everybody knows this, I daresay, but I call attention to the fact so that I may the better be enabled to plead for a full chance being given to any kidney which is the unfortunate associate of a communication with the surface of the loin, so long, at any rate, as it is not discharging foul urine. One argument for the removal of such a kidney is that the fistula may become septic, and the patient's life thereby become endangered. But it certainly need not do so.

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; but I do not think that a more conspicuous instance than this, of the untrustworthiness of the subjective symptom of *pain* in renal calculus, is likely to be forthcoming. Subjective signs are proverbially untrustworthy through the whole range of surgery; but in the case of the kidneys, which have drawn their nerves blindfold from the epigastric pool, it is small wonder if, in the absence of objective signs, patient and surgeon are sometimes led by them to make mistakes.

It is strange how often vomiting is associated with injury to, or disease of, the kidney. So often, indeed, that in any case whatever in which unexplainable, or unexplained, vomiting persists, the medical man should make a careful examination of the kidney and of the urine.

The explanation of the constant association of vomiting with renal lesions is an interesting subject for speculation—Is the vomiting due to disturbance of the pneumogastric filaments, or of the sympathetic filaments, or of both? A blow over the solar plexus gives rise to the same symptom, as may also a squeeze of the testis, the nerve-supply of which, is, practically, the same as that of the kidney. But the statement of this fact does not help in the solution of the problem.

VASCULAR ASSOCIATIONS.

In one matter in particular the vascular associations of the kidney are important from a surgical as well as from a medical point of view. Let us take, for instance, the case of a man with old-standing stricture of the urethra, that is to say, a surgical case of damaged kidneys, or, if you will, a man with

early Bright's disease—a sufficiently vague term. The kidneys are just able to do the amount of excretory work which is demanded of them, but they have absolutely no reserve of physiological energy. The man indulges in a drinking bout, or, out at work, he gets wet through, and is suddenly attacked with subacute nephritis; and, perhaps, with complete suppression of urine. What is to be done for him?

The intestinal canal and the skin are always ready to lend the kidneys a hand (this expression is used in a physiological, not an anatomical, sense) if properly called upon, and, therefore, a full dose of calomel and jalap, and a hot air bath may suffice to help the comatose patient over this very serious crisis. But there is something yet that may be done towards relieving the vascular engorgement of the kidneys and putting them in working order once more. The practitioners of bygone days would have resorted to venesection, and I am not sure that I should not do so myself, for I am a keen advocate for this "old-fashioned remedy out of date," as the late Dr. Hare called it. But the method to which I would here refer is the application of a score of leeches, or the efficient employment of wet or dry cupping over the loins. And I desire to enter somewhat fully into the way in which this local abstraction of blood affects the vascular engorgement of the kidneys themselves.

If we take down from the dusty shelf the handbook of Anatomy which was so familiar to us in our student days—the only book in our old professional library, by the by, which has not become hopelessly out of date—we shall find (what we have never forgotten) that the kidney is supplied by the renal artery, and that the mass of the loins is supplied by the lumbar branches of the abdominal aorta. And from this brief description it might be taken as implied that the vascular systems of these two areas are separate and distinct. But if it were so the application of leeches or cupping-glasses to the loins could have but very slight influence upon the renal engorgement.

In his valuable work upon the Arteries which Robert Harrison published in Dublin in 1828, he specially called attention to the fact that the lumbar branches of the aorta helped in the supply of the kidneys—that is to say, that a free communication took place between the vessels of the abdominal wall and those of the abdominal viscera. Sir William Turner, also, when a Demonstrator of Anatomy in the University of Edinburgh, did a great deal of work at this subject, publishing the results of his injections and dissections in the *British and Foreign Medico-Chirurgical Review* of 1863. He gives an account of the parietal and visceral anastomoses from diaphragm to perineum, but just now we are concerned with the scheme only so far as it affects the kidneys.

The renal artery from the abdominal aorta having given the kidney all that it needs, sends branches through the fibrous capsule to join in an extensive anastomosis which the Edinburgh Demonstrator named the subperitoneal arterial plexus. The chief vessels in this anastomosis of parietal with visceral arteries, are the phrenic and the lower intercostal arteries, and the upper lumbar branches of the aorta. Together with this arterial anastomosis there is, of course, a free communication between the venous plexus of the parietes and that of the kidney. And thus it comes about that the application of leeches or cupping-glasses to the loins, has an equally direct and important influence in the relief of renal engorgement. A knowledge of this piece of anatomy explains, moreover, how it is that a turpentine fomentation or a mustard plaster, by causing a dilatation of the surface-capillaries, and getting them filled from the renal vessels, thereby relieves the congestion of the kidneys, and produces a valuable diuretic effect.

ASSOCIATION WITH PERITONEUM.

One of the most important anatomical features of the kidney is its situation behind the peritoneal sac. This circumstance might almost be taken as a suggestion that the proper route to the kidney is by the loin and not from the front, through the peritoneal cavity.

As is well known, Mr. Thornton was a strong advocate for operating by the transperitoneal route. In the *Lancet* of May 26, 1883, he wrote of the perfect suitability of the abdominal operation to all cases in which nephrectomy, and not mere nephrotomy, is the end aimed at.

But the ordinary surgeon cannot always be sure, when

setting out to operate, if he is going to remove the kidney or not. I should think that if he makes it a rule to cut down on to each kidney through the peritoneum with the idea that nephrectomy is needed, and then finds that, though there is an abscess in the upper part of the gland the lower part is healthy, he might be inclined to remove the kidney rather than, by leaving it, to run the risk of subjecting the peritoneum to infection. He might have desired to leave the damaged organ, and would probably have done so had he had a free hand, but, in the circumstances, he might rightly deem it more prudent to perform the nephrectomy.

If one is certain that a nephrectomy is to be performed the transperitoneal route on the outer side of the rectus (Langenbuch's incision) answers well. I have had occasion to use it a good many times, especially in dealing with sarcomatous and cystic kidneys in children, but I certainly would not adopt that method in a septic, or a probably septic, case, because of the risk of peritoneal infection. I will go back to the statement from which I started, namely, that the situation of the kidney behind the peritoneum is a strong suggestion, or even an indication, that the proper route to it is through the loin—except in the case of certain very large renal tumours.

I feel sure that, in hands less capable than Mr. Thornton's, the mortality attending the removal of septic kidneys by the abdominal route would be very large. Who can tell that in a case of calculous nephritis there is not a perinephritic abscess, or that the ureter itself is not distended with septic fluid? And either of these conditions would be a source of great danger if the peritoneum overlying the region had been incised, even when provision had been made for drainage through the loin, as in one of Mr. Thornton's cases. Taking advantage of the situation of the kidney behind the peritoneum, the surgeon who cuts down upon it from the loin makes himself far more the master of the situation than can he who explores it across the peritoneum through the median or the semilunar line, for the simple reason that he is unhampered by thoughts of the occurrence of a possible infection of the serous membrane should the kidney prove to be involved in septic processes. And until he has tried it, one could scarcely realise the amount of elbow-room (if I may be allowed this expression) that can be gained in the operation on a large renal tumour by hooking the fingers under the lowest ribs and forcibly drawing them upwards. This done, after a little sponging, a perfectly clear view can be obtained of the kidney and the most complete and leisurely access to it obtained. There are few renal tumours which cannot be effectually and efficiently dealt with from behind, though I readily admit that in the case of a child with a renal sarcoma the tumour had better be removed by abdominal section.

Calculous kidneys, which are not infrequently septic, certainly should be attacked from behind, for not only is the risk of direct soiling of the peritoneum much lessened thereby, but, in the case of nephrectomy being found expedient, it is much better to leave the end of the septic ureter near a lumbar wound, than to bring it up through the abdominal cavity to secure it at the anterior incision.

An advantage claimed for the anterior route is that the surgeon can examine both kidneys before determining how he should deal with the one which he has reason for deeming to be diseased. But I cannot think that his line of treatment would be materially influenced thereby. For, having cut down on to the kidney from behind, he would do his best for it in all circumstances: he would treat it on its merits. If it were hopelessly diseased he would be compelled to remove it, but in every case his first thought should be towards saving it. For though a part of it may be hopelessly beyond redemption, a good deal of the remainder may be worthy of being offered a further trial. No surgeon, I imagine, who is upholding the advantages of the anterior route, would go so far as to say that, having ascertained by inspection that one kidney is sound, he can with less compunction proceed to the total ablation of the other. And I venture to affirm again, that in each individual case the operator should proceed on the most conservative lines possible.

ASSOCIATIONS WITH THE COLON.

I wonder if in Glamorganshire surgeons have ever met with such experience as that through which I have at times unhappily had to pass in London, of several of his cases,

hospital cases and private cases, actually or apparently going wrong together? When clinical records, bedroom reports, thermometric charts and x-ray shadow prints all seem to be pointing with fateful fingers at one and the same time.

So far as my personal knowledge goes, I am apparently the only operating surgeon in London who has met with this experience; and I am heartily glad of it, for I would not wish my worst enemy to undergo it! The feeling, as I have experienced it, is such as to make a surgeon wonder if he did not, after all, commit a grievous error in the choice of his Profession; to induce him at once to throw it up, and to seek the friendly solitude offered by a silent trout stream, or by a crowded Continental express train, according to the season of the year. Failing this, however, a little time and a dose of blue pill may prove very serviceable.

I ask if anyone in this part of the Principality has ever gone through such sad experience, because I am now amongst my Celtic congeners, and I think it just possible that the Celtic temperament may have something to do with so unhappy a state of affairs.

Venturing to assume from your silence that at least one of you has known similar fits of depression in connection with his professional work, I at once feel less lonely; and, being thus enabled to speak in the first person plural, instead of a solitary individual, I will ask if we are to explain the condition on the theory of the possible inheritance of some mysterious psychic legacy from an ancestral Druid of dyspeptic nature, who, becoming discredited in his profession because of his having persistently made wrong prognoses from the flight of the birds, or from the curl of the smoke of his sacrificial fires, fled despondent from his shady grove, and, somewhat late in life, turned his wasting energies perchance into the more honest and healthful paths of agriculture.

At any rate, just before the last period of the gathering of the sacred mistletoe, I was passing through such a time of trial as that just referred to, and when my cup of clinical misfortune seemed already full, I became associated with a peculiarly calamitous case, which I will report to you after I have made one more digression.

Before relating it, I would ask how it is that in London the operative experience of almost every surgeon is apparently so extremely happy? For happy it must surely be. Read your *Journal* or your *Lancet*. Do not the unvarying and triumphant successes of surgery smile on you from every page?

Nevertheless, when I am studying some professional essay which is based upon a series of universally successful cases, which boldly conveys, or like an *Æsop's* fable ends up with a puffy "moral," I am now and then tempted to wonder if in the compilation of it the diplococcus of the imaginative faculty has not here and there been allowed to get the better of the germ of truth. But about this "germ of truth." It is strange how little we hear of it now, even in laboratory work. I understand that it is most difficult of cultivation; that it will not grow in hay-broth or gelatine, or upon fresh cut slices of potato. So delicate is it that there is a risk of its altogether disappearing out of cultivation, like the beautiful pseudo-narcissus or Tenby daffodil, that plant so dear to our illustrious friend, Dr. Vachell. In the 26th volume of the Cardiff Naturalists' Society, Dr. Vachell tells us that this, our only native narcissus, which used to thrive so well in South Wales, has now almost entirely disappeared from the land it loved, by reason of the attacks made upon it by scientific and commercial botanical thieves, who came from London and other parts of the adjacent country of England in search of the precious bulbs. Let us hope, for the sake of the Principality, that the day may be far distant when English bacteriologists and other men of science will come to Wales in search of the few remaining specimens of the germ of Truth!

On the first day of last December I saw with my colleague, Dr. Sidney Phillips, a clergyman, 42 years of age, an unusually well-made, muscular man, who, except for a somewhat "worn" expression, looked as if he were in perfect health. This is the history that Dr. Phillips gave me of his case:

"He had always enjoyed good health till the beginning of

the spring of 1900, when he began to get pain in the back when bicycling. On July 3rd, 1900, he travelled by train to Llandudno from Northampton, and experienced pain on the journey, and this became more severe in the evening. Since July he has been constantly in pain, but it has been most severe in the evenings and nights. About the 6th of October the pain became a good deal worse; he is doubtful if exercise brings it on, but he feels it more when he has had a railway-journey. The pain goes into his left thigh and testis. He thinks that he has never had hæmaturia. The urine deposited phosphates with heat; there was no albumen in it, or sugar. He used to weigh 13 st., but on October 17th, 1900, his weight was only 12 st. 8 lbs. He had "gravel" at the age of 25, and since then he has not held his water well, never going through a night without having to get up to pass urine. He does not think the frequency of micturition has become more marked of late."

Dr. Phillips examined him under an anæsthetic on October 17th, as he held his abdominal muscles so tense on the left flank that no deep palpation was possible; but nothing abnormal could be detected—neither fulness nor tumour. On December 1st Dr. Phillips received a letter from the doctor who had been looking after him in the country, in which it was stated that there had been blood in the urine on several occasions. The opinion of the doctor was that the cause of the trouble was renal calculus.

When I examined him there seemed to be so much tenderness in the front and back of the lumbar region that I was not able to make a thorough exploration. The muscles were rigid, and I could not thrust my fingers into the renal region. The patient told me of pains running into the thigh and into the testis, and I also arrived at the conclusion that he probably had a stone in his left kidney. Accordingly, on December 5th, in the presence of Dr. Phillips, I made an incision from the tip of the last rib to the outer border of the erector spinæ, but on cutting down to the posterior surface of the kidney I could detect no stone. I then loosened the connections of the kidney and brought it out on to the surface, and still finding no stone, I incised the outer border of the kidney and introduced my finger into the interior, but with a like negative result. Greatly disappointed, I closed the wound, inserting a gauze plug which passed into the interior of the kidney.

Subsequent to the operation the patient suffered considerably, so that several injections of morphine had to be given him. But although the appearance and surroundings of the wound remained perfectly healthy, his general condition caused great anxiety. He had no high temperature or shiverings to suggest that his failure to improve was due to septic causes, but he became more depressed and feeble day by day. Rectal stimulation was resorted to, as was also the intravenous injection of a hot saline solution; but all to no purpose. He died about midnight on December 8th.

On the afternoon of that day I was examining for the Bachelor of Surgery degree of the London University, and during an interval in the examination I told my colleagues how a splendidly-developed man was slipping through my fingers after a disappointing operation for supposed renal calculus. My co-examiners were human and sympathetic, and one of them remarked that the unhappiness of a case of this sort is sometimes greatly softened by the disclosures of a *post-mortem* examination. And so it was here; for the necropsy revealed a small epithelioma growing into the interior of the descending colon at the level of the kidney, and secondary deposits in the liver, which were so hidden in the phrenic vault as not to be easily recognisable, though one of them was as large as a small cocoa-nut. "The kidney was found to be quite normal, and only showed the incision of the operation."

Nec silet mors is the motto of the pathologists; and certainly the information which Death vouchsafed on this occasion, that a splendid-looking fellow had died of cancer and not of the results of an operation for a renal calculus which did not exist, was most welcome to everyone concerned!

From a surgical point of view, the most important of the anterior relations of the kidneys is certainly the large intestine, the ascending part of the colon lying in front of the right kidney, and the descending part in front of the left.

On New Year's day of 1895 a man aged 55 years was admitted into the Thistlethwayte Ward of St. Mary's Hospital. He looked very worn and ill, and he remarked that he had lost four stone in weight during the past three years. He said that his troubles began about four years ago with a dull, dragging pain in the right loin, which sometimes extended across the abdomen, but generally shot down into the right groin. The pain came and went irregularly, lasting six or ten minutes and disappearing completely between the attacks. He had steadily got worse, and a little more than a year ago he went into a large London hospital, where the surgeon under whose care he was told him that his distress was due to the fact that he had a "floating kidney," and that it ought to be cut down upon and stitched in its proper place. To this operation he said he submitted, and a long, linear scar running obliquely over his right lumbar region seemed to confirm this statement. The man further said that the very day after that operation he had recurrence of his old pains as severely as ever, and that on informing his surgeon of this, he had received the explanation that the "kidney must have broken loose again."

From that moment it was recognised that the operation had produced no improvement whatever. On the other hand, the pains, which were steadily increasing up to the time of the operation upon the kidney, continued to increase subsequently, so that when he applied for admission to St. Mary's Hospital he compared them to "a thousand knives." He had also been troubled with loose, blood-stained actions of the bowels. On examination, a circumscribed tumour could be felt deeply in the region of the ascending colon, well above the level of the cæcum. It was hard and tender, and was evidently the starting-point of all his pains. Whilst examining this mass, it was noticed that distended pieces of intestine in the neighbourhood were struggling to rid themselves of a collection of gas which was apparently divided up into hard, ball-like masses. Indeed, so vigorously was the peristaltic action being carried on, that the gas was locked up in the segments of the bowel under such tension as to convey, at a first touch, the idea of the balls being solid. But they were resonant on percussion, and they presently changed their position or disappeared altogether. The man was given to understand that in all probability he had a cancerous mass which was blocking his bowel, and that though, possibly, it could not be removed, still some operation might be performed with the view of getting the contents of the bowel beyond the blockage, or of securing for them an easy and painless outflow.

On January 4th, therefore, a free incision was made through the right semilunar line, and a hard mass of the size of the fist was found in the colon as it ascended in the renal region. I proposed short-circuiting the ileum with the colon beyond the obstruction, but on one of my colleagues urging that this could afford the patient but short or imperfect relief, I resected the cancerous bowel and connected the divided ends of the colon by a Murphy's button. The growth proved to be a columnar epithelioma which almost entirely blocked the passage. Below the obstruction the muscular wall of the intestine was greatly thickened, with the object of forcing onwards the liquid and gaseous contents. Unfortunately the man died. On the evening before his death there was a slight escape of feculent fluid from the wound, and the conclusion formed was that the splice was not watertight. At the *post-mortem* examination it was found that a perforation had occurred upon the distal side of the bowel, where the thin intestinal wall had pressed against the edge of the button. The man had been so weak, however, when the discharge was noticed, that it was not considered practicable to open up the wound and examine for the seat of the leakage.

Having told you that this case ended fatally because of the edge of the metal button causing a perforation of the bowel (for the occurrence of which I readily accept the blame), it is obvious that I do not cite this report with any thought of building up a surgical reputation. Nor do I cite it with the idea of making any invidious reflection upon the surgeon who, about a twelvemonth previously, had mistaken carcinoma of the ascending colon for a movable kidney. But I bring it forth from the clinical treasury because it so well illustrates my paper. And let me tell you that the surgeon

who made the mistake was a man who deservedly occupied an extremely high position in the surgical world—indeed, he had been a President of our College.

May I take this opportunity of saying that there must sometimes be a considerable amount of uncertainty in connection with the diagnosis of floating kidney? I do not suggest, of course, that this man had at any time such an affection; the evidence, as I read it, is very circumstantial and all against such a theory. Nevertheless, that, apparently, was the diagnosis made before the operation by one of the most practical and illustrious surgeons of the day. A cancer in the middle part of the ascending colon would give rise to dull aching and pains which the patient would almost certainly associate—at first, at any rate—with his *kidney*, for he is fully cognisant of the fact that his kidneys are in his loins. The knowledge of this important piece of anatomy seems to be almost universal. Then, as the tumour continued to grow larger, and the bowel became more and more loaded and distended, the lumbar aching would increase, on account of pressure upon the psoas and upon the lumbar nerves. This pressure would especially be felt by the genito-crural branch: and so it came about that the patient complained of pain shooting into the groin and into the region of the cord and testis. Had these symptoms been associated with blood in the urine, they might have suggested the presence of a renal calculus; but there was no history of hæmaturia, and, as there was a movable mass in the region of the kidney, the existence of a *renal calculus* would hardly be thought of.

Accounts given by patients of the treatment carried out by their former medical attendants, as of their symptoms, are usually untrustworthy. It is quite possible that the operator never suggested that this man had a floating kidney; but the scar gave unmistakable evidence of the kidney having been cut down upon in the loin, and this, the man said, was for the relief of pains which except in degree, were identical with those for the relief of which I unsuccessfully removed the intestinal growth.

In the *BRITISH MEDICAL JOURNAL* of April 13th, 1901, Professor Morton, of Bristol, briefly recorded a case which was of a somewhat similar nature. The patient was a woman aged 49. Her symptoms were pain in the right loin and right side of the abdomen, with occasional vomiting, but no symptoms of intestinal obstruction were present. The swelling was hard, not tender, and lay between the right anterior superior spine and the umbilicus, but rather nearer the former than the latter. It was about the size of the kidney, though not quite that shape, being broader at the top than below. Mr. Morton operated in November, 1898, and first explored the loin to determine if it was a movable kidney. It was so movable that one of his colleagues even suggested that it must be a *floating* kidney with a meso-nephron. Finding by the loin-exploration that the kidney was safe and sound in its proper place, he then opened the abdomen from the front, resected the cæcum (which was the seat of a malignant tumour), and successfully married the ileum and colon by a Murphy button.

In commenting on the case, Mr. Morton remarked;—"It is sometimes difficult to distinguish between a distended gall bladder and a movable kidney, but it is not often that a tumour of the cæcum gives rise to the same difficulty in diagnosis. This tumour could be pushed well back into the loin, and when the patient was under the anæsthetic, just before the operation was commenced, I could push it right under the umbilicus. It did not feel like a kidney in shape, but such free mobility was very suggestive of movable kidney, especially the way in which it seemed to fall back into the loin. Inflation of the colon with hydrogen gas would not have aided us in diagnosis, for the production of greater resonance in the position of the swelling would have seemed to indicate an overlying colon, and would therefore have favoured the view that the swelling was renal, whereas the increased resonance would have been within the swelling itself."

Having just now narrated a case in which a late President of the College of Surgeons mistook an affection of the colon for one of the kidney, I think it not inappropriate that I tell of another in which a late President of the College of Physicians diagnosed a case of renal calculus as one of disease of the large intestine. I am indebted to Dr. Sidney Phillips for

the clinical details; he gave them to me when we were discussing together the case of the clergyman which I reported a short while back.

A gentleman, 33 years of age, well-known in Art circles, suffered from pain of irregular incidence in the right iliac fossa for many years. Nothing was detectable by examination of the abdomen, and several well-known physicians of eminence, amongst whom was the President of that day, agreed in thinking that his pain was due to some thickening or adhesion about the ileo-cæcal valve. (At the present time it would probably have been ascribed to "appendicitis," and it is not improbable that some one would have had a look at his innocent appendix.) He was ordered a belt which gave him comfort and support, and a diet which did neither. On February 9th, 1892, he was suddenly attacked with intense pain in the back and faintness, after a sudden movement when pulling down a cord from above his head, and a swelling appeared in the right lumbar region. This was soft and tender, and was probably an extravasation of blood into ruptured muscular fibres. The same night there was frequency of micturition, and the urine contained blood. Thirteen days after this he seemed better and went for a drive. In the evening he passed urine containing a good deal of blood, and this recurred once or twice. There was tenderness in the right renal region, and pain about the perineum and testis. On February 25th Mr. Beck sounded the bladder, but no stone was found. The patient was ordered to take turpentine in capsules; on the next day he had a severe attack of renal colic, and passed a uric acid calculus. Probably the sudden effort in pulling down the cord slightly moved a stone from the pelvis of the kidney as well as ruptured some muscular fibre in the back.

Dr. Phillips saw him the other day, and says that he is now quite well.

ASSOCIATION WITH THE STOMACH.

It has been said that if a person comes to you complaining of "heart disease" you are to suspect indigestion, and that if he tells you that he is distressed by "indigestion" you are to suspect morbus cordis. This is certainly not very complimentary to the diagnostic acumen of the ordinary layman; nevertheless, the physicians may possibly agree with me in saying that the aphorism is not far wrong. But the appalling fact is that upon his imperfect diagnosis, the ignorant patient often proceeds to erect a scheme of treatment for himself! He generally knows, or thinks that he knows, exactly which bottle of those wretched tabloids he has to select; and if, by chance, he does not feel equal to joining in such a pharmaceutical lottery, he not infrequently borrows a second-hand prescription from a friend who, still judging from symptoms, he assumes to have the same sort of complaint. Sometimes, however, he decides in preference to unburden his woes to the "medical editor" of a $\frac{1}{4}$ d. paper, and treats himself accordingly. Surely he well deserves his fate! The work of the general practitioner has long since ceased to be the personal matter it was in former years; and that sympathetic and trusted individual, who used to be known as the Family Doctor has now, I believe, been widely supplanted by a weekly periodical of the same name.

But I am again digressing. What I am working up to is this—that though the stomach lies just beneath the heart it is also a close neighbour of the left kidney; and that when it is distended it may seriously worry that organ, especially when the kidney is enlarged or inflamed:—

On the 25th of last October I operated upon two cases of renal calculus, one of them being that of a butcher of middle age. He had had acute pains for about nine months which had been confined to the left renal and lumbar region and to the back of the iliac crest. There was no mention of inguinal neuralgias, nor of retraction of the testis, nor was there any other suggestion that particles of stone had been forced down the ureter. Still, he had passed blood-stained urine and gravel, and he had had severe attacks of vomiting. My ward clerk, Mr. Ramsay, recorded in his notes this interesting clinical detail, that the pains were always worse after the man had had a full meal, or even after his stomach had been distended by his drinking aerated waters. At the operation we found the kidney so greatly inflamed and enlarged, that had the clerk omitted to make that statement we were almost in a position to supply it.

ASSOCIATIONS AS REGARDS SAFETY—RUPTURE OF
KIDNEY.

The aorta and vena cava rightly occupy the most secure position in the abdomen. Next to them come the kidneys, lying close by the side of the vertebral column, upon the lowest ribs and the diaphragm. Their bed is made soft by the phrenic arch and the psoas, and by a large quantity of semi-fluid fat in the midst of which they are comfortably packed. Here, if anywhere, they ought to be safe from the effects of violence, but a kick from a horse, a blow from the shaft of a cart or the buffer of a railway coach, is very apt to find them out and rupture their somewhat friable tissue. Hæmorrhage is the inevitable result of rupture of the kidney, some of the blood finding its way down the ureter and giving rise to hæmaturia, and probably still more of it being extravasated into the loose connective tissue between the transversalis fascia and the peritoneum, for, as a rule, in these cases, the peritoneum is not torn. If a large division of the renal artery is lacerated, the bleeding may be very serious, the patient becoming blanched, and a definite dullness occurring in the lumbar region. But in the case of a formation of a tumour in the loin being associated with rupture of the kidney, it must not be assumed that this is due to hæmorrhage, for it often happens that the hæmaturia clears up and that aseptic urine quickly collects in the perinephritic tissue with scarcely a stain of blood.

The outlook, of course, is most serious when the injury is quickly followed by the formation of a lumbar swelling, and the increasing collapse of the patient points to internal hæmorrhage.

I may further allude to this subject shortly, but, in the meanwhile, I wish to refer to a case of ruptured kidney which was associated with the slow and quiet formation of a lumbar swelling:—

On a 26th of April a boy of seven was kicked by a horse on the front of the left side of the abdomen. He immediately became blanched, but complained of no great pain. No abrasion could be found, but the muscles of the abdomen were tense and tender. Beyond this, nothing abnormal was detected. Persistent vomiting supervened, lasting twenty-four hours. In the evening a considerable quantity of blood was passed with the urine, and this continued for two days, after which the urine became free from blood. No severe pain was complained of, but tenderness persisted over the seat of the injury. The temperature kept below 100° F. He remained fairly well until May 11th, when he complained of left lumbar pains and had some return of vomiting. There was still no rise of temperature. On the 13th a tumour the size of a large orange was made out in the left lumbar region. This increased rapidly, without constitutional disturbance beyond occasional vomiting and paroxysmal pains, which were referred to the lumbar region and the thigh. These pains increased in severity as the tumour grew larger. On May 22nd the tumour, which extended above to the false ribs and below to the crest of the ilium, was aspirated by the loin, and a wine-bottleful of bloody urine was withdrawn. After this the vomiting and pain ceased, but on the third day the tumour began to refill, and with this the vomiting and pain reappeared. A second aspiration was therefore performed and with a like result. After this, on the fluid reaccumulating, I advised that an incision should be made in the loin for exploration and for needful drainage. This being done, the kidney was found to be torn right across. The upper part comprised about four-fifths of the gland, and the lower fifth was separated from the main part by a considerable space in which blood-stained urine had collected. The capsule of the kidney had been completely torn across, and the blood and urine had evidently collected in the loose tissue around the kidney and between the fragments. A drainage tube was placed in the wound for a few days, and the boy made a complete and uneventful recovery.

I quote this case somewhat fully with a double object in view; first, that I may make some more remarks in connection with the post-peritoneal situation of the kidney, and, secondly, that I may call attention to the fact that because a kidney is ruptured it need not necessarily be removed. I will deal with the second clause, and will speak rather strongly upon it, because I have seen it stated, in more places than

one, that nephrectomy is the line of treatment to be adopted if a kidney is found ruptured, and because triumphant reports every now and then appear of cases thus ruthlessly dealt with. I feel sure that such radical and heroic treatment would never have been thought of, much less advised, if human subjects—surgeons as well as patients—had been supplied with only a single kidney. But because Nature has been bountiful should Surgery become reckless? I am satisfied that if, in making a lumbar incision for the treatment of hæmorrhage, either directly after the receipt of the injury or, later on, for dealing with the hydronephrosis, the kidney is found to be torn across, Nature, who is resourceful as well as bountiful, should be afforded the opportunity of showing how much she is able to effect for the repair of that damaged organ. Then if, after all, the presence of a persistent renal fistula showed that the clearing of the ureter of clot, or the efficient repair of the kidney could not be effected, nephrectomy might be thought of. But even then it should not be resorted to until “everything” had been tried with a view of restoring efficiency, though if the local trouble were associated with persistent suppuration and its attendant risks, the surgeon might have no alternative to excision. In these days of surgical enterprise and aggressiveness I have felt it incumbent upon me thus to put forward a plea for the kidneys.

Supposing that on making a lumbar inspection of the ruptured kidney it were found that not only was the capsule ruptured, but that the rent extended into the peritoneum, so that hæmorrhagic and urinary extravasation had taken place into the abdominal cavity, the patient could easily be placed in the supine position, the peritoneal cavity opened and wiped out, and a drain conveniently arranged through the loin-wound. But even in such a case, unless the kidney were hopelessly damaged, the desire of the operator should be to afford it a chance of undergoing repair. Circumstances may be such that Nature cannot be entrusted with repairing a ruptured stomach or bladder, but a ruptured kidney may offer her no more serious difficulties than does a torn muscle or a broken bone. All that she demands is a little surgical help, and a good deal more surgical trustfulness than (in the case of the damaged kidney) is at the present time apparently bestowed upon her.

REMARKS

ON

SKIAGRAPY AND FRACTURES :

ESPECIALLY IN THEIR MEDICO-LEGAL RELATION.

*With Special Plate.*By C. H. GOLDING-BIRD, M.B.LOND., F.R.C.S.ENG.,
Surgeon to Guy's Hospital.

THE perfection now reached in the art of skiagraphy, notably in its instantaneous form,¹ and the facilities offered all over the country for obtaining skiagraphs, compel the attention of the surgeon to the real value of this novel method of investigation, as an agent for good or the reverse.

That the use of the *x* rays possesses physical drawbacks all who have employed them are well aware; and though these may be presently combated, we are for the time being dealing with an agent of which we know hardly anything, and over the chemical, nutritive, and penetrating properties of which we have practically no control.

The acute injuries done now and then to the skin of patients submitted to the influence of the *x* rays are far from uncommon, whilst the chronic atrophic changes induced on the hands of operators is a very serious drawback that has to be reckoned with, although we may hope that the introduction of instantaneous methods of skiagraphy will materially modify all this.

It is an ill wind, however, that blows no good; and this very atrophic change that the rays induce is now being studied with the view of using it as a therapeutic agent in various affections, especially of the skin, and notably of lupus, and apparently with marked success; though as yet there has not