STATED MEETING, MARCH 3, 1902.

The President, RICHARD H. HARTE, M.D., in the Chair.

FRACTURE OF THE PATELLA TREATED BY WIRING.

DR. W. L. RODMAN presented a man, forty years of age, who had sustained a fracture of the patella ten weeks ago. The patella was wired simply by placing the wire through the fibro-aponeurotic covering of the bone instead of drilling the bone. The joint was found to be full of blood-clots. It was thoroughly irrigated with normal salt solution and the wire introduced through the periosteum covering the fragments, which were widely separated and turned down, so that good results would have been impossible by non-operative treatment. Recovery was uneventful, and the temperature was never more than 99.5° F. There had been no resentment in the joint. As a precaution to prevent refracture of the bone, he is wearing an apparatus at the present time. Wiring was done two days after fracture.

DR. H. R. WHARTON expressed the opinion that there was not bony union between the fragments. He thought, however, the result would be a very good one, and the separation of the fragments would be limited by the presence of the wire. He had never used the silver wire in the aponeurotic structures, but rather favored the method of Stimson, of bringing the aponeurotic structures together with catgut and then closing the wound as Dr. Rodman had done. He thought the question of wiring the patella was still on trial. He saw very excellent results by the older methods of treatment, by simply fixing with posterior splints, compresses, and adhesive strips. Either this method of wiring the bone or suturing the aponeurotic structures with catgut is better than Barker's method, which consists of passing a heavy silk suture around the patella. The latter method leaves a foreign body in the knee-joint, and does not get rid of blood-clots or inverted or torn aponeurotic tissues which may be inverted between the edges of the bone.

DR. JOHN H. GIBBON favored the semicircular incision for turning up a flap to expose the patella.

DR. DE FOREST WILLARD recently had an unfortunate experience. The man had suffered a simultaneous fracture of both patellæ from muscular action. The fragments were encircled subcutaneously by loops of silk, and drawn closely together. The case progressed without the slightest evidence of joint infection. He let him up at the ninth week with apparently good union. The second day, while on his crutches, he slipped, and in endeavoring to catch himself pulled the fragments in each patella half an inch apart. He remembered another case in which he did not wire; and yet there seemed to be bony union,—the skiagraph also showed complete union,—and yet the man on using the limb pulled the fragments half an inch apart.

DR. RODMAN said that he had used the curved incision in his previous operations on the patella. Like Dr. Wharton, he much preferred the direct suture rather than the subcutaneous suture of Barker and others. There is certainly less danger of infection and better results are to be procured. As to the statement of Dr. Wharton regarding ligamentous union, he did not think there was motion. He did think union was pretty close; certainly closer than it would have been without direct suture. Wiring fractured patellæ is possibly still *sub judice*. It was his conviction that in good subjects who are to lead an active life, it should be given the preference over other and less satisfactory methods of treatment. He had had no bad results.

FRACTURE OF THE CLAVICLE ASSOCIATED WITH ANEURISM OF THE SUBCLAVIAN ARTERY.

DR. R. H. HARTE presented a fracture of the clavicle associated with aneurism of the subclavian artery. The history of the case is briefly as follows: The patient about a year ago noticed at the root of his neck a large swelling, which was pulsating and of considerable size. He did not seek any medical advice for its relief. While descending a flight of stairs he tripped and fell, striking on his shoulder and breaking his clavicle, and when admitted to the Episcopal Hospital in November last, the speaker found a large pulsating expansile mass corresponding to the position of the subclavian artery, and directly over that, and lost to a certain extent in the surrounding swelling, were the two ends of

a fractured clavicle. On auscultation all physical signs of an aneurism were evident. Shortly after admission there was considerable ecchymosis around the seat of injury, and the pulsation and bruit, with a well-marked radial pulse, still continued. In about four days after the receipt of the injury attention was called to the fact that the pulsation had entirely ceased in the region of the injury, and it was found that this was correct, leading to the belief that a clot had formed, which was apparent by the increased density of the tumor. The patient was kept absolutely at rest in bed, and no attempt was made to apply any surgical dressing to correct the deformity in the clavicle other than to keep him on his back with a small sand bag resting on his shoulder. All evidences of pulsation now have disappeared, leaving only a clavicle united with some deformity. The speaker was inclined to regard this as a case of aneurism which had been cured in some way by the traumatism received.

OLD DISLOCATION OF THE SHOULDER.

Dr. Harte also presented a man of seventy-three years, who had presented himself at the Pennsylvania Hospital a few weeks ago with all the characteristic signs of an old subcoracoid dislocation. He felt quite positive that it would be impossible to reduce it without doing damage to either the bone or more particularly to some of the important blood-vessels or nerve-trunks. He therefore did a resection of the entire head of the bone by splitting the deltoid. The patient at no time complained of any discomfort, and in a week was up and around the ward with the wound entirely healed. He had been always strongly of the feeling that this is much the safer way of dealing with old dislocations of the head of the humerus, rather than attempting to resort to force in correcting the deformity, which is always accompanied with a certain amount of risk, especially in old people. The results that he had obtained by excising the head of the bone had been much more satisfactory, and the function of the joint is restored much quicker than if the head of the bone is forcibly replaced and retained for a long time in an apparatus to insure its remaining in its normal articulating surface.

Dr. O. H. Allis agreed with Dr. Harte that efforts to reduce old dislocations, even if the head is placed in the better position, often result in ankylosis and a useless and painful joint. In this

instance, the man's arm will be getting better and better and the flail-motion in the shoulder-joint become, under proper exercise, gradually more accurate.

Dr. John H. Gibbon spoke of the danger resulting from attempts at reduction in these old luxations. He had broken the humerus by attempting to reduce it by the Kocher method. He had seen two other fractures of the humerus by attempts at reduction. All the cases were of long standing. This method works all right in fresh dislocations, but in old dislocations is apt to produce a fracture.

LIVER ABSCESS, PROBABLY OF AMŒBIC ORIGIN.

Dr. John H. Gibbon presented a man who four and a half years ago went to South Africa and followed the occupation of peddler. After a residence there of two years, he developed a form of diarrhœa which he said was very prevalent at that time among the foreigners. It was characterized by frequent and bloody stools, loss of flesh, very little pain, and no loss of appetite. At the end of three years he determined to leave South Africa, and began to improve as soon as he set sail. This improvement continued after his arrival in this country until about three months before admission to the hospital, the latter part of September, 1901, when he suffered from a return of bloody stools, and was treated in the medical dispensary of the Polyclinic Hospital by Dr. Cohen. Under treatment the blood entirely disappeared from the stools and the patient improved in health. About a year before coming to the hospital he noticed a swelling in the upper portion of the right side of the abdomen, which has continued to gradually enlarge. During his attendance at the dispensary his stools were repeatedly examined for the amœbæ, but none were found. At the time of admission it was found that the patient's liver was enormously enlarged, particularly the anterior portion; so much so, in fact, that the lower ribs were displaced upward. The patient's temperature was below 100° F.; his pulse was not rapid; he suffered from no localized pain, had no sweats, and complained of little discomfort. The leucocyte count was about 10,000. At this time it was thought that crepitation could be felt over the tumor. The patient stated that before coming to the hospital a doctor had introduced a needle and withdrawn some brown fluid. Dr. Gibbon made an incision into

the abdomen over the most prominent part of the tumor, which was at the costal border on a level with the tenth rib. When the peritoneum was opened, he found the liver extending nearly down to the crest of the ileum and very generally enlarged. There was, however, at the point of greatest prominence a sense of fluctuation, and into this portion he introduced an aspirating-needle, withdrawing a very thick, dark pus. There were no adhesions between the liver and the intestines or the omentum. The upper surface of the liver, however, was slightly adherent over the point of fluctuation to the diaphragm. The opening into the liver made by the needle was enlarged by means of the Paquelin cautery until a large-sized glass drainage tube could be introduced. Through this tube there flowed an enormous quantity of very thick, dark pus. The exact quantity he was unable to estimate because of the necessity for constant irrigation with salt solution in order to protect the peritoneal cavity, which had before puncture been walled off with abdominal pads. The quantity of pus, however, exceeded the largest quantity that he had ever seen removed from the pleural cavity. As the liver contracted, he saw that he would be unable to drain the abscess through the incision which he had made, and found it necessary to make another incision at right angles to the first and running backward towards the loin. Through the lower angle of this transverse incision he was able to establish very satisfactory drainage by means of a rubber tube and gauze packing. This operation was done in the early part of October. The patient improved rapidly after the operation, the amount of drainage gradually growing less until about two weeks ago, when it ceased entirely. The contraction of the liver was at first slow, but lately has been very rapid, until now it has reached about its normal size. The wound is entirely healed, and the patient suffers no discomfort. The pus was examined for the amœba, but the examination was negative. He was sorry that he did not scrape the abscess wall, because often the amœbæ can be found in the scrapings when they are not found in the pus itself. During the man's stay in the hospital his stools were also frequently examined for amœbæ, but on each occasion with a negative result. The diagnosis in this case was somewhat obscure; and, although the speaker had carefully weighed the question of liver abscess, he rather inclined to the view that the condition was a suppurating hydatid cyst. The patient's history of long-standing diarrhœa accompanied by blood in the stools becoming better and worse alternately was in favor of abscess; but, on the other hand, the long duration of the swelling (more than a year), the absence of all symptoms of pus, and the absence of amœbæ in the stools, together with the fact that occasionally crepitation was heard over the growth, led him to believe that he would find upon opening the abdomen an hydatid cyst. The discharge in the abscess cavity was carefully examined for hooklets, but none were found. The patient has now returned to his work, feels perfectly well, and has gained a great deal in weight.

OPERATIONS UPON THE KIDNEY AT THE GERMAN HOSPITAL IN PHILADELPHIA.

Dr. John B. Deaver read a paper with the above title, for which see page 58.

OSTEOPLASTIC RESECTION OF THE SKULL BY MEANS OF A NEW TREPHINE.

Dr. John Chalmers Da Costa read a paper with the above title, for which see page 68.

VAGINAL HYSTERECTOMY FOLLOWED BY DRY GANGRENE OF THE RIGHT FOREARM.

Dr. William J. Taylor reported a complication which had occurred in a case of vaginal hysterectomy, and which he had never before seen. The patient was a woman, aged fifty-nine years, sent by Dr. S. Mason McCollin, who entered the Orthopædic Hospital on November 21, 1901, for the relief of a complete prolapsus of the uterus, associated with a badly lacerated perineum.

Physical examination showed her heart-sounds muffled, slightly accentuated second sound. The lungs normal. The urine showed the presence of a small amount of albumen, but no casts and no sugar. There was a very slight œdema of the lower extremities.

She was kept in bed, the uterus replaced with tampon, and hot-water douches given for nearly a week (until December 4), when vaginal hysterectomy was performed. This was only diffi-

cult owing to the small size of the pelvis, it being impossible to get three fingers into the bony outlet. The uterus was separated easily from the bladder and rectum and the vessels ligated with silk, there being no occasion for the use of clamps.

Everything went on very well until the ninth day, when she had a sudden fall of temperature to subnormal, with rapid pulse and enlarged abdomen. This suggested some form of internal hæmorrhage. In a short time she reacted, but for some days there was distention of the abdomen and great tenderness, and evidently a local infection. Soon a foul-smelling discharge came from the vagina as an evidence of it. At the time of operation, the speaker could detect that the right ovary was somewhat enlarged and possibly cystic, but her abdomen was so fat and the pelvic outlet so small that it was impossible for him to make a satisfactory examination, and it is, therefore, a surmise on his part.

By the tenth day she was somewhat improved, and on the twelfth very distinctly improved in all of her symptoms, except that now there occurred a sudden loss of power and fall of temperature in the right forearm with total loss of radial pulse. This was accompanied by intense pain in the upper forearm, and by the next day there was loss of ulnar pulse. The hand gradually became discolored, fingers blue, and by the sixteenth there was distinct dry gangrene with a line of demarcation well shown. Her general condition fluctuated,—some days rather better than others,—there being a discharge of pus from the vagina until January 7, when there began an area of moisture around the upper edge of this heretofore dry gangrene.

On January 9 she was given ether with oxygen and the arm amputated through its middle third by a circular flap.

Recovery after amputation was very rapid. The wound healed throughout very promptly, save at the inner angle, where there was a superficial slough about an inch long by one-half inch wide. For some time she had intense pain in the nerves of the arm and complained of great cramp as it were in the amputated hand. She had one or two attacks of depression with very rapid and weak pulse, generally following some digestive disturbance; but with this exception her progress towards recovery was uneventful, and finally she returned home able to walk around with comfort and feeling quite well.

Vaginal hysterectomy has always seemed to the speaker to be non-surgical, since much of the work has to be done in the dark, with great liability to local infection. This seemed to him a very suitable case for vaginal hysterectomy, for the uterus was hanging between the legs, and all of the manipulations could be done practically outside of the patient. If this condition of infection were due at all to the right ovary, which was supposed to be cystic, abdominal hysterectomy would have given an opportunity for perfect investigation and proper treatment of it. This complication might have arisen very readily before this, but he had been fortunate enough never to have met with such a condition.

An examination of the arm after amputation showed a complete clogging of almost all of the vessels, and just above the elbow was quite a considerable abscess which had burrowed down towards the gangrenous area.

OPERATIONS UPON THE KIDNEY AT THE GERMAN HOSPITAL IN PHILADELPHIA.

BY JOHN B. DEAVER, M.D.,
Surgeon to the German Hospital.

From the beginning of 1899 to the present date there were performed in the German Hospital, in Philadelphia, thirty-four operations for the fixation of floating or movable kidney; seven for nephrolithiasis; three for pyonephrosis; two for hydronephrosis, and two for sarcoma and nephrotomy or pyelotomy.

NEPHROPEXY.

Of the floating kidney operations there were twenty-nine on the right kidney, four on the left kidney, and one bilateral. Six of the cases also suffered from chronic appendicitis, and this organ was removed at the same time. One case had had an appendectomy performed one year previously. Two cases had cœliotomy performed some years previously for tubal troubles. One case was two months pregnant and recovered without mishap. Thirty-one cases were females. Three cases were males,—one on the left and two on the right kidney. Thirty-two cases recovered. Two cases died (6.7 per cent.), one thirteen days after operation from acute mania, and the other in four days from uræmia. Both of these cases were males.

A blood count was made on seven cases before operation and averaged, hæmoglobin, 60 per cent.; red cells, 3,610,000; white cells, 7960. In no case was a leucocytosis observed.

The patients were in the hospital on an average forty-four days,—excluding the two deaths and three cases still in the hospital. Shortest confinement in hospital, twenty-two days; longest, seventy-five days.

Ether was used in all cases and without any difficulty, patients leaving the table without medication. Of the thirty-

four cases, thirty-two were operated with the diagnosis of floating or movable kidney. Two cases had the diagnosis made of stone in the kidney. One case negative to X-ray examination, and the other positive; both here and at another hospital. In neither case was a stone found, and the kidney was subsequently anchored.

The patient in all cases was laid on the side opposite the kidney affected, with the knees and thighs flexed and an inflated pillow beneath the loin. The incision was usually about three and a half inches long, extending along the outer margin of the erector spinæ from the twelfth rib towards the crest of the ileum, separating the fibres of the latissimus dorsi and laying bare the lumbar fascia. The fascia was then incised, exposing the perinephric fat and quadratus lumborum muscle, care being taken to avoid the lateral cutaneous branch of the last dorsal nerve. The posterior part of the fatty capsule was resected in all cases and the kidney delivered.

In three cases the true capsule was split from pole to pole, the kidney replaced, and the edges of the capsule united to the muscular layer by three chromicized catgut sutures on either side. Iodoform gauze was packed into the wound cavity and dressings applied.

In twenty-eight cases after delivering the kidney, its true capsule was well scarified with the blade of a scalpel, a strip of white or iodoform gauze was passed around each pole and the kidney replaced. Several pieces of gauze were packed in the wound cavity and the gauze around the poles tied over these. Dry dressing was then applied.

Three cases were operated by Edebohls's method. The kidney was exposed and delivered in the usual manner. The entire fatty capsule was then cut away. The true capsule was divided along the dorsum to the middle of each pole, reflected, and the excess cut away. Four mattress sutures were passed through the reflected capsule, two on either side, near the poles, and left loose. The kidney was then returned. The eight ends of the four sutures were passed through all the abdominal parietes, except the skin. For the present these sutures are

left untied. The muscles and fascia of the wound were then united by interrupted sutures. Then the two ends of each of the four suspension sutures were tied and the skin united over all.

In no case was the peritoneum opened. In no case was the patient very much shocked. In all cases there was a temperature varying from 99° to 100° F. after operation, and lasting from three to twelve days.

In only one case was vomiting present as a sequelæ beyond the usual results of ether narcosis. This case was the one on which a double nephropexy was performed. Vomiting was controlled on the third day by means of exclusive rectal feeding. One case developed a urinary fistula, which healed spontaneously on the fourteenth day. In one case the pelvis of the kidney and ureter was slightly torn during the operation; suturing with Lembert silk sutures resulted in primary union.

In all cases the gauze packing remained untouched for from six to nine days; it was then removed and the wounds mostly healed by granulation. In a few cases the patients were etherized, the edges of the wound pared, and the tissues brought together with silk or worm-gut sutures.

Most of the cases were discharged with a small granulating wound flush with the skin surface and with the kidney seemingly in good condition and position. None of the cases were readmitted.

It will be noticed that none of the cases were anchored by any method requiring sutures to be passed through the parenchyma of the kidney. I have long ago abandoned this method on account both of the danger of a subsequent pyonephrosis and its inadequacy.

In addition to a case in my own experience, two cases were reported by Dr. Heath, of England, in a personal communication to Dr. Keen, of pyonephrosis following kidney suture.

The operation of splitting the true capsule and suturing its edges to the muscular layers of the wound was found to be unsatisfactory for two reasons: first, urine was exuded from

the surface of the kidney into the wound and greatly interfered with granulation. In one case contraction of the capsule forced the kidney out of the wound, and it was almost impossible to replace it. In fact, the case recovered, but the kidney is between and not below the muscular layers of the back. In spite of this malposition the patient is perfectly well, and has been since delivered of a child without any difficulty either during labor or afterwards.

The patients operated upon by Edebohls's method were a little more comfortable after operation than those anchored by gauze.

Of the two deaths in this series, the one due to acute mania had probably an alcoholic foundation; the one due to uræmia I am unable to satisfactorily explain, but it is tentatively suggested that perhaps it was due to a compression of the renal vessels and failure of the other kidney to establish compensation.

NEPHROLITHIASIS.

Seven cases diagnosed clinically as stone in the kidney are reported in this group. On two of the cases, operation revealed the absence of a stone. One of these gave a positive shadow to an X-ray examination on two occasions, nine days apart. The other was not X-rayed. Both cases were on the left side. The first case was opened from pole to pole and no stone found whatsoever. Kidney closed and gauze placed around poles, as in nephropexy. Patient very much shocked and was transfused before leaving the table. In four hours marked hæmorrhage took place, the patient was given a little ether, and a complete nephrectomy rapidly performed. Death took place an hour later from shock.

The second case was operated on the same lines exactly, but the patient made a perfect recovery without a complication.

In five cases the diagnosis was confirmed by operation. Three cases were positive to X-ray. Two cases were not examined by X-ray. Three cases were on the left side. One case was on the right side. One case was bilateral. Four cases were men. One case was a woman. All five cases recovered.

In two cases the stone occupied the pelvis of the left kidney. After the usual incision, the pelvis was cut open, the stones removed, and the wound closed with Lembert sutures. Both cases were anchored with gauze as in nephropexy, and both made a complete and uncomplicated recovery. Discharged on the twenty-first and forty-first days respectively, with small granulating wound.

In two cases, after the usual incision, the kidney was found not only to be filled with stones, but also the subject of pyonephrosis.

First Case.—Peritoneum opened in delivering the kidney, which was markedly adherent, closed immediately with catgut. Ureter ligated as low as possible, the vein and artery tied separately, and the kidney removed. The wound cavity packed with gauze and allowed to heal by granulation. Patient made a nice recovery, and was discharged in thirty-one days, with a small granulating wound.

Second Case.—Precisely as above, but peritoneum was not opened. Discharged in thirty-nine days with a small granulating wound.

One case bilateral.

June 4, 1900.—Incision as in nephropexy (left side), kidney opened from pole to pole, and a number of stones found in the pelvis and calices. All cleaned out and kidney brought together, packed, and anchored as in gauze nephropexy. The patient suffered very little from shock, but shortly became very septic, and several hæmorrhages took place from the kidney. Seventeen days after operation a stone was passed out of the wound. Eighteen days after operation the patient was re-etherized and the kidney (left) rapidly removed, and the cavity packed with gauze. The wound healed by granulation and, with the exception of considerable vesical trouble, the patient did very well. Improving gradually in weight and strength, and on discharge was able to walk about.

Exactly nine months later the patient was admitted with all the symptoms of stone in the right kidney. Operation under chloroform revealed a hyponephrosis due to a stone in the pelvis blocking the ureter. Two large incisions were made through the

cortex and six calculi removed from the pelvis. Incision was packed with gauze. During the next six weeks the patient was dressed every other day, and nineteen stones were discharged through the wound during this time. There were no uræmic symptoms, and the urine was passed both through the urethra and through a sinus leading to the kidney. Discharged nine weeks after operation with a urinary fistula, but in good general health.

NEPHRECTOMY FOR PYONEPHROSIS.

Case I.—Female; right side. Incision from crest of ileum to anterior border of quadratus, nine inches long. Kidney delivered and aspirated, vessels ligated separately. Ureter ligated and stitched in wound. Kidney removed. Peritoneum not opened. Wound closed with silk sutures, with a rubber tube for drainage.

Patient became very weak and anæmic after operation, but recovered after a protracted convalescence. Discharged four months after operation.

Case II.—Female; right side. Operation the same as in preceding case, except that the peritoneum was accidentally opened, and immediately closed. Patient still in hospital, with a clean granulating wound and in good condition, twenty-eight days after operation.

Case III.—An X-ray made on this case showed a distinct shadow over the right kidney. *Operation.*—Long lumbar incision, and a second at right angles to the first going up over the two lower ribs, the ends of these were cut off with forceps. The kidney was enlarged and firmly adherent to the peritoneum. It was cystic and filled with pus. In delivering the kidney, the peritoneum was opened and immediately closed with catgut. The kidney was then removed, after ligating the artery, vein, and ureter, separately; wound packed with gauze and partially closed. Cultures made from purulent foci in kidney remained sterile. Patient was discharged five weeks after operation, completely recovered.

NEPHRECTOMY FOR HYDRONEPHROSIS.

Case I.—Female; right side. Incision extending from right lumbar muscle over and beyond the anterior superior spine of the ileum, with ileum about one and one-half inches above it. Tumor mass found as large as an adult head. In attempting delivery, mass was ruptured, and about 1000 cubic centimetres of cloudy

amber fluid without urinary odor escaped. Sac wall and remains of the kidney were delivered, vessels and ureter ligated, and mass excised. Extremities of the wound closed, gauze drainage in the centre. Patient died on the second day of uræmia.

Case II.—Male; right side. Incision as in first case. Kidney delivered and aspirated, vessels ligated separately. Ureter ligated and stitched in abdominal wound. Kidney removed, peritoneum not opened. Wound sewed up with silk sutures, using a rubber tube for drainage. Wound healed by first intention. Patient never had a bad symptom. Discharged three weeks after operation.

NEPHRECTOMY FOR SARCOMA.

Case I.—Female; right side. Incision through right rectus, nine inches long, growth seen to be retroperitoneal and attached to kidney. Parietal peritoneum clamped to mesocolon; growth enucleated, considerable bleeding in doing so. Tumor about the size of a child's head and was lobulated. Parietal peritoneum was then stitched to mesocolon (ascending) and gauze packed into the cavity. Patient was severely shocked and died three days after operation.

Case II.—Male; left side. *Operation.*—Patient placed on right side, resting on an air-cushion. Incision made extending from the angle between the erector spinæ and the last rib, obliquely to the anterior superior spine of the ileum. All flat muscles were divided down to the lumbar fascia; this was divided, exposing the perirenal fat. Perirenal fat picked up with forceps and divided, and pressure anteriorly brought the kidney mass into the wound. Dissection round the kidney mass of the perirenal fat was carried on with index-finger. Many adhesions were found, especially at the upper pole. Terrific hæmorrhage occurred at all points, which was very difficult to control on account of size of vessels. Thought best to try to tie the renal vessels as soon as possible. Upper angle of the wound was packed with gauze as tight as possible, to check hæmorrhage, and dissection of kidney mass attempted from the lower end. The ureter was first exposed in a dense mass of adhesions. It was ligated and cut. Further dissection exposed the renal vessels, which were clamped and cut. A dense mass of adhesions was encountered at the upper end. It was adherent at all points. The broken-down tissue resembled wet, coarse sawdust. The kidney was

now removed and as much of the tissue as possible was scraped away from all adjacent structures; all bleeding points ligated. The kidney mass was about the size of a very large cocoanut, of firm consistency at the lower pole, but friable and spongy at the upper. The wound was then packed with large pieces of iodoform gauze, and partially closed with silk sutures. Before this could be done the patient went into collapse, almost pulseless, with shallow breathing. Hypodermics of atropine and strychnine were given and intravenous injection of hot saline was administered. Patient reacted slightly before leaving the operating-room. Dry dressing applied. At no time was the peritoneum opened.

CONGENITAL ABSENCE OF LEFT KIDNEY; OBSTRUCTION OF RIGHT URETER BY STONE.

Male; sixty-five years old. Suffered from severe abdominal cramps one week before admission, which yielded to mustard-plaster treatment. Two days before admission was suddenly taken sick with severe pain in right flank, testicles, and penis, suppression of urine, which continued until operation. Examination showed marked tenderness in the region of the right kidney, bladder empty.

Incision was made in the right flank parallel to the crest of the ileum extending round in front nearly to Poupart's ligament; the kidney delivered and ureter found much distended with urine. The kidney was about twice the normal size and very dark. On account of the fatness of the patient and his bad condition, a very thorough exploration of the ureter could not be made. The pelvis of the kidney was opened and a rubber drainage tube put in, coming out through the back; gauze was packed in and the incision partly closed with silkworm-gut sutures. Patient died in three days from uræmia. At post-mortem the left kidney was found wanting, the left ureter being represented only by a fibrous cord extending down through the inguinal ring to the scrotum. A small stone was found blocking the right ureter near the bladder.

DISCUSSION.

Dr. J. Chalmers Da Costa was in accord with Dr. Deaver's view that stitches should not be put in the kidney. He believed stitches to be inadequate and dangerous. In making an attempt

on one occasion to find out how much resistance there is in the kidney structure, he found that the stitch would tear with the very slighest traction. Any stitch that goes through the kidney substance must be loose before the wound in the skin has been closed.

He was in favor of the gauze-packing, and had used it habitually for a number of months. He had had an opportunity a few months ago to open the abdomen of a patient on whom this operation had been done. He had operated on the man a year before for a dislocated kidney. The kidney was replaced and gauze was used. The abdomen was opened because of another trouble, and it was found possible to palpate the kidney, and he was gratified with the fixation. He had lost a case from uræmia in which there was apparently no kidney disease antecedent, in which there was no complication, and in which the operation was completed as rapidly as usual. It raises the question as to whether these operations are quite as safe as we previously thought they were.

Dr. W. L. Rodman was fully in accord with the position taken by Dr. Deaver and subsequently reinforced by Dr. Da Costa. He had had no untoward result in the gauze-packing operation, and had been gratified, in the majority of instances, to see that the removal of the gauze packing was not so painful as many have claimed. One advantage of the Senn operation is that the work is done from behind. The kidney substance is not interfered with; there is no danger of extravasation, and there is a firm cicatricial band which adequately holds the kidney in position.

Dr. H. R. Wharton, in speaking of pyonephrosis, said that his experience had been that in a large proportion of cases the kidney is converted into a large pus-tumor with firm adhesions, and that there is a certain amount of danger in removing it at a primary operation. He had lost a case of this kind a few years ago from hæmorrhage in removing such a kidney; and since that time he had followed the plan of Weir, who strongly advocates first drainage, and then, in a week or ten days, enlarging the wound and doing a nephrectomy. By drainage the tumor shrinks, and the operation is done with less difficulty. As a matter of safety, it should be considered in nephrectomy for pyonephrosis.

Dr. Richard H. Harte was convinced that the X-ray in

renal surgery and in other conditions is a Will-o'-the-wisp which is liable to lead many astray. He did not wish to state that it is of no service at all; but it is dangerous to depend too much upon it before making a diagnosis. He had seen many mistakes made where too much confidence had been placed upon its shadows for the diagnosis of renal calculi or other conditions. He felt that the anterior incision is a poor way to attack the kidney, and is very often accompanied with a great deal of risk. In regard to the fixation of the kidney, he had tried a number of methods,—the so-called Senn by packing, and also the Edebohls's operation. They all are open to certain defects. Feeling that possibly some other method might be devised for retaining the kidney in position, he had tried to support the kidney in a small basket made of chromicized gut, after the kidney had been exposed, and then closing the wound with this network of catgut supporting the kidney in relation with the posterior abdominal wall. This enabled him to close the wound, and at the same time to retain the kidney in its normal position. It may be said that with this method of procedure undue pressure may be made upon certain portions of the kidney and cause ulceration; but of course this has to be carefully guarded against by the amount of pressure in tying the sutures which form the net-work or cradle in which the kidney is supported. The results that he had obtained by this method of treatment were quite satisfactory; but he did not know that they were any better than had been obtained by the so-called Senn operation, except that it relieves the patient of a good deal of pain when the gauze has to be removed. It has, however, the advantage that the wound can be permanently closed, and that there is little chance for the kidney to slip away and assume a false position.

Dr. Deaver agreed with Dr. Da Costa's point relative to the suture cutting out of the kidney. He did not know that he had really modified Senn's operation. He practised delivery of the kidney and stripping off the fatty capsule. In the Senn operation only the posterior portion of the fatty capsule is cut away, the anterior part being pushed into the wound. In the Edebohls's operation the entire fatty capsule is cut away. In the speaker's opinion, the kidney being delivered on the surface of the back, a piece of gauze is placed under either pole. This piece of gauze comes in contact with the pelvis of the ureter. Pieces of gauze are then packed around the kidney.

OSTEOPLASTIC RESECTION OF THE SKULL BY MEANS OF A NEW TREPHINE.

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VARIOUS methods are practised for effecting an opening into the cranial cavity. The one most frequently used is the old operation of trephining. This plan will probably always be the method of choice in the majority of cases. It exposes, however, but a small area for inspection and for operation, and, if it is necessary to expose a large area, the bone around the trephine opening must be cut away with rongeur forceps. When such an operation is finished, a large gap is left in the skull; and, because of the fear of hernia cerebri and of apprehension as to future injury from without, various ingenious methods have been practised to effect a closure of the opening.

The osteoplastic method of resection of the skull, originally suggested by Wolff and put into practical execution by Wagner in 1889, makes an opening into the skull by cutting what is practically a trap-door in the bone. This trap is held open, the operation is completed, and the trap is replaced. In certain cases such a method is distinctly advantageous. It enables us to expose as large a surface as may be necessary, because a large bone-flap of this description will unite, when returned to place, as easily as a small one. The osteoplastic method is the one chosen in most exploratory operations, where we fancy that there may be a tumor; in some operations for the removal of known tumors, and in operations for epilepsy.

The bone-flap is usually cut by the use of chisels or gouges of special construction. It takes a long time to complete the chiselling, and the employment of the mallet or hammer may, by repeated tapping or more violent jarring, injure the nervous structures within the skull. In such a condition as abscess of the brain, hammering may lead to diffusion of the

abscess; if hæmorrhage exists, it may increase it or it may cause hæmorrhage; and in using a chisel there is always some danger that a fracture will extend out far beyond the point which we desire cut. Many surgeons feel apprehensive in using the chisel and mallet for opening the skull. It is my personal belief that the hammer increases the shock and distinctly adds to the risk of the operation.

In order to avoid this risk, some surgeons cut an osteoplastic flap by means of the Gigli saw. To use this saw, it is necessary, first, to make several or a number of trephine openings. To do this requires the expenditure of a great deal of time. The saw, when put in use, cuts from within outward, which is the safe way, but the operation requires much time to perform.

Other surgeons cut the bone-flap by means of a surgical engine, and this would seem to be the ideal method; but the handle of the cutting-saw in the engine is difficult to satisfactorily sterilize, and the engine runs the saw with a speed so great that long training and the utmost care are required to cut with safety. I have no doubt that a surgeon can train himself to work accurately with a surgical engine, but I do not believe that the implement is destined soon to come into really general use.

Recently, Dr. T. C. Stellwagen, Jr., a dentist and a student in the third-year class of the Jefferson Medical College, devised an instrument designed to cut an osteoplastic flap with a minimum expenditure of time and without inflicting any serious concussion upon the intracranial structures. After constructing this instrument, he experimented with it upon the dead body; and I joined him in some of these experiments. We determined that certain alterations were necessary in the instrument as originally constructed, and, after these had been made, we used it with much satisfaction upon a patient in the hospital of the Jefferson Medical College.

This patient was a child who was laboring under epilepsy and hemiplegia, the condition having followed an attack of diph-

theria. A large-sized osteoplastic flap was cut in an extremely short space of time with ease and certainty, the chisel being lightly used to complete the division of the inner table of the skull. In using the saw, it was found to be undesirable to take it at each turn through the whole length of the half-circle. It was moved rapidly to and fro over a short portion of the length of the circle; then over another portion; next over another; and so on, until the whole had been traversed. The outer table and diploe were very readily cut through, and the inner table was satisfactorily divided. The skull was of moderate thickness. It is evident that in a very thick skull this operation would be more difficult, and would require especial pyramidal, sharp-cutting instruments, in order to make a sufficiently large opening in the bone to enable the surgeon to locate the position of the point. In fact, in none of these cases would a very narrow cutting instrument do; because such a line of incision in a bone would not admit a chisel to complete the division and to pry up the bone-flap. The flap in this case was raised with the utmost ease; and after the completion of the operation, when the bone was replaced in position, it fitted with an evenness that is not seen after the ordinary operation with a chisel.

This instrument consists of a handle and a shaft, as does an ordinary trephine. Screwing into the end of the shaft is a movable centre-pivot or point instead of the pin seen in the ordinary trephine. Dr. Stellwagen and I discovered, while working on the dead body, that a sharp and long centre-point might bore through a thin skull,—a danger which had to be obviated by modifying the instrument. The danger of such a puncture is reduced to a minimum by placing a shoulder above the point, which shoulder prevents the possibility of any deep penetration. Another method is the use of a centre-plate, with a hole for the pivot, and with sharp points on the under side, these points being driven through the scalp and a short distance into the skull, thus assuring fixation. It was this latter method which I employed in the case of the child above mentioned.

Plates containing points of several sizes should be used, the thickness of the scalp determining to some extent the length of point which it is necessary to employ. If care is taken that sufficient length is used to go but a short distance through the scalp, there is no real danger of penetrating the skull with the point.

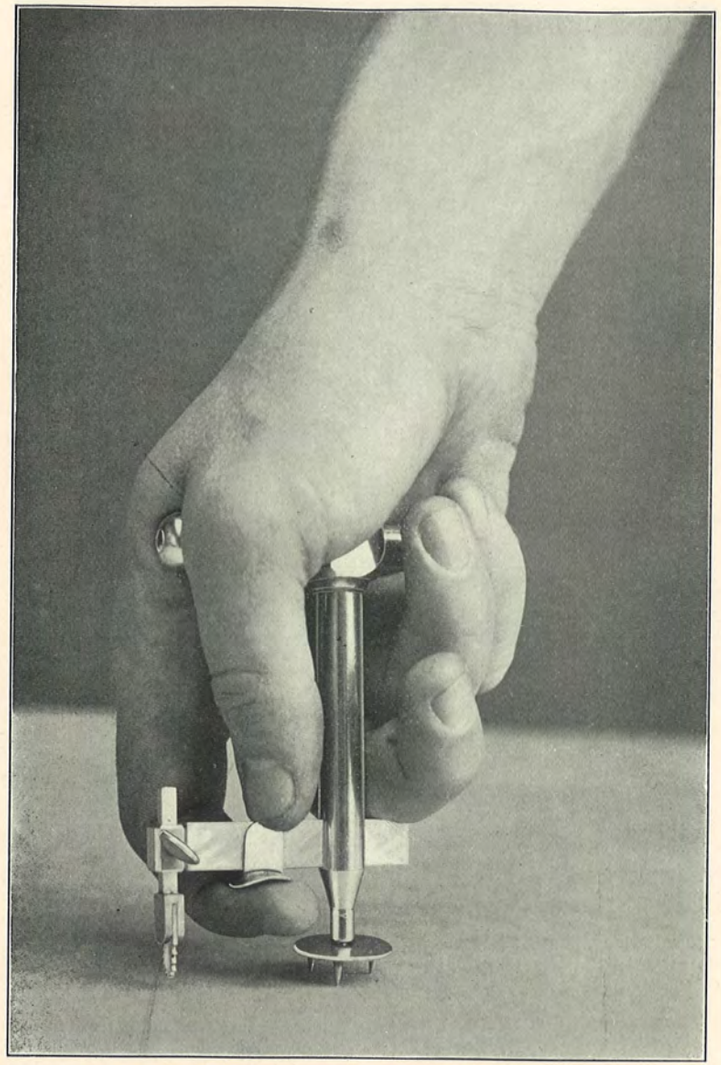

FIG. 1.—The method of using Stellwagen's trephine.

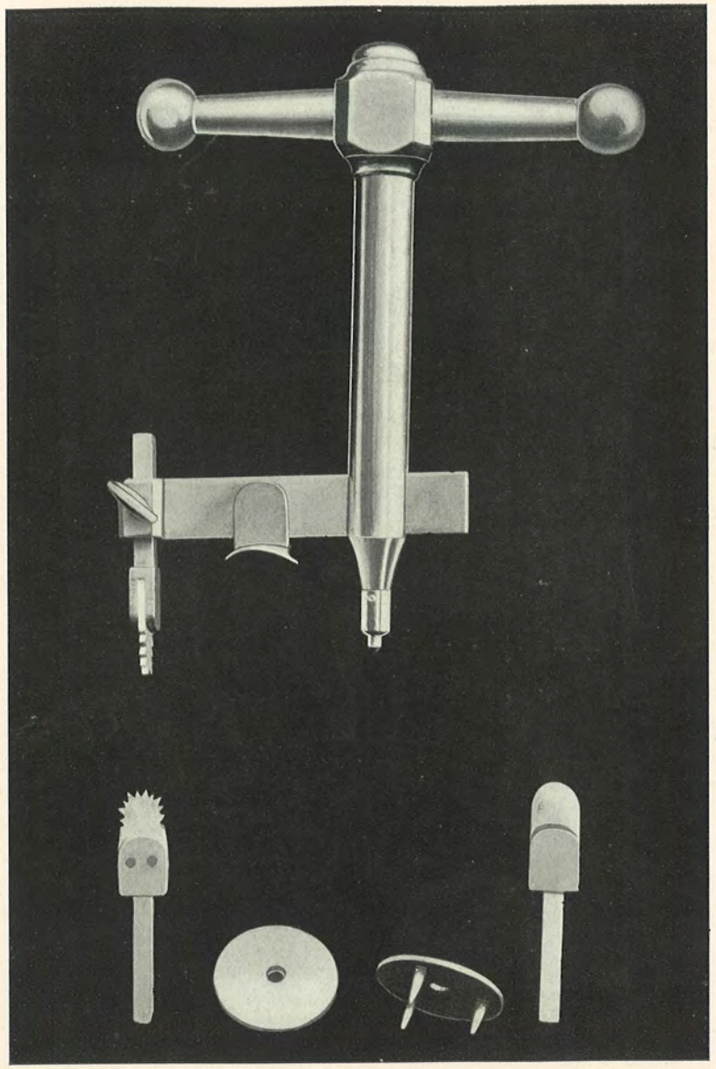

FIG. 2.—Shows the saw, the plates, and the knife, and also the instrument put together and ready for cutting the bone.

The centre-pivot, too, may be changed, a short or a long one being used as desired. Dr. Stellwagen says that when using the centre-pivot without the plate it has been found practicable upon the cadaver to start it with an appropriate drill, sinking the hole just deep enough to prevent slipping of the instrument. Thus, a centre-pivot with a blunt end may be used for the final work. Dr. Stellwagen's description of his instrument is as follows:

The instrument, with its parts assembled ready for use, consists of a shaft pierced by an oblong quadrilateral hole, through which is passed a piece of steel at a right angle, the projection of this piece of steel being regulated by a set thumb-screw. This device enables the surgeon to cut any desired size of bone-flap. The projection-bar has a gear-hole forged in its outer or cutting end, into which fits the shaft of a movable knife and movable saws, which are used for incising the scalp and for dividing the bone. The saw may be raised or lowered to suit each case and to permit of adjustment to the inequalities of the skull, and, when once set, may be clamped by a thumb-screw. Several different forms of bone-cutting instrument were tried at various times upon the cadaver, but were discarded as being conspicuously inferior to the saw.

Fig. 1 shows the proper way to hold the osteoplastic trephine. It will be observed that the index-finger is hooked beneath the finger-guard on the bar, and not extended along the shaft of the instrument, which is the method employed in using the ordinary trephine. The manner of holding this instrument should be most particularly observed, as the success of the manipulation largely depends upon absolutely controlling, at the same time, the saw and the centre-pin. By holding it correctly, the greatest amount of power is obtained with the least resistance and the slightest pressure; thus, the control and power of the instrument are much increased.

Fig. 2 shows a knife for making the incision through the scalp and periosteum, which device was suggested by Professor W. J. Hearn. The employment of this knife shortens the time required to incise the flap and expose the bone, and it makes the scalp incision accurate; this is necessary when we are going to use a bone-cutter which moves with absolute accuracy. Furthermore, the consequent cicatrix is neater than when the incision has been made with a knife. It is difficult or impossible to make an

absolutely circular cut with a knife. Even if we attempted to cut a half-circle, there would be irregularity and nicking of the edges.

Fig. 2 also represents the saw, the diagram being of the actual size. A saw of this character and size has been found to be the most successful. This saw is easily kept in order, and can be readily sharpened. It must be thick enough to cut a fairly wide groove; must have long teeth, properly set, polished, and sharpened. A saw of the character shown in the cut will make the bone section without jamming or clogging with bone dust. The surgeon should have several saws of different lengths until he becomes accustomed to the use of the instrument. When the kerf is deep and the skull thick, a longer saw may be inserted. This would prevent sudden plunging of the blade into the dura. The shoulder, which is shown in the cut, will prevent such slipping.

Fig. 2 also shows the plate, the pins of which pass through the scalp around the centre of the circle selected for operation. When they engage the bone, a few light blows of the mallet will cause their entry into the skull.

In performing the operation on the case before referred to, it was found that not only did the plate serve as a satisfactory centre for turning the instrument upon, but it also kept the scalp fixed to the bone and prevented the stripping or separation which is apt to occur, to a greater or less degree, in an ordinary osteoplastic operation. The centre-point, or pivot, of the osteoplastic trephine is introduced into the hole in the plate. This prevents slipping of the instrument. The scalp is then cut through with the knife and the bone cut through with the saw, with the least possible expenditure of labor.

Dr. Stellwagen further observes that in proportion as one's hand becomes trained in the employment of the instrument, so will the necessity for the use of the mallet and chisel decrease; as, with care, not only may the outer table and the diploe, but also a considerable thickness of the inner table, be cut through with the saw, so that with a very few light blows of the mallet upon a chisel the section may be completed. The bone should be divided well up to where the fracture is to be made through the base of the bone-flap. By so doing, a clean

break can be obtained with the least possible amount of prying. In fact, it would be advisable to cut the scalp and the bone-flap rather in the shape of a clover-leaf than in that of a semicircle. It would be well for the surgeon to practise with this instrument upon the dead body before using it upon the living.

The inventor shows that this instrument can be employed for cutting a complete circle; that when it is used for this purpose, it is adaptable to the inequalities of the bone; and that a circle of practically any size can be cut with it. This one instrument, therefore, can cut a trephine opening of any size. I believe, however, that the ordinary trephine is still the instrument to be preferred in making a moderate-sized trephine opening; but if we wish to remove a very large circular piece of bone, I think that Stellwagen's instrument should be given the preference. Its inventor likewise suggests that this instrument might be used for the removal of portions of other bones.

I agree with the conclusions of the ingenious deviser of this trephine, which are that its simplicity of construction, the ease with which it can be manipulated and sterilized, its freedom from the danger of disarrangement or crippling, the speed with which it can be set, or sharpened, if need be, its adaptability to various cases, its cheapness, and the fact that either an osteoplastic flap or a circular piece can be rapidly cut by it, make it an instrument which will probably be regarded as most useful to the surgeon.

DISCUSSION.

Dr. William J. Taylor was firmly convinced that the ordinary use of the chisel and mallet increases very materially the dangers in making these large flaps. The continual hammering increases the shock, and he was sure that any method which will relieve this is a distinct gain.

He now had a dental engine with which he was practising on skulls. He found that the oftener he used it the greater dexterity he acquired. No one should ever use a dental engine unless they have worked considerably on the dead body with it. He had seen one case die from the use of the dental engine, entirely from faulty technique.