lightly, against the lower border of the symphysis pubis. In this position from one to two inches of the staff ought to be lodged in the bladder.

FIG. 2.

Deep dissection, showing situation of prostate and neck of the bladder.

Some surgeons regard it as important that there should be a considerable quantity of water in the bladder. I venture to express an opinion that its use is overrated, and that it is sufficient to take the chance of the urine accumulating for an hour before the operation. At all events any attempt to inject an irritable bladder is rarely successful. Cheselden expressly says that he prefers the bladder empty, as the stone is then sure to be found close to the internal incision at the neck; whereas, if the organ is full, it may entangle the stone in its folds as it collapses. Mr. Crichton was of the same opinion, and insists, in the MSS. referred to, that if the bladder is empty, or nearly so, the stone is certainly found at the neck of the bladder.

The operator commences by introducing his left forefinger into the rectum, to ascertain that it is empty, and to stimulate the bowel to contract. He next places the fingers of the left hand upon the upper part of the perineal region, and holding the sharp-pointed knife in his right, commences the first incision about a quarter of an inch to the left of the raphé, and an inch or a little more in front of the anus, carrying the blade downwards and outwards for about three inches in a direction midway between the anus and tuber ischii, but inclining a little nearer to the latter. The knife should at its point of entry divide the skin, and quickly sink more deeply towards the staff into the hollow which exists between the bulb and anus on the one side, and the ramus of the ischium on the other, corresponding, therefore, to about the upper half of the incision, which is to be made gradually more superficial through its lower part. If a large stone is anticipated, its length may extend to three and a half inches or more.

The left forefinger now enters the wound, and separates a little at its deeper part the tissues in the direction of the staff, guarding at the same time the rectum by pressure downwards and inwards, while the knife follows, and by an additional stroke or two enables the operator to define clearly the line of the staff, and press his finger-nail into the groove where it lies in the membranous portion of the urethra, close to the apex of the prostate. Guided by the nail, he carries the point of the knife into the groove at this spot, and he holds the knife so that the blade is neither vertical nor horizontal, but inclining rather more to the latter direction. It is now pushed steadily along the groove of the staff, the operator remembering that the depth of the incision made in the prostate by that act very much depends upon the angle which the blade makes with the staff. The hand must therefore not be lowered too much if a small incision be desired, the point of the knife being kept up only enough to insure its transit cleanly along the groove. When the bladder has been entered the knife is withdrawn,

and if it is desired to enlarge the wound a little, or to ensure a clear free passage through it, the edge may be cautiously swept along the outer angle of the opening in this act. The left forefinger closely follows the knife, and gently dilates the wound in the prostate as it passes slowly along the staff. Generally the last joint of the finger enters the vesical cavity and comes in contact with the stone, enabling the operator to ascertain its situation, and also to make a kind of hold on the bladder and maintain his communication with it. Having accomplished this, the operator orders the staff to be withdrawn, and taking a pair of straight forceps, carefully slides its wedge-shaped extremity outside the finger, but along its palmar aspect, until the blades are free within the bladder. The stone being fairly seized, the extraction has now to be slowly and cautiously accomplished, in the direction already anatomically indicated.

Two debatable questions of importance arise for discussion here: one regarding the first incision; the other relating to the last.

The line of the first incision is somewhat differently taken by different operators. Nearly all agree to commence a little to the left of the raphé, but not so in regard to the distance in front of the anus. Thus Mr. Fergusson directs that it should commence an inch and three quarters in front; Mr. Erichsen, an inch and a half; Sir B. Brodie, Mr. Stanley, and Mr. Skey advise an inch and a quarter; while Mr. Coulson and Dr. Keith (of Aberdeen) direct that it should commence at one inch only in advance. The latter attaches considerable importance to this point, and argues in its favour at some length.* Mr. Crichton made his incision always low—I infer from his notes, at about the last-named point. It is quite clear also that Cheselden himself commenced not more than one inch in advance of the anus.† The directions given by other well-known operators are not expressed in precise terms, and on this account they are not quoted.

Now as it appears that nearly all advise an external incision of about the same length—that is, of three inches or thereabouts for an adult patient—it follows that the situation of the opening relatively to the pubic arch and to the bladder must differ, and somewhat materially. This discrepancy has sometimes been the source of perplexity to the student; although it is true that where the incisions are commenced high up the skin only is cut at first, and where they are low the knife is made to penetrate deeply at once, so that in any case the deepest part of the incision is made into the hollow between the accelerator and the erector penis muscles, just beneath and outside the bulb of the urethra. Nevertheless, I believe it is the safer practice to err (if it be an error) by placing the incision too low rather than too high. The low incision avoids the bulb and the artery leading thereto; it enters the urethra in the membranous portion, or just at the apex of the prostate; and it places the axis of the wound in its best relation to the pubic arch—that is, as far as possible from that unyielding boundary of the perineal space. It thus affords room for removing a large stone, and lessens the chance of bruising the neck of the bladder, with its external cellular relations, in the act of extraction.

The second point, relating to the deep incision, is of much greater importance.

(To be continued.)

REPORT

ON THE

CASE OF DR. CHARLES WALLER.

By THOMAS B. CROSBY, F.R.C.S.

DR. WALLER, on the evening of the 9th January, while at a juvenile party at Dulwich, received a severe injury, the details and consequences of which are so painfully interesting that no apology is needed for their publication. It appears that after igniting a roman-candle, thinking something was wrong with it, he threw it on the ground, on reaching which it exploded, emitting, as it would appear from the wounds inflicted, three distinct balls. This was clearly proved by the discovery of three rounded holes in his drawers. He was knocked down by the blow, and carried into the house in a state of syncope, which lasted for some minutes, resulting partly from the shock

* Hospital Statistics of Stone. By Dr. Keith. pp. 17—21. Aberdeen, 1849.
† Cheselden's Anatomy of the Human Body. Sixth Edition, 1750.

and partly from a very free arterial hæmorrhage, which was speedily controlled by Mr. Middleton, who was present at the party. As soon as reaction was established he was removed home to Finsbury-square, myself, Mr. Gay, and Dr. Jeaffreson being summoned as the carriage which conveyed him passed our respective houses. Mr. Gay and Dr. Jeaffreson immediately attended. On the calf of the leg there was a wound about the size of a half crown, round and somewhat ragged (we will call this the "gastrocnemial wound," in distinction from others to be hereafter described). The edges were covered with clot, and from it a considerable amount of blood was said to have issued; the parts immediately around were free from all indication of the slightest disturbance. The anterior and posterior tibial arteries were examined at the ankle and found to be pulsating, so that it was deemed unnecessary to disturb this wound. On the outer and back part of the thigh, at the junction of the middle with the lower and upper thirds respectively, were two wounds of a less severe character; the parts around these wounds also were quite free from signs of injury or disturbance. The Doctor complained of severe pain at the back part of the leg and over the great trochanter. The wounds were washed and dressed in the usual manner with cold water, and a bandage applied; and a sixth of a grain of morphia was ordered to be taken.

On the following morning (Jan. 10th) he had passed a quiet night, and seemed comfortable; he was free from any serious symptoms, and the leg looked well, of healthy colour and temperature. On the same evening the limb had become swollen and discoloured from the hip to the foot, with one large vesicle, containing dark serum, on the front of the leg, just above the ankle. His expression of countenance had somewhat changed.

On the morning of the 11th these appearances had increased, after a very restless night; and as we felt no time ought to be lost, a consultation with the patient's colleague, Mr. Solly, took place at one P.M., the following being his condition at that time:—His countenance expressed the greatest possible anxiety; rapid intermittent pulse, which was explained by the state of the limb; gangrene of the skin and subjacent cellular tissue around, but chiefly below, the gastrocnemial wound, had commenced; there were large vesications over the front of the ankle and lower part of the leg; there was a faint purple line encircling the leg, just below the knee, apparently marking the point where the line of demarcation for the separation of the sphacelus would have been produced, had not that process been arrested by a free incision of three or four inches' extent through the skin and fascia. In addition to this frightful condition of the leg, the skin along the course of the saphena vein on the inner side of the thigh was mottled and purple, reaching nearly to the pelvis. He was ordered to take champagne and other stimulants freely, with nourishing soups, &c.; but, it need hardly be stated, his inclination to take anything was very slight. In the evening we saw him again, his son, Mr. C. B. Waller, of the Margate Hospital, being present. There was then a marked improvement in his general condition. Gangrene was arrested by the free cut, but as there remained about two inches of skin tense between the incision and the wound, the former was extended into the latter. The patient had taken a fair amount of stimulants and nourishment, and was in every respect better. The whole limb, from the ankle to the pelvis, was enveloped in hot crushed linseed (not linseed meal) poultices, the warmth and moisture of which were further secured by gutta percha sheeting; and he took a third of a grain of morphia. This dose, repeated every night throughout the case, proved sufficient to secure him sound repose.

On the following morning (12th) the improvement, both general and local, was decided, and he continued to progress favourably during the ensuing week. The wounds were dressed night and morning, and each time most thoroughly syringed with warm dilution of Condy's fluid as a deodorizer and stimulant. At the end of this period the sloughy surfaces of the leg wound, which now exposed the whole of the calf, had all separated, leaving a healthy but deep and wide chasm between the soleus and gastrocnemius, extending down to the ankle below and into the popliteal space above; and from the extensive destruction of the intermuscular septa and fascia in every direction, it was now quite clear to us that the projectile had first entered the leg, and exploded beneath the skin, lacerating the most easily yielding tissues. We now abandoned the poultices for benzoate-of-zinc dressing, carefully padded the overlapping skin and sinuses, applying a roller somewhat firmly to retain the dressings in position. Considerable hopes were now entertained for our patient, as he held his ground well, took his stimulants and nourishment freely, and had a fair amount of sleep nightly.

On the thirteenth day we observed that the condition of the wounds on the posterior aspect of the thigh had not progressed so favourably; and when their charred surfaces separated, deep sinuses were disclosed, which the healthy condition of the skin surrounding them had not led us to suspect. These two wounds were found to communicate with each other, and the upper wound to extend upwards for at least several inches, and the lower one down to the popliteal region. The question of laying open the bridge of skin and cellular tissue between these wounds was abandoned, as the condition of our patient made it desirable to save him as much as possible; but in order to facilitate the discharge of sloughing cellular membrane from the upper wound, Mr. Solly dilated it to the extent of two inches. The lining membrane of the mouth and throat, which from an early period had shown some signs of whitish exudation, together with his general condition, gave us much anxiety. There was now a continuous white membrane covering the whole of the velum pendulum palati, and completely sheathing the uvula. Here and there on the sides of the tongue the same white specks were observable. Dr. Jeaffreson, who had kindly watched the case with us, and assisted us by his counsels, regarded it as simply that aphthous condition which occasionally accompanies severe exhaustion, and not as true diphtheria. Our patient derived much relief in this state by sponging the throat with a weak solution of chloride of soda. With regard to medicine, he preferred quinine with sulphuric acid and tincture of orange-peel, as a most grateful bitter.

On the fifteenth day after the receipt of the injury, the wound in the leg had not progressed satisfactorily. The large overhanging flaps of skin showing no disposition to unite with the bared muscle beneath, it was deemed advisable to divide them. This did not, however, arrest the downward tendency of our patient, or a return of the sloughy condition which alarmed us so much at first, and which we hoped we had stopped effectually. In the evening everything was worse. We then applied warmth and moisture again by the poultice, which we were compelled to remove in consequence of hæmorrhage of an arterial character welling up from the bottom of the original wound produced by the explosion, into the popliteal space. This bleeding was quickly arrested by compress and roller, but not so the sloughing action.

There is little now to be added to this melancholy case. Matters grew daily worse, sloughing spread in every direction both of thigh and leg wounds, and Condy's fluid now ceased to be a sufficient deodorant, and was changed for the solution of chloride of soda, which was used in the strength ordinarily sold. He suffered but little, except during the dressings of the limb, and retained his consciousness to the last. He died at a quarter before seven on January 30th, exactly twenty-one days from the receipt of the injury.

Autopsy.—Our examination, which was confined to the leg, showed the original gastrocnemial wound to lead deeply upwards to the posterior ligament of the knee-joint, and the upper femoral wound to extend beneath the gluteus maximus as high as its upper border, exposing and separating along its course all the trochanteric muscles, and for several inches the great sciatic nerve, the surface of which was lacerated and sloughy. The lower femoral wound extended into the popliteal region without communicating with the gastrocnemial one. No wadding or other foreign body was found.

Remarks.—From all this it would appear that the missiles from the roman-candle had not only produced three gun-shot wounds, but, after penetrating the skin, had then exploded, lacerating and destroying the cellular membrane and intermuscular septa in all directions. The arterial hæmorrhage at the time of the accident and during the progress of the case was accounted for by the direction and depth of the gastrocnemial wound.

Finsbury-place, Feb. 1862.

OBSERVATIONS ON INJURIES OF THE HEAD.

By JAMES F. WEST, Esq.,

SURGEON TO THE QUEEN'S HOSPITAL, BIRMINGHAM.

(Continued from p. 169.)

CASE 3. Compound Comminuted Fracture of the Vault.—Thomas M—, aged thirty-four, labourer, was admitted into the Accident ward of the Queen's Hospital, at two A.M., on the 17th May, 1857. The patient, a strong muscular Irishman,