forcibly, he had no doubt the membrane might be torn in the attempt. The true mode in which they were formed he believed to be perfectly analogous to the manner in which the identical substance, coagulated fibrine, is prepared for chemical experiment, namely, by shaking blood in a phial with pieces of metal or glass, the serum and colouring matter being separated by the agitation; so he believed it to be the case in the formation of the cardiac polypi or fibrinous concretions during the paroxysm of death, the muscular fibres of the heart contracting rapidly round the blood stagnated in their chambers, its proximate principles are separated, and the fibrine, entangled in the columnæ carneæ and cordæ tendineæ, assumes the appearance of a production growing from the heart itself, as was seen in the specimen sent round for inspection.

LITHOTRITY.

To the Editor of THE LANCET.

SIR,—I transmit another case of stone, cured by the lithontritic process, in which the “pince à virgule,” and “sonde évacuatrice,” were of especial service. I have subjoined notes on the “rectangle-bed,” and “recto-curvilineal sound;” and I shall have ready for publication in a short time, two cases where the “brise-coque” was found to be all-efficient.

I have the honour to be, &c.

D. O. EDWARDS.

Westminster Hospital, 6th April, 1830.

CASE OF ADMIRAL ———, æt. 64.

Stone of from Twelve to Fourteen Lines' Diameter—Muco-purulent Catarrh of the Bladder—Enlarged Prostate—Impossibility of ejecting the Fragments naturally, surmounted—Importance of the Rectangle-Bed—Utility of the “Virgule” and “Sonde Evacuatrice”—Cure.

By BARON HEURTELOUP, D.P.M.

ADMIRAL ———, sixty four years old, of a good constitution, but rather irritable, experienced for many years painful sensations in the region of the kidneys. Some time after the first occurrence of this circumstance, he perceived certain changes in his mode of passing urine. There was a sudden stoppage in the midst of the stream; the expulsion of the fluid was attended with spasm, and a sense of tickling, afterwards augmented to uneasiness, was evident at the

extremity of the penis. The admiral came to London, and consulted Mr. Brodie, who sounded him, discovered a stone, and proposed the operation of lithotomy. The patient, however, not suffering much at that time, refused his consent, and returned to Exeter, the place of his residence.

Eighteen months after this event, the admiral was informed of my arrival in London, and determined to undergo, under my hands, the less formidable process of lithotritry.

On the patient's arrival in town, his constitution was unimpaired, and his habit of body a little gross. The symptoms had not as yet related to any but the urinary organs, which, however, had evinced much derangement. Their sensibility was excessive; in micturition he was obliged to rest his head against the wall of his apartment, for the purpose of gathering sufficient force of expulsion. The urine which was voided, came away without a jet, and excited acute pain and violent spasms. He felt a desire of making water at least twenty times a day. Catheterism was impracticable with a straight staff, and difficult even with a curved one. The prostate gland was greatly tumefied; the urine glairy and often purulent; the bladder small, contractile, and scarce capable of containing two ounces of water, without causing its immediate expulsion. The mere introduction of a sound gave rise to a discharge of blood, which was sometimes considerable, and indicated a varicose state of the membrane. The sound, when introduced into the organ, afforded a sensation of soft and uneven cavity. A permanent pain was felt in the right kidney, and prevented the patient from lying on that side. The stone appeared to be about the size of a small walnut, and was not easily accessible. It was felt with the curved extremity only of the recto-curvilineal instrument, and was almost always situated laterally. When on the right side, although moveable, it was with difficulty displaced. On the left side of the bladder, the extremity of the sound came in contact with a projection, produced by a species of muscular column, which seemed to divide that part of the organ into two cavities.

Such was the condition in which I found admiral ———, and notwithstanding there existed many difficulties to be overcome, I thought it incumbent on me to undertake the treatment.

I began by endeavouring to soothe the excessive sensibility of these organs, which would otherwise have precluded every attempt.

Opiates regularly administered, emollient injections of the bladder, and the regulated employment of bougies and staves of different degrees of curvature, soon paved the way for the introduction of straight instru-

ments.* When the organ, in consequence of this preparatory treatment, admitted a quantity of water sufficient to allow the performance of the operation, I attempted it. I did not at first succeed in grasping the stone; this body being always situated towards the lateral parts of the bladder, the open pincers could not be brought in contact with it. The prostate was swollen, and projecting into the bladder, diminished its antero-posterior diameter, and prevented the stone from placing itself in the median line, a situation where it is most accessible, being exactly in the axis of the instrument.

I was on the point of giving up in despair, my efforts to seize the calculus, when I perceived that the part of the bladder which corresponds to the concavity of the sacrum, presented a smooth and even surface, and was in direct relation to the extremity of the pincers. I thought if I could succeed in rendering this part of the organ the most depending, I might be fortunate enough to locate the stone there, and ultimately seize and destroy it.

The inclination afforded by the rectangle-bed† which does not exceed forty degrees,

* My friend, Mr. White, wished this preparatory treatment to be adopted in the admiral's case, with a view of insuring my success, and diminishing the risk of incurring the unpleasant constructions which might result from an unfortunate attempt in this case. I take this opportunity of thanking Mr. White for this delicate attention, which is so characteristic of him.—Dr. H.

† The rectangle-bed, so frequently mentioned by Dr. Heurteloup, is not unlike the common operation-table. It is, however, rather shorter, and the two legs which support the head are attached with hinges, and being folded under, admit of depressing the head of the patient, and consequently the fundus of the bladder to any degree of declension. The shoulders of the patient are supported with a wedge-shaped box, and this prevents the position from being rendered irksome by the dependence of the head. The receding of the patient is prevented by a leather strap passed round the shoulders, and buckled to the sides of the bed, and the feet are secured in slippers attached to the foot. The object of Dr. Heurteloup, in the construction of this simple machine, is, to raise the pelvis to such a considerable degree, that stones situated behind the neck of the bladder, in the horizontal posture of the patient, may be thrown back, and with greater facility seized. Another object proposed by this invention, is the supplying a fixed point for the instrument during the process of comminution, this is fulfilled perfectly by a curved bar of iron,

was not sufficient for my purpose. I succeeded, however, with the assistance of a thick pillow, in raising the pelvis to an angle of fifty degrees from the horizon, and proceeded to the operation. I began by making an injection through the recto-curvilineal catheter, with the extremity of which I might dislodge the stone, which was situated on the right side of the organ* and before that membranous partition, of which I have already spoken. After having placed the stone directly opposite the cervix, about an inch and a half from the meatus, I introduced "*le pince à trois branches avec le mandrin à virgule*," with which the stone was immediately grasped, perforated with the drill, excavated and broken in a few minutes by the eccentric action of the virgule.† The stone being reduced to fragments, I waited some days for their expulsion, but the smaller particles only were evacuated. The urine was not ejaculated with sufficient force to carry the grosser particles through the urethra, and over the obstacle presented by the enlarged prostate.

This was a great inconvenience; but I thought that by reducing the entire stone into powder, I should be enabled to secure

which is attached by a screw to the foot of the bed. During my visit to Paris last autumn, I had many opportunities of witnessing the effective aid which the rectangle-bed affords in these two points of view. I saw Dr. Civiale operate several times at the Hôpital Necker, without this auxiliary; the patient lies on his back in bed during the operation, his pelvis being raised by a pillow; the operator is placed by the side of the patient, and an assistant holds a sort of manubrium into which the instrument is fixed with a screw. The inferiority of this plan to that of the rectangle-bed, will be immediately evident to any one who sees the two modes practised. My friend Dr. Leroy, the inventor of lithotritry, has adopted its use, and considers it to be the most valuable of the baron's improvements.—D. O. E.

* The recto-curvilineal sound is one invented by Baron Heurteloup, and is peculiar in being perfectly straight to a certain length, and in having a curved extremity which represents the quadrant of a circle, the radius of which is an inch and a half. I shall more minutely describe this on another occasion.—D. O. E.

† The "*mandrin à virgule*" is an instrument constructed by Baron Heurteloup, to destroy calculi by first perforating and afterwards excavating them to an extent of from ten to twelve lines. This instrument has great power over stones of moderate size, and excels considerably the simple *perce-pierre* of Leroy and Civiale.—D. O. E.

its evacuation, as the flow of urine was sufficient to carry away the detritus when pulverized.

I endeavoured to effect this complete pulverization, but another inconvenience arose. The bladder, soft and spongy in its existing state, had permitted me to seize the stone with facility; when this body was entire, it could be easily felt, because it could not be concealed in the rugæ formed by the inequalities of the organ; but now the particles remained buried in the soft substance of the bladder, and were with difficulty distinguished.

A further difficulty existed, in the irregular form of the fragments, which prevented them from easily obeying the law of gravitation, and falling to the most inferior part of the organ, I was consequently obliged, each time I wished to seize any fragments, to place them with the recto-curvilinear catheter, in a situation where they were tangible by the pincers.

Notwithstanding all these difficulties I succeeded in reducing the calculous portions to such a size as might permeate the urethral canal.

In the mean time these fragments, comminuted as they were, were not as yet expelled by the urine, and this fluid did not flow with force enough to answer this purpose. I now thought, that to effectuate the perfect cure of the admiral, it was absolutely necessary to resort to a mechanical contrivance, for the expulsion of the detritus. I had, therefore, constructed a catheter of a particular pattern, furnished with two large foramina, such as would permit the passage of fragments into the tube, and their subsequent escape.* With the aid of this instrument I soon had the satisfaction of witnessing the expulsion of the fragments from the bladder, in which there does not now exist the slightest vestige of stone.

* This instrument is not, as might be supposed, a simple catheter with an eye of large diameter; an instrument of this kind would be very dangerous to use in the removal of fragments from a bladder which had lost its expulsive power, for a fragment once entangled in one of these eyes, and projecting from it, would certainly cause a laceration of the urethra in the withdrawal of the instrument. The portions of calculus which remain, after the lithontritic action, always abound in points and edges. The principal object proposed by Baron Heurte-
loup, in the "sonde evacuatrice," is the obviating the entanglement of these calculous portions. An accurate account of this, and some other instruments, will shortly appear.—D. O. E.

Clinical Reflections.

The cure of this patient ought to be considered as, certainly, a conclusive fact in favour of lithotritry, for it proves the efficiency of this process even in the most difficult cases. To be perfectly clear, it is necessary we should proceed methodically in our deductions.

We have seen that it was absolutely impossible to take the stone whilst the patient was horizontal, but that a considerable elevation of the pelvis rendered it not only practicable but easy. It is certain that without the aid of the rectangle-bed, this would have been reported a refractory case of lithotritry. If the use of the bed in this case was the immediate cause of success, is it not reasonable to conclude, that, in other cases less difficult, a recourse to the same means would multiply the chances of success? There is no doubt that certain operations of lithotritry have been rendered tedious, painful, and sometimes incomplete, in consequence of not resorting to this auxiliary.

The bladder of this patient bled on the mere contact of the sound, and consequently the urine was tinted with this fluid immediately after the operation; but after the third application, the hæmorrhagic disposition of the bladder was so much corrected, that the urine was rendered no longer sanguinolent. In general, when it is proposed to practise lithotritry, it is necessary to ascertain if the state of the bladder be varicose, and to inform the patient, that he may not attribute to a lesion of the organ, that which is the effect of a particular state. I think I have generally observed that, in cases of this description, the more blood flows after the operation, the sooner does the patient feel himself relieved; the urine flows better, the tenesmus is lessened, and the detritus is expelled with greater facility.

The case of admiral ——— is the first I have met, where it was absolutely necessary to locate the fragments in order to seize and destroy them. The irregularity of the internal form of the bladder, and, above all, a species of projection, which was discernible by the recto-curvilinear staff, rendered this part of the operation very delicate, for the fragments placed in front of this projection were with difficulty moved, and directed to the situation where the lithotrite could act upon them. By means of the staff at first, and by slight impulses, communicated by an assistant, to the bed, all the fragments were located, and easily taken by a "*pince sans crochets*." The softness of this organ, and its inequalities, rendered the employment of the "*pince à crochets*" inconvenient, if not dangerous.

CASE OF ADMIRAL * * * *

Of all the unfavourable circumstances which rendered the case of the admiral difficult, what obstructed the process most, was, the excessive tumefaction of the prostate, which, being highly sensible, irritated the whole urinary economy.

This organ being considerably developed under the cervix, pushed that portion of bladder which covered it towards the posterior part, and thus diminished the antero-posterior diameter of the organ. Besides this effect, it created two lateral sinuses below the neck, from which it was difficult to dislodge the calculous fragments.

Over and above this disadvantage, which arose from the inward projection of the prostate, there existed another, not less difficult to surmount. To reach that part of the lower fundus of the bladder nearest the neck, I was obliged to depress this gland, which would have been exceedingly painful but for the aid of the rectangle-bed, which enabled me to throw back the fragments from the cervix, and to seize them without laying much stress of the instrument upon the diseased gland, an effect which the patient could not possibly support.

The preparation of the urethral canal, which, in ordinary patients, is seldom necessary, was, with the admiral, an indispensable preliminary. When he arrived, it was difficult to introduce curved, and perfectly impossible to introduce straight, instruments. The gland being tumefied beyond measure, (the effect perhaps of a long journey,) raised the cervix considerably, increased in depth the cul-de-sac of the prostate, and consequently obstructed the instrument in its passage. It was natural to suppose that rest, and the judicious use of bougies, would remedy this inconvenience; and, as in the present case, this morbid disposition existed to a high degree, the success obtained would lead one to conclude that an unfavourable prognosis is not always to be formed under such circumstances. After a continuance for some time of these preparatory measures, the urethra of the patient was rendered capable of receiving a large sound with facility.

It is a curious circumstance, that notwithstanding the facility with which a staff of large diameter was introduced, the fragments of the calculus could not be ejaculated. It is certain this was not owing to an inertia of the bladder, for a gum-elastic catheter being introduced when that viscus was full of water, induced that fluid to be immediately expelled with considerable force.

The tumefied prostate gland occasioned this anomaly. Forming a ring round the neck of the bladder, and part of the urethra, it gave to this part of the canal, for about the length of an inch, the form of a hard

cylinder, whenever a sound of four lines and a half diameter was introduced into its interior; but when the instrument ceased to impart its round form, the canal became flattened from above downwards, a consequence arising from the tumefaction of the inferior part of the prostate. It follows, from this, that the urethra might be enlarged *mechanically*, but had not the power *vitally* to enlarge itself. This last property is indispensable to the energetic expulsion of the urine, and the concomitant evacuation of the fragments. When we have not succeeded in obtaining this result by natural efforts, we ought to profit of the extreme facility with which we may mechanically distend the canal. This case may serve to prove, that frequently the most difficult part of lithotripsy is not the breaking of calculi; but that there exist other impediments, amongst which I include the difficult ejection of the fragments, whether arising from the present cause, or from others, which are both numerous and various.

In general, an operation of lithotripsy ought to be performed with the most powerful instruments, and especially in cases where the sensibility is much augmented, and the circumstances difficult; and I am convinced a great deal of my success is ascribable to the use of the "*mandrin à virgule*," for, with this instrument, the stone once taken, is quickly excavated and broken. This prompt success could not assuredly be expected from the simple "*foret*," employed by Leroy and Civiale.*

Notwithstanding the advantage derived from the employment of the "*virgule*," the case of the admiral was protracted. This chiefly arose from the difficulty of placing the fragments in a situation where they were seizable. When I felt the calculous body in the right position, I introduced the "*pince*," and reduced it to powder; but as soon as this fragment was pulverized, I had not the power of seizing another, as is usually done in a sound bladder. The recto-curvilinear sound, in consequence of its curve, was not sufficient to dislodge the fragments from the lateral pouches in which they were situated. It was necessary therefore, as soon as one fragment was destroyed, in order not to fatigue the patient, to postpone the duty of crushing the various remaining fragments, to successive days.

By the employment of the means I have described, I succeeded in curing the admiral, without his experiencing any fever, or being confined to his bed. Immediately after

* With this "*foret*," instead of breaking the stone at once, it is necessary to repeat the process several times.—See *LANCET* for August 1st, and 26th of September, 1829.—Dr. H.

the first "séance," the patient experienced relief, and his sufferings diminished each succeeding one, until the attainment of his perfect cure. Hence we may fairly conclude, that the operation itself is the best anodyne for the patient's sufferings—that is, if it be properly performed.

The admiral has left London for Exeter, his place of abode these three months, and has not experienced the slightest inconvenience in micturition. The bladder retains a large quantity of urine; the internal membrane of the organ is so much improved, that the introduction of a catheter causes not the slightest effusion of blood. The pain which he experienced in the right kidney has disappeared, being merely symptomatic of the affection of the bladder. The jet of urine is continuous, and sufficiently voluminous, but not very rapid, in consequence of the influence of the still-enlarged prostate, which, although diminished in volume, is yet sufficiently large to affect the stream of urine. This fluid is not catarrhal, and, in short, the patient is radically and completely cured.*

This operation was practised in the presence of Sir Anthony Carlisle, Messrs. White, Brodie, Green, Copeland, Bransby Cooper, Keate, Boyton, &c. &c.

HYDROCEPHALUS.

[From a Correspondent.]

DR. CONQUEST introduced to his class, at St. Bartholomew's Hospital, on Saturday evening, one of the two children who have been successfully tapped by him for the relief of *water in the head*. It having been previously intimated that the child would be brought forward, considerable interest was excited, and an unusual number of gentlemen were present. This child, a girl about two years of age, had several signs of hydrocephalus from a date soon after its birth, and for many months past the head had gradually increased, until it acquired an enormous size. The forehead was singularly broad, and the anterior fontanelle unnatu-

rally large; the pupils were permanently dilated; the child slept almost incessantly, and frequently had two or three frightful convulsions during the day and night. Dr. Conquest operated some time since, before a large number of the pupils of the Hospital, by pushing a very beautifully-constructed trocar into the right lateral ventricle; he introduced it obliquely, close to the edge of the right temporal bone, about midway between the crista galli process of the ethmoid bone and the anterior fontanelle, so as to avoid the longitudinal sinus on the one hand and the corpus striatum on the other. The instrument entered about two inches below the scalp. An ounce and a half of bloody serum, mixed with portions of cerebrum, escaped; the pulse became feeble, and temporary collapse followed. The fluid was allowed to escape drop by drop, and within eight-and-forty hours about two pints and a half flowed out of the opening. Almost immediately after the operation, the pupils became sensible to the stimulus of light; the drowsiness was succeeded by disinclination to sleep, and the pulse, which had always before been remarkably slow, became about eighty-five. Two days after the operation, the brain evinced signs of inflammation, with high constitutional disturbance; a great alarm was excited by a rather formidable attack of convulsions. Leeches to the temples, and the constant application of cold to the head, subdued the local inflammation, and within four and twenty hours all became tranquil. The head was well strapped, and, from the cessation of cerebral excitement, no unfavourable circumstance occurred.

When this interesting child was exhibited to the class on Saturday evening, every one was struck by the improvement in its appearance, and by the intelligence and cheerfulness of its countenance. Dr. Conquest stated, that he considered it to be perfectly well, and as exhibiting a most gratifying and triumphant proof, that this seemingly formidable proceeding might be again safely and successfully adopted under similar circumstances.

The other case, to which the doctor has often adverted during the winter, he operated on last autumn, assisted by a physician of Guy's Hospital. Nine ounces of serum were withdrawn from the posterior fontanelle; the head became lessened six inches in its circumference, and no increase in its size has again recurred.

St. Bartholomew's, April 5th, 1830.

* One effect designed in the publication of this series of cases, is, to illustrate the advantages derived from the numerous and important improvements of Dr. Heurteloup in this branch of surgery; and it is worthy of remark, that all the patients treated by this gentleman in England, and whose cases will be successively published in this Journal, have been cured without the occurrence of the slightest fever, or inflammation of the bladder.—T.