space was stacked with coffins from floor to ceiling, in "most admired disorder." Some were lying east and west: some north and south: others were placed cross-wise, and some were standing up on end. Every one of these had to be taken out so that the name-plates might be read. This was a long and gruesome business, as the coffins were heavy of oak and lead, and he and the men helping him spent fifteen days over it. At last, when upwards of 200 coffins had been fruitlessly examined, there were only five left at the end of the vault; and as he could read the names on the three uppermost of these, he feared that his chance of reaching the object of his search was small. However, on one of the last two he had the satisfaction of finding the inscription,

John Hunter, Esq.,
Died 16 October
1793
Aged 64 years.

And above these words were engraved the arms of the Hunter family.

Thereupon the Council of this College approached the authorities at Westminster, and asked that the body might be granted tardy burial in the Abbey. The Dean, Dr. Trench, worthily replied, "We shall be proud to be the guardians there of the ashes of so great a man."

The coffin, therefore, was brought to the Abbey; and on March 28, 1859, in the midst of a crowd of illustrious persons, all that was mortal of John Hunter was laid in the earth of the North Aisle, not far from the last resting place of Isaac Newton. And as the coffin was being lowered into the vault, the organ pealed forth that magnificent chorus from Handel's Funeral Anthem,

"His body is buried in peace; but his name liveth evermore!"

To you, Mr. President, and to me, as to others who are devout worshippers at the Shrine of Hunter, there may appear little or nothing in this Address which is worthy of attention. Still, it may be hoped that in its course some stray thought may have been set free—as when a flint strikes steel—which, falling upon the mental tinder of some younger man, may cause the springing up in him of a flame to illuminate his studious path and help him onward. Indeed, without the hope of some such effect resulting from a Hunterian Oration, the pious intention of John Hunter's Executors might well be allowed to sink into oblivion.

And even for those of us whose thoughts should be directed to the lowering of the sails of their bark, and the gathering in of the ropes, there will still remain a place in the mental vision for the picture of a raw Scottish lad coming up to a great City in which he had but one friend, and, possessing nothing beyond the rudiments of an education, seeking his way to a position in the world of Science and of Art such as it is the lot of few to attain, and, without any indebtedness to the goddess Fortune, reaching it by dint of industry, vigour and determination.

THE number of persons who visited the Royal Botanic Gardens at Kew during 1910 was over three and a half millions, the largest number on record. It seems a very large number until we recollect the enormous population which lives within ten miles of the gardens, and think of the great number of persons who visit London during the spring and summer months to see the sights. Undoubtedly one of the most beautiful of these is the garden at Kew, whether it is seen in its spring or its summer dress. But the garden has a scientific as well as an æsthetic attraction, for a great deal of important scientific and economic work is done there. Apart from growing things, the dried collections and the wonderful set of drawings of tropical vegetation by Miss North are alone worth the easy pilgrimage, for the objection which used to be made against Kew that it was inaccessible no longer holds good. With the help of underground railways and electric tramways it can be reached *tuto cito et jucunde*. It is worth while to add that when a foreign visitor, or one of our overseas countrymen, asks about the Botanic Gardens the Londoner would do well to direct the inquirer to Kew rather than to the gardens of the Royal Botanic Society in Regent's Park. That society does much good work, but it is hampered in many ways, not least being lack of funds, and its gardens, interesting as they are, compare favourably with the great botanic gardens in other countries. Kew, on the other hand, is not unworthy of such a comparison.

The Lettsomian Lectures

ON

A REVIEW OF THE OPERATIONS FOR STONE IN THE MALE BLADDER.

DELIVERED BEFORE THE MEDICAL SOCIETY OF LONDON.

BY
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LECTURE I.

MR. PRESIDENT AND GENTLEMEN,—It is known that operations for the removal of vesical calculi have been performed for over two thousand years, and we are indebted to Celsus for a clear description of the method then adopted, which, with but little variation, kept the field for over fifteen hundred years, and was at times practised as lately as two hundred years ago. This operation seems originally to have been regarded as beyond the scope of the practitioner of that time, for we find that those who took the Hippocratic oath bound themselves not to perform this operation; the disciple, taking the oath, said, "I will not cut persons labouring under the stone, but will leave this to be done by men who are practitioners of this work." No wonder, then, that the operation fell into the hands of quacks and irregular practitioners, but in justice to them we must remember that the first step of putting the operation on a sound foundation was taken by a man who was in no sort of way qualified as a practitioner of medicine. When we remember that this operation has not only been brought before societies of learned men, but before princes, parliaments, and men in high position, there is sufficient of interest to warrant our giving it some attention. We may safely conclude that a person suffering from a vesical calculus in those distant days had to put up with the pain and distress until his condition was desperate. There was no early diagnosis of stone then—indeed, the stone was detected not by the sound, but by introducing the fingers into the rectum and feeling it through the anterior wall. The next step was to recognize that it could be pressed forward against the perineum, then, when this was done, it was but one step farther to suggest that the intermediate parts should be cut with a knife and the stone extracted. Such were the steps by which the first simple operation was arrived at. It is possible also that the sloughing of the perineum, due to the presence of a stone impacted in the deep urethra, thus allowing it to come away, may have suggested the division of the soft parts as a means for its extraction. This operation, from its having been described by Celsus, has been called the *Lithotomia Celsiana*, or, from the use made of the fingers in pressing down and holding the stone, it has been called cutting on the gripe, and when in later ages more complicated operations were invented and many instruments used, this was named the apparatus minor, or lesser apparatus, from its being performed with no other instrument than a knife and a hook. Such an operation as this, requiring no knowledge of anatomy for its performance, could be undertaken by quacks, whose only desire was to extract the stone, and who were indifferent as to any complications which might arise afterwards. Apart from these, however, it was performed by regular practitioners, and for many centuries was in considerable favour. Celsus describes the operation as one which,

when all others fail, must be performed on those afflicted with the stone; an operation which, since it is full of danger, must never be rashly performed, nor at all times and seasons, nor in all ages, nor in all degrees of the malady; but only in the spring in boys from 9 to 14 years of age, and when the disease is so desperate that it can neither be cured nor even alleviated by medicine, but when the person must die in a little while.

Such, then, were the conditions justifying the operation. It is difficult to understand why the operation should not have been performed on boys under 9 years of age, as it could have been carried out as well before that age as after. In the adult there were difficulties, arising from the size and depth of the perineum, which may have rendered it more dangerous than in boys. The operation

was performed as follows: The fore and middle fingers of the left hand were inserted, one after the other, into the anus, while the right hand was placed on the lower abdomen. The stone was then sought for by the fingers of the left hand in the rectum, assisted by those of the right hand, which pressed from above into the pelvis, and kept the stone in front of the left fingers, so that these might press it from behind forwards against the neck of the bladder and perineum. The difficulties at this stage were fully recognized, for we are told that

when the stone is within the gripe it must be more cautiously and carefully handled in proportion as it is small and smooth, for a small and smooth stone is apt to slip back and to occasion much handling and tormenting of the bladder. For these reasons the fingers of the right hand are pressed in behind the stone, while with the fingers of the left hand it is brought downwards to the neck of the bladder. If the stone be oblong, let it be presented, lying along with one end turned towards the wound; if flat, with one end towards the wound; if square, resting upon two of its angles; if bigger towards one end, let the smaller end be presented to the wound. Whereas, when the stone is round, there can, from the figure of the stone, be no difference in which position it is presented, but from its roughness there may, if in a rough stone there be one smooth part, let that part come foremost.

Such reasoning as this shows that the early operators not only knew of the difficulties that were likely to arise, but were capable of obviating them as far as circumstances would allow. The next step was to make the incision directly on to the stone.

This was "of a lunated form, not far from the anus, and with the horns of this lunated incision looking towards the hips. Then, in the deeper and narrower part of the wound, is to be made a second incision, also transverse, into the neck of the bladder itself till the flowing out of the urine shows the incision to exceed in some degree the size of the stone. The neck of the bladder being thus opened the stone itself comes into view, which, if small, is to be got out with the fingers alone, the fingers of the left hand pushing it forward from within, while the fingers of the right help to pick it out, but, if it be larger, a hook, made on purpose, must be slipped in behind it."

This hook, we are told, "should be flattened and bent into a semicircular form, smooth on its back part, where it presses against the parts and rough where it touches the stone, and it should be rather long, for a shorter hook has little power."

Such careful detail could hardly be improved upon; and when we read the directions for its use, we see that the operators had at least given attention to their work, for we are told that

when the hook is fixed behind the stone it must be moved from side to side to work the stone forwards, for the stone, if it be fairly caught by the hook, moves along with it, whereas if you merely press upon the stone without moving it thus from side to side it will slip, it will escape again into the bladder, and the point of the hook will strike against the edges of the wound. Having secured a fair hold of the stone, you are to perform at one moment three separate motions—namely, from one side to the other and directly forwards, but all quietly, taking care first to draw the stone a little downwards. Finally the handle of the hook must be raised that the lower end may press deeper behind the stone, which may be then more easily protruded. The stone, if it be not easily caught from above, may be extracted by slipping in the hook from one side.

Celsus was fully alive to the danger of dragging a large stone through a small incision, and he therefore recommends that "when the stone is too large to be extracted without laceration of the neck of the bladder it is to be broken." This was accomplished by fixing it with the hook and then striking it with a suitable iron instrument.

Such, then, was the nature and scope of the operation as described by Celsus, and for many centuries it was the only one that was resorted to. There were obviously many dangers connected with it, and it would not be unfair to assume a high mortality. The operators, however, had the sympathy and support of the public, though they were not regarded favourably by the profession. One especially rendered himself obnoxious to the regular practitioners by the success he attained in the practice of this procedure. This was Le Raoues, who operated in the seventeenth century in the principal cities in France, long after surgeons had established the operation known as the Marian. When one reads of his skill in operating, and considers that surgeons were then performing the Marian, with all its horrible cruelties, it is easy to understand that the advantage was with him as regards results. His operation was an advance on the apparatus minor as described by Celsus, for instead of using it only for boys from 9 to 14 years of age, he cut men of all ages, and did not hesitate to pass three fingers into the rectum when necessary. His

incision, instead of being transverse and lunated, was longitudinal and curved to the left of the middle line. Further, by drawing the skin of the perineum to the right and pushing the stone towards the left, he obtained an oblique or valvular incision on to the stone, so that the bladder should be closed afterwards. This, however, could hardly have been an advantage, as the risk of extravasation of urine must have thereby been considerably increased. He is, however, reported to have operated on a nobleman who was able on the ninth day to walk round the city with his operator. Raoues, after having operated with great success in the provinces of France, appeared in Paris, and managed to gain access to the society of learned men, where, in the presence of the Prince of Condé, he stated that he had discovered a new way of cutting for stone—more expeditious, safe, and easy than that by the Marian then in use. This brought down on him the wrath of the physicians, and more especially of Collet, the King's lithotomist, who did not hesitate to say that he operated on men who had not the stone, and that the one produced was one which he held in his sleeve and dropped into the palm of his hand at the proper moment, and presented to the spectators, soiled with the blood of the wound. In spite of such hostile criticism there can be no doubt whatever that his was a plain, simple, and successful operation, which he well knew how to perform, and there was no need for him to resort to deception. He was therefore bound to make enemies, many of whom invented tales against him.

The incision in the apparatus minor, up to the time of Celsus at any rate, was transverse and lunated; the incision of Raoues was also lunated, but it was nearly an inch to the left of the middle line, a sort of semicircle around the tuber ischii. It is not known when this was changed for a longitudinal incision, but about this time the incision was made in a direction similar to that of the Marian, that is, in a lateral direction. In the case of the apparatus minor the incision was made on to the stone, while in the Marian it was made on to the staff. The original transverse incision was open to many objections, for the parts cut varied according to the degree in which they were protruded by the fingers, and it was quite possible to completely sever the urethra from the bladder, an accident which might also happen with the lateral lunated incision. The extraction of the stone was comparatively simple, provided a suitable incision was made, and there was the further advantage that no gorgets were used. The bladder was entered by a clean cut of sufficient size, but unfortunately, it was possible by this very method to inflict irreparable harm, and at all times there must have been a great uncertainty as to what parts were being cut. The dangers and difficulties of this operation were therefore very considerable. Great pain was caused by bringing a rough stone to the surface in a chronically inflamed bladder. The irregularity of the stone frequently caused the incision upon it to be so uneven as to render its extraction difficult. The possibility of damaging the rectum with the fingers was very real. In a stout patient the size of the bladder, and its distance from the surface, rendered it difficult to protrude the stone, and it was very difficult to retain it in that position in the case of a very smooth stone. There was also the fact that the surgeon's fingers became tired when pressing down the stone on to the perineum. It was not, however, until early in the sixteenth century that any serious attempt was made to introduce any other operation in place of this, and it is somewhat uncertain as to the exact reasons that caused the new procedure to be adopted. It has been suggested that the first idea of this may have arisen from observing how easily stones were frequently voided by women, either naturally, or with some assistance; the shortness and great dilatability of the urethra in women giving a comparatively easy passage to the stone. It may, therefore, have been argued that if an opening were made into the male urethra near the bladder, so as to have the intermediate parts as short as in women, it might be dilated and the stone extracted with ease. Such an operation was also in accord with the view generally held at that time, that a wound of a membranous organ, such as the bladder, was mortal. Thus it may have been that, seeing the dangers and difficulties of the apparatus minor, men were honestly searching for an improved method; or was it from less worthy motives that the new operation

was introduced? Such, at any rate, was the reason if we are to believe Heister, who says that physicians abandoned it because—

Their fees were melting away, their gains and honours were intercepted by quacks. They invented, therefore, new and curious operations, not to cut men more easily, but to display their learning. They first proved by an aphorism of Hippocrates that wounds in membranous parts are mortal. Thence they deduced this rule, that, whatever external incisions might be required, the neck of the bladder itself should never be divided with the knife, but should only be dilated with instruments of various forms.

They willingly forgot the maxim of Celsus, "that there is greater danger in dilating the neck of the bladder than in opening it by incision." They therefore dilated the parts rather than cut them, and the simplicity of the apparatus minor, and the ease with which it was performed, may have been, if we are to accept this view, their chief objection to it.

Those (says Heister) who choose to speak contemptuously of this method represent it as an operation fit only for quacks and mountebanks, as an operation too low and contemptible even to be practised by regular surgeons and physicians. Modern surgeons have invented more cunning and curious methods, such as the vulgar do not know, such as must captivate all ranks of men, the rich and great as well as the vulgar, by the profusion and elegance of the apparatus.

The operation that superseded the apparatus minor was called, not without good reason, the apparatus major, or, from its having been described by Marianus Sanctus Barolitanus, the Marian operation. The instruments used were well calculated to impress the great with admiration and reverence, provided they were not likely to require its assistance; but the feelings of the unfortunate patient must have been those of mingled dread and fear, while the spectators of this agonizing proceeding must have left the scene with a silent prayer to be delivered from the troubles incident to a vesical calculus. The inventor of this horrible operation was one Joannes de Romanis, a surgeon of Cremona in Italy, but for some reason he did not publish any account of it. This omission, however, was made good by his pupil, the eloquent Marianus, in 1524, who was quite equal to the task of presenting it to the public in language that would convince them of its virtues. Even the fact that it was to be performed by the use of an ordinary barber's razor did not disturb him, for he proceeds:

The barber's razor, friendly reader, is a most important weapon, wherewith, when the business is to shave, cut close, and utterly subdue a stubborn and rebellious beard, the barber mows down the hairs, thousands falling before him at each remorseless stroke.

All the instruments in their turn are spoken of in the same strain, but as dilatation was the chief purpose of the operation, the description of these instruments of torture excels even that of the razor. He says:

Look—look but to the aperiens, how it gapes with desire when the conductors have made way for its approaching, and, seizing the stone, it rages like the ferocious soldier ready to enter the breach in the walls of the besieged city. Next come the voracious and vociferous forceps themselves, which often, when their morsel is too large for them to devour, cry out for the aid of their two supporters, or latera, which are then laid side by side with the forceps.

The operation thus fantastically described was performed by introducing a grooved staff into the bladder, then opening the perineum by an incision in a longitudinal direction to one side of the middle line, which, however, did not pass backwards through the transverse perineal muscle into the ischio-rectal fossa, thus considerably limiting the space through which the stone had to be removed. The groove in the staff was then felt for and the membranous urethra opened by fixing the point of the knife in the urethra. A probe was then passed along the knife into the groove and along this into the bladder. The staff was now withdrawn. The operator then took two conductors, like strong iron probes, one, called the female conductor, having a groove in it, the other, the male conductor, having a probe point corresponding to the groove. The female conductor was passed along the probe into the bladder; this was then removed and the male conductor was passed along the groove in the female conductor until it also was in the bladder. Then, indeed, the operator was in a position to carry out his principle of dilating the deep parts, for taking a conductor in each hand he separated them to such an extent as to dilate, or rather

tear open, the prostate. The wound was now prepared for the introduction of the dilator, an instrument resembling forceps, whose points diverged and opened when the handles were pressed together. The dilator was passed into the bladder between the conductors, and the wound was stretched until it would admit the forceps. Finally, the dilator was removed and the forceps were introduced between the conductors, the stone was seized, and the conductors removed. If now the stone could be extracted, there was no further need for help, but if, as Marianus said, the stone was too large for them to devour, they cry out for the aid of their two supporters or latera. These were passed by the side of the forceps and locked upon the stone so that the whole resembled a four-bladed forceps. The latera were so constructed that on claspings the handles the points closed and the hinges rose, so that the instrument served at once the double purpose of dilators and assistant forceps.

This barbarous procedure did not entirely supersede the more simple, and probably at least equally successful, apparatus minor, for, writing in 1808 on lithotomy, Allan says of the apparatus minor:

It was longer practised than all the other methods for lithotomy put together, and was performed at Bordeaux, Paris, and other places in France on patients of all ages by Raouss, even so late as 140 years ago. It was one of the operations of Frère Jaques, for he had two; in performing it he made a longitudinal instead of a lunated and transverse incision. It was practised with great success by Heister, and when a staff is used to prevent the wounding of the urethra, it is still the preferable way of operating in boys. Instead of driving a gorget into the bladder of a child, which, from the smallness of the parts, is a most perilous stroke, even in the hands of an expert surgeon, we would introduce a small staff, cut upon it till we reached the bladder, then introduce the fore and middle fingers, well oiled, into the rectum, bring forward the stone, and by cutting directly upon it force it out. There is no difficult dissection, no depth of parts, no protracted sufferings, no mangling with the forceps, no possibility of doing harm—the staff prevents the bladder from being severed from the urethra. It is performed in two minutes, and this method of operating we would invariably recommend in operating on boys under 14 years of age.

Thus we see that with slight modifications the Celsian operation was in favour with some surgeons for over two hundred years after the account of the Marian was published. In spite of its many defects the apparatus major found many ardent supporters, and it was taken up and run as a special procedure by the Collots, the first of whom, Laurent Collot, was appointed to the position of court lithotomist in 1556 by Henry II of France. The Collots were famous lithotomists for eight generations, but they kept their exact method of operating a secret. There are two statements as to how this became known—one that a book was found in the closet of the elder Collot, written in his old age, containing an authentic account of his operation; the other and more exciting version being that some surgeons bored through the ceiling of the operating theatre at La Charité in order to watch the great operator at work. They were rewarded for their trouble by seeing him do an operation which was only a slight modification of the Marian, which was well known to all those practising lithotomy. The operator was Jerome Collot, who died in 1684. The Collots were strong supporters of dilatation; indeed, they considered that the whole secret in operating lay in the dexterous use of the dilators, and when the gorget was invented one of this family took upon himself to defend the dilator, which it was intended to replace. The gorget was not at first a cutting instrument, but merely a blunt wedge, a scoop of conical form, which, from the form of its beak, slipped easily along the groove of the staff, and by its wedge-like shape dilated the wound, and by the groove or hollow served as a conductor for the forceps.

I do not deny (says Collot) that those who refuse the use of the dilator may find themselves successful with the gorget—the gorget may be a commendable invention, but this I will say, that those who thought it necessary to invent the gorget must have understood very little the way of using the dilator, for the use of this instrument may be regarded as a sort of secret in the art not to be acquired but by being taught.

Marianus draws attention to the fact "that while the dilator was passed between the male and female conductors it was necessary to hold them perfectly steady and firm," the reason for this being that unless this precaution was taken they might be forced through the fundus of the bladder, as was actually seen by Saviard in a case

operated on by another surgeon. Such was the reality of this danger that some conductors were made with holes, through which crosspins were placed to prevent their being pushed in; others were made with cross handles, like a Roman sword. The wound left after this operation was not likely to heal, nor did it, and in nearly every case that survived the operation a fistula was left for life. A cannula was usually inserted into the bladder after the operation, and Collet was active in support of this, for he criticized Frère Jaques for healing the wound too early. The horrors of this operation were so great that as soon as Frère Jaques appeared with his operation he had a considerable following, though the Marian operation had a fascination for many who had been taught its mysteries. Some, indeed, while professing to do it, modified it to a great extent. They commenced by cutting low in the perineum, but added to this an incision in the prostate by running the knife forwards in the deep part of the wound. This, of course, was against the traditions of the Marian operation, where dilatation was laid down as the foundation on which it stood. One of the most noted men who in theory supported dilatation as opposed to incision was Le Cat, a lithotomist of Rouen, who was ambitious of being considered an original inventor, and would not perform an operation which was not in some sense his own. He was constantly changing his methods and his instruments, and at the same time that he was insisting that dilatation alone was safe he was in practice dividing the prostate with the knife, much as other lithotomists were then doing who had openly adopted the operation of Frère Jaques.

In studying the Marian operation we see that it was faultily conceived, and so rough in its detail that the patient stood but a poor chance. The operators desired not to cut into the bladder, but to effect an entrance by dilatation. The incision was placed too far forwards, and was in the perineum, and did not extend into the ischio-rectal fossa, where there was more room for the passage of the stone. The urethra was opened through the bulbous portion, and, as the surgeon was impressed by the idea that membranous parts should not be cut, the membranous urethra together with the prostate and neck of the bladder were dilated, or rather torn open, by his instruments. The destruction of so great a length of the urethra—for by the time the operation was completed it amounted to this—led to the formation of a permanent fistula, if the patient escaped the ordeal with his life. As to the actual mortality attending this procedure a glance at the list of the operations performed in the hospital of La Charité and collected by Morand on his return from England, where he had learnt the lateral operation from Cheselden, will show that there was room for improvement.

Year.	Number Cut.	Deaths.
1731	14	8
1732	11	4
1733	16	8
1734	17	9
1735	13	9
Total	71	38

These operations were performed by the best lithotomists in Paris, and they represent what the actual mortality of the Marian operation was when done under the most favourable circumstances. We do not know the condition of those who escaped death, but we can form some idea of their miserable condition by remembering that probably most of them had incurable fistulae with such attendant troubles, discomforts and dangers as are incident to this condition. While the credit of having introduced the lateral operation should be given to Frère Jaques, it is interesting to know that an almost similar operation was practised by one Pierre Franco, and an account of it published about one hundred and fifty years before Jaques was agitating the profession and the public in Paris by his own operation. In 1556 Pierre Franco published a work on the lateral operation and other branches of surgery, and though from his account it was an enormous

advance on the Marian operation, no one appears to have followed his description, or to have thought it worthy of notice. Indeed, Ambroise Paré, who published his immense volume of surgery in 1561, makes no mention of Franco's operation. The operation was performed as follows:

With a grooved staff in the urethra an incision is to be made between the anus and the testicles, 2 or 3 fingerbreadths from the anus, 1 or 2 fingerbreadths from the side of the commissure of the perineum. This must be done with a razor that cuts on both sides towards the point, and cuts well, being small at the point, for it is necessary that it should cut at the point. The razor is introduced into the groove in the staff and passed into the bladder so as to divide the neck, the opening being according to the size of the stone. The razor is withdrawn and a gorget introduced into the groove in the staff and pushed into the bladder; when it is in the bladder the staff is to be withdrawn and the forceps are to be passed upon the gorget into the bladder. The gorget is now withdrawn and the stone must be removed, or if too large must be broken.

This operation seems to have been a better one than that first practised by Frère Jaques; indeed, it was in many respects on a par with his second operation; yet Franco was treated with contempt during his life. No one appears to have grasped the advantages of this comparatively simple procedure, and, though he cannot be credited with having induced surgeons to adopt his method, he at any rate brought it to their notice.

When Frère Jaques appeared in Paris in 1697 and exhibited to the profession his method of extracting the stone, there was a general feeling, not only among the profession, but among the public, that here, at any rate, was a method that, so far as extracting the stone was concerned, was less brutal and far quicker than the Marian operation, and that, whether the results were good or bad, the patient was spared the prolonged agonies of this procedure. The principle of the operation as performed by Jaques was to cut, and not to dilate, the deeper parts of the wound. He it was who showed that wounds of membranous parts were not mortal, and that Celsus was right when he said "it is safer to cut than to dilate." By some he was regarded as one sent from heaven to alleviate the sufferings of his fellow creatures. By his enemies—and he naturally had them—he was spoken of in different terms. He was born of poor parents in Beaufort in the year 1657, and his only education was some instruction in reading and writing. When he was 21 years of age he became the servant of a quack of the name of Pauloni, and for six years he travelled about France with him, acting as his assistant, and helping him with his operations on those suffering with stone. When, however, Pauloni went to Venice, Jaques found his way back to his own country and practised those operations at which he had hitherto only assisted. At about the age of 40 he became impressed with the most enthusiastic sentiments of religion and resolved to devote his life to works of charity. He travelled over the provinces of France, assuming the name and character of a hermit or religious man, and he cut those who came to him with stone. He appears to have extracted certificates from the friends of those on whom he operated, who were astonished at the dexterity with which he extracted the stone. He, however, had the sense not to wait until the time of cure arrived, but at once passed on to another district, leaving his patients to their fate, and many of them died. Finally, he met with some real success among those of high rank, and one of his patients, a canon of the Metropolitan Church, advised him to go at once to Paris. This he did and took letters from him to one of the canons of the church of Notre Dame, together with numerous certificates from the magistrates of the towns and provinces which he had visited. On arriving in Paris he introduced himself at the hospital of La Charité, through M. Maréchal, the first surgeon, but the physicians of that hospital would not allow him to operate, though he had come to Paris with the sole object of teaching a new and particular manner of cutting for the stone. The difficulty was, however, soon overcome, for the canon to whom he had been introduced presented him to De Harley, first President of the Parliament of Paris, who became his friend and protector, and he was permitted to demonstrate his operation at the Hôtel-Dieu. Frère Jaques's operation was done as follows:

Having introduced a staff into the bladder, without a groove, he took a long knife with which he made an incision by the side of the left ischium, and cutting obliquely upwards he divided all the parts between the tuber ischii and the staff,

which he allowed to remain in the bladder; he cut so freely upon the staff as to admit the finger into the bladder; along the finger he introduced an instrument which he called his conductor, as if to dilate the wound, and along the conductor he passed the forceps. Having introduced the forceps he withdrew the conductor; upon finding the stone he withdrew the staff also, and having seized the stone he drew it out.

The interest excited by this operation was so great that M. Méry was requested by the Lord President to draw up a report on it. This he did, and fully recognized and drew attention to the points in the operation in which, in his opinion, it was superior to the Marian. He considered it more favourable with respect to the extraction of the stone than that in common use, for a wound made thus in the neck of the bladder will permit the stone to pass easily, and being extracted through the widest part of the opening of the pelvis, it will be brought along without violence; whereas in the common operation, there being no incision but in the urethra, and the stone being forced through the neck of the bladder still entire, and through the narrowest part of the arch of the pelvis, the operation cannot be accomplished without extreme difficulty, and (whenever the stone is large) with great violence. He considered that the operation of Frère Jaques must be less liable to accidents than that in common use. The muscles of the penis were uncut, and the prostate and neck of the bladder were divided, instead of the more vascular bulbous portion of the urethra. The incision in the Marian operation was in the perineum, while that of Frère Jaques was further back where the exit from the pelvis was wider, thus adding greatly to the facility with which the stone could be extracted. Fistula was also less likely to follow an operation when parts were cut rather than torn asunder. This report of M. Méry's was a fair and impartial statement of the merits of the new operation, but it raised a storm of indignation in the profession, and in a short time Méry, who lacked the strength to maintain his opinion, joined those who were opposed to Jaques, and he condemned the operation he had so recently approved. A further trial of Jaques's skill was required, and the President instructed Méry to make a second report. Unfortunately for Jaques, his next two cases were failures. One was a boy whose urethra he nearly severed from his bladder, the other was a female whose vagina he cut entirely across and opened the bladder from the place where the ureters enter, up to the beginning of the urethra. It was, therefore, obviously impossible to report favourably on these two cases, and Méry now retracted the opinion he had previously given of the operation, and the support of the President, Harley, was consequently withdrawn. Jaques now went to Fontainebleau, where the Court was, and here he was fortunate enough to gain the friendship of the Court physicians and of the King himself. He became intimate with Duchesne, Bourdelot, Fagon, and with Félix, body surgeon to Louis XIV. Fortune now smiled on Jaques, for when these influential men were expressing the most earnest desire to see him operate on a living body, a boy was found who was badly afflicted with the stone, and on him Jaques performed his operation in the presence of the leading Court physicians with perfect success. The operation was rapidly performed. The boy passed his urine naturally soon afterwards, and in three weeks after the operation he was seen walking in the streets. Jaques cut six others while at Fontainebleau, and the King was heard to say, "This is a man that must not be neglected." Jaques was accordingly lodged and maintained at His Majesty's expense. The King soon returned to Versailles, and Jaques entered Paris for the second time, and as the report of his recent successes was made known, three patients were brought to him on whom he operated with such success that the President, Harley, again asked for a report from the surgeons and physicians of the Hôtel-Dieu. As a result of this request a meeting was held in the Archbishop's Palace on April 7th, 1698, at which were present the magistrates of the city, the physicians and surgeons, and the managers of the Hôtel-Dieu. Méry opened the debate, and now spoke unfavourably of the operation, reflecting the opinion of the surgeons and lithotomists who were hostile to Jaques. Finally, however, the physicians and the friends of Jaques expressed the opinion that he should be allowed a further trial in the hospitals, and in spite of the hostility

shown by Méry and his party it was decided that he should be permitted to perform operations in La Charité and the Hôtel-Dieu. Jaques now operated in public at the hospitals, and so great was the desire of all to see him that sentries had to be placed at the gates to keep the mob back. Men from all parts came to see him operate, and they were greatly impressed with his boldness and rapidity, for it is stated that on one occasion he cut nine patients in three-quarters of an hour—a very remarkable performance when compared with the time taken in operating by the Marian.

For a time all went well, and his enemies seemed unable to attack him with any success; but before long his patients began to die, both in the Hôtel-Dieu and in La Charité, in such numbers that, disappointed and broken by persecutions, he left Paris and travelled first in the provinces and then in Holland and Germany, where he was well received by those who saw him operate. Impartial observers of Jaques soon discovered that his operation was a great advance on the Marian, and Maréchal in Paris, Raw in Holland, and Cheselden in England adopted it and put it to the test. There was one also who was deeply impressed by this procedure, and that was M. Fagon, who had shown much kindness to Jaques on his visit to Versailles, and had remained true to him even after his misfortunes in Paris. Fagon was himself afflicted with stone, and, in spite of the fact that all the best surgeons in France and Holland performed this new operation, resolved to place himself in Jaques's hands. He therefore, in the year 1700, called him to Versailles, lodged him in his own house, and persuaded him to go through a complete course of studies and dissections. This he did under the guidance of Fagon; then a series of operations were performed on dead bodies, and the parts afterwards dissected by Du Verney, the anatomist, who with Félix, the King's body surgeon, and Fagon, his future patient, discussed the various points of the operation with Jaques. As the result of these experiments, he formulated his second operation, giving up the use of the round staff, and using a grooved one instead. The incision was now no longer made with the long dagger-shaped knife, but with an ordinary scalpel, the position of the incision being similar to that of his first operation. The deeper incision was, however, quite different, for, instead of passing the knife through the cellular tissue that surrounds the rectum or seeking the body of the bladder, the neck of the bladder and the prostate were cut by passing the knife along the groove in the staff, and thus incising the prostate. The rectum and pudic artery were out of danger, as the knife was not plunged blindly among the parts. Jaques now put his improved operation to the test, and cut thirty-eight patients in Versailles without losing one. He fully recognized the help that had been given him by this staunch supporter, and he saw the value of a knowledge of the anatomy of the parts, of the advantage of the grooved staff, and of the method of making the deep incision by passing the knife along the groove. A critical time now came in Jaques's career, for not only was M. Fagon afflicted with stone, but the Maréchal de Lorges was also the subject of stone. M. Fagon, who had been so largely instrumental in perfecting the operation, had actually been sounded by Jaques, when he was prevailed upon by his friends to place himself in the hands of Maréchal, who had learnt to perform Jaques's operation. This he did, and was cut by him with complete success. The Maréchal de Lorges took every precaution to ensure success in his own case at the hands of Jaques. He collected twenty-two patients with stone, who were cut by Jaques with perfect success. He then submitted to the operation himself, and died in tortures the next day. This was a fatal blow to the reputation of Jaques, and he left Paris, never to return. He travelled over the Continent of Europe, and operated with great success. At The Hague the magistrates had his portrait engraved and presented him with a set of golden sounds. In Amsterdam, by the permission of the magistrates, he cut patients in the hospitals. In 1707 he was again at Versailles, and visited his old friend M. Fagon. He went to Vienna, Venice, Padua, and Rome, and finally died at his native village in 1715. The career of this remarkable man is full of interest and romance, and few men have effected such a change in any surgical procedure as he did in the operation for stone in the bladder.