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SURGICAL CASES AND OBSERVATIONS.

BY

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AND SURGEON TO THE QUEEN IN SCOTLAND.

Extracted from the Lond. and Edin. Monthly Medical Journal—August 1844.

LITHOTOMY.

CASE 1. Robert Bruce, aged 3 years and 10 months, recommended by Mr Philp of Kirkcaldy, was admitted on the 26th of October, on account of stone in the bladder. It was extracted on the 31st, and he was dismissed on the 18th of November.

CASE 2. Henry Hutcheon, aged 6 years and 9 months, from North Berwick, was admitted on the 4th of November, on account of stone in the bladder. The operation was performed on the 8th, and he was dismissed on the 28th.

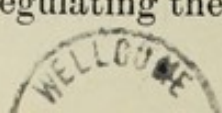
CASE 3. James Patterson, aged 3 years and 6 months, recommended by Dr Stenhouse of Dunfermline, was admitted on the 30th of December, on account of stone in the bladder. The operation was performed on the 3d of January, and he was dismissed on the 17th.

In the cutting part of these operations, the only instruments employed were a common grooved staff and a straight bistoury, blunted to within an inch and a quarter of the point; and all the experience I have had in operating upon children leads me to the persuasion, that before the period of puberty any additional apparatus would be useless and inconvenient. But in adults, where the prostate gland has become developed, along with the other organs concerned in generation, the state of parts being materially different, a corresponding alteration in the mode of procedure is requisite for its safe and effectual performance. The necessity of this rests upon the importance of dividing the gland to a certain extent, and

upon the deep situation of the part concerned, which prevents the incision from being precisely regulated by sight or touch.

It would not be correct to say that the incision of the prostate is the most important step of the operation, since imperfection in any part of the process prevents it from leading to a good result. If the external incision be too small or not well placed—if the muscles of the perineum be not fully divided,—and if the stone be not properly extracted, the most perfect incision of the prostate will not protect the patient from danger. But if not the most important, it certainly is the most critical step, since, while the others admit of being modified and corrected, the character of this one is determined in the moment of its execution. If it be too free, it cannot be contracted; and if too limited, it cannot be extended without endangering the neighbouring parts. It hence becomes of great consequence to determine the proper extent of incision, and also to ascertain the means of effecting it with most precision.

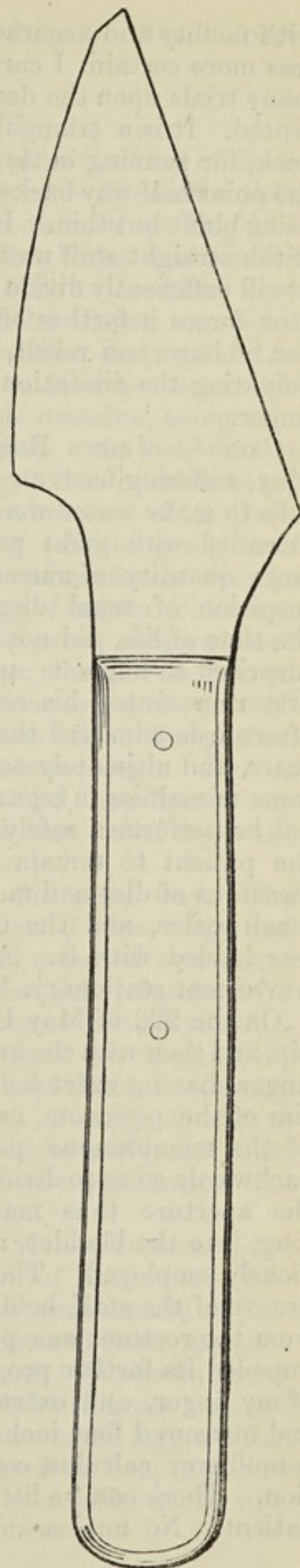
Notwithstanding the diversity of opinion at present existing on the subject, and the conflicting statements of experienced writers, I am persuaded that all successful operators have made their deep incision nearly to the same extent, and that the apparent discrepancy between their directions proceeds merely from the careless use of language suggested by the impressions under which they wrote. I have been led to this conclusion, in the first place, by ascertaining that there is a part at the neck of the bladder which *must* be divided, in order to allow the extraction of even a small stone, without inducing fatal inflammation of the bladder; and that if this part be divided, additional space is readily obtained through dilatation by the finger, the remaining part of the prostate tearing in the direction it is cut,—the mucous membrane of the bladder stretching,—and the fibres of its muscular coat separating from each other; and secondly, by finding that the various forms and modes of incision which have been recommended on the ground of success, when carefully considered and compared with their contexts, are calculated to produce this effect. The part I mean is that which is usually called “the neck of the bladder,” which opposes the final resistance to passing a catheter, which gives the feeling of a ring when the finger is introduced through it, and which seems to be the most sensitive portion of the urinary apparatus. When catheters or bougies reach this point, sickness and fainting frequently betray its peculiar sensibility of irritation; and when the stone presses upon it, the patient suffers an agony that characterizes his complaint. I believe that leaving this ring entire is the most dangerous error which can be committed in performing lithotomy. It results either from the misleading influence of such statements as, “the less that is cut, the greater will be the patient’s safety,”—“the success in lithotomy is in the ratio of the force employed to extract the stone,”—“the acme of excellence I believe to consist in cutting nothing,”—or from inability of regulating the instrument employed, so as to cut the extent desired.



In operating with a curved staff, it is very difficult to know how far the knife cuts when it is run along the groove. The perineums of different people vary so much in the proportional size and relative distance of their component parts; and the instrument is so apt to have its direction changed by movements of the patient, or of the assistant's hand which holds the staff, that the incision cannot be regulated as in other operations, where it is guided by sight or touch.

Mr Cross of Norwich has declared¹ his conviction from what he personally witnessed, that Mr Martineau did not cut nearly to the extent he has described in publishing his 84 cases, of which only two proved fatal. But if a surgeon so experienced cut less than he intended, and supposed, — is it not possible that others may have unconsciously exceeded the bounds prescribed by them? At all events it must be admitted that except in the hands of those, not always the most distinguished members of their profession in other respects, who acquire the trick or knack of operating with them, a straight knife and curved staff are very uncertain means of executing the prostatic incision.

In a former number of this Journal I advised the use of a straight staff introduced through the wound of the perineum, as a guide in cutting the prostate, and I have now to propose a knife which promises to obviate all risk of error in making the incision through this part. It was suggested to me by the case of a respectable citizen here, on whom I had occasion to operate. He was corpulent to an extreme degree, and possessed a perineum of extraordinary depth, as well as brawny firmness. The stone was removed with success, but I did not feel satisfied with the operation, from finding that in such circumstances the means employed were not adequate to effect division of the prostate



¹ Treatise on Urinary Calculus, p. 156.

with facility and accuracy. With the view of rendering the process more certain, I carefully reconsidered the subject, and made many trials upon the dead body, with the result which is here represented. It is a triangular shaped knife, straight and blunt on the back, for running in the groove, and sharp on its convex edge from the point half-way backwards to the extremity,—the remaining part being blunt but thin. If this *prostatome* be pushed along the groove of the straight staff until the blunt part is arrested by the prostate, it will sufficiently divide the neck of the bladder,—and if the operator forces it farther onwards, or even into the cavity of the bladder, no harm can result, from the blunt part of the edge merely anticipating the dilatation which must otherwise be effected by the finger.

CASE 4. James Roger, aged 27, was admitted on the 9th of May, suffering from an extreme degree of urinary irritation. The calls to make water were nearly incessant both day and night, and attended with great pain; the urine when collected, deposited a large quantity of mucus; and the patient's aspect suggested the suspicion of renal disease. These circumstances, together with the time of life, did not lead me to suspect a stone, and I was rather surprised to find one upon introducing a sound. The patient at first represented his complaint as of a few months' standing, but afterwards admitted that it had been troublesome for the last four years, and ultimately confessed that all his life he had experienced some uneasiness in regard to making water. As the operation could not be performed safely while the symptoms were so acute, I desired the patient to remain in bed and employ the ordinary soothing measures of diet and medicine; under the use of which he soon felt much easier, and the urine, though not free from mucus, became less loaded with it. At the end of a fortnight, finding the improvement stationary, I resolved to extract the stone.

On the 22d of May I made a free incision from the raphé to the hip, and then with the knife, (a common short straight bistoury,) and finger, having extended the opening through the muscles and fasciæ of the perineum, cut into the groove of the staff at the middle of the membranous portion of the urethra, and ran the blade backwards so as to divide the anterior part of the prostate; through the aperture thus made, I passed a straight staff, nine inches long, into the bladder, and withdrew the common curved one previously employed. The "*prostatome*" being then placed in the groove of the staff, held in my left hand, so as to raise the prostate from the rectum, was pushed steadily onwards until the blunt part impeded its farther progress. I lastly dilated the wound by means of my finger, and extracted the stone. It was nearly quite round, and measured four inches and a half in circumference; consisting of a mulberry calculus, completely enclosed by a phosphatic incrustation. There can be little doubt that the nucleus was as old as the patient. No unpleasant symptom followed the operation, and the

wound contracted quickly, though still (30th June,) it allows a part of the urine to escape.

EXCISION OF THE ELBOW-JOINT.

CASE 1. John Currie, aged 18, was admitted on the 13th of June last, on account of disease in his left elbow-joint. He stated that without any assignable cause or perceptible pain, a swelling had commenced about four years before, and that three weeks after noticing it, he had applied to a bone-setter, who treated him very roughly in attempting to reduce a bone which he alleged was dislocated. Though the swelling increased and became very painful in consequence of this treatment, he submitted to its repetition twice a-week for three months; the joint upon each occasion being subjected to the most violent twisting and bending. At last, finding his complaint getting worse and worse, he applied to another bone-setter, who assured him that the bone had not been out of its place, and that he was the victim of mismanagement. Nothing was then done, and no change worthy of notice occurred until nine months before the time of admission, when a discharge of matter took place spontaneously from the joint. The elbow was much enlarged, and had entirely lost all trace of its proper form; there were several openings from which thin matter issued copiously, and through which a probe could be passed down to carious bone; the patient was much emaciated, and had a very suspicious cough. But as the most careful stethoscopic examination did not detect any evidence of pulmonary disease, it was hoped that relief from the local complaint might restore general health.

On the 28th, I performed the operation in the usual way. The articulating surfaces of all the bones were divested of cartilage and carious. They were exposed in succession, and removed by the saw, which I find preferable to the cutting pliers for this purpose. No bad symptom followed the operation; the wound healed satisfactorily, and the patient very soon began to regain his health; the cough ceased, and the other indications of a phthisical tendency disappeared. He was dismissed on the 14th of August, able to resume his occupation as a "skinner." I saw him lately, and could not have distinguished the imperfect arm, unless my attention had been directed to it.

CASE 2. Christian Hunter, aged 53, from Kelso, recommended by Dr F. Douglas, was admitted on the 10th of November. She stated that, for ten years she had complained occasionally of pain in the right elbow, stretching down to the wrist and hand, and gradually becoming more severe as well as frequent. Nine months before the time of her admission, the joint swelled to a great size, and the pain which was then incessant, suffered so much aggravation by the slightest movement, that she was obliged to keep the limb entirely at rest. An opening was made soon afterwards with

the effect of discharging a large quantity of matter, and affording relief from the pain. The disease then remained stationary.

On examination, the elbow was found considerably swelled, and scarcely moveable. It could not be extended beyond a right angle, or bent, except very slightly; and the arm was almost powerless. A sinus on the outer side of the joint allowed a probe to enter the articulation. I performed the operation on the 15th of November, cutting out the articulating extremities of all the bones, which were completely carious. The soft parts being unusually sound, healed quickly; indeed, almost entirely by the first intention, so that the patient was dismissed quite well on the 18th of December. I heard soon afterwards from Dr Douglas, that on calling to see how she was doing, he had found her knitting stockings in good health, and free from any uneasiness.

Previous to 1829, the operation of cutting out the elbow-joint had not been performed in Great Britain. In that year¹ I recorded three cases of its employment, and, in 1831, I published a treatise on the subject, containing *fourteen* cases. Since that period, the operation has been established in the practice of surgery, and some credit has been generally conceded to me for my share in the introduction of this improvement. But the reviewing gentlemen of Dublin, doubtless through their morbid sensibility of Saxon injustice, have charged me with claiming more than my due, and decking myself with plumes rightfully belonging to their Surgeon-General. "Why did not Mr Syme say, Great Britain *and* Ireland? Our readers will form their own judgments, but we think it would ill become us as editors of an Irish journal, did we not secure to our fellow-countryman his just rights. Sir Philip Crampton, we repeat, performed the operation three years before Mr Syme; and his interesting paper, in the fourth volume of the *Dublin Hospital Reports*, drew general attention to the subject, four years before the appearance of Mr Syme's work."² Now, I beg to remind these patriotic gentlemen, that my first paper on the subject (Excision of Joints) was published in 1826,³ while Sir P. Crampton's did not appear until 1827.⁴ And, in the next place, I entreat them to notice that I never assumed any credit for originality in contriving, or priority in adopting, this operation. Excision of the elbow-joint was proposed by Mr Park of Liverpool, and performed in France by M. Moreau; also more recently by M. Roux; and in Ireland by Sir P. Crampton. But the profession had not adopted the operation. And the fact of only one case occurring in the extensive practice of the Surgeon-General, who had tried the experiment, was not calculated to remove the existing prejudice against it.

If any credit is due to me, it is for awakening the attention of

¹ Ed. Med. and Surg. Journal, 1829.

² Ed. Med. and Surg. Journal, July 1826.

³ Dublin Medical Journal, 1842.

⁴ Dublin Hospital Reports, vol. iv.

the profession to the operation; enforcing its advantages by establishing them on a broader base of experience than had previously been done, and divesting its performance of some imperfections, which, in no small degree, impeded the facility of its execution, and lessened the perfection of its result. For instance, in the few cases subjected to operation before the date of my paper, no distinction had been drawn between the truly carious portion of bone, which alone requires to be removed, and the effusion of new osseous substance, which causes an irregular thickening of the bone considerably beyond the extent to which it is diseased. In consequence of thus confounding the sound and morbid parts, much more was taken away than required removal, and the cure was not only greatly protracted, but rendered much less complete than when the operation is properly performed. Instead of confining his saw to the articulating extremity of the humerus, which is the only part liable to caries, Sir P. Crampton applied it three inches above the tuberosity of the bone, so that he must have removed at least four inches of its length; and it is no wonder that at the end of seven months the patient, by a voluntary effort, could only "give a slight degree of flexion to the fore-arm."¹ If the operation had always been performed in this way, and with a similar result, do the Dublin Reviewers imagine that it would ever have been generally adopted by the profession? In taking my leave of them, I have only further to say, that though unwillingness to criticise the practice of a gentleman so distinguished as the Surgeon-General formerly restrained me from dilating upon his solitary case, I felt no desire to treat it with disregard, and thus concluded my paper of 1829: "The almost forgotten operations of Moreau will now perhaps be reconsidered, and the recent case of Mr Crampton, together with those now submitted to the public, will, I hope, make such a deep impression on the profession, as may induce practitioners to pause before they mutilate a fellow-creature by amputating his arm for disease or injury of the elbow-joint."

AMPUTATION AT THE ANKLE-JOINT.

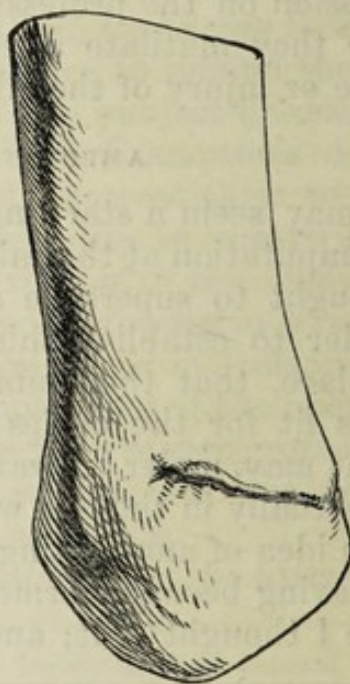
It may seem a startling, but it is nevertheless a true statement, that amputation at the ankle-joint, with hardly any exceptions, may, and ought to supersede amputation of the leg below the knee. In order to establish this position, it is necessary to show, in the first place, that the stump which results from the former operation is fit for the duties required of it; and, secondly, that the patient may, under the various circumstances concerned, be relieved as effectually in the one way as the other.

The idea of amputating at the ankle-joint is not new, the operation having been performed on the Continent by different surgeons before I thought of it; and it would probably ere now have become

¹ Loc. cit.

generally adopted, but for the doubt that was entertained as to the ends of the bones being sufficiently covered to afford the patient a comfortable and useful support for the limb. For my own part, when I read of dissecting flaps of skin from the instep, or sides of the foot, I felt so much distrust in the protection that could thus be effected against the injurious effects of pressure on a part so exposed to it, that I had no desire to try the experiment. But it occurred to me that by performing the operation in a different way all such objections might be obviated. This was to save a flap from the sole of the foot and thick integuments of the heel, by making a transverse incision, and dissecting these parts from the *os calcis*, so that the dense textures provided by nature for supporting the weight of the body, might be still employed for the same purpose. Two trials of this operation having proved satisfactory, I communicated them to the profession, and am glad to find that not only my colleagues in the hospital here, but also practitioners in other places have already acted upon this recommendation. The additional experience of my own practice now enables me to suggest some improvements in the mode of procedure—point out an error to be avoided—and verify the expectation formerly expressed as to amputation of the leg being hardly ever required.

The best instrument for performing the operation, is a large bistoury, or small amputating knife with a blade about four inches long. There is no occasion for a tourniquet, as the assistant has complete command of the vessels by grasping the ankle. In my first operations, the flap was made unnecessarily long; and I feel confident that the following directions may be trusted for exactly determining its proper extent. The incisions across the instep and sole of the foot should be curved, with the convexity forwards, and exactly opposite each other. A line drawn round the foot mid-way between the head of the fifth metatarsal bone and the malleolus externus will show their extent anteriorly, and they should meet a little way farther back, opposite the malleolar projections of the tibia and fibula. Care should be taken to avoid cutting the posterior tibial artery before it divides into the plantar branches, as in two cases where I did so, there was partial sloughing of the flap. If the ankle-joint is sound, the malleolar processes should be removed by cutting pliers; but if the articulating surfaces of the tibia and fibula be diseased, a thin slice of these bones should be sawn off. The edges of the wound



should be stitched together, and lightly dressed. When the cure is completed, the stump has the shape here represented, being conical in form, and having for its apex, or central point of pressure, the thick integument which covered the heel.

In proceeding to consider the circumstances in which this operation may be performed, it seems worthy of notice, that until a recent period, amputation of the leg was in this country generally resorted to for the removal of diseased bone, when the part affected extended upwards beyond the metatarsus. The operation of Chopart might frequently have accomplished all that was requisite, but unfortunately laboured under a prejudice which opposed its adoption. This was, that the extensors of the heel, being deprived of antagonizing action, would point the stump downwards, so as to render it useless as a support for the body. In 1829, for reasons elsewhere stated,¹ though there was no precedent for its performance in Edinburgh, I ventured upon this partial amputation of the foot, in a case where removal of the leg had been proposed, with perfect success, and without the slightest inconvenience of the kind anticipated. Encouraged by this result, I resolved to adopt the operation; and before long performed it six times with entire satisfaction. Since that time the operation has been established here, and regularly practised in cases admitting of its application.

Although the introduction of Chopart's operation considerably abridged the field for amputating the leg, there were still two situations in which caries frequently occurs, where it was beyond the reach of any partial removal of the foot. These were the joint between the astragalus and os calcis, and the ankle-joint itself. In the former of these situations, the diseased bone is so near the fibular side of the heel, that it is apt to seem within reach of the gouge or other means of extirpation; and attempts have often been made to effect this, but seldom if ever with success, owing to the caries extending along the complicated articulating surfaces of the bones affected. I have succeeded in such a case, by making a fair breach through the foot from side to side, and passing a thick seton, which could be made the vehicle of red precipitate and other escharotics; but even this treatment cannot be depended upon, and its failure, in a case where I had ventured to indulge hopes of success, led me to think of contriving a method of amputating at the ankle-joint which might afford relief under such circumstances, and afford the patient a comfortable stump. In the case of John Wood, formerly related,² the disease was thus situated, between the astragalus and os calcis. Soon after that case had terminated favourably, I met with another related in the same paper, where the ankle-joint itself was affected; and did not hesitate to repeat the operation. The gentleman who was the subject of it,

¹ Ed. Med. and Surg. Journ., Oct. 1829.

² MONTHLY JOURNAL, February 1843.

though long in very indifferent health from other causes, now walks with ease and comfort.

Compound dislocation of the ankle-joint, either with or without that curious displacement of the astragalus which results from falling with great force on the heel, was formerly held to require amputation of the leg. The authority of Sir A. Cooper's experience encouraged attempts to preserve the limb in such cases; and in private practice both forms of the injury are now frequently conducted to a successful issue, though in general through a protracted process of recovery. But it must be admitted, that many lives have been lost, especially in hospitals, from trying to retain the limb. In the Royal Infirmary, I find that of 13 patients who had suffered compound dislocation of the ankle, and were not subjected to amputation, only 2 recovered; and even in the event of recovery the foot generally remains in such a state of stiffness, weakness, and sensibility of external impressions, as to be rather an encumbrance than a support to the patient. Now, all this danger, tedious confinement, and permanent discomfort might be obviated by amputating the foot in the first instance. So long as the only alternatives were attempting to preserve the limb, and amputation of the leg, there was a strong inducement to abstain from operating. But if the patient's safety and speedy recovery may be ensured by taking away merely that part of the limb which at the best can hardly be of any value either as to use or ornament,—and at the same time producing a stump in all respects preferable to a shattered, stiff, irritable foot, I think there should be little hesitation in resorting to amputation at the ankle-joint under the circumstances in question. I would certainly have done so in the following case, had I not been in the country on the day of the patient's admission.

CASE 1. John Cameron, aged 54, was admitted on the 11th November, having on the morning of that day fallen from a height of about twenty feet into the hollow of a gasometer. There was a large rent in the instep of his right foot, through which the articulating surface of the astragalus protruded. It was replaced without any difficulty, and the edges of the wound were brought together. He did very well for a few days, but then became feverish, and complained of pain in the limb, which had become much swelled. Incisions were made with the effect of discharging matter and affording relief. He continued pretty well until the 25th, when he had a rigor followed by increase of fever. On the 31st he had another rigor, and his pulse, which had previously ranged from 90 to 100, increased to 120. On the 2nd December, as a forlorn hope, I amputated the foot at the ankle-joint. As the malleolus internus was fractured, and the articulating surfaces of the tibia and fibula divested of cartilage, I sawed off a slice of both bones. The patient improved daily after the operation, and though recovery was delayed by the unhealthy state of the leg, in which diffused sup-

puration repeatedly took place, the stump had cicatrized completely on the 15th January. All who witnessed this case were persuaded that amputation of the leg would have proved fatal if performed at the time the foot was removed.

When the anterior part of the foot is destroyed by violence or exposure to cold, the remaining soft parts may be employed in different ways to afford a covering for the bones. It was for such occasions that Chopart contrived his operation, which, from its proximity to the ankle has hitherto been considered the last resource, short of amputating the leg. This severe measure would have been deemed necessary in the following case, according to the established rules of practice.

CASE 2. James Sutherland, aged 25, from Shetland, was admitted on the 25th of September. He stated that four months before, in consequence of exposure to cold, his left foot suffered from mortification; nearly the whole of it had separated, so that only the astragalus and os calcis with the integuments covering them, remained. The anterior articulating surfaces of these bones were quite denuded, and it was evident that the formation of a cicatrix over them was not to be expected through any length of time or attention in treatment. But as the soft parts, though not more than sufficient for the ankle-joint amputation, seemed adequate for the purpose, I resolved to attempt the patient's relief in this way.

I performed the operation on the 3d October, taking away no part of the integument except what was requisite to give the flaps a proper form. The wound healed by the first intention, and before the end of the fourth week the patient was able to walk through the wards with a common shoe, so that the defect of his limb could hardly be noticed.

In describing the operation, I have said that care must be taken to avoid cutting the posterior tibial artery before it divides into the plantar branches; and I may now explain more particularly the ground on which this advice is founded.

CASE 3. Elizabeth Wilson, aged 7, from Dalkeith, recommended by Dr Hunter, was admitted on the 19th of February, on account of disease in her left ankle. It had become swelled and painful about sixteen months before, without any known reason. Matter speedily formed, and was discharged spontaneously by several openings, which did not afterwards heal. The foot was much enlarged, stiff, and shapeless; and two sinuses allowed a probe to pass into carious bone.

On the 21st, I proceeded to amputate at the ankle-joint, but finding that ankylosis had taken place between the articulating surfaces, I exposed the extremities of the tibia and fibula, and sawed them through, without previously removing the foot as usual. In tying the vessels, it appeared that the posterior tibial artery had been divided before its division into the plantar branches, so that one ligature sufficed in place of two. The stump looked

remarkably well, and was expected to prove a very favourable result of the operation. It was therefore with much surprise, and no small disappointment, that in the course of a few days I saw the flap had sloughed, through fully a half of its extent. Recovery was consequently delayed much beyond the ordinary period, and the patient did not leave the hospital until the 31st of March. The stump at length, though not so full and cushion-like as usual, cicatrized by contraction of the integuments, without leaving any part of the bone uncovered.

I attributed the sloughing in this case to the undue pressure of a bandage; and having occasion soon afterwards to perform the operation on a patient in Minto House, intentionally divided the posterior tibial before its division, in order to obtain the same facility in tying the vessel as on the last occasion. To my surprise and concern, the flap again sloughed to the same extent as in the case just related, and as great attention had been paid to dressing the stump, I could not refer this effect to the cause formerly supposed. But, as on both occasions the artery had been cut before its division, while in all the other cases it had been left entire, and as the flap at best, being deprived of nourishment from most of its ordinary sources, could be chiefly supplied with blood only through the successive anastomoses of small vessels, I concluded that this deviation from usual practice had led to the mischief in question, and resolved to avoid it for the future.

CASE 4. Robert Craig, aged 10, from Dunbar, recommended by Mr Turnbull, was admitted on the 3d of June, on account of disease in his right foot. It was stated that three months before, after severe rigors, inflammation had commenced, and been speedily followed by the formation of matter. A succession of abscesses then formed, and gave rise to a number of sinuses opening in different parts of the instep and sides of the foot, and allowing a probe to enter carious bone. The general health had latterly been much impaired.

I amputated the foot on the 5th, taking care to avoid cutting the posterior tibial artery. The wound healed chiefly by the first intention, and the boy is already almost quite well.

It has now been ascertained that amputation at the ankle-joint may be performed so as to afford a stump in every respect convenient and comfortable, retaining the full use of the knee-joint, and enabling the patient to walk with perfect freedom. It has also been shown that by means of this operation caries of the upper range of the tarsus, of the joint between the os calcis and astragalus, and of the ankle-joint itself may be removed; while compound dislocation of the ankle, and destruction of the foot beyond the extent admitting of Chopart's operation, may also be remedied by it. But what other occasion besides these is therefor amputating the leg? Malignant tumours of the tibia and fibula require amputation of the thigh, and compound fractures of the leg, so severe as to demand

removal of the limb, hardly admit of the operation being performed below the knee, on account of the soft parts so near the seat of injury being unfit for healing action. The cases, therefore, if any, must be very few. In my own practice, since adopting amputation at the ankle-joint, I have removed only one leg below the knee, under very peculiar circumstances, which did not permit the milder measure to be adopted.

In conclusion, it may be remarked, that the advantages of amputation at the ankle-joint, as compared with amputation of the leg, are not limited to the smaller degree of mutilation and greater utility of the limb; since the operation is also attended with much less danger. This will appear when it is considered, 1st, How much less the shock must be, from the small extent of parts removed, which is little more than in Chopart's partial section of the foot. 2d, That the smallness of the arteries divided prevents any risk of serious hemorrhage. 3d, That the cancellated texture of the bone exposed is not liable to exfoliate. 4th, That from the medullary canal remaining entire, inflammation of its contents, and also of the veins is prevented.

In confirmation of these grounds for favourable expectations as to the diminution of danger, I am now able to add the proof of experience, since in fourteen cases where the operation has been performed, eight in my own practice, and six in that of others, there is not one fatal result.

