

Case of suicide in which death resulted from a wound in the neck by an earthenware jug: with remarks / [Robert Spittal].

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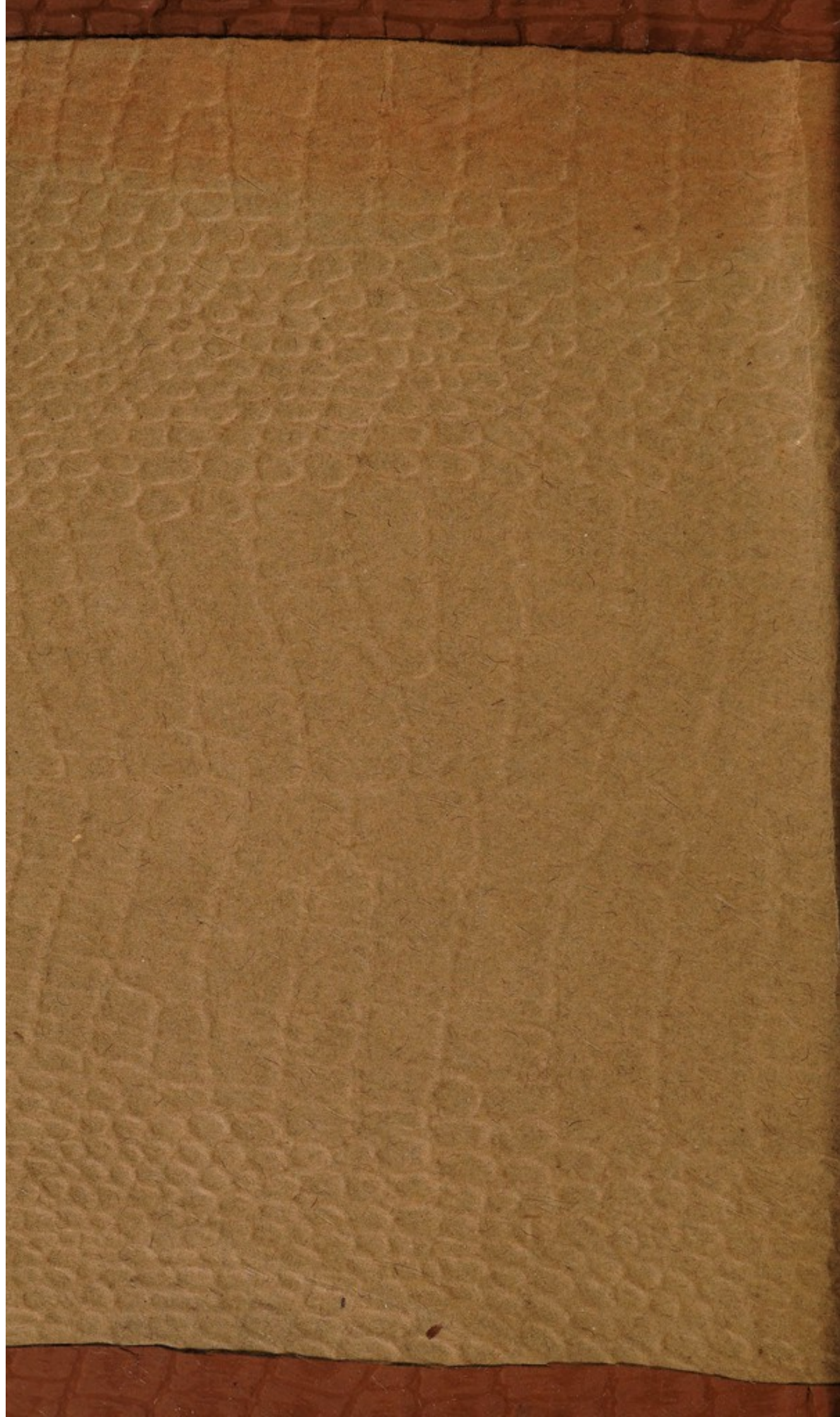
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CASE OF SUICIDE, 73338

IN WHICH

DEATH RESULTED FROM A WOUND IN THE NECK BY AN
EARTHENWARE JUG:

WITH REMARKS.

By ROBERT SPITTAL, M.D., F.R.S.E.,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, AND PHYSICIAN TO THE
ROYAL INFIRMARY OF EDINBURGH.

READ TO THE MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH, 6TH APRIL 1842.

(Extracted from the London and Edinburgh Medical Journal for June 1842.)

The following case, though wanting in some of its pathological details, appears to me to be interesting in a medico-legal point of view, from the unusual nature of the weapons employed for suicidal purposes, and which, but for the undoubted certainty attached to all the circumstances, might have been, perhaps, reasonably questioned as capable of being used with such a result.

M. D. or W., a woman, was committed to the jail of Edinburgh in the year 1839, and, although medical attendant of the prison at the time of the occurrence, I had not an opportunity of seeing the deceased until after her death. I will therefore, as it is all the history of the case which I could obtain, quote the statements of the various individuals connected at the time with the prison, whose declarations were made before the procurator-fiscal for the city, and which I have, through his kindness, been permitted to peruse.

1. W. W., a clerk in said jail, states that he received the deceased on Saturday the 23d February, about five evening; that he put the usual questions to her put to all sentenced prisoners; that she answered them quite collectedly, and the declarant took a jotting of her answers, as follows, viz.: age 27; a native of Perth; father dead three years ago; mother alive; married; has two children; never convicted before; can read; belongs to the established church; resides in Dunbar's close (Edinburgh); goes out washing: She was sentenced to solitary imprisonment, but it is usual to allow the prisoner to sleep the first night with another prisoner, especially, as in this case, when a companion comes in with them.

2. J. L. or B., a widow, was sentenced in the police court by the sheriff, on 23d February current, to 28 days' imprisonment along with deceased for theft: neither had been convicted before. They slept in the same cell together on Saturday night. The deceased was much addicted to drinking, and was apparently ill of delirium tremens after coming in. She calmed about midnight, was collected in the morning, and took her milk, but no porridge, to breakfast. The declarant left her about nine, and thought there was nothing the matter with her. She (deceased) said nothing as to being vexed, but remarked it might have been a worse punishment. She used no expression to lead the declarant to think she would attempt to commit suicide. The declarant has seen her as delirious in her own house as she was on Saturday night (23), and that on two occasions. The deceased was quite calm on the Sunday morning, and said she had been affected by drink. The declarant said, "I'll not drink again when I get out;" when the deceased replied, she would not give it up altogether, but that she would not drink so much as she had done.

3. E. S. P., the matron, had charge of the deceased. Declares that she saw her on Saturday night before she was locked up. She was then crying, but not in any way outrageously: That the declarant was sent for by the watchman about half-past eleven, who told her that the deceased was making a noise. The declarant went and found her muttering something, and saying somebody was chasing her: That the declarant soothed her, and she got better. The declarant then left her, and returned in half an hour. She was then quite calm, and the preceding witness (No. 2) did not seem alarmed about her. That the declarant left the wooden door¹ open to give her more air, and that if noise was made again it might be easily heard. That the declarant saw her in the morning, and gave her a jug and spoon for her milk. She was then quite composed and calm, and washed her face along with the other prisoners: That the declarant remarked, she had been noisy through the night. She answered, she was sorry for that, and would not do it again: That before going to chapel, at eleven o'clock, the declarant gave her a Bible, and told her to learn the first psalm. She remarked, it was the best consolation she had: That on her return after the forenoon service, about one, to give her her dinner, the declarant found her lying on the floor with her throat horribly cut, and quite dead, and the jug broken in pieces, and one portion of it lying at her side all bloody: That witness No. 4 was with the declarant carrying the dinner, and the declarant desired her to wash up the

¹ There being an iron grated one besides.

blood and lift the body, while she went and reported to the governor. The governor and doctor to the jail attended immediately.

No. 4. H. M., a convict in said jail, declares and concurs with the preceding witness (No. 3) as to the state the deceased was found in. She was quite dead.

Besides the above declarations, I may briefly state a few further particulars which I have obtained chiefly from the matron, who, as already mentioned, was one of the first who saw the deceased after the fatal act; and for this I need offer no apology, as, in a medico-legal point of view, every circumstance connected with the case, however minute, ought to be stated, and the most apparently trifling may subsequently turn out of paramount importance, when applied to the discrimination of those cases in which doubt exists as to whether the deceased has come by his death by accident, by suicide, or by the hands of another person.

1st, The door of the cell was locked during divine service, and found so by the matron on her return from chapel.

2d, The amount of blood on the floor was "very great," and there was a "great quantity in the pail" belonging to the cell, over which the matron thinks "the deceased must have leant her head;" there was also a "good deal" in one of her shoes, which was on her foot, the other being off; her hands were "partially bloody," as also were her clothes, especially about the neck and breast; and the "muslin strings of her cap were very bloody;" lastly, her Bible, from which she had promised to learn the first psalm, was sprinkled with blood at the specified portion.

3d, Several pieces of the jug were lying in the blood on the floor, besides the portion found lying at her side, all bloody, as mentioned by the matron in her declaration, which she has informed me was that to which the handle is attached.

4th, The spoon—a common iron one—was found lying near her, "very bloody. It seemed to have been much handled," "and much used in the act;" but it was "by no means sharper than other common iron spoons, nor at all altered from its original form;" no attempt had been made to sharpen it.

5th, The deceased was found lying "on her side;" "her face had a ghastly grin upon it." The matron felt her arm,—"it was cold and stiff."

As stated in the evidence, I visited the deceased a short time (in about half an hour) after she had been found in the condition described. The body had been before this, by the matron's orders, lifted from the floor to the sleeping-bench in the cell; and the blood, reported to have occupied the floor near the deceased, had been wiped up, and thrown away. Her clothes and hands were still bloody, and her extremities cold and rigid. On examining the neck, which was streaked, and otherwise marked with dried blood, an irregular wound was observed immediately in

front of the trachea, extending from the lower edge of the cricoid cartilage, downwards for rather more than an inch, and about an inch in width. The edges of the wound were very abrupt, and had an irregular, torn, or haggled appearance. The trachea was all but exposed in the bottom of the wound, where the parts had a contused aspect. The wound, in truth, had all the appearance as if a portion of the integuments and subjacent soft parts, down to the trachea, involving, of course, a portion of the sterno-hyoid, sterno-thyroid muscles, and thyroid body, had been roughly pinched or torn out, leaving a deep gaping excavation, somewhat smooth at the bottom, especially in the centre, exactly over the trachea. On this visit, I was shown several portions of the jug mentioned by the matron. It was composed of common white glazed earthenware, and had been recently broken into several pieces, some of which were of considerable size, and possessing very sharp edges and angles.

Sectio cadaveris, about forty-eight hours after death.—On removing the whole of the parts belonging to the anterior portion of the neck, of course including the wound, and submitting them to a more minute examination, a vein more than sufficient to hold a crow quill, and passing obliquely across the neck, from the upper part of the left internal jugular vein, to the lower portion of the same vessel on the right side, was found slit open for about three quarters of an inch. It was situated, as respects the wound, immediately, and deeply within its left edge, and might be termed one of the thyroid veins, which are well known for irregularity.

The contents of the large intestines were by no means healthy. Their consistence was soft and clayey; their colour slate-grey; smell offensive, and containing several ascarides, and one small lumbricus.

The os uteri was enlarged, irregular, firmer than usual, and evidently affected with the scirrhus form of carcinoma, having much the appearance of a white turnip when cut; it was not in a state of ulceration. On the right side of the epiglottis, there was a cicatrix, evidently consequent upon considerable loss of substance, most likely from previous ulceration.¹

Remarks.—This case forms one of a class not unfrequent in prisons, in which suicide is attempted or accomplished very shortly after the committal of the party, especially in those convicted for the first time, and who have recently been indulging freely in alcoholic liquors, and, it may be, on the verge, or al-

¹ I very much regret that I am unable to give a more detailed account of the internal appearances, having either lost, or omitted to make at the time, a note of those belonging to the chest, and, being unwilling to trust to my memory for observations made so long ago, I think it better altogether to omit notice of them. The preparation, with portions of the jug, I have sent to the museum of the Royal College of Surgeons in Edinburgh.

ready, to a certain extent, under the influence of delirium tremens. In these circumstances, although, of course, subject to the modifications belonging to the mental qualifications of the individuals, as is well known, a period of extreme anguish and mental depression not unfrequently arises, when half real and half imaginary forebodings of evil haunt their disturbed brains, creating a desire to fly from present distress, and sometimes showing great determination of purpose. In this instance it will be observed, that several of these remarks are applicable. This was her first conviction; besides, the evidence proves that she was accustomed to the use of ardent spirits, and that, to a certain extent, she laboured under delirium tremens, on the night previous to her death; and, though unobserved by those who had seen her, this state had, in all probability, continued more or less throughout.

In a medico-legal point of view, it is important to remark the unusual nature of the weapon chiefly employed, viz. the jug, which, no doubt, had been deliberately broken in pieces, for the purpose of obtaining a sufficiently sharp, cutting, and lacerating instrument for her purpose. The result proves that it was so; and it is well known to surgeons, that severe wounds not unfrequently arise from newly fractured earthen-ware vessels. Whether or not the deceased was acquainted with this fact, I cannot pretend to say; but it is curious to observe, that while at least *two* apparently more obvious lethal weapons were within her reach—I allude to the *glass* in the cell window and her *iron spoon*—she had nevertheless made choice of the jug. That the former of these has been employed successfully for the purpose of suicide, I may mention, that a case of this kind is described, in which “sudden death took place from the division of the external jugular vein alone. The individual was in prison, waiting his trial for piracy. He awoke in a state of delirium, attempted to strangle himself, but failing in this, went to the window, and broke out a piece of glass and wounded himself with it, just under the angle of the lower jaw. Then by a rapid succession of cuts, he extended it from side to side, but fell immediately into the arms of his companion, and, after gasping two or three times, was dead. He had not lost more than a pint of blood. Death, it was suggested, may have arisen from the admission of air into the veins.”¹ As to the iron spoon, it is unnecessary to enlarge on the obvious advantages which the material composing it possesses over other substances for the construction of cutting instruments; and it is somewhat remarkable, where so much determination of purpose was evinced, that no attempt appears to have been made by the deceased to sharpen the spoon, although


¹ Boston Med. Mag., vol. iii. p. 117, quoted in Beck's Med. Jurisprudence, p. 631. Sixth edition. London, 1838.

the stone floor of her cell rendered this by no means difficult. The probability is, however, that being Sunday, and all quiet within and without, she was afraid of arousing suspicion of her intent, by creating a noise, which any such attempt must of course have done, as well as that to obtain glass from the window; whereas it is quite apparent that the jug might have been, and probably was, fractured with much less noise, either by being forcibly pressed to pieces, or torn asunder.

It is evident, from the site, depth, and direction of the wound, that the deceased had aimed at opening into the windpipe, as is not unusual among persons in humble life, whose ignorance thus, not unfrequently, proves their only protection; while the same instruments, in the hands of the better informed, generally prove fatal. It has been stated, that the wound penetrated down to the trachea, or nearly so, and that it was smooth and bruised-like, especially in its centre, an appearance, it is obvious, not consistent with the idea, that no other weapons but the portions of jug were employed, with which cutting, haggling, and tearing could alone have been accomplished. We are thus called upon to look for some other assistant instrument, and this, we can scarcely doubt, is to be found in the iron spoon, which, as already stated, appeared from the marks of blood upon it, to have been "much used in the act;" and most likely by attempts with its handle at boring, and pressing aside the parts, for the purpose of widening and deepening the wound.

In the absence of positive information as to the amount of blood lost, as well as the pathological details belonging to the thorax, we are not in a situation to come to a very decided opinion as to whether death had been more immediately the result of the hemorrhage alone, or to any extent owing to the entrance of air into the circulation. I incline to the former explanation, not only from the statements of the witnesses, that the amount of blood was great, but from my present recollections, on which, however, I do not wish to rest much, that no frothy blood was observed in the heart, nor other usual indication of air in the circulation. Besides, the fact of the deceased labouring under delirium tremens, though slightly, may have contributed to render the hemorrhage the less easily borne, especially as in all probability the blood had flowed in a considerable and rapid stream from both extremities of the wound in the vessel, quickly causing syncope. Whether death had been at all accelerated by the continued irritation of some of the branches of the recurrent nerves passing to the thyroid body and mucous surface of the trachea, inducing, according to recent experiments,¹ spasmodic constriction of the glottis, is a point, perhaps, worthy of consideration in cases like the present.

¹ Prof. Reid on "Functions of the Eighth Pair of Nerves." Edin. Med. and Surg. Journ., No. 134.



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The first part of the paper is devoted to a general discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The second part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The third part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The fourth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The fifth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The sixth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The seventh part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The eighth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The ninth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The tenth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science.

was obtained only after the operation had been performed, the symptoms not having been sufficient to warrant the conclusion that these very minute foreign bodies were actually there. Indeed all the symptoms might have arisen, and probably did arise, from the lodgment of particles of sand in the mucous folds of the larynx, above the rima glottidis, or even from what was not unlikely, the presence of a quantity of the sand in the lower part of the pharynx, behind the larynx;—as the lodgment of a foreign body there has been known to cause,—independent of the pressure which it exerted,—complete and fatal spasmodic closure of the glottis.

Supposing, however, that in such a case, the existence of a few particles of sand in the trachea could be actually ascertained, the operation of tracheotomy would not even then be warrantable, as the rima glottidis itself would be a sufficient aperture for their extrusion by the expiratory efforts, when the paroxysm of the dyspnoea was over; unless, as occurred in this case, the dyspnoea was so severe and continued, as to demand immediate operation.

In regard to the true pathology of this case, it differs from that of the one first related, in so far as the first case presented some of the characters of laryngismus stridulus; whereas, in the second case, the spasmodic affection of the muscles of the glottis was severe and unintermitting,—the cause not being of internal or of idiopathic, but of traumatic origin. It required accordingly immediate operative interference.

The errors in practice which might arise from confusing such cases with those of true laryngismus stridulus, are sufficiently evident; since operative measures are not warrantable in cases coming strictly under the latter denomination, until, after repeated attacks of the dyspnoea, between which there have been intermissions, the patient is at length unable to struggle through the fit, and is in imminent danger of suffocation. Whereas, in cases such as that which forms the subject of these remarks, the operation is demanded almost at the beginning;—just as in the somewhat similar case of a foreign body of considerable size in the larynx or trachea, giving rise to so severe and continued dyspnoea as to demand the performance of tracheotomy to obviate impending suffocation; and I need hardly remark, that to these cases also, the term laryngismus stridulus is inapplicable.

The acute laryngitis which subsequently occurred, in this case, is to be ascribed to the violence of the primary irritation, and also, to some of the particles of sand having lodged in the neighbourhood of the glottis until they were removed by the viscid mucus which was expectorated. And it was not attributable to the entrance of unheated air by the wound, as an acute bronchitis would have been the more likely consequence of this, and as every precaution was taken to prevent the entrance of unheated air.

The suppuration which afterwards occurred in the neck, it is worthy of remark, took place rapidly, and from this circumstance,

as well as from the reduced state of the patient's system, the matter was diffused in the cellular tissue, the usual barrier of lymph being absent. A free incision was therefore made as soon as supuration seemed to have occurred, not only in order to evacuate matter which had already formed, but to prevent the formation of more, and the farther destruction of texture which would otherwise have resulted.

III.—ON AMPUTATION AT THE HIP-JOINT.

Case of Osteo-Medullary Sarcoma of the Os Femoris, for which Amputation at the Hip-joint was successfully performed:—with Observations.

John Wright, aged 13, was admitted into the Royal Infirmary, under Dr Handyside, on 13th June 1843, with an extensive tumour of the left thigh-bone. On examination, the thigh was found to be much enlarged, especially at its middle, whence it tapered gradually towards each extremity. The tumour was hard and inelastic, connected evidently with the os femoris, and it occupied about the three middle fifths of that bone, leaving its extremities of nearly the normal size. Its surface was smooth and regular, and over it the muscles and other soft parts could be moved freely. The integument over the disease presented a somewhat glistening appearance, but was not discoloured; and beneath it there appeared some faint blue lines, indicating distension of the superficial veins. The tumour was the seat of acute, darting pain, which became increased towards night, and also underwent, occasionally, severe exacerbations.

The lymphatic glands of the groin, and of the rest of the body, were carefully examined, and found not to be enlarged or otherwise affected. The motions of the hip-joint were perfect, and were performed without giving rise to pain. The limb below the knee was much emaciated. The countenance of the patient was sallow, and had an anxious appearance; and his tongue was of a bright red colour. His body generally was not much emaciated; and his health appeared on the whole to be good.

Previous history.—Six years since, he had an attack of scarlatina, on recovering from which, the left thigh remained weaker than the other, and appeared also to be smaller in size. For this, the part had been rubbed frequently with various ointments. He continued to go about, otherwise quite well, till about six months ago, when, during the night, he was suddenly seized with violent pain in the thigh. Poultices were next applied to the affected part, and afterwards sinapisms, and a few leeches; but under this treatment, the thigh increased rapidly in size. Since then, the tumour has

gradually increased; and of late he has experienced considerable uneasiness, from the frequent pain in it, and the deprivation of sleep thus occasioned.

As amputation was the only method by which the patient's life could be saved, or, at least, prolonged,—and as the bone appeared to be affected at the trochanteric region also, as indicated by its apparent enlargement there, and by that region being the seat of stinging pain,—it was resolved that the limb should be removed by Amputation at the Hip-joint.

Accordingly, on the 30th June, the patient having had a good night's rest, and his bowels having been freely opened, the operation was performed by Dr Handyside, at noon, in the following manner:—The patient was secured on his back, on the operation-table, with the nates resting on its edge. The right limb was held aside by *one* assistant, and the left extended by a *second*. The femoral artery was then compressed against the pubes, by the fingers of a *third* assistant, and the knife was introduced rather above midway between the anterior superior spine of the ilium and the trochanter major. It was then carried downwards, forwards, and inwards, passing close over, and grazing the capsular ligament and the neck of the thigh-bone; and the point of it was brought out at about two inches and a half from the anus. The anterior flap was then rapidly formed, being about from three and a half to four inches in length. This flap was then seized by the left hand of the *third* assistant, who thus more effectually prevented hemorrhage from the divided vessels, and who, at the same time, elevated and retracted the flap thus made. As the knife entered, the *second* assistant (he to whom was committed the charge of the limb) held it midway between abduction and adduction, then slight flexion was made by him, and subsequently, complete rotation inwards, as the knife advanced. On the completion of this anterior flap, the limb was immediately rotated outwards, by which movement the capsular ligament was fully exposed, and rendered quite tense, at its thinnest part, where it was struck by the knife, so as to penetrate the cartilage covering the head of the bone. At the same moment, the limb was abducted and depressed, which made the ball of the os femoris start forwards from the acetabulum. The teres ligament, thus rendered tense, was divided by the point of the knife. The operator, then, grasping with his left hand the head of the bone, and maintaining it on a transverse plane with the neck and trochanter major, passed the blade of the knife behind these parts, dividing thus the remaining portion of the capsular ligament; while, at the same time, he completed the separation of the limb, by rapidly forming the posterior flap, which was of greater length than the anterior one.

A small portion of the tumour, which was observed to remain on the divided surface of the posterior flap, was now carefully and completely removed. The hemorrhage from the sciatic and obtu-

rator arteries and their branches, as these issued from their pelvic apertures, was temporarily arrested by the instantaneous and firm application of two dry sponges, which, during the ablation of the limb, *two other* assistants watched the opportunity to apply; and the bleeding from the many small vessels of the posterior flap was farther prevented by the quick application of the expanded hands of the *second* assistant, instantly on his dropping the amputated limb. The vessels of the posterior flap were secured by ligatures, previously to those of the anterior, the superficial femoral being tied last. Fifteen vessels in all required ligature. About six ounces only of blood were lost, and this flowed chiefly from the divided surface of the ablated limb. The flaps were brought together by seven points of the interrupted suture; a pledget of dry lint was next applied,—and this was retained, while the stump also was supported by the application, around the loins and pelvis, of a broad cotton bandage.

The patient bore the operation well; but symptoms of the shock exhibited themselves before he left the table, notwithstanding that stimuli to the amount of four ounces of brandy and two of wine were administered. He was replaced in bed, after about 15 minutes only had elapsed since his leaving it, and the removal of the limb did not occupy more than about one-third of a minute;—although a trivial delay was occasioned at the moment when the limb was forcibly depressed, by the attendants having, in their desire to stead the patient's body, drawn the nates backwards on the table, from which position he had to be again drawn forward.

Soon after being placed in bed he became much excited, from the load of stimuli that had been given him during the operation; but on vomiting freely, he became quite calm. The pulse, however, soon began to sink, so that additional stimuli were administered. On this he revived, and about an hour and a half after the operation the pulse had risen to 115, and half an hour thereafter reaction set in.—*An opiate, consisting of 20 drops of the sol. mur. morph., was then administered, and repeated twice within an hour.*

At 4 o'clock P.M., he was asleep; and the pulse still continued at 115. At 9 P.M. the pulse was 125; at 11 P.M. 140; and at 12 P.M. 150. The respirations were 35 in the minute, and he perspired profusely.

July 1. At 1 o'clock A.M. the pulse had risen to 156, and it continued thus high till about 3 A.M., when it fell to 150. At 9 A.M., it was reported that he had slept most of the night. The pulse was found still to continue high, and *an opiate was given, which has been since repeated.*

3 P.M. The pulse has now risen to 160.—*To have a full opiate, which is to be repeated several times during the afternoon and evening, and let a blister be applied to the chest, as slight catarrhal symptoms have shown themselves.*

July 2. He slept soundly during the night, and the pulse has

fallen to 128. At noon, the pulse ranged between 140 and 150. The catarrhal symptoms are now gone.

3d. Pulse from 130 to 140. The tongue is natural; and the bowels have been freely opened.

6th. Since last report he has continued much in the same condition. His food has been light and farinaceous, and he has been allowed various cooling drinks. *He has had opiates administered from time to time, and the bowels have been freely opened by an enema. The stump has been kept cool and moist by cold applications, frequently changed.*

To-day the stump was dressed for the first time. Union by the first intention has taken place, except at three places where this was prevented by the ends of the ligatures. *Two of the sutures were removed.* A small quantity of pus was discharged at the parts already mentioned, where primary union had been prevented. There was no hemorrhage. *The tepid water dressing to be applied to the stump.*

12th. Since last report, the pulse has ranged between 110 and 120. *After an enema—several of which have been given, containing assafoetida—he passed a large lumbricus. Three more sutures were removed to-day.* The ligatures were tried gently, but all of them remained fast. There is some discharge from around the ligatures. Otherwise the stump is quite solid and free from pain.

His appetite remains good, and his food consists chiefly of porridge and milk.

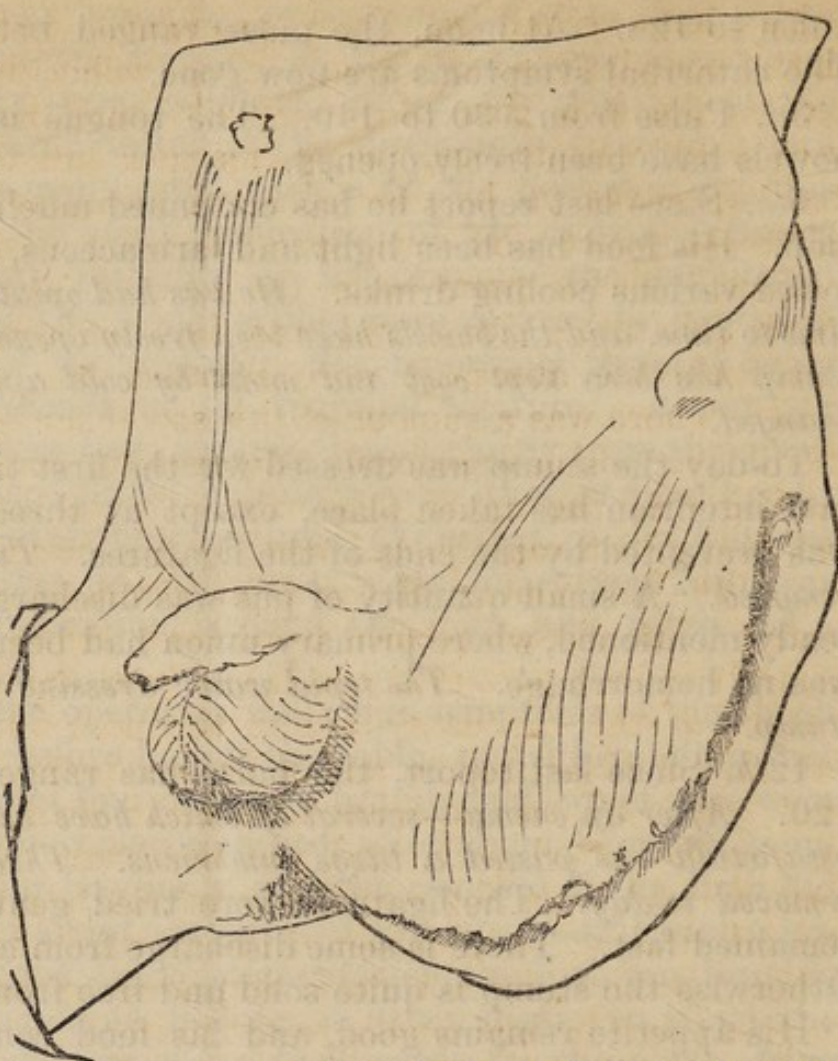
It would be tedious to give the farther details of this case:—suffice it therefore to state, that the patient remained in the hospital till the 5th of August, during which time every thing advanced favourably. His diet during this time was chiefly farinaceous, with a little steak and wine occasionally; but these were discontinued, as they did not agree with him. His general health and appetite continued to improve daily; and during the last ten days that he remained in the hospital, he had an occasional airing in the grounds.

The discharge from around the remaining ligatures continued healthy in character, and moderate in quantity, and the stump itself became firm, and continued free from pain.

On the 5th of August, six weeks after the operation, he left the hospital, but remained in the immediate neighbourhood of Edinburgh till the 11th of September. Soon after leaving the hospital he complained of occasional frontal headach, which was followed by pain in the left orbit and eyeball, with increased sensibility to light, and lachrymation. About the middle of August also, a small chronic abscess formed over the occiput. Towards the beginning of September the pain in the eye and orbital region diminished; and he took exercise on crutches in the open air daily, using also the stump freely by sitting on it.

On the 11th of September he left the neighbourhood of Edinburgh

for his home in Stirlingshire, in excellent spirits, and apparently in good health. The stump at this time felt a little indurated in the course of the lymphatics, where it had assumed a slightly glazed and full appearance, but otherwise it was natural, and entirely free from pain. It presented the appearance, represented in the accompanying wood-cut, copied from a cast made by Dr J. Maclean, the day before the patient returned home.



The first ligature came away on the sixth of July, and by the 11th of September, when he went home, only four of them adhered. These appeared to be held fast among the deep granulations, as there was no want of action in the stump.

He was discharged from the hospital about six weeks after the operation, and returned home, in the condition above mentioned, about two months and a half after having left it.

After his return home he continued to progress favourably, walking about on crutches, till about the end of September, when the pain in the left frontal and orbital regions became so severe as to oblige him to remain in the house.

At this time he was visited by Dr Handyside, who found that the functions of the patient's left eye were much impaired, with prominence of the eyeball, and considerable tumefaction of the left eyelids. Three of the remaining ligatures were withdrawn, and the fourth—the only remaining one—when pulled, broke across, from its being held fast in the interior of the stump.

The stump itself was nearly in the same condition as when he left the neighbourhood of Edinburgh,—only there protruded at the seat of the ligatures, a mass of cedematous granulations,—but it was still free from pain.

Towards the end of October he was again seen by Dr Handyside, who found him in the following condition:—

The left eyeball was very prominent and discoloured, with almost complete loss of vision. The eyelids were so much tumefied, as almost to conceal the eyeball,—and the veins of the eyelids were very conspicuous, being enlarged and tortuous. The orbit itself appeared to be also enlarged and prominent, especially towards its upper and outer part, forming there a hard inelastic swelling. These parts were the seat of continual stinging pain, which prevented sleep, and was fast undermining his strength. Three chronic abscesses were situated over various parts of the head. There was a tumour of the size of an egg on the left hypochondrium, which was firmly adherent to, and connected with the cartilages of the upper false ribs. It was slightly elastic to the feel, had grown rapidly, and was the seat of acute darting pains,—being, like the tumour of the orbit, decidedly of a malignant character. The disease seemed to be fairly begun in the stump, particularly in that part of it which had been irritated by the long retention of the ligatures,—as, at the part where the last ligature had lain, a small, pale-coloured fungus protruded. The patient's body, generally, was emaciated, and his strength was worn down by the continued pain, and the malignant hectic. To procure sleep, he had been for some time in the habit of taking frequent and full doses of the solution of the muriate of morphia.

His appetite was not much impaired, as he had a great desire for food; but he was unable to eat much.

He was now evidently sinking fast. He lived, however, getting gradually worse, till the 11th of November.

No *sectio cadaveris* could be obtained.

The patient thus lived for two months after leaving Edinburgh, and about four and a half months after the operation.

Remarks.—In connexion with this case, numerous important considerations suggest themselves.

In regard to the previous history of the case, it may be observed, that though the tumour commenced apparently only about six months before the patient presented himself at the hospital, the disease had existed probably for some time anterior to that. The left thigh and limb had, in fact, continued weaker than the other, for about six years subsequent to the attack of scarlatina,—an affection indeed which is not an unfrequent precursor, or even cause, of such diseases in children.

During the last six months, however, the expansion and growth of the tumour had been rapid, and when the patient did present himself at the hospital, it evidently partook of a malignant character; as was indicated not only by its remarkable advance in size, of late, and by its being the seat of acute darting pain, but also by the appearance of the patient. At the same time, it had the character of the osteo-sarcoma, as indicated by the apparent great expansion of the bone, or of the tumour connected with the latter,—

by the absence of any softness or elasticity on the tumour being handled,—by the entire absence of any affection of the lymphatic glands in the neighbourhood,—by the soft parts and the integument being freely moveable over the tumour,—and by the disease having shown no tendency to spread to and involve the integument. On the last point it may be added, that some of the diagnostic characters of the osteo-sarcoma, as distinguished from the osteo-encephaloma, (or true and originally malignant tumour of bone), are, that the former increases and spreads by continuity, being confined to the bone only, which becomes much expanded and attenuated, as was apparently the case in the tumour now under consideration;—whereas the latter, although it arises in the bone, yet does not confine itself to that tissue, but, after the part originally affected has become softened without much expansion, it extends and spreads more by contiguity than by continuity, so that, after having involved in its ravages all the various deep textures with which it comes into contact, it ultimately reaches the surface, the integument becoming included in malignant ulceration.

In the present instance, therefore, the appearances of the tumour favoured the opinion, that it, though now of a malignant nature, had originated, and for some time advanced as an osteo-sarcoma,—the tendency to degeneration possessed by which having been increased, and its progress accelerated by the constant irritation of the tumour by the counter-irritants and rubefacients applied to it, and continued so long.

On the muscles and other soft parts which lay over the bone and tumour being dissected off, the disease presented the appearance represented in the accompanying sketch.



On making a section of the tumour and bone, it was found to be of a somewhat peculiar nature, and to be different from what was to be expected from its external appearance.

The shaft of the bone is entire, except near its middle, where it appears as if compressed by the tumour, which is external to it. The medullary canal is obliterated opposite to the bulk of the tumour, being filled up with apparently new osseous deposit; this, however, as well as the shaft of the bone, is more soft and sectile than natural. At about four inches from the lower epiphysis, the medullary canal is divided into large cells, in which sarcomatous substance has been deposited. The space also which intervenes between the walls of the cylinder, from the part surrounded by the tumour up to the neck of the bone, is filled up with similar deposit. The section of the upper extremity of the bone

presents the usual osseous cancelli, but these are condensed and crowded, owing to the altered form of the head, neck, and trochanter.

This alteration in form consists chiefly in the flattening and elongation, in a transverse direction, of the head of the bone, and in the nearly complete absence, from absorption, of the neck,—the head at its upper arc being almost in contact with the great trochanter.

The periosteum, which extends over and limits the tumour, is thickened and diseased, and this condition extends as high as the head of the bone. The morbid mass, which constitutes the tumour proper, lies between the shaft of the bone and its periosteum, having originated either in the latter texture, or in the outer lamina of the shaft. The former is the more probable view, since, in the substance of the periosteum itself, both above and below the tumour, (where that investing membrane, altered by disease, surrounds the cervix, and also the lower fifth of the thigh-bone) may be recognised both osteo-sarcomatous and medullary tissue. In structure, the tumour appears to be a mixture of the osteo-sarcoma and of the fibro-medullary formation, there being distinct radiating bands between the surface of the bone and the periosteal covering of the tumour. Some of these striæ are osteo-cartilaginous, and others fibrous; and in the interstices of both of these are deposited the sarcomatous and encephalomatous substances.

The teres ligament adheres firmly to the bone, and is healthy in texture. These appearances, presented by the section of the tumour and bone, are represented in the accompanying sketch.



But the tumour having presented the appearance already described, when the case presented itself at the hospital, it was evident, that the only chance in favour of the patient's life being saved, or at least prolonged, was the early and complete removal of the tumour;—it was therefore resolved to afford the patient this benefit. The question next arose, whether the limb should be removed by amputation in the upper fifth of the thigh, or by disarticulation at the hip-joint; but there could be little doubt as to the propriety, or rather the necessity, of giving the preference to the latter operation, since the bone evidently appeared to be affected as high as the trochanteric region. This fact was indicated by the symptoms already noticed.

Had the operation of amputation through the trochanters been performed, the patient might have sustained with impunity the shock resulting from this at least equally severe operation,—the

flaps might have united by the first intention, and the stump might have remained well for a short time,—but there can be no doubt that the latter inevitably would have early become one mass of malignant disease, as this would have soon increased with renewed vigour in the diseased portion of the divided bone, thus left behind,—would have soon extended to, and seized on, the surrounding soft parts,—and, after involving the integument, would have protruded as a bloody fungus, so as to have carried off the patient more speedily, after all the dangers he had escaped, than if the original tumour had been left unmolested.

No doubt the disease did return in the stump after all, but this appears scarcely attributable to part of the tumour or of the local disease having been left behind, as is shown by its having first occurred in a distant part, and only subsequently in the stump itself; whereas, had the operation of amputation through the trochanters been performed, the local disease would never have been eradicated, and the stump must have been the first part in which the disease would have shown itself,—certainly ere many weeks had elapsed,—and in a more severe form than before.

The preference was therefore evidently to be given to the operation of disarticulation at the hip-joint, as by it only could the local disease be entirely removed.

In arriving at such a determination in similar cases, the surgeon must, of course, keep in view the hazards which attend such a serious operation; though, at the same time, the dangers attending it, as compared with amputation through the trochanters, or at the upper fifth of the thigh, have been, I believe, much over-rated. Indeed, many of the fatal results which have followed its performance, have not been due to the fact, that this operation in particular had been performed, but to other causes.

Previously to the present instance, the operation had been performed, I believe, in about fifty cases, of which sixteen were attended by complete success. A few only of these successful cases occurred in Britain; and the only recorded instance in Scotland, where the operation has been attended with final success, is one which was performed by Dr Macfarlane of Glasgow, on account of extensive injury of the left thigh, with compound fracture below the trochanters, occurring in a child only two years of age.¹ “The patient is now a stout and active girl.”²

There are published other cases, however, in which it cannot be said that the patients died from the operation, as they survived its first effects, but were carried off by diseases apparently unconnected with it. Six in number of such cases have been related, only one of which occurred in Scotland, being in the practice of Professor Syme, and where the patient lived till the com-

¹ See London Medical Gazette, vol. ix., p. 231.

² Extract from a private letter from Dr Macfarlane to Dr Handyside.

mencement of the eighth week from the operation, but then died from ascites.¹

The remaining cases were unsuccessful, as the patients died either some hours, or at least some days, after the operation. These occurred chiefly in military practice. In most of them the operation was undertaken for severe injuries, from gun-shot wounds, of the upper third of the thigh and trochanteric region; and in many of which the patients would, in all probability, have sunk from the extent of the shock and original injury, although the removal of the shattered limbs with the head and neck of the bone had not been attempted.²

Taking, then, even the statistics of the results of the cases where the operation has been performed, we see that one-third of the patients have recovered completely. This, however, is by no means a correct method by which to form our conclusions in regard to the operation; as the deaths in some of the unsuccessful cases were clearly attributable to causes unconnected with the operation, and occurred a considerable time after it. Moreover, in many of those cases in which death occurred not long after the operation, the surgeon felt called on to remove the shattered bone by disarticulation, notwithstanding that the patients were previously so much enfeebled by the injury, that the chance of success was but small. To these considerations, it may be also added, that in almost all the cases in which the operation has been undertaken, death was otherwise expected speedily to ensue.

It is commonly believed, that this operation is in itself much more severe and dangerous than that of amputation through the trochanters, or at the upper fifth of the thigh; but the difference between them is not so great as might at first sight appear. The flaps formed, the vessels divided, and surface exposed, are nearly the same in both; whereas in the former, the operation is much more easily and more rapidly executed, and the removal of a few inches more of the bone is attended with less shock and danger to the patient, than is the division of the bone by the saw, in its trochanteric region. Lastly, any greater fatality which may have followed the former, is due to the fact that the cases in which it has been performed have been much more complicated and dangerous, as well as more hopeless, than those in which the latter operation has been practised. The superiority, also, of the operation of disarticulation, in a case of disease of the bone, where there is suspicion of the upper end being affected,—as in the case which has given rise to these remarks,—is sufficiently evident.

In regard to the easiest, safest, and best method of performing an operation of such magnitude and importance as Amputation at the Hip-joint, surgeons are not as yet entirely agreed. Very many

¹ See Edinburgh Medical and Surgical Journal, vol. xx., p. 25.

² See Velpeau's *Eléments de Médecine Opératoire*, 1832.

different methods have been proposed and practised, but these may be referred to three principal methods, with their modifications; excluding that by the circular incision, which was recommended and even practised by Mr Abernethy. It is also almost unnecessary to notice the old preliminary practice of securing by ligature the common femoral artery, as adopted by Baron Larrey, this being now superseded by compression, effected by the fingers of an assistant. *First*, There is the method of making directly lateral flaps by transfixion, and cutting from within outwards; the disarticulation being effected between the formation of the flaps, as practised by Larrey,—the internal flap being first formed. This method has been varied by different surgeons. Thus, Langenbeck reverses the order of forming the flaps, by beginning with the external; and Dupuytren begins with the formation of the internal flap, by cutting from without inwards. *Secondly*, The method by the formation of postero-external and antero-internal flaps, effected also by transfixion, and then cutting from within outwards, beginning with the external flap, but leaving the disarticulation till the end. This method is practised and recommended by Lisfranc, and has been followed by Mr Syme. It has also been varied by cutting from without inwards. *Thirdly*, The formation of antero-posterior flaps, the disarticulation being effected after the formation of the anterior flap. The anterior flap is derived partly from the inner side of the thigh, and the posterior one partly from its outer side.

The last described method was practised by various surgeons, so far back as the year 1806, but in such a manner as not to have been generally adopted by subsequent operators, the anterior flap having been made of great length, and the posterior one cut very short. An improvement on this method, adopted by Mr Liston, is that which was followed in the present instance.

As to which of these methods the preference should be accorded, the surgeon must be guided principally by the nature of the case. However, when circumstances will allow of it, the antero-posterior flap method,—just adverted to, and as described in the early part of this narrative,—will be found, I believe, to be the preferable one. The vessels divided are the same, and they are more easily secured than when the surfaces exposed are lateral,—the flaps are of more equal dimensions, and lie afterwards more accurately in apposition,—the articulation is more rapidly reached, and is exposed at a more favourable part for being opened,—the head of the bone is more easily dislocated, and the division of the ligaments more easily effected;—the removal, too, of the limb is completed with one instrument only,—and, finally, by this method the whole operation can be much more easily and rapidly completed, than by practising any of the other methods.

For these reasons, therefore, I would recommend the adoption of this mode of performing the operation of Amputation at the Hip-joint.

(To be continued.)

SURGICAL CASES AND OBSERVATIONS.

BY

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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.

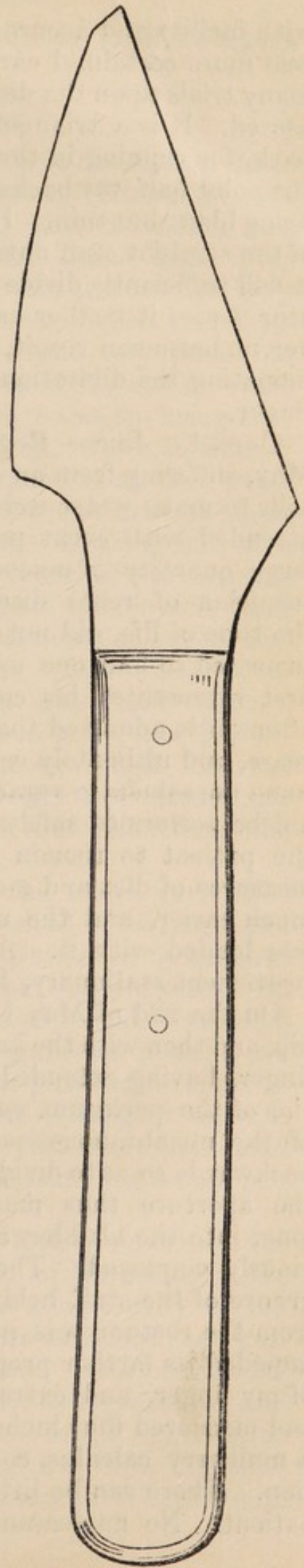
It would not be correct to say that the incision of the prostate is the most important step of the operation, since imperfection in any part of the process prevents it from leading to a good result. If the external incision be too small or not well placed—if the muscles of the perineum be not fully divided,—and 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.

³ Ed. Med. and Surg. Journal, July 1826.

² 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.

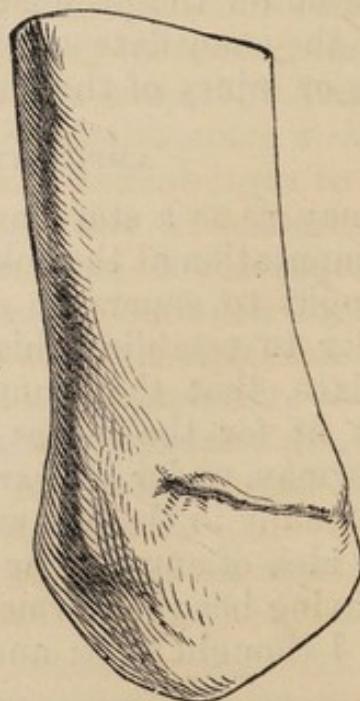
It may seem a startling, but it is nevertheless a true statement, that amputation at the ankle-joint, with hardly any exceptions, may, and ought to supersede amputation of the leg below the knee. In order to establish this position, it is necessary to show, in the first place, that the stump which results 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.

