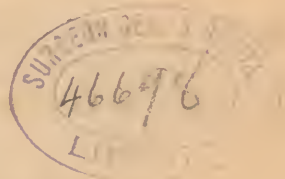

A
BIOGRAPHICAL
A C C O U N T
OF
MR WILLIAM HAMILTON,
LATE PROFESSOR OF ANATOMY AND BOTANY
IN THE UNIVERSITY OF GLASGOW.

—
FROM THE TRANSACTIONS OF
THE ROYAL SOCIETY OF EDINBURGH.



III. *A BIOGRAPHICAL ACCOUNT of Mr WILLIAM HAMILTON, late Professor of Anatomy and Botany in the University of Glasgow. By ROBERT CLEGHORN, M. D. F. R. S. EDIN. Lecturer in Chemistry in the University of Glasgow.*

[Read 6th Nov. 1792.]

IN writing the life of a person who himself published nothing, it is extremely difficult to satisfy the expectation of his particular friends, without incurring the charge of adulation from the rest of the public. How far I have succeeded in doing justice to Mr HAMILTON's merit, without insensibility or exaggeration, must be determined by those who knew him, and by those who can appreciate the worth of such professional remarks as I shall lay before them in the sequel. Mr WILLIAM HAMILTON was born in Glasgow, July 31. 1758*. Having finished the usual course at the Grammar School, he went to Glasgow College in 1770, and continued there studying with great diligence till 1775, when he became Master of Arts at the age of seventeen.

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* His father was Mr THOMAS HAMILTON, an eminent surgeon, and professor of anatomy and botany in Glasgow; his mother Mrs ISABEL ANDERSON, daughter of Mr ANDERSON, formerly professor of church-history in the University of Glasgow.

HAVING shewn an early and strong predilection for the study of physic, he went to Edinburgh, which was then, as it is still, the most celebrated school of medicine in Europe. During the summer of 1775, he studied botany under the late worthy Dr HOPE; and during the two ensuing winters he studied with great ardour under all the medical professors, and enjoyed the friendship of Dr CULLEN and Dr BLACK, who having been formerly members of the College of Glasgow, were the companions and friends of his father.

MR HAMILTON intended to have remained a third season in Edinburgh, but the state of his father's health rendered it necessary for him to give up this plan. Accordingly, in summer 1777, he accompanied his father to Bath, and from thence to London, where he was recommended to the particular notice of the late Dr WILLIAM HUNTER, and of his brother Mr JOHN HUNTER. Each of these gentlemen was connected with Mr T. HAMILTON by early friendship, and a constant intercourse of good offices. Under their direction Mr HAMILTON quickly distinguished himself by that ardent pursuit of anatomical and professional knowledge, which marked every part of his subsequent life. Though left at an early age to his own conduct, in a city abounding above all others with objects of pleasure and amusement, he resisted the blandishments of both, devoting his time to the acquisition of knowledge, applying not only to those parts of knowledge which were entertaining, but to those also which the young are apt to neglect as uninteresting, or to despise as useless, and manifesting, on every occasion, a diligence discouraged by no difficulty, and interrupted by few avocations.

SUCH conduct did not escape the eye of Dr HUNTER. Indefatigable himself, he was delighted with appearances of professional zeal among his students; and he was so particularly pleased with them in the son of his old friend, that, after the first season, he invited Mr HAMILTON to live in his house, and committed the dissecting-

fecting-room to his care. In this situation, the best that a student of anatomy could wish for, Mr HAMILTON continued two years hearing the lectures, and enjoying the conversation, of the first anatomist in London. How far, in Dr HUNTER's opinion, he improved this opportunity, appears from the following letter addressed to Mr T. HAMILTON, December 31. 1778: "Your son makes me very happy on your account, and for his own sake. I see and hear much of him; and every body regards him as sensible, diligent, sober, and of amiable dispositions. He is now in the direct road for acquiring knowledge, as director in the dissecting-room. It obliges him to apply, because he is to answer any question, and solve any difficulty that may occur; and which is best of all, he is to demonstrate all parts of the body again and again to students. This is a most instructive province, and a fine introduction to giving lectures, as it gives facility in public speaking, and a habit of demonstrating distinctly and clearly, both of which are easily acquired while we are young; and yet, for want of that very opportunity, are possessed by few. In this way he will acquire not only knowledge, but a character for knowledge with the public, which a young man cannot procure but by being in some public station."

IN another letter to the same gentlemen, dated May 18. 1780, Dr HUNTER says: "Your son has been doing every thing you could wish, and from his own behaviour has profited more for the time than any young man I ever knew. From being a favourite with every body, he has commanded every opportunity for improvement which this great town afforded during his stay here; for every body has been eager to oblige and encourage him. I can depend so much on him, in every way, that if any opportunity should offer for serving him, whatever may be in my power, I shall consider as doing a real pleasure to myself."

THE opportunity hinted at soon occurred. Mr HAMILTON came to Glasgow in 1780, and taught for his father during the ensuing winter. Having given most satisfying proofs of knowledge in anatomy, and of talents as a lecturer, he was appointed in 1781 successor to his father, who had resigned some time before. When consulted about this appointment, Dr HUNTER said to the Marquis of GRAHAM, now Duke of MONTROSE, "That from an intimate knowledge of Mr HAMILTON, as a man, and as an anatomist, he thought him every thing that could be wished for in a successor to his father, and that it was the interest of Glasgow to *give him*, rather than his to solicit the appointment."

HIS father lived till January 1782; but the whole burden of lecturing, and the greatest part of the business, devolved on the son. The business was very extensive, as old Mr HAMILTON was connected with many of the most respectable families in Glasgow and its neighbourhood. His professional character, too, was high as a successful practitioner, and a skilful operator; and being withal a man of great hilarity, and genuine humour, his company was courted by all who relished wit and good fellowship. From the co-operation of so many favourable circumstances, Mr HAMILTON's progress was extremely rapid, his outset being encumbered with few of those difficulties which have often obstructed the course of other young practitioners. His father lived long enough to introduce him fully. His youth did not diminish the confidence of his patients; because, besides knowing that he had studied with uncommon care, in situations the most favourable for acquiring knowledge, they believed that he had ready access at all times to the experience of his father. By gentleness of manners, by unaffected benevolence, by the most prudent circumspection in all his conduct, and by unremitting attention to his patients, he not only retained most of those who had employed his father, but added many

many to the number. While he practised extensively as a surgeon, his skill in anatomy made him be consulted by many surgeons, older than himself, before they performed operations; and, in a few years, those who had been his pupils, practising in distant parts of the country, consulted him on similar occasions. Besides anatomy, he taught botany and midwifery; which last he practised with such success, that he was called to almost every difficult case near Glasgow. In October 1783, he married Miss ELIZABETH STIRLING, an accomplished lady, connected with several opulent families in Glasgow and its neighbourhood. From these connections, his practice, already extensive, was very considerably increased.

ANXIOUS to excel, not only as a skilful physician, and an expert surgeon, but as a public teacher, he was led to consider every case that he treated more accurately than is usually done by those who confine their attention to practice merely. Though naturally convivial, and endowed with a considerable degree of his father's humour, he avoided company as much as he could with prudence, and devoted every vacant hour to study, and especially to writing. He kept a regular account of all uncommon cases, accompanying the conclusion of each with remarks suggested at the moment, and forming, at the end of each year, a general table of the diseases which had prevailed during the different seasons. This plan facilitated his practice, and was highly gratifying to his patients, by convincing them, that their former complaints were distinctly remembered: But he had a higher object in view than the assisting of his own memory, or the gratifying of particular patients. His object was to have published a System of Surgery, illustrated with cases, of which several are fully and accurately drawn up. As a specimen of what might have been expected from this work, had he lived to finish it, I shall mention a few particulars, which, on account of
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their novelty or importance, seem most worthy of being recorded.

UPON performing lithotomy, for the first time, he was struck with the difficulty of introducing the gorget, and, on examination, he found it blunt at the point, where sharpness was most needed, so that, instead of cutting, it tore the urethra. The cutter finding it difficult to sharpen the gorget, as commonly made, up to the button which goes into the staff, Mr HAMILTON directed him to make it in two separate pieces, which, locking together, had all the firmness of the old instrument, with the advantage of being easily sharpened when taken asunder. This instrument he always employed afterwards in operating, which he did often, and with great success.

IN midwifery he met with several uncommon cases, of which the most remarkable are instances of two women who survived a complete inversion of the womb*. He detailed those cases to his pupils, along with others that ended fatally; and took occasion from them all to enforce the necessity of avoiding force, or even haste, in delivering women. The following extract, nearly in his own words, proves with what caution he treated his patients, and with what care he considered their cases afterwards: "I have seen four cases of inverted uterus, of which two patients died, and two recovered. This recovery is so singular, that I know only one case by THOMAS BARTHOLINUS similar to it.

"THE great object in all cases of such danger, is to understand fully how the accident happens, that so we may be able to prevent its occurrence. It is evident, that the uterus can never be inverted when it is contracted, or even beginning to contract itself; it therefore must happen when the fibres of it are relaxed,

* BOTH these patients are still alive; and the history of one is given in the Medical Communications of London, vol. 2.

relaxed, allowing themselves to be bent in any direction, and when the uterus is still large. This is the condition of the uterus; when the child has been forced away, either by the action merely of the abdominal muscles and diaphragm, or by the assistance, as it is called, of the midwife, should the placenta adhere to the very fundus or near it, a small degree of force, applied to the cord, may invert the uterus while large, flaccid, and empty.

“ THE surest method of preventing such an accident, then, is to produce a complete and regular contraction of the uterus, which may be accomplished more easily than some have imagined. For we know, that as long as any stimulus is applied to the cavity, and especially to the mouth, which is the most irritable part of the womb, a contraction will take place, in order to expel the stimulating cause. Therefore, by allowing the child to be born solely by the pains of labour, by giving no assistance in the extraction, (except where the size of the child, or the mal-conformation of the pelvis, render assistance absolutely necessary), and by preventing the delivery of the body from being accomplished by the abdominal muscles solely, we force the uterus to contract itself, and to expel its contents. After the delivery of the body, by allowing the legs to lie for a short time in the vagina, and to press on the mouth of the womb, we ensure its contraction.

“ BY such management, the uterus having been made to contract itself properly, we have the placenta separated, and ready for extraction. Thus, together with the danger of inversion, we are freed from two more common accidents, *viz.* a retained placenta and a flooding. Besides, the child is less hurt, when the slow delivery allows time for the dilatation of the passage; and it runs no risk of those sprains and bruises which often happen in attempting to pull away the child without the assistance of a labour-pain.

“ I HAVE paid particular attention to this subject, and I have always found, that where the womb was inverted, where the placenta was retained, or where much flooding followed the birth, the child had been born, head and body at once, by a single pain. An attention to this point, procured Dr HUNTER part of the fame which he so justly possessed, on account of his skill and caution in midwifery. He has often told me, that many women had been under his care, who, with other practitioners, had lost much blood, and been exposed to much danger, from the speedy extraction of the after-birth. By allowing it to separate slowly from the uterus, and after separation to lie for half an hour in the vagina, he completely avoided the flooding, and the danger that attends it.”

MR HAMILTON was called to many cases of luxation, both of the shoulder and thigh joint ; in reducing which, he succeeded by very simple means, after other surgeons, who employed the force of machinery, had failed. On this subject he wrote an accurate paper ; in which, after describing the joints, with the ligaments and muscles that surround them in a natural state, he considers fully the change brought on every part by luxation, deducing partly from the structure of the parts, chiefly from his own extensive experience, the following directions concerning the best mode of reducing the joint to its natural position.

“ THE situation of the muscles round the joint differs much according to the kind of dislocation.

“ IN all cases the deltoid is stretched, but particularly when the bone is thrown directly downwards. The long head of the biceps must be sometimes torn, but, where it is not, it will be extended, and the ligament through which it passes, and which binds it to the humerus, will be always lacerated in a greater or less degree. The muscles that are most deranged, are the supraspinatus, subscapularis, and infraspinatus. These two last we shall call the lateral muscles of the joint.

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“ IN the dislocation downwards the supraspinatus will be on the stretch, the subscapularis and infraspinatus will have their fibres lengthened, and their direction altered, in consequence of the head of the humerus being thrown below the glenoid cavity.

“ WHEN the bone is dislocated outwards, and rests on the dorsum scapulæ, the situation of the muscles will be nearly the following: The subscapularis and supraspinatus will be both very much stretched, while the infraspinatus, having the humerus thrown under it, will be relaxed, and a number of its fibres will be torn from the scapula, to make room for the head of the bone.

“ IN the third situation, when the bone is luxated inwards, the supraspinatus and infraspinatus will be on the stretch, while the subscapularis will be relaxed, and in the same situation as its opposite muscle has been described in the preceding species of dislocation.

“ THIS account is drawn from the natural situation of the parts, and the few cases of dislocation where there has been an opportunity of dissecting the arm. It may be observed, that in all the three species of luxation, the supraspinatus and deltoid are put much upon the stretch, the last in a less degree. From this we may infer the propriety of relaxing these muscles completely during the time of reduction; and this is another reason for raising the arm when we attempt to replace the bone.

“ MR THOMSON * speaks of the head of the humerus being caught between the tendons of the infraspinatus and teres minor, as in a noose; this can happen only in the luxation outwards, and is one reason for relaxing them completely in attempting reduction, by throwing the arm towards the side of the scapula, opposite to that where the head of the bone is lying. Having mentioned the situation of the muscles, I shall now

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* London Medical Observations, vol. 2. p. 354.

point out the changes that take place on the joint, when left unreduced, as being our proper guide in judging what line of practice is to be followed in such cases. An unreduced luxation may be described in three situations: The first, when the parts are little changed from the state they are in, immediately after dislocation happens. The second, where motion is beginning to take place, and when the soft parts become adapted to the dislocated state of the bones. And the last, when a new joint is formed. After the head of the bone is lodged on some part of the scapula, it is found to consolidate the cellular membrane and muscular fibres under it, so as to form a kind of soft socket for itself, which, by the pressure of the cartilage on the end of the humerus, and by the motion the arm admits of, gets a smooth surface. The burfal ligament torn on that side next the humerus, is pulled across the glenoid cavity, and the muscles will be found in the state I have already described.

“AFTER the inflammation and swelling, consequent upon the injury, have gone off, the patient will be plagued with pains in the stretched muscles, and will be incapable of moving the joint with ease. The inflammation will however make the lacerated parts grow together, so as to obliterate the passage through which the head of the bone escaped from the joint. This may be reckoned a luxation in a recent state. After some time the muscles begin to adapt themselves to the state of the bones, those that were overstretched are lengthened, and the relaxed ones contract, so that the person is capable of moving his arm, and by degrees the motion becomes more considerable. The burfal ligament now gets adhesions to the edges of the glenoid cavity, over which it lies, and the opening in it, through which the bone passed, is filled up, so that it embraces the humerus closely. The torn passage in the soft parts has become as firm as if no laceration had ever take place. The socket, formed in the cellular substance, between the head of the humerus and the scapula,

scapula, begins now to be removed, from the constant pressure made upon it; and before this, which we would call the second state of the dislocation, is completed, that bone is resting on the surface of the scapula itself. It is much to be wished, that it were ascertained, by accurate observations, when these changes take place, and particularly when the third state, which we are next to describe, begins. This last state of a dislocation is, when nature is beginning to form a new joint to supply the place of the old one.

“ THE soft socket having been completely removed, the humerus is resting on the surface of the scapula. By pressure, and frequent motion, a cavity is formed for the head of the bone; the surface of this new cavity becomes smooth, and is covered with a cartilaginous crust; the attachment of the humerus to the parts around answers the purpose, and at last assumes the appearance of a ligament, so that a new joint may be said to be formed completely in all its parts. That this can happen, has been proved by dissection; and particularly in a man, after whose death my father had an opportunity of examining his arm, which had been dislocated for upwards of thirty years. This person was a fencing-master, and, as it was his right arm, he was obliged to perform with it a great variety of motions. He had acquired so completely the use of it, that he could perform all the different motions necessary in the small sword, except pushing a high carte*.

“ Monsieur MOREAU † gives two cases similar to this, of old luxations of the thigh, where the head of the femur had formed a new acetabulum for itself in the os innominatum. Another case, though not of a dislocated shoulder, I shall likewise describe,

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* MR THOMSON dissected a man with a new socket, formed in the inside of the scapula, *Med. Obs.* vol. 2.

† MEMOIRES de l'Academie de Chirurgie, tome v. p. 45. small edition.

scribe, as illustrating the efforts of nature, to supply the motion between bones after dislocation, and where a process for forming a new joint, that, so far as I know, has never been described, is taking place. The bones are from a woman, who was dissected in the theatre here, about four years ago; the thigh had been long dislocated, and the woman had been able to walk about. The neck of the os femoris lay on the edge of the acetabulum, while the head, which is changed in its shape from the pressure of the surrounding parts, was on the dorsum ilii beyond this cavity. The edge of the acetabulum filled up the hollow at the neck of the femur, which is made deeper by its pressure. There are two processes of bone growing into the acetabulum from the os femoris, and which at last would have formed a kind of head to play in this the cavity of the old joint, and thus have made a new one considerably different from that in the cases already mentioned. By one or other of these different ways, nature attempts to remedy the injury done to a limb after luxation. At the time the head of the humerus is forming a new socket for itself, the glenoid cavity is destroyed, its sides approach each other, and the hollowed part is filled up by granulations of bone. The bursal ligament adheres to the surface of this cavity, and is thus to all appearance lost.

“ THE patient continues in this state, with a joint either more or less perfect, and, when proper attention has been paid, the new joint may be made a very useful one; and to this point alone our treatment of old dislocations ought to be directed. The treatment of luxations must differ according to the state of the disease. When they are recent, reduction in the easiest and safest manner is the surgeon's object: And here we shall make a few observations, drawn partly from what we have already shown to be the state of the joint and muscles, and partly from experience.

“ THE head of the humerus being in all cases pulled beyond the glenoid cavity, and lodged on the scapula, the first step towards
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wards replacing it, must be to draw it out, so as to bring it over that cavity out of which it was thrown.

“ THIS is to be done by making the extension of the arm, with such a degree of force as to separate the bones from each other, and so applied that it may act only upon the parts round the dislocated joint. When extension is omitted, as was the case among the old surgeons, the attempts made by the lever to force the humerus into its place, so far from having salutary, were attended with very bad, consequences. Extension, however, in the modern practice, is our first view. The resistance to the extension is owing to the contraction of the surrounding muscles, which is partly voluntary, and partly the effect of their being much stretched, from the new situation of the bone. The first it is seldom in our power to prevent, as the terror of reduction, and the uneasiness consequent upon moving the arm, makes the patient exert his muscles to resist what gives him pain; and so far as no resolution in him can prevent this action, it may be said to be involuntary. Were it possible to deceive him, and make him suppose we were only examining the state of his arm, when we were really making the proper extension, this cause of difficulty might be overcome in some degree. The resistance from the overstretched muscles is of more importance, as it is in our power to prevent it, and, when not attended to, must increase the surgeon's difficulty, and by extending the muscles, already too much on the stretch, may produce greater laceration than from the disease intended to be remedied.

“ THE observations we have already made on the state of the muscle after dislocation, must now appear necessary, being on a subject little attended to, though of great importance, and particularly as they lead us to place our patient in such a manner as to remove this cause of difficulty and danger.

“ ANOTHER cause preventing reduction, is the bone being pulled in such a direction by the surgeon, as not to pass through
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the cavity it formed for itself in dislocation, but is made to press on the surrounding parts, so that if the force is continued to be exerted in the same direction, a new passage must be torn for it. This, like the last, may be avoided, by attending to the most probable position of the limb when the accident happened. We have attempted to prove, that, in general, dislocation is most apt to happen when the arm is raised; and therefore that this position is the preferable one for reduction. I suspect in many cases, where improper attempts to reduce the bone have been made, that the difficulty is increased by the bone tearing a passage for itself in a new direction, and thus, by twisting the muscles, preventing reduction from being accomplished.

“ THE last obstacle is from the bursal ligament. As in no case of dislocation the head of the bone can pass out without lacerating it, so, in reduction, it cannot be replaced, unless it is brought through the same opening by which it went out; for if we attempt to bring the humerus over the glenoid cavity in a wrong direction, the ligament will get between it and the scapula, and thus, when apparently reduced, the bone will return to its old situation, as soon as the arm is let loose. This can be avoided only by the posture of the limb; and here also, in the raised state of the arm, the bone will return most readily through the opening in the ligament, as being put into the same position in which it was luxated.

“ THESE three great difficulties in reduction, then, are to be remedied by a proper position of the patient and of his arm; and this, I think, there can be no doubt, is by placing him so, that the extension may be made when his arm is raised. In order to this, I make him sit on the ground, the scapula, with the glenoid cavity upwards, being kept fixed by two assistants who are placed behind him. I put a towel round the humerus, immediately above the elbow, both to give me a firmer hold of the part, and likewise, that, if necessary, I may have a place for an assistant

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or two in the extension to lay hold by. The fore arm is bent up, so as to relax the biceps completely ; and this I prefer to the state of half flexion, as the extensor triceps is not one of the muscles that gives any difficulty in reduction. When the bone is luxated directly downwards, I make the extension standing opposite to the patient's side ; but, when it is either outwards or inwards, I place myself towards that side, opposite to where the head of the bone is lying, and I carry the arm in the same direction. If, for example, the head of the humerus is under the pectoral muscle, I carry the arm outwards towards the patient's back, and *vice versa*.

“ I THEN begin to make the extension with a slow and steady force, but of such a kind as I find is capable of overcoming the resistance of the muscles, and of bringing the bone out of its place. After it is completely disengaged, it is pulled into the glenoid cavity by the action of the surrounding muscles, so as not to require any pressure in the axilla to raise it up. In this manner I have reduced several dislocations of the shoulder ; and in none have I failed, or been obliged to use the force I have seen applied in other modes of reduction, and without effect. Among the cases I have succeeded in, there were seven where all the other methods had been tried in vain ; and in three of these the arm had been out for three weeks. Mr WHITE of Manchester* has employed a mode of reduction similar to this, as to the position of the arm ; but I think the other parts of his plan are not equal to that here described. The raised state of the arm is likewise advised by Mr THOMSON, from the situation he found the muscles in the dissection of two men with dislocated humeri, who had died before reduction had been effected.

“ IN this manner of reduction, all the extended muscles are relaxed by the arm being raised ; the supraspinatus and deltoid
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* Medical Observations, vol. 2. p. 373.

in the dislocation downwards; and in that to the side, by turning the humerus towards the side of the scapula, opposite to that on which its head is lodged, the lateral muscle is taken off the stretch it was put into by the dislocation. When these overstretched muscles are thus attended to, the reduction becomes more easy to the surgeon, and much less hazardous to the patient, as laceration is guarded against.

“ AFTER long and violent attempts to reduce the shoulder, particularly with the muscles on the stretch, I have heard of the bone becoming so loose, that when it had been at last got into its socket, it fell out again very readily. This I imagine must have been owing to the muscles round the joint, and the ligament, having been very completely torn, so that the humerus had lost its natural support. In the two modes of reduction most commonly made use of, the state of the muscles is not enough attended to. When the arm is at an acute angle with the side, as when we attempt to force in the bone with the heel in the axilla, the superior muscles are very much on the stretch; and when the patient is placed on a chair, and the arm forms a right angle with the body, they are still not sufficiently relaxed to prevent additional difficulty and danger; and I must agree with Mr THOMSON in thinking attempts in these directions often the cause of succeeding bad consequences. Another advantage of reduction with the raised arm is, that as soon as the humerus is disengaged from the scapula, the muscles, that from the nature of the dislocation were most extended, contracting, pull it into its socket. In other modes of reduction, a considerable force is required to press the bone into its place, after the arm is fully extended. When this force is great, the parts that lie over the bone must be bruised, particularly if a hard body is used to effect this purpose. On this account the *Ambe*, both of FREACK and PETIT, appears to me a bad instrument. It pulls out the arm at right angles, and therefore it requires considerable action

tion of the end of the instrument as a lever to force the humerus into its place, while the pressure on the patient's side is equal to the force of the extension. It can likewise be properly used only in the dislocation downwards.

“ IN all dislocations of the humerus, the extension, I think, should be made with the hands, in place of pulleys, as by the first, the direction of the bone can be better adapted to the resistance and situation of the surrounding parts.

“ IN what we called the second state of an unreduced dislocation, the obstacles are more numerous than in the recent. The muscles have now adapted themselves to the situation of the bones, the hole in the ligament is in part grown up, and the lacerated passage in the soft parts is obliterated, the sides of it having, by inflammation, adhered to each other. These being added to the difficulties in recent luxations, render the reduction here both more difficult, and more apt to be attended with laceration, than in the other. These obstacles are to be got over, however, by the same means. The patient ought to be put into the same position, and the extension made in the same manner, only it will require the force to be greater, and to be longer continued, before it accomplishes the end in view. I do not think, however, it will be necessary to employ any other method, (as that of Mr WHITE), as every thing may be done by the hand, that can be expected from pulleys.

“ IN the last state, and even in the latter part of the second, instead of reduction, we should attempt to render the new joint that is forming as perfect as possible. This is to be done principally by making the patient use his arm as often, and for as long a time as he can, without pain or fatigue, and to perform with it a variety of motions.

“ IN this way we will hasten the formation of the new joint, and render him sooner capable of using his arm. That this is possible is evident from the case of the fencing-master already
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mentioned, who followed his profession for upwards of five and twenty years before his death, and who, by being obliged to use his arm, acquired the motion of the new joint sooner than if he had been under no such necessity.

“ IT is a matter of importance to ascertain when the changes, we have described, take place. I imagine the recent state may continue for a fortnight or three weeks: But still we want observations to point out when the muscles become completely adapted to the new situation of the bones; when the glenoid cavity begins to lose its shape, and the ligament to adhere to it; and, particularly, when the surface of the scapula begins to become hollowed and smooth, so as to receive the head of the humerus. These, however, may be guessed at, by the quality and degree of motion enjoyed in the dislocated joint. Were these points fully ascertained, they would guide us in our practice, and prevent attempts being made to reduce old dislocations, where the surgeon, from want of knowledge of the process carrying on by nature to form a new joint, and the obliteration of the old cavity, racks the patient's limbs to no purpose; and even should he be successful, he might be said not to reduce, but really to dislocate, as he destroys a new joint beginning to enjoy motion, and throws the end of the bone on a surface which has now lost every thing necessary to make it a part of a joint.”

MR HAMILTON had occasion once to open the chest of a *Lady*, who had water in her breast. The quantity at first drawn off amounted to sixteen ounces; a great deal oozed out afterwards, and some of the symptoms were for a little relieved, but the patient died in a few weeks. On the best manner of performing this operation, he makes the following remarks:

“ IN Mr BELL's mode of operating, which I here followed, simply drawing off the water, and avoiding every thing that may bring on inflammation on the cavity, is not sufficiently kept in view. An extraneous body, a canula, is introduced and kept in
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for two or three days. The effect of this practice is evident; inflammation may be brought on over the cavity; suppuration will succeed, and the case will be converted into one of empyema, with an opening in the chest. The effects of keeping in a canula in the abdomen were found, by the old surgeons, to be so bad, that the practice was given up, even before the faintness, from drawing off the water at once, was so well understood as to be capable of being prevented. In our patient, symptoms of inflammation from the canula were beginning when it was withdrawn, and had it been kept in another day, the inflammation would probably have become so considerable, that it might have been expected to produce the worst consequences.

“ THE view with which a canula is introduced and kept in, is, to allow the water to run off only when we choose it, and to prevent air from getting into the cavity. The first intention it does not answer; as in our patient, though it was introduced through the pleura when only a small perforation had been made in it, so that it might be closely embraced, the water oozed out by its sides, and more was discharged in this way than by the canula itself.

“ AIR is likewise more apt to get into the cavity by the canula, than if the water was discharged without it. It is impossible to stop it so accurately and quickly with the finger or cork, as to prevent the access of air, when there is little water left, or when the lungs are not in a situation to fill the cavity, and especially when the patient is inspiring. This I found to be the case, when I drew off the last water by it. But before I left the patient, I evacuated the air as completely as possible, by depressing that side of the chest during expiration.

“ FROM the structure of the thorax, air is apt to be drawn in by the external wound, and is again not easily expelled. The most ready method of evacuating it, is by compressing that side

of the chest during expiration, at the same time pressing up the viscera of the abdomen, so as to make the diaphragm ascend; and thus, by lessening the cavity, while the patient, by shutting the glottis, prevents the air from escaping, but forces it into the collapsed lung, we force out as much of it as possible. Other ways of evacuating it hath been suggested by different writers. Sucking it out by a syringe, or an elastic bottle, are common proposals, but I am afraid can never be put in practice. The bottom of the wound between the ribs is so irregular, that they can never be applied when the canula is out; and when it is in, more air would be admitted during the time the syringe, or bottle, was fitting on, than could be extracted by them. But after all the water is evacuated, the wound must be healed up, for if not, suppuration will come on the wound, and when the canula is then withdrawn, the skin, that was intended to act as a valve, will have become fixed by the inflammation, and will not come down over the hole in the pleura, so that air must be admitted, though it was excluded before.

“ WHETHER common air does hurt to any cavity, I doubt much. Water, with a penetrating wound, would be as bad. The inflammation of the wound is what is most to be dreaded, as it spreads from that over the whole cavity. The canula, therefore, as inducing inflammation, must, in my opinion, be very hurtful.

“ IN place of the operation described by Mr BELL, I would propose doing it in the following manner: I would place my patient in the common posture, and, after the skin was well pulled up, make my incision in the usual place and manner, till I came down to the pleura. I would then make an opening through it, about half an inch in length, merely dividing the membrane. In cutting into the cavity, great care should be taken not to do it rashly, lest an adhesion of the lungs to the pleura be over the incision. At the same time we must expect to find
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the pleura much thicker than it naturally is, owing to the effects of inflammation, and the pressure of the water, so that a timid operator, not aware of this circumstance, (which is not taken notice of), might desist, from an idea of having met with an adhesion, when he was really only half way through the membrane. In a case of hydrothorax I opened, I found the *pleura costalis* a fifth of an inch thick. I would then allow as much water to run off as I thought proper, two assistants making such a degree of pressure on the ribs of that side as to prevent their being raised in breathing, during the time the fluid was discharged. After I had drawn off such a quantity as flowed readily, and the patient could bear without faintness, I would bring the loose skin over the hole in the pleura, and fix it there with slips of emplastr. adhesiv.; I would then lay the patient on the diseased side, so as to allow the water to ooze off by the wound, while air would be prevented from getting in, by the skin acting as a valve. If the patient grew faint, from the evacuation being too quick, it could easily be lessened, or stopped, by making him turn more and more towards his back, or opposite side, so as to make the hole in the pleura less a depending opening; or, by making pressure upon the skin over the opening, the discharge might be completely stopped. If the lung was not diseased, as the water flowed off, it would be more and more filled with air, and expanded. If it was so much diseased as to be incapable of expansion, by no mode of operation can more water be drawn off than what distended the cavity; a quantity must be left equal to the want of enlargement of the lung; if we draw off more than this, air must supply its place; for we are not to imagine we can take away all the water, and leave a vacuum. The wound will admit of the water oozing long enough to evacuate all that should be taken away; and it will not be prevented from healing, so as to endanger the patient, from the risk of internal inflammation. If we find a
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large quantity thus evacuated, it will prove the lung of that side to be found; as, air being entirely excluded, the cavity must be filled up by that alone, after the water is discharged. If little runs off, it is probably one of these cases where the lung is so much indurated as to be for ever incapable of performing its function. In the first case, the patient may derive benefit from the operation; the disease may be prevented from recurring. In the other we have done him no hurt; he will breathe more easily as long as the oozing continues, by taking away the redundant water, but, as this cannot be kept up long, he must at last be left to his fate.

“ LAYING the patient on the diseased side after the operation must be of service, as it both allows the water to run off, and it prevents him from enlarging that side of the chest, and thus running a risk of drawing in air by the wound. When a canula is kept in, this is impracticable; the patient cannot be laid much towards that side without the canula pressing on the bed-clothes. In the manner I have proposed, the operation will, I think, be more safely performed, and might therefore be oftener tried.

“ WHAT I have said applies only to hydrothorax. In empyema an opening must be kept in the chest, to discharge the matter as it forms. The two diseases certainly require different surgical treatment. In the first, inflammation has not come on, and is to be guarded against. In the other, the collection of matter is the effect of it, and its being regularly discharged will, if any thing can, abate it. I should therefore follow Mr BELL's plan* in this, though I would differ from it in the other; and as the steps of the operation in these two cases would be the same, except leaving in the canula in empyema, we may attempt
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* THE canula recommended by Mr BELL has no lip or margin round the opening. By such an addition it has a hold of the parts round the opening, and can be kept much steadier.

it when proper, though we may not be certain of the nature of the fluid contained. In most cases we may ascertain this before from the symptoms; but, at all events, the puncture in the pleura will put it beyond a doubt."

MR HAMILTON had an opportunity of seeing several herniæ in women, upon some of whom he operated successfully; and, from considering all the cases he had seen, he was led to make the following remarks, some of which he thought new.

"WHEN I began the practice of surgery, as I had never met with a case of hernia in women, I believed implicitly in the doctrines we find in every writer on the subject, *viz.* that women have seldom bubonocèle, but are more subject to femoral hernia. Soon after I had begun to practise, I was called to a consultation about a woman with a hernia, which had been strangulated for two days. As it was placed in the groin, I at first sight thought it a femoral hernia; but, upon examining it attentively, I found it was a bubonocèle that had gone towards the thigh, in place of towards the labium. The operation which was performed put the matter beyond a doubt, and showed that it came through the ring of the muscle. In a few months I was called to another patient in the same situation, and I found, to my surprise, the same appearances which in the first I took to be a *lusus naturee*; the hernia in the groin, at the top of the thigh, and yet evidently coming through the ring; having all the appearances at first sight of femoral hernia, but in reality a bubonocèle. The operation here, likewise, which I performed, made me certain of the fact. In a third, under strangulation, I found the same appearances, and operated.

"FINDING the hernia bubonocèle in these three cases, yet with all the appearance of that species where the gut is pushed out under PAUPART'S ligament, I began to suspect that the common account given by authors was erroneous, and that bubonocèle

bunocele had, from inaccurate observation, been often described for femoral hernia. From the time I began to have these suspicions, I have missed no opportunity of determining my point; and I have been lucky enough to have the dissection of two women, with the apparent femoral hernia, which turned out bubo-nocele. I have likewise had five or six living patients with hernia, where I had an opportunity of a careful examination, and have again operated in a similar case. As the result of these ten or twelve cases is against the common opinion, I shall state my observations at full length.

“ THE idea that a bubo-nocele in women was to take the same road with a similar hernia in men, has, I fancy, misled; for we find, that this is the account commonly given of the disease, that the gut passes down into the labium. Now, if we compare the two cases, we will find there is no similarity. In men, the gut and sack are surrounded by the cremaster, and are therefore conducted towards the testicle. The cellular membrane of the scrotum is free of fat, and therefore yields more easily to the pressure of the gut than that of the parts around; and thus the hernia passes more easily in this direction than in any other. In women, when the hernia has past the ring, it has no cremaster to conduct it to the labium, it may therefore push in any other direction; but as the cellular membrane of the labium, and from it to the ring, is very much loaded with fat in most women, it will find more obstruction in this direction, and will therefore be pushed where the parts yield more readily. The parts on the groin are less loaded with fat, the gut therefore will be pressed here. This I found corroborated by all the three cases, where I either operated or was assistant; and in the two dissections the hernia was pushed outwards from the ring, and in one it had gone up along the belly above the ring. This only takes place when the hernia is small. If the ring is much opened, and a great quantity of gut forced out, the motion of
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the thigh presses it inwards and downwards, and it then goes towards the labium. This I have instances of in some women I have lately examined with herniæ.

“ THE appearances of the bubonocèle, when small, will deceive a practitioner if he is not on his guard, and make him imagine it a femoral rupture. The marks by which the one may be distinguished from the other, though situated in the same place, are few and simple.

“ As the fascia of the thigh joins PAUPART’S ligament, the femoral hernia is always under this fascia ; it is therefore more compressed ; it is not loose, and we cannot so well grasp it with the hand ; and, instead of being rounded on the top, it is more or less flattened. The bubonocèle again is only under the skin and cellular membrane, is therefore looser, can be grasped, and is rounded on the top.

“ IN femoral hernia the swelling begins at the edge of PAUPART’S ligament, and goes down, and we feel the ring and the parts above the ligament uncovered by the hernia. In the bubonocèle of women it goes over PAUPART’S ligament, and sometimes up upon the muscles over the ring, and extends more to each side along the bending of the thigh than the other.

“ FROM these marks not having been attended to, I suspect much that the place where the hernia lay was alone taken into view, and cases similar to mine had been called femoral ruptures. Indeed I have every reason to suppose so, as some of the cases where I was most certain of their being bubonocèle, had been looked on as of the other kind.

“ I WOULD therefore recommend to practitioner’s attention to these marks, so as to determine how far the observations I have been led to make are just.

“ THE bubonocèle in this situation in women, from its often lying in parts over the ring, makes the reduction much more uncertain, as we cannot grasp the part of the hernia just coming

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through

through the ring, so as to force it back, which is essentially necessary to ready reduction, and which we can always do in men, from the looseness of the skin at the top of the scrotum.

“ UPON examining the state of the parietes of the belly in women, and comparing them with those of men, I see no reason for their being more subject to femoral hernia than bubonocoele, though in general I think them less liable to the disease altogether than men. The figure of the pelvis makes PAUPART'S ligament a little longer in them, but the space under it is in proportion as well filled up by muscles, vessels, and fat, &c. so that no more room is allowed for the viscera to be forced out in the one than in the other. The rings of the muscle in women, though less apt to yield, as being more contracted than in men, are in proportion the weaker part, and therefore the passage through which a viscus will be more readily pushed. In operating upon this species of bubonocoele, I varied a little from the common method. As the tumor extended along the bending of the thigh, my incision being made in this direction, was parallel in some measure to the ring. This made the introduction of the bistory, to cut the tendon, a little more difficult, but it gave me advantages to counterbalance this inconvenience. I had after the reduction a piece of integuments above the incision, which when pressed down covered the ring. This soon formed adhesion with the parts below, and effectually excluded the exposure of the cavity of the abdomen, which adds much to the danger of the operation. In the common operation, where the ring is laid in view, and is at the bottom of the wound, the integuments over it having been divided, I suspect the inflammation on the edges and bottom of the wound, which is kept open, extends through the ring to the peritonæum, altogether independent of the exposure, and produces very fatal effects. Now, in my method, this was prevented; the integuments being found immediately over the ring. In dressing the
wound

wound I used stitches to keep the lips together, which was likewise assisted by bending up the thigh. This I look on as of consequence in every operation for hernia, as the healing the parts by the first intention over the ring must be of essential service in preventing inflammation in the abdomen; and the only objection that has been made to it, the risk of the gut slipping out, may be easily prevented by a compress over the opening in the tendon for a few days: And after this, as adhesions will have taken place, unless great force is used, no protrusion can happen."

To these specimens others might be added, were not this memoir already too long, and were not these sufficient to justify what has been said of the unremitting attention and sound judgment of a gentleman, whose premature death was regarded by all his friends as a loss to science and to society. His constitution, somewhat enfeebled by early and intense application to study, was worn out with the toil of business and thought, in which he was continually engaged; and, after a tedious illness, he expired, March 13. 1790, in the thirty-second year of his age, leaving a widow and two sons.

HAVING lived according to the laws of religion and virtue, and being naturally of a placid, cheerful temper, he bore much suffering without complaint, looking forward to death, which for some time he knew to be unavoidable, with those sensibilities indeed which every good man feels on the prospect of leaving his dearest friends, and entering into an untried existence, but without unmanly dejection or timidity. Besides the approbation of his own mind, he was soothed with the affectionate attentions of all his family, and with the regrets of his brethren and the public, who from day to day testified the utmost solicitude concerning his health; uttering not the unmeaning language of ceremony, or the interested one of flattery, but that of sincere

sincere esteem and gratitude. Even when his funeral passed along, many among the crowd were observed to shed tears for one whose kindness had soothed their minds, and whose skill had relieved them in the hour of distress; nature prompting them to pay this grateful tribute to him who could no longer observe or reward them.

THE softness and tenderness with which he spoke to his patients; the attention with which he listened to all their complaints, however frivolous; the readiness with which he sympathized with their feelings; to a bystander in health might sometimes appear excessive, but, to the same person in disease, the whole appeared but a reasonable exertion of humanity. Delighted with the kindness of his manner, his patients vied with each other in their commendations, of which he proved himself worthy, by the utmost delicacy of conversation, and the strictest purity of conduct, no less than by exertions of superior skill, and by a punctual laborious attendance. His prudence, which was uncommon for his years, led him to avoid all ostentatious display of the extent to which he was employed; by which means, together with the most modest demeanour, he, in part, stifled that envy which is apt to rise in the old, when they see themselves overtaken or outstripped by the young.

As a lecturer, his manner was remarkably free from pomp and affectation. His language was simple and perspicuous, but so artless, that it appeared flat to those who place the beauty of language in the intricacy of arrangement, or the abundance of figures. His manner of speaking corresponded with his style, and was such as might appear uninteresting to those who think it impossible to be eloquent without violent gestures. and frequent variations of tone. He used nearly the tone of ordinary conversation, as his preceptor Dr HUNTER did before him, aiming at perspicuity only, and trusting for attention to the importance of the subjects he treated. These he selected with great judgment.

judgment. Holding in contempt all hypotheses unsupported by fact, and inapplicable to the improvement of practice; omitting or passing slightly over parts remarkable for curiosity more than utility; he demonstrated with great distinctness and precision those parts which it is necessary to know accurately; accompanying his demonstrations with specimens of morbid parts, and with every remark, physiological or practical, which he was able to collect from extensive reading, and careful reflection on his own practice. To excite emulation among his students, and to honour the memory of his friend, he gave a gold medal, bearing the figure of Dr WILLIAM HUNTER, as a prize to the best dissertation on a surgical subject. By these means, he had the satisfaction of contributing to increase the number of medical students in Glasgow; and while his students became from year to year more numerous, they began to discover also that ardour, which it is impossible either to excite or maintain where the students are few.

F I N I S.

