The life work of Professor James Spence : the Harveian oration for 1886, delivered at the Royal College of Surgeons, April 12, 1886.

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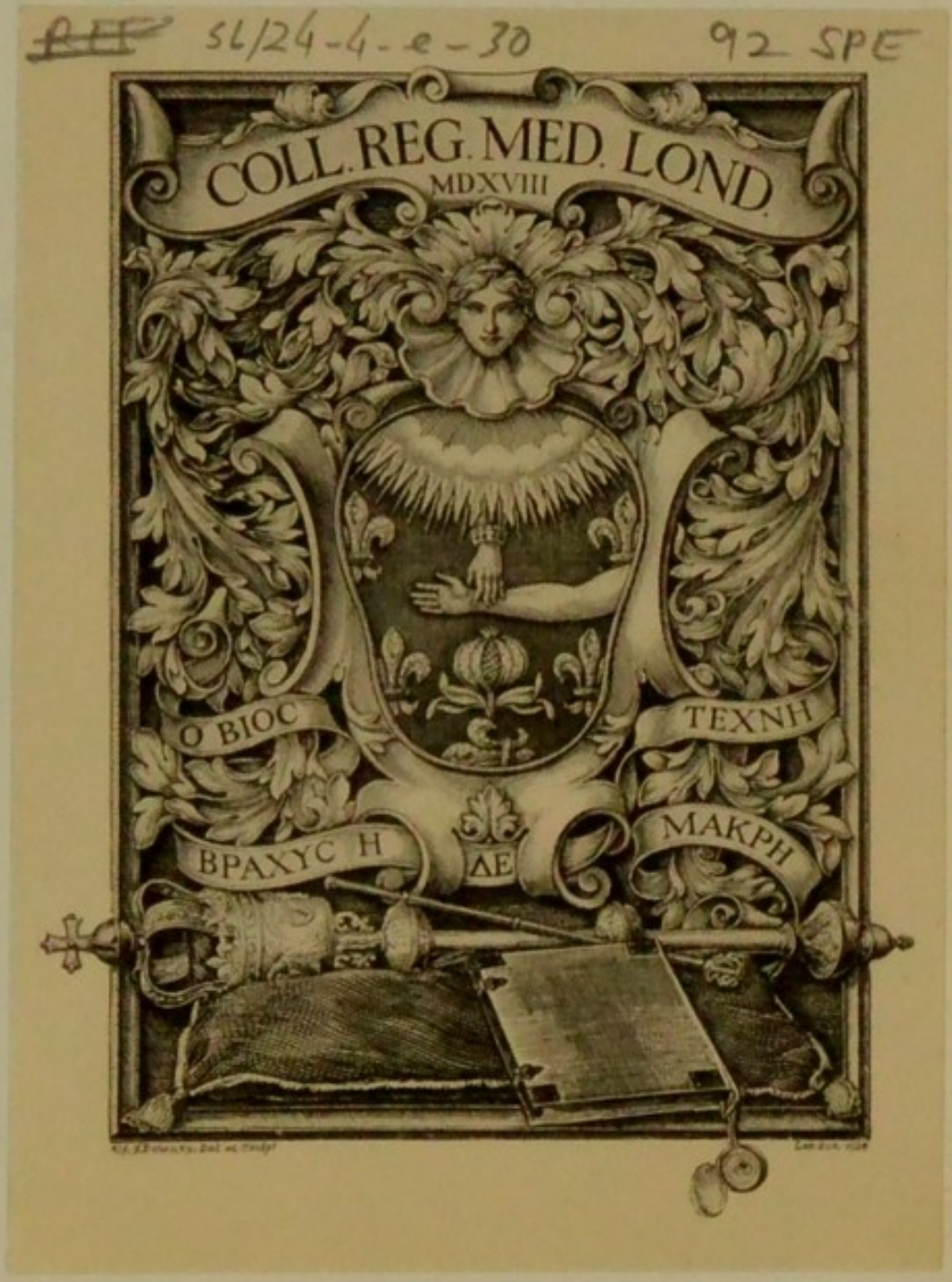

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James Spence F.R.S.Ed.

THE

LIFE WORK

OF

PROFESSOR JAMES SPENCE.

THE HARVEIAN ORATION FOR 1886,

DELIVERED AT THE ROYAL COLLEGE OF SURGEONS,
APRIL 12, 1886,

BY

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THE LIFE WORK OF PROFESSOR JAMES SPENCE— THE HARVEIAN ORATION.

GENTLEMEN—FELLOW HARVEIANS,—My first duty is to thank you very warmly for the distinction you have conferred upon me in electing me to the office I have to fill to-day. It is an honourable office by reason of the brilliancy and the great gifts of the men who have been my predecessors, and by the distinguished position of many in the audience to whom it is my privilege now to speak.

Our meeting commemorates—as our Society by its existence is meant to commemorate—the name of the immortal Harvey, a name which, although nearly three centuries have elapsed since he who bore it lived, and laboured and died, is still cherished by the profession to which he belonged as that of one of the most distinguished of her sons. And this is not to be wondered at when we call to remembrance (as it has been so often and so well told to you) the story of his life, of the times in which he was born, of the dark beliefs of those days, of the difficulties with which he had to contend, and of the great work it was given him to do,—a work which has since proved the grand foundation upon which much of our best knowledge has risen, and the record of which will ever be held in grateful reverence while medicine remains a science.

It is not my object, then (by such words as are mine), to endeavour to keep fresh the glory of a name which will never grow dim. Such effort were needless on my part—Harvey's example, Harvey's method, and Harvey's teaching will ever remain as models of what is best and highest in our art. Time has proved this, for time is surely the strongest test of reality.

As I have already said, his story has been often told, its reiteration has done much to render to us, the far-off generations, his personality and his influence strong and pronounced; but it has done more, for as "the history of the world is largely the biography of great men," so is the life of Harvey one of the chiefest chapters in the history of medicine,—a history with which each one of us should have more or less acquaintance.

Further, there can be no doubt that as the great men of a nation have always done much to create the nations they represent, so in like manner men such as Harvey may be said to be the creators and the best representatives of the profession to which we belong.

For reasons such as these we Harveians cherish lovingly the strong term "immortal" prefixed to his name by the College of Physicians in his own time. The days of hero-worship have, therefore, not yet ended, nor, indeed, as its high priest Thomas Carlyle predicts, "ever will, for loyalty and sovereignty are everlasting in the world." Believing, then, as I do strongly, that the story of the lives of great men and the work they did in them is ever a profitable subject for consideration, and that we cannot look, even if very imperfectly, upon earnest and faithful work without gaining something by it, I have chosen to speak to you this evening of the life work of one who once spoke from the chair which I now occupy, who to some few here was a life-long friend, who to many was a revered and valued teacher, and who was known to all by the honoured name he bore,—I refer to James Spence.

Difficult, I know, is the theme I have set before me, for I speak to those who, with greater and wider surgical knowledge than I have, are the more able to appreciate and appraise the lessons he has taught us; but I find courage in the feeling that I speak of him in the hall of the College of which he was so distinguished a Fellow, where the lengthening of memories in common will be welcome to many, and where, perchance, a short notice of what we surgeons owe to him may tend to perpetuate the remembrance of his worth with those younger members, who in the ranks are now keeping step behind me.

Of his life, apart from his professional labours or of his personality, I will say little. Time, the fell destroyer of the cherished possessions of memory, as of all else that surrounds us, can scarcely yet have dimmed with many of you the vivid impression which as a teacher, a surgeon, and a man he created; for to me, to whom it happened that from the time I crossed the Border until the day of his death, I saw little of him, it remains that through the dimness of the ten years and more that have passed since then, and all that has happened in them, I can still recall at will his image, his kindly bearing, and the ways that were his. The tallish, slightly stooping figure, the slow semi-swinging walk, the rather pronounced features, with their thoughtfully anxious, half-sad expression, and the scrupulous neatness of his dress, how well they are all remembered, and how inseparable any one of them is from memory's picture of the man!

It has sometimes occurred to me that the sad expression of his face, so untrue an index with him of his real nature, which had much genial humour in it, may have been a result of the uphill work of his earlier years, of the anxiety he ever had in the duties of his life, and the fact that after all, and despite the talents he possessed, the vigour of his days was somewhat spent ere he attained the position he had for so long a time previously so undeniably deserved. But it is as a surgeon, and with reference to

the benefits he conferred upon his art, that he is of chiefest interest to us now.

The two primary factors in all individual development may be truly reckoned as heredity and environment,—the one, powerful certainly in its influence, exerts its power apart from a man's volition, for he has no choice in the parentage that may be his; but the other, and it seems to me in a large majority of instances the stronger in its issue, moulds and develops as much through capacity and adaptability as by conscious will and effort. So far as I know, heredity played no marked part in the surgical development of James Spence, but that environment must have done so seems indisputable; for at the time he began his studies Robert Liston and Robert Knox were great teachers, James Syme in Minto House was rising into fame, while among his compeers were such men as John Goodsir, John Reid, James Duncan, and Richard Mackenzie.

Mr. Spence began his professional life in Edinburgh—for at this point I elect to take up the record of his achievement—as an assistant-demonstrator in the University under Prof. Munro, and in this position he remained for seven years. Then it was that by assiduous and careful work he laid the foundation of that perfect knowledge of surgical anatomy which in the after years of his life so pre-eminently distinguished him. Although he has left valuable evidence that regional anatomy was not his only care, and has proved how capable he was of dealing with the subject in other aspects, there can, I think, be little doubt that surgery was his first mistress, and that his devotion to the sister science was in large measure due to the inseparable relation, which in a practical aspect especially, there exists between them. That the well-trained head and hand of the demonstrator are the most valuable early possessions of the surgeon is indisputable.

In 1841, so far as I can discover, he gave forth the first fruits of his thoughts and of his labours. This is in the shape of a most interesting and important contribution to the *Edinburgh Monthly Journal of Medical Science*, and entitled "Remarks on the Sources of Hæmorrhage after Lithotomy."*

The reasons which led him to this investigation are in a measure characteristic in many ways of the man. Lithotomy must even then have excited his keenest interest; for it is evident that he had so thoroughly mastered the literature of the subject, and especially that part of it relating to the occurrence of hæmorrhage during its performance, that he made bold to challenge the published statements of Liston, and to refute them not only by direct anatomical proof, but by the citation of a large number of cases which had occurred in the practice of some of the greatest surgeons of that

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* March, 1841, p. 157.

time. And the thorough way in which he did his part of the work is demonstrated by the fact, that in the course of his research he made no fewer than seventy-three examinations, and that by it he proved that the danger of wound of the internal pudic lay in the use of such instruments as the cutting gorget, the beaked knife, and the lithotome caché ; and that in six cases the accessory pudic lay in such relationship with the prostate that by very free incisions of the pelvic fascia, and neck of the bladder, it might have been wounded. That the inferior hæmorrhoidal and the superficial perineal artery might in certain circumstances also prove the source of considerable hæmorrhage he shows ; but his chiefest contention, and that to which, owing to the remarks of Liston, his attention was chiefly directed, was as regarded the risk of wound of the artery of the bulb. It was held by that great master in surgery that wound of this vessel arose from want of care, and that if the incision was placed low and the knife used cautiously in the deep incision, the vessel would be safe whether it followed its usual course or not. Mr. Spence found, however, that in six cases operated upon by three different methods, that in one but a few lines separated the vessel from the deep incision, that in other instances it lay little more than an inch in front of the anus, therefore in a position of the highest danger ; while in several cases, from irregularity in its distribution, it was impossible to avoid cutting it. Again, and this was, may be, the most important observation in the paper, he pointed out the special danger which may arise in some cases in which the prostatic artery gains the perineal surface of the gland as an unbranched trunk ; for in eight cases in which this occurred, its calibre was as large as that of the artery of the bulb. Nor did the anatomical arrangement and the large size of the prostatic veins in the aged escape his practical observation ; for he shows how ever and again they may, when of necessity divided, prove a source of dangerous hæmorrhage. That in after years he learned to dread them in another relationship we will hereafter discover. The outcome of this paper was conclusive ; for it proved that in eleven cases out of seventy-three dissections, there occurred such arterial irregularities as must of necessity have given rise to hæmorrhage however carefully lateral lithotomy had been performed.

In the following year, and in the pages of the *Edinburgh Medical and Surgical Journal*,* he gave good evidence that it was not in its surgical bearing alone that he had interest in anatomy ; for despite the memorable researches of John Reid, or it may have been in consequence of them, Mr. Spence made "Inquiry into the Anatomy of the Eighth Pair of Nerves." In this he proves that the vagus has a non-ganglionic part from its root passing over the superior ganglion, that the filaments he describes unite below the ganglion

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* April, 1842.

with the internal branch of the spinal accessory, and that the pharyngeal branch of the vagus is the result of this union. This was an important anatomical discovery; it was the means of throwing light on some discrepancy in physiological observation, and it was one of which too little note has been taken.

In the same year in which he published this important anatomical contribution he left the University and became a teacher of anatomy in Surgeon Square. There he laboured successfully and arduously for four years; and of the way in which he did his work I am enabled, through the kindly pen of a contemporary, to tell you:—*

"His part in the School lay in the dissecting room, and in giving a considerable share of the supplementary lecture-room course, then known in Edinburgh as the Demonstrations. When his turn came to appear in the lecture-room he was always more than well received; his dissection was invariably nicely made; he spoke easily, and with the earnestness of a man who was master of his subject and believed in it; stuck to his text, and maintained the proprieties of the lecture-room. There was no pomposity, though that we could forgive for the good teaching that went with it. . . . Spence was always listened to with respect, and was a most successful lecture-room teacher.

"While at home in all parts of anatomy, it was his exposition of the surgical regions, such as the parts concerned in hernia and lithotomy, the neck, and the parts involved in operations on the great arteries, the tendons concerned in club-foot and the like, which most impressed the class, and left an enduring recollection of the teaching and of the man. To hear Spence on Scarpa's or Collis's fasciæ, or on the pelvic fascia, on lithotomy, or on tying the subclavian or carotid were things to which the students ran with eagerness. It was the highest anatomy going in Edinburgh at that time (as, indeed, the surgical aspect must always be as the *sine qua non* in a medical school), and Spence certainly inspired the students with interest in it."

This is a happy picture, sketched by a loving hand, of the admirable work he did in these early days of his career as a teacher; and it is interesting to note how, based on the intimate anatomical knowledge he had then acquired, his future fame largely rested; for, as I shall endeavour to demonstrate to you, the direction in which his originality shines forth most conspicuously is in the surgery of the head and neck, of the parts connected with Scarpa's and the pelvic fasciæ, and of the arteries.

Forty years have passed away since James Spence ceased to demonstrate anatomy, and he and, I doubt not, the greater part of those who looked upon his work have left us; but there still remains to us and to the generations following lasting evidence of how his

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* *Edinburgh Medical Journal*, July, 1882, p. 92.

fingers were fashioned, how delicate was their touch, and how capable they were in executing the work to which they were trained. Although it is more than a quarter of a century ago, and when I was a High School boy, I yet remember a Saturday spent in the Museums of our College; and although, and of necessity, then quite unable to estimate in any wise the value or the importance of the things I saw, some lasting impressions remain with me, and three of them connected with the handiwork of him of whom I am now speaking. A hand and a foot in clearest outline, and yet all that remained to represent their soft parts was a network of red tubes, marvellous many of them in their delicacy and their intercommunication. The arteries in the neck of the dog shown in the same beautiful way also impressed me, and I have a belief that from that day I date my happy knowledge of the name of Mr. Spence. It was but natural that the man, the nicety of whose handiwork was thus manifested, should become a great operating surgeon. Even his step to a lectureship in surgery was not a direct one, for he had an intermediate stage in which he taught special parts of surgery. But his time had now nearly come, and in 1849, having obtained his Fellowship, he began in a locality well known to many of us, the High School Yards, to give a systematic course. That he had then acquired a very considerable experience of surgical practice upon which to found his teaching we know; for in the pages of the *Monthly Medical Journal* there appear, from 1842 onwards, many valuable papers from his pen. Here, again, we find the forecast to which I have already made reference; for the subjects upon which he chiefly wrote—and doubtless because they were of highest interest to him—are on "The Ligature of Arteries,"* "On the Irregularities in Arteries,"† "On Hernia," and on the anatomical condition of stumps long after amputation.‡ In the discussions at the Societies he was now also taking a part, and among some other very decided positions he assumed is one of opposition to ovariotomy.§

His foot was now fairly on the ladder to fame, and with his appointment to the Infirmary in 1851, he may be said to have become fully recognised as the coming surgeon of Edinburgh.

His life work from this point is in the knowledge of many who are here assembled; and as from its greatness in extent and in value it is impossible to deal with it in its entirety, I will only venture to discuss a few subjects in which his teaching is of highest importance, in order to manifest to you his primary character as a surgeon, and the debt that we, the members of the surgical profession, owe to him.

Of the many ways in which he attained pre-eminence in his art,

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* *Monthly Medical Journal*, June, 1843, p. 501. † *Ibid.*, August, 1845 p. 577.
‡ *Ibid.*, July, 1849, p. 931. § *Ibid.*, January, 1846, p. 65.

one of the chiefest was his marked success in operative surgery. That this was largely due to the serious business that he made of all his work, and to his unceasing and conscientious attention to detail, admits of little doubt.

None of us who had the privilege of working with him but will ever remember the care with which his patients were examined, and the treatment to which they were subjected prior to operation; how especial attention was devoted to ascertaining the condition of the kidneys; and how, without, as I believe, any intimate knowledge of auscultation, he would occasionally examine pulmonary organs, regarding the state of which he had any material doubt. Family history, previous history, and predisposition were all inquired into, and it was notable how closely he could on such information found a correct prognosis.

But the care thus lavishly bestowed was not limited to the sufferer, his surroundings were also matters engaging his earnest attention. A long time before the influence of germs and an aseptic atmosphere was discussed, before, I believe, the great discussion upon Hospitalism, Spence had found how much his success depended on the hygienic state of his hospital wards, and having noted that many of the causes of atmospheric vitiation were cumulative in character, he was in the constant habit of clearing out a ward at short intervals, having its walls and furniture thoroughly washed and fumigated either with chlorine gas or sulphurous acid fumes, and afterwards all the windows kept open for thorough ventilation. Pure mortality had probably comparatively little to do with the development of his practice in this especial direction, for I take it that the state of the wounds under his care often excited suspicion and anxiety apart altogether from the graver issue of life or of death.

Prof. Humphry has well said "that the treatment of wounds is undoubtedly not merely the first stone, but also the corner stone of surgery," and therefore to Mr. Spence they were a subject of the highest interest and importance, and although in the later days of his life the discussion of the value of antiseptics and antisepticism entered of necessity into his teaching, I am not sure they were ever regarded by him as indispensable in the practice of good surgery. The reasons for this were not difficult to seek, for at a time when other surgeons following the same method he had practised so long—the method, in fact, of such masters as Liston and Syme—were but moderately successful, thanks to the personal care he bestowed upon his patients, their wounds were well managed, they were kept at rest, and they were kept clean, so that speedy union and a satisfactory recovery were the outcome.

The lessons experience had taught him—for a man exercising such care as he did is singularly ready to learn such lessons—had made him in these earlier times use such precautions as we, the

surgeons of to-day, would reckon it most culpable to neglect. His sponges were always clean, his instruments were always bright, he was as particular as regarded the appearance of his hands as he was in the matter of his dress, and he thus avoided, what doubtless at times happened to those who as capable were less careful, the direct contamination of a wound at the time of its infliction. The thorough arrest of hæmorrhage, the painting of the wounded surface with iodine or a chloride of zinc solution, the dependent angle left without a stitch, it might be with a bit of guttapercha tissue inserted in it, secured sufficient drainage, and the light dressing easily and painlessly removed enabled his ever watchful eye to note such changes in the part as told the tale of its well, or it might be its ill-being. Through means such as these, traumatisms did well in his hands; and thus it was that when the ardent followers of antisepticism, vaunting may be too loudly its powers, proclaimed for it such results as had not often previously been recorded, he, conscious of the success that had been his, and confident in the means that had led to it, declared his opposition to it, and in unmistakable language advanced the reasons why he doubted the correctness of the theory upon which it was based, and the necessity for its adoption.

However much we practising surgery, but lacking greatly in comparison with him in surgical gifts and in richness of experience, owe to the genius and the teaching of Sir Joseph Lister, there can be no doubt that Mr. Spence had, in the results he could record, good ground for maintaining the opinion he held as to the unnecessary use of antiseptic dressings. Some years ago, when the increased expenditure of the Royal Infirmary, owing to the cost of the practice of antiseptic surgery, became matter for consideration by its board of management, and when they for their guidance procured from the Hospital books a record of the success of each individual surgeon, it was found that the results obtained by Mr. Spence with his simple and inexpensive dressings fell little short of those attained by the then Professor of Clinical Surgery.

Although he was strongly conservative in his principles and in his treatment, he was never blindly so, for it happened that in the end, either recognising some virtue in this new doctrine, or influenced by the feeling that it was his duty as a surgical teacher to practise it, he did adopt it, and in the last few years of his work he employed it in such form as seemed to himself safest and best. His results as he records them are not, however, by its adoption strikingly improved upon, for I find that among the cases of amputation thus treated there is almost as high a mortality as in those managed in the old ways. He states that he has had "excellent results in excision of tumours and similar operations, although not more successful as regards life than by other methods." In this connexion, however, the feeling must have come to him that these are

the very cases, that without antiseptics, but with careful management in the complete arrest of hæmorrhage, and by the use of well-applied dressings, heal, as a rule, in the most satisfactory way. In excision of joints he found the apparently rapid healing of the wound was not always a gain—for it was not a guarantee of healing through its whole depth—and for cogent reasons, as he puts them, he was dissatisfied with the special dressings necessitated in cases of amputation. Therefore it was that with that honesty of purpose which always possessed him he developed a plan of his own—a plan, I may say, especially as regards the management of stumps—closely akin to that followed by his friend, the late Mr. George Callander.

Viewing his results in this light, it is but natural that he who still practises, with the primary rigidity of its rules, the application of antisepticism in surgery, should cavil at the method employed; but I take it that it is but another proof of the keen insight of Mr. Spence when we find that much of that which was reckoned of highest importance by others—the spray, to wit—has been abandoned, and that with many of the best and most successful surgeons of our time there is a gradual approach to the simplicity of the old gospel, of which he was ever a disciple—the gospel of cleanliness.

The principle upon which the practice of antiseptic surgery is founded is an invaluable gift to our art, but it is most valuable to him, who lacking the ability and the experience of a great master, lacks with them the capacity which they bring, and which, regarded as a personal possession, is the surest bulwark against the preventible calamities of surgery. That Spence was one of the few men who might dare to act without its help in its fullest development, his long record of success amply demonstrates.

In the large bulk of traumatisms there is breach of surface, and inasmuch as in a certain proportion of such cases, treat them as we may, reparative action does not follow, I may well here, in connexion with the subject of wounds, make mention of traumatic gangrene. On the treatment of this condition there is not perfect unanimity among surgeons, for some contend that the old rule, founded on the teaching of Larrey, as to immediate amputation without waiting for a line of demarcation should not hold good, but that rather should it be, that we ought, except in a limited number of cases, not to operate at all.

Mr. Spence's doctrine is clear on this point, and I cannot but feel that were the rules he has tabulated concerning it more widely known, and more frequently acted upon, there would be less hesitancy in giving, and giving early, to many a patient the best chance that is his.

In common with every hospital surgeon he had large experience in the treatment of fractures, and the methods by which he managed them are, as a rule, as simple as they are successful. To only

one of them would I make reference, and that one the arrangement by which he contrived to use without disadvantage the hooks of Malgaigne in fracture of the patella. If his method was more frequently employed, we would have fewer cases in which treatment by wiring may prove of service. To avoid such necessity is of much moment, for despite what has been written in favour of this operation, it is one which, in the hands of the majority of surgeons, is undeniably fraught with danger. His recommendation of primary amputation in cases of compound dislocation of the ankle occurring in those who have much passed the meridian of their life is also noteworthy, for it is the advice of one who, ever striving to do the best for his patient, found, as the result of a well-considered experience, that in some circumstances you aid him most surely by following a line of practice to which all surgeons do not subscribe.

When noticing the work done by him in his earlier days, I made reference to his dissection of arteries, and the evident interest this special topic had for him; and here, before considering the opinions he held on the important subject of aneurism, I desire to draw attention to certain original observations of his, which, I believe. have had not only an important connexion with the results of his operations upon bloodvessels, but which will ever remain with his pupils as a notable part of the inheritance he has left them. Especially does it become us, as Harveians, to have interest in this matter, for the observations and experiments of him whose name we perpetuate, formed, I believe, the basis upon which the genius of John Hunter was able to found what has proved to be, mayhap, the very greatest advance ever made in the science of surgery.

It was in 1785 that Hunter first tied the femoral artery for popliteal aneurism—a procedure which of necessity attracted greatly the attention of surgeons to the effect of the ligature when applied to arteries. The experiments of Dr. Jones early in the present century did much to unfold and to explain the vital changes by which obliteration of the vessel was brought about, but it was not, I believe, until the investigations of Mr. Spence were published that the fact was realized that the effusion of lymph external to the coats of the constricted vessels played an important part in the process of effacement and the safe separation of the ligature. True, Pouteau had noticed the closure of the vessel by means of the condensation which took place around its extremity, but he misread its meaning, and formulated upon this misreading a dangerous practical deduction. To Spence is the credit due of demonstrating how essential to success this part of the process is, how it is brought about, the steps by which it progresses, and the advantageous results which follow it. The experiments by which he proved this are full of interest, and are apt examples of how thorough and conscientious a worker he was.

Other light, too, he has given us, for he proves that the presence of the mere blood-clot, far from holding the position which Petit ascribed to it, is not an essential to successful obliteration; and in support of this statement he draws attention to these points, that in some of his experiments in which no secondary hæmorrhage occurred, there were no blood-clots in the vessel, and that the importance of its existence has been over-estimated owing to the term "coagulum" being frequently applied to the true plastic effusion which is always present, and which is essential to success. Fully aware of all that had been done in this association, it had not escaped his notice that Dr. Parry, when treating of the process of anastomosis after ligature, had advanced the belief that certain new vessels are formed in order that this might be adequately brought about. Doubt, however, on this point was his, and by very careful injection and dissection he was able to disprove the assertion, and to show that what had been taken for new vessels "were but portions of the enlarged inoseulations of previously existing vessels of the sheath with the vasa vasorum."

The bent and the gifts of the labourer were, however, so eminently practical, he was so truly one of those whose farsightedness enables them to grasp at principles through close attention to details, that the result of his anatomical and physiological observations had always an intimate and valuable connection with surgery. And so it was now, for having ascertained as much by experiment as experience, how wellnigh impossible it was for nature unaided to seal the wound in a large artery, he taught in the strongest way the practice of securing the wounded vessel at once, and thus avoiding the risks of what some surgeons consider should happen ere operation be undertaken, the occurrence of consecutive hæmorrhage. This is in many cases a by no means difficult proceeding, and as a rule, is attended by the happiest results.

The circumstances are, however, different when we come to deal with the ligature of a vessel in its continuity. Then so largely does success depend upon the skill of the surgeon, that Spence never wearied in reiterating the lines upon which the operation should be performed, and the development of which he admitted were largely the outcome of experience gained in his experiments upon the arteries.

Always desirous of the formation of that plastic effusion of which he had so thoroughly proved the value, and knowing that it had origin, not only in the vessels of the sheath, but also in the vessels of the surrounding tissues, he impressed upon all the care to be exercised in the limited separation of the sheath, and in the avoidance of unnecessary disturbance of the parts in close relation, lest the occurrence of suppuration should either prevent the formation of or destroy the already formed lymph. This was but half the lesson, for as he had proved it to be essential to the safe

closing of a vessel that the textures in its neighbourhood and the tissues of the artery itself should have considerable vitality, he was of opinion that in certain cases in which from sloughing a large vessel had been opened into, that it was not sufficient merely to tie the artery at the point at which it had given way, but that for safety another ligature should be placed on its continuity nearer the heart.

Here he comes into opposition with the well-known dictum of Guthrie, and it is of interest to note that the case he narrates to support the value of his teaching is in its history very similar to that of Mackenzie, who, observing the practice now advocated by Spence, incurred, in this celebrated work upon *Injuries of the Arteries,* the severe criticism of the distinguished Peninsular surgeon. In either case, whether we deal with the artery in healthy surroundings, or when alterations in its vitality add to the anxiety and the difficulty attendant upon our proceedings, it is essential for the proper formation of the lymph, upon which so much depends, that the blood which supplies it, and through whose influence its vitalization and ultimate development is to be effected, should be of good quality, and therefore it is that we are told by Mr. Spence how much success may hang upon the careful after-management of the patient.

Apart from the changes in those portions of the artery to which the ligature is actually applied there is the important consideration of the alteration which it produces on the lumen of the vessel in its immediate neighbourhood. Dr. Jones had stated in his summary of the effects of tying an artery, that one is "to produce indirectly a complete obliteration, not only of the canal of the artery, but even of the artery itself, to the collateral branches on both sides of the parts which have been tied." This statement some preparations made by Mr. Spence entirely disproves, and conversely, that the actual extent of obliteration seldom exceeds an inch and a half to two inches, showing, therefore, that this is all the space which nature absolutely requires for the safe closure of an artery after ligature.

The interpretation of the value of this observation is not difficult, for it teaches that if in any given vessel you can have such a distance as is here specified free from collateral vessels, then there is every probability that you will succeed in obliterating it by ligature. The knowledge thus acquired also enabled the demonstrator, by an interesting line of argument, to arrive at the conclusion that in vessels near the centre of the circulation, provided the space between the collateral branches was sufficient for the purpose of effacement, their very presence might, by dividing the blood-current and thus lessening the force of the cardiac impulse, prove an aid in the process.

The accuracy with which his observations were made enabled him to draw from them many and valuable practical deductions,

and thus it is that he has still something to teach us beyond the local effects of the ligature on the bloodvessel involved.

It had long been matter of observation that pain in the limbs was apt to follow deligation of their main vessels, and the alteration produced in the vascularity of the nerves passing to them, and brought about by the first step in the process of anastomosis, was reckoned the proximate cause of this. That this is so there can, I take it, be little doubt; but in other situations, and especially when certain pulmonary symptoms followed interference with the circulation in the carotid, it was thought that another explanation was necessary. This was found in the supposition that the aneurism for which the operation had been undertaken increased rapidly in size, and by direct pressure interfered with the functions of neighbouring organs; in the fact that for the time being the cerebral circulation was disordered, and the action of the pneumo-gastric probably disturbed; and lastly, in the idea that owing to the lost balance in the circulation, consequent on the obstruction of so large a vessel, the lungs became congested.

This last proposition is ably supported in a valuable paper by the late Prof. Miller; and while admitting that there is weight in his argument, Mr. Spence contends that the increased vascularity in the sheath of the vagus and its surroundings, and the lymph effusion which takes place at the seat of the ligature, are in themselves quite adequate to explain all the phenomena observed, and the accompanying lesions described. Remembering his work in earlier days, and his investigations on the eighth pair of nerves, he is able to state that all the symptoms and pulmonary changes which have been found in this connexion can be produced with equal certainty by irritation or injury of that important nervous trunk. That this may well be so the operation of nerve stretching pretty conclusively proves, for to many of us it must have happened to note symptoms of severe irritation and suffering associated with increase in the vascularity of a nerve sheath.

While Mr. Spence was by experiment and research learning these lessons to which I have made reference, he had opportunity afforded him of testing in actual practice his anatomical knowledge and surgical skill. In that volume of the *Monthly Medical Journal* which contains his first paper upon ligature of the arteries, there is a case recorded by him of "Ligature of the Carotid for Hæmorrhage from Ulceration of the Face." This patient, despite the occurrence of hæmorrhage at the site of ligature, recovered, and his recovery was doubtless matter of encouragement to the young surgeon. And as the event proved he was the first of many, for Mr. Spence was very successful in the ligature of arteries. This very success it was which rendered him so strong an advocate for ligature of the femoral in popliteal aneurism, and so little in favour of methods of compression. Yet strangely enough one of his cases thus treated had this

extraordinary history, that the aneurism apparently cured by ligature in Scarpa's triangle reappeared, and was ultimately successfully dealt with, by flexion of the leg.

To only two out of the many clinical histories he relates in connexion with this subject, would I briefly direct your attention; for to both there appertains interest and instruction. Aneurisms of the subclavian and their treatment have always been matters of grave import to the surgeon. Ligature of the artery itself, ligature of the innominate, or ligature by Brasdor's method, have so often been followed by disaster, that in trying to find a safer method, it occurred to Sir William Fergusson that in cases of disease of the vessel in its middle or outer third of its course it might be well to combine amputation at the shoulder with the application of the distal ligature. To Mr. Spence was it given to test the efficacy of the plan, and his is, so far as I know, the only case on record in which it has been practised. Although the result was not altogether successful, for the aneurism was not quite cured, there are some points in the case which may so materially have influenced the prevention of a successful issue that we may take courage from the story, and following the direction of Spence "to tie the axillary as high as possible before removing the arm," we may succeed in curing what is always a formidable condition.

Again, guided by the doctrine of Fergusson and of Roux, he dealt, and dealt successfully, with a varicose aneurism of the thigh. In this case, without disturbing the sac itself, and in this way avoiding interference with the vein, he tied the vessel above and below the point at which it had been wounded. Valuable as the record was at the date at which it was written, it is may be in these times of less value, and yet I believe that the surgeon who has not implicit confidence in his management of antiseptics will after all find it a safer method than opening the sac and trying to close the aperture in the femoral vein. Acknowledging fully the value in certain cases of the old operation for aneurism, he believed such cases to be few in number, and he therefore held in high estimation and practised confidently the method of John Hunter.

Tumour growth was a subject that engaged much of his attention. Beginning his career at a time when microscopic knowledge was confined to the few, and when in the vital characteristics and in the life-history of a tumour were found the tendencies it possessed, he always relied upon them, and although deeply interested in the pathology and minute structure of new formations, the old ways by which he judged them were with him the foremost in importance as they were ever the readiest. That they served him well, and that he had good reason to trust them, his successful practice in this department of surgery amply proves.

I well remember how, when the first edition of his lectures was published, certain critics were hard upon what seemed to them

as defective pathological classification and imperfect microscopic description of tumour formation. But his classification was based upon what I venture to think is the best foundation, that of clinical experience and observation; and in this connexion let me quote the words of another great surgeon, Mr. Jonathan Hutchinson, who, teaching in later times and with the widest knowledge of pathology in its histological aspects, thus writes,* "Such groupings must be accomplished chiefly by observation of external features of similarity and of resemblance in general tendency. It is these conditions, rather than minute histological differences, which will be of chief assistance to the surgeon. . . . . The surgeon cannot much longer content himself with the groupings which the microscopic pathologist offers." And again, "The revelations of the microscope in reference to new growths are inadequate to the needs of the practitioner who has to deal with them, and that the latter will in most instances help himself better by setting to work at accurate and detailed clinical observation." Spence's method was the method here so well advocated, and it was that which enabled him to disregard the previous doctrines of his school, and to advise, as he practised successfully, the removal of tumours growing under the sterno-mastoid, when from their history he believed them to be innocent in character. That this was a very distinct advance in the surgical treatment of tumours, and a fortunate demonstration of a great principle which to-day is confidently acted upon, must be freely admitted.

The operation of amputation engages alike the attention of the general practitioner and the hospital surgeon. There is no surgical procedure which either will sooner or later be more certainly called upon to perform, and none in which, dependent on the way it is carried out, will the future comfort of the patient more surely depend. Very early in his surgical career Mr. Spence devoted attention to amputation; for taught by Liston and Syme, strong advocates of the flap method, that it possessed every advantage, and should be generally practised, he learned in London and Paris that the surgical world did not all believe this dictum, and that the plan by circular incision had still many warm adherents.

The statement by the supporters of this latter method that the advantages supposed to accrue from the preservation of muscular substance in the flap were illusionary, because it quickly and entirely disappeared, drew Mr. Spence's attention to this point; and with a view to its elucidation he made a number of dissections of old stumps, which have now a place in the Anatomical Museum of the University. By means of these he was enabled to prove that there was error in this belief, because the muscular fibres in the great majority of cases did not entirely disappear; and that even

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* *International Journal of the Medical Sciences*, No. clxxx. New Series.

where they had apparently done so, there yet remained evidence of their previous existence in an advantageous thickening of the subcutaneous substance of the stump. Having satisfied himself in this matter, he threw in his lot with the masters of his school, and turned his attention to improving, by methods of his own, some defects at that time inherent in the operation by transfixion. He thus determined the advantages of a long anterior flap, the merits of which were then not recognised; and although many years came and went before, in 1858, his well-known modification of Teale's method was originated by him, there can be little doubt that throughout them all the subject was engaging his attention. That this plan of his is one of the highest value time has shown, for by means of it he did away with what were the difficulties of the Leeds method, and he yet retained all the undoubted advantages it possessed. The shorter length of the anterior flap is an immense gain, for it enables the amputation to be performed at a lower part in the thigh when the knee-joint is diseased, or a lower bone section made if the amputation be undertaken on a higher level. Now that the method of disarticulation at the hip-joint practised by Furneaux-Jordan has attained such success, and must in great measure, if not entirely, do away with amputation through the trochanters,—for, other things being equal, it is better to avoid the presence of a divided bone,—there is no point at which the thigh may not be advantageously removed by the long anterior flap of Mr. Spence. In association with this portion of his work, there is one other plan of his to which I will make reference, and that is his mode of amputation at the shoulder. For ease in performance, for bloodlessness, for safety, for wide applicability, and for the excellent results it gives, I know no other method to equal it. It has this great advantage, that even without skilled assistance the operator has, prior to its division, the axillary artery in perfect command.*

These fresh modes of operation were largely the result of a well-nigh unique experience in this department of surgery, and they form a small part of the legacy he has left us regarding it. Statistics of amputations have often been quoted as a test of the efficiency of surgical hospital practice on the one hand, and of the dangers of the operation on the other; and the deductions drawn from them have not always proved accurate or reliable. "There can be little question that to employ statistics usefully you must make a thorough analysis of totals and of the figures on both sides of a case, as well as a searching examination of collateral circumstances

* When discussing some time ago with a distinguished London surgeon the modes of amputation at the shoulder, I was struck by his remark that the Furneaux-Jordan plan of disarticulation at the hip was in all essentials similar to the method followed by Mr. Spence in the removal of the upper extremity, and that the former plan of operation may well have been a direct outcome of the latter.

and conditions. You must have an exact acquaintance with all the facts of a case before you can safely generalize from it." He therefore insists upon the fact that in the formation of statistical statements not only should the special method of treatment have consideration, but that the whole circumstances of the case should be carefully recorded and fully considered. That he is right in this any one glancing over the very complete record he has left us of over 600 amputations performed by him personally can have little doubt, for one cannot miss observing what, indeed, most hospital surgeons realize but too frequently, the grave risks which pertain to prolonged shock, to hæmorrhage, and to the harm attendant upon a long journey following the receipt of a grave injury.

If there is one lesson more than another which this portion of his work emphasizes, it is that in the case of such injuries as demand immediate amputation there should be no delay, no removal to a distant hospital,—the surgeon first called should at once perform the operation. That any special mode of treatment or any operative skill can influence the result in many cases of this kind is impossible, for the patient is moribund ere the hospital surgeon sees him. That the practice of antiseptics has done away with some of the risks he points out is certain, for it is indisputable that the former scourge of surgical practice, pyæmia, has now largely disappeared, and that the disarticulations which, following his teaching, some of us practised in order to avoid the section of a bone which had been badly fractured, are now seldom necessary. But much still remains. All will admit the additional risks which multiple injuries—even of a slight character—bring to a patient, and that the issues in cases in which amputations are performed for disease depend largely on the condition for which the mutilation is practised. Mr. Spence had a confident impression that amputation of the thigh was a safer operation when performed for articular caries than for synovial disease, but he failed to prove it as a fact; at the same time the results of excision of the knee and of amputation generally in those whose synovial tissues undergo this degeneration lend strong support to his belief.

That the subjects of necrosis are unfavourable for operation he also points out, but in those in whom the existence of malignant disease demand amputation he finds the highest mortality. At the same time he directs how such risk may be lessened, for his results taught him that fatal as the operation was when performed through the continuity of the bone affected, it not only diminished the chances of recurrence, but added to those of recovery if the removal was practised beyond the proximal joint. Certain moral factors, impossible to calculate upon previous to operation, either as regards their appearance or their influence, he also draws attention to, and that they play an important part for good or for ill each one of us must at times recognise. Full of value and full

of interest are his deductions, for although one holds confidently the belief that some of the risks which patients ran in his time are now diminishing, as witness the success of transfusion in the hands of Dr. John Duncan, his teaching, here as elsewhere, is the result of a ripe and well-matured experience, and it is that which no surgeon can consider without finding light and leading in the perusal.

No student of surgery can examine closely the literature of the past without having his attention strongly directed to the subject of injuries of the head, and the interest thus excited is, if opportunity offer, certain to be maintained, for there are few departments of our craft in which there are greater differences of opinion as to operative treatment, and where the clinical problems at times presented are more difficult to solve. Spence thoroughly understood and had well considered all this, for if rich in the possession of memories of the past, we recall the old days spent in his wards, I feel sure that his teaching was never more to the point or more memorable than in connection with an injury of the head.

"Never look on any injury of the head as too slight for anxiety and watchfulness." Words such as these, spoken it might be, at the bedside of a patient with whom there seemed little amiss, caught the attention of the youngest student present; and when substantiating them he spoke of concussion, its symptoms and its treatment, of the risks which might follow it, and especially of the risk of passive hæmorrhage, a point upon which his teaching is of unique value, of the late period at which inflammatory symptoms generally make their appearance, and of the manner in which these dangerous sequelæ were most readily recognised and best treated, he taught a lesson invaluable to remember and fortunately difficult to forget.

Certainly a student of the works of the great surgeon of St. Bartholomew's, Mr. Pott, he recognised fully the truth of his observations on the dry and unhealthy appearance of wounds connected with contusion of the skull, and of the meaning to be attached to the presence of the puffy tumour indicating, as they both may when taken in connexion with certain accompanying symptoms, the existence of pus superficial to the dura mater. Holding these beliefs, he drew attention to the fact that in many cases, nay, in the majority, there is no true puffy tumour,—a mere baggy tumefication or flattened swelling under and in the scalp tissue alone marking the site in the bone under which the harm lies.

But his acquiescence in the doctrines of Pott and his practice went further than this, for he was, in such cases as seemed to him to demand it, a strong advocate of the value of the operation of trephining. In compound, comminuted, or depressed fracture, in punctured fracture, in simple fracture where the symptoms do not yield to treatment, and in certain cases of intra-cranial hæmorrhage

and suppuration, in all of these conditions he advises its employment, and through the cases he has placed on record he demonstrates alike its usefulness and the danger which attaches to delay in its performance. That his early practice in this respect was probably founded upon the teaching of others is not unlikely, but it was ultimately the result of a large and well-weighed experience, and is such as the Edinburgh School of Surgery should be especially grateful for, as the emphatic and reliable utterance of a master on a debateable point. Much has been said against the use of the trephine, but its success in the hands of Mr. Spence alone demonstrates, to my thinking, how it may in such cases as I have noted be employed with perfect safety and with truest benefit.

He tells us more, however, that the time to use and the good that is likely to follow the employment of the trephine, for his experience had taught him that in cases where a large area of bone is depressed, Hey's saw may prove most useful in the division of the base of an impacted fragment, thus giving access to the removal of the depressed portion; and that when the trephine is employed it is most serviceable when applied, not, as is generally taught, on the sound bone bordering the fracture, but on the fissure which generally runs across the bottom of the fragments which are depressed. The operation, as he states, may notably prevent the occurrence of inflammation of the meninges, and it may be the means of averting that rarer issue—hernia cerebri, an issue he ever found fraught with the gravest risks, and one for which treatment, based, although it undoubtedly is, on pathological observation, did little good.

Unhappily, unable from his personal knowledge to lesson the anxiety attaching to the state of hernia of the cerebrum, or to recommend any very successful mode of treatment, he is able to speak hopefully in another condition which by many is regarded as wellnigh desperate—fracture of the basis cranii. Here, and his record is one in which many of us can join, he tells of repeated recoveries, and emphasizes the importance of careful treatment instead of that folding of the hands to which hopelessness is but too apt to give rise.

We have it, as I have already noted, on the testimony of one of his early friends, that the surgical anatomy of the neck was with him, in the days when he laid the foundation of his future greatness, a favourite subject of demonstration. The credit which his anatomical knowledge, in connection with this important region, brought to him then was more than maintained in after-time, for his intimate acquaintance with the parts enabled him to undertake successfully the removal of large tumours growing deep in its triangles, and most intimately related with its great vessels and nerves. But much as we have to thank him for light and help in this relation, he will be better remembered as a pioneer among those

to whose advocacy and success we owe the resource of tracheotomy in croup and in diphtheria, and for the proposition he formulated and has done so much to establish, that in such cases "the great and positive indication for operation is the immediate urgency of the suffocative laryngeal symptoms." We may justly regard him as a pioneer, for I find that he first performed the operation in a case of croup in 1856, at a time when its reputation employed in this disease was of the most uncertain character, and when, indeed, many surgeons were inclined to regard it as unjustifiable.*

It was probably a knowledge of Trousseau's practice that led him to adopt it, and it was a fortunate circumstance that his first case recovered, for as he found in after-days—and as his pupils, forewarned by him, doubtless have found also—success is uncertain, and the happy and the sad issues are apt to come in runs. That the results which were his are likely to be often obtained is doubtful, for after a *very* large number of operations he had the satisfaction of having saved one case at least out of every three. The operation performed with the greatest skill—performed always, as he once told me, and this after ten years of experience had been his, with anxiety; this, followed by the most careful and assiduous after-treatment, can alone explain such satisfactory results. His experience negatived a belief in the unity of diphtheria and of true croup, and there are few lines of argument more strong and more striking than those employed by Spence, and gathered by him as an operating surgeon, against a doctrine which, I believe, has never quite gained ground in the North. And this opinion of his is not to be wondered at, for disappointment, which with each one of us stamps impressions more immemorably than good fortune, had taught him that the first four days well over, the chances are all in favour of the case of croup; whereas, when the subtle poison of diphtheria gave rise to the production of the membranous exudation, death might spoil at the end of some weeks what, so far as the operation was concerned, was a decided triumph.

In croup, specific and non-specific, when medical treatment had failed, as in those cases in which foreign bodies had entered the air-passages, and in those in which boiling or irritant fluids having been swallowed laryngeal symptoms had made their appearance, he advised the resort to operative procedure without delay. Nothing, as he reckoned, was to be gained by waiting, for in croup or in œdema glottidis there was the great risk of pulmonary congestion being added to the laryngeal trouble, while in those instances in which a foreign body had lodged in the air-passages there was the imminent and ever present danger of suffocative spasm. That the practice thus insisted upon has been, and will yet be, the means of saving from certain death many whose footsteps

* Cases of Tracheotomy in Croup, *Edin. Med. Journal*, 1857-58, p. 673.

have passed but a little way beyond the gateway of life, and in whom there centre unguessed-at possibilities, all surgeons must be satisfied.

The subject of hernia, and the operations for its relief and for its cure, have a kind of fascination for the surgeon. This may be due to the fact that in cases of strangulation, at least, there is no other procedure he will ever be called upon to carry out where his action may prove more highly beneficient, and in none in which in its execution his deftness of hand may be more fully displayed.

Very early in his surgical career this influence came to Mr. Spence, for in looking over the pages of the *Monthly Medical Journal* of forty years ago, I find there related by him many interesting cases. All through the working day that was his he maintained in full measure this enthusiasm—an enthusiasm which a rarely large experience served to maintain, and the results of which remain to us as one of his richest bequests. It was but a short time ago that I heard it stated at the meeting of a Provincial Medical Society in the North of England, that in that especial district, thanks to the teaching of Mr. Spence, early operation in cases of strangulation was now the rule. That this should be so I can well believe, for no one who ever heard him speak upon the subject but must remember his strong assertions, "that he never saw peritonitis that had not begun before operation as indicated by the condition of the bowel," and that "there was no risk in the operation itself if done early and before change in the constricted viscera had taken place." But as unfortunately happens too often, the surgeon has no choice—strangulation has long been in existence, and the changes which result from it have become fully developed before the patient comes under observation. It is in those circumstances when the danger is great, and when doubt and difficulty rise before us, that the remembrance of his teaching is of the highest value.

The special dangers of strangulation in congenital hernia—the necessity for the free division of the stricture in all cases of strangulation, but especially in this variety, the pulling down and thorough examination of the gut at the constricted point, its replacement within the abdomen or simply in the upper part of the canal as the condition of the bowel permits, and the stringent rule not to open the gut at once if it be in a state of gangrene. Very much have directions such as these done to render his pupils successful operators in cases of hernia; and although maybe the days have come when gangrene of the gut may be dealt with on other lines, there can be little doubt that his plan of allowing time for effused lymph to block the canal ere the sphacelated bowel is divided is, in contra-distinction to the old rule of immediate section, a notable and valuable improvement.

To me it seems, however, that among the golden threads of experience he has so lavishly woven around this important subject, maybe the richest is to be found in connexion with his management of hernia when reduced "*en bloc.*" This has always been a point of interest and anxiety to the surgeon, for, careful as he may be in the reduction of protruded gut if his experience be a large one, he will be a fortunate man if some day this condition does not come before him with all its urgency and all its gravity. The difficulties which surround it are twofold, for it is sometimes not altogether easy to diagnose, and dependent on a certain or uncertain diagnosis must rest our line of treatment. The conditions from which we have to distinguish it are a constricted hernia partially reduced from the canal, and from an internal strangulation coincident with a reducible hernia. Heretofore there has existed a discrepancy of opinion as to the surest way by which to discriminate between them, but the method pointed out by Spence, and one in which he placed the greatest confidence, was to endeavour, by the action of the abdominal muscles, to reproduce the protrusion. This, in the case of a partially reduced hernia, they do readily, for lying as it does in the axis of the canal it speedily yields to the expelling force. When internal strangulation co-exists with a reducible hernia the conditions are different, for here, as he shows, owing to the abdominal tension brought about by the harm in the peritoneal cavity, retention of the hernia is difficult, its tendency is to protrude. Given, then, a case in which symptoms of obstruction arise or continue after apparent reduction of hernia, if in addition to the fact that we find a certain fulness and hardness in the region of the abdomen proximate to the canal, and having called into distinct action the expulsive powers of the abdominal muscles, there be no re-protusion, then operative procedure is clearly indicated, and should be carried out without delay. Upon the form this procedure should take he also held strong opinions. It had been urged that as there was a difficulty in diagnosis—a difficulty, however, which his instruction has largely overcome—direct operation upon the canal might do little for the patient if internal strangulation was present, the safer plan was to open the abdomen by median incision. To this his objections were decided, for, as he argued, should the condition prove one of reduction "*en masse*," you have to deal with the point of constriction at a disadvantage, inasmuch as you have to draw upon the parts in order to bring them somewhat into the median line, and you have to divide the stricture from within outwards, during which proceeding there arises great risk of wound of the bowel. Added to these objections, and having, as I take it, the greater weight, there was the dread that the necessary traction might cause rupture of the bowel, the coats of which had probably been for a long time and very tightly constricted, and that the disruption would occur in the cavity of the peritoneum itself.

Moreover, should it be found that the gut was in that uncertain condition in which complete reduction might be followed later by grave disaster, then the difficulty would arise as to how best to deal with it.

In the direct operation there was no such trouble; the sac was opened, as a hernia sac generally is, outside the abdomen, and if its contents were not fit for immediate replacement they could be left in such a situation as would best tend to avert future harm. Whether, in these times of restless abdominal surgery, such doctrines will always be acted upon it is impossible to say—all I would venture to add in support of them is, that experience has convinced me that in no way does Mr. Spence overstate the advantages of the operation done through the canal, either in the search for the displaced sac, or in the satisfactory manner in which, after having found it, we can deal with its contents.

As it was granted to him to help us in the diagnosis and the treatment of reduction *en bloc*, so was it to aid us in another direction, for in consequence of his experience of a case in which, taken all in all, the circumstances are unique, he has left on record the best method of treating cases of strangulation in which an irregular obturator artery lies in contact with the sac. The possible existence of this abnormality must be present in the mind of every one called upon to operate for femoral hernia, and it is ever a satisfaction to remember that by following the advice of Mr. Spence we may not only be able to detect the presence of the vessel, but with care in ordinary circumstances to avoid wounding it, and in extraordinary circumstances to reach it in such a way that its division and ligature can be safely carried out.

From the beginning up to the very close of his career Spence was great upon the subject of lithotomy. How early and thoroughly it had attracted his attention is proved by the numerous quotations he makes in his paper written in 1841, on hæmorrhage occurring in connexion with this operation, displaying thereby a very intimate acquaintance with the literature of the subject. In few ways can the surgery of the dissecting-room have proved more valuable to him, for the practice there acquired enabled him to make his incisions in such directions as they would least jeopardise important parts, and thus largely conduced to the formation of an opinion expressed after an experience of forty years, "that there is no great danger attendant on lithotomy if properly performed." Fortunately the record remains of the knowledge that guided *him*, and is to-day accessible to each one of us. Noteworthy is his testimony to the advantages of the rectangular staff, for that it renders the operation easier and the section of the deep parts a less anxious proceeding is certain. In one class of cases, however, he objected to its use: where there was an enlarged prostate, and where, in consequence of the shortness

of the horizontal line, its extremity might not be lodged within the bladder.

Of especial value is what he tells us regarding the performance of the operation in children, a proceeding simple enough when we call to remembrance the cautions he emphasizes, but one upon which some fair reputations have ere now suffered shipwreck. Although a very successful operator, he was, with all his knowledge of the literature of the subject and of the anatomy of the parts involved, unable to command unvaried success, and to us now perhaps the most notable part of his teaching comes through his lack of it. And in this wise—his own experience and the recorded experience of others had led him to believe that the mortality in lithotomy is mainly due to causes not under our control—"That the size of the stone in relation to the width of the parts through which we must extract it, and a rigid unyielding condition of the prostate met with in some elderly and old men, in whom we also find most generally enlarged prostatic veins, seemed the conditions which continue to diminish the favourable statistics of lithotomy." The good reasons he had for such a conclusion are readily recognised, for he records that of the many times he performed lithotomy under the age of 40, only two patients died; while of forty cases operated on between middle life and old age, eight died, and all of these between the ages of 56 and 72. "All were large fat men, and in all of them, with one exception, the prostate was rigid, and the stone above the average size. One died as the result of venous hæmorrhage, while four succumbed to phlebitic pyæmia." That the prostatic condition determined the issue in these fatal cases there can be little doubt, and that they happened in the hands of so accomplished a lithotomist is proof of how unable at times surgical skill is to cope successfully with such a state of parts.

But the science of surgery does not stand still; since those early days of Harvey, pregnant through him with such good to our art, it has been advancing on all its lines, and it now seems as if in the wider development of litholapaxy and the performance of the high operation, as practised by Sir Henry Thompson, we may be enabled to escape the risks which notably diminished the success of a master in lithotomy.

Glad would he have been had he lived to see the day when results which were fraught with such trouble and anxiety to him, because they were bad ones, had this good inherent in them, that they lent help in the establishment of other methods, by the practice of which they might be reversed. That even here intuition did not fail him is evident, for in treating of the suprapubic operation, he thus writes,—"In cases in which the prostate is greatly enlarged and rigid, I cannot help thinking that by adopting the suprapubic method we would avoid the danger incident to section of the prostate when so altered, whilst, owing to the bladder being permanently

raised out of the pelvis in such cases, the risks of its subsiding after being opened, and consequently that of infiltration, would be lessened." On these very lines does its greatest advocate commend its performance now—a proceeding which has been rendered more easy and more safe by the experimental results of an old pupil of Mr. Spence, Dr. Garson, and the demonstrations of Petersen of Keil.

The Edinburgh School of Surgery has long maintained a high reputation for success in the treatment of stricture of the urethra, and the success has not been more notable than the simplicity of the means by which it has been achieved.

Spence inherited all the best traditions of Liston, and he had for long years the incalculable advantage of observing the masterly practice of Syme. The reputation so deservedly attained by these great men in this department of surgery drew, doubtless, many bad cases of stricture to the wards of our infirmary, and thus it happened that the experience of him of whom I am speaking was large and ripe and full of value. To some of us less dexterous than others, it must have happened before the time when the relief which aspiration affords was within our knowledge, to have anxiety and trouble in certain cases of retention associated with enlarged prostate. In the passage of a catheter we had been utterly foiled, and if tapping by the rectum occurred to us, the impossibility of reaching the trigone, forced upwards by the big prostate, rendered the operation impossible. Then it was that, in the remembrance of the teaching of our old master, help came to us, and in following his direction, and forcing the catheter through the enlarged prostatic lobe, we found relief alike for our patient and for the anxiety which beset us.

In the treatment of stricture he was proficient, and no more lasting memory does one possess of student days than the manner in which he managed a bad case of retention, the perseverance and the care he displayed, and the wonderful way in which his long and pliant fingers guided the instrument.

The special site of stricture—*not* in the membranous portion of the urethra, the rarity of enlarged prostate complicating such a condition when it is markedly developed, the use of the probe pointed steel staff in its detection and as a measure of treatment, and the benefits likely to follow the non-passage of the instrument over the prostatic portion and neck of the bladder,—such points were always touched upon and readily kept in remembrance. The means by which we can best and most safely treat stricture were according to his teaching few in number, the cases adapted for each method were readily classified, and the results likely to follow their employment didactically stated.

Of internal urethrotomy he had such distrust as almost amounted to injustice, because, as he believed, the incision was made in the

dark and without safe guidance, and therefore hæmorrhage and infiltration were difficult to avoid.

Vital dilatation, the old plan of Liston, Holt's method, in which he had much confidence, and in those rarer and more obstinate cases in which, associated with a tight stricture, there is suppurative action in the perineum, he found the method of Mr. Syme an operation as safe in performance as it was satisfactory in result. It is not difficult to bear in mind the simplicity and directness of teaching such as this, and inasmuch as it is teaching upon which we can rely with the fullest confidence, the mature fruit of an especially rich experience, we must be thankfully grateful for it.

Gentlemen, such are some gleanings from the life-work of James Spence. It has been difficult for me, looking over the vast field of that work to find in it special topics for illustration, for the richness of the harvest is so equally great that I knew not well where to glean. And now that my subject is finished, I cannot but feel how far short I have fallen in my endeavour to manifest the value of the work he did, for the gathering power I possess has often doubtless missed the ripest grain in the portion with which I have dealt, and the richness of some that I have gathered is hidden from ready recognition in the forceless way in which I have presented it to you. My hope, however, rests in this, that inasmuch as most of those now listening to me knew the worth of the man of whom I have spoken, and the high position he held as a surgeon, in what I have said there may be sufficient to stir old memories and to recall, what indeed requires at times recall with most men, the recognition, of the source from which these lessons came to them, upon which their own success in their profession has had its best foundation.

Fortunately for us now, as for those who, as the years pass, will be our successors, the sense of responsibility which came to him as a Professor in the University, and the necessity of impressing upon his students the lessons that he taught, led to the publication of his *Lectures on Surgery*, and there one finds that he lives again in the stores of experience left behind him.

Somewhere in her works the gifted authoress of *Adam Bede* writes :—"It were a blessed lot to die in just finishing a book if it could be a good one—I mean, it is blessed only to quit activity when we quit life." Such was the lot of James Spence, for he died just as he finished a book which will remain a grand memorial of his knowledge and of his skill. Placed as I am in the midst of a wide rural district, and brought into frequent contact with many country doctors, I have it from some of them that in the midst of a surgical difficulty, when time is of moment, and no skilled help is within reach, they can ever turn with confidence to the aid they

have beside them in the written record of the matured experience of Mr. Spence.

> "Why should our pride make such a stir to be
> And be forgot! What good is like to this,
> To do worthy the writing; and to write
> Worthy the reading and the world's delight?"

Such a man leaves behind him a wider good than the loss his personal presence can take away, for his teaching endures, and as the vibratory force communicated to the air when one speaks lasts long after the voice which gave it origin is silent, so each great teacher teaching others his ways of thought, and thus awaking that which again will never slumber, lives an abiding and growing influence in the students he has taught. Thus his example and the traditions of his work will survive and influence surgery long after we, the Harveians of to-day now reverencing his memory, have passed to our rest.

The value of medical education in Edinburgh has been long recognized; to day its school is larger than ever, and we its graduates, who take just pride in this prosperity, would fall far short of our duty did we not from time to time recall to memory the great men who have gone from us, but the honour of whose names will never fade, because upon them truly does the foundation of our scholastic greatness rest.

Robert Christison, John Goodsir, James Simpson, James Syme, the compeers of James Spence, have with him passed into the silent land, but of them and of him I may say that if earnest and good work well done, if the nurturing of a school which is now the strongest in the kingdom, be a title to honourable remembrance, then in the Pantheon of Scotland's men of science they all must hold a lasting place. "*Ultimus Romanorum*" was graven upon the tomb of Cato, and it has been written by the genial and gentle Dr. John Brown of Sir Robert Christison; but confident in the belief that other wise Romans lived after Cato's time, I take it that some yet remain to us, and that James Spence was one of the last to leave us.

We live admittedly in an age of progress, when the great thing which is done to-day suffers eclipse on the morrow, and yet, uniquely rich as this city is in the highest surgical talent, I believe it has not produced another man who can make us forget his loss.

It is not only affection for Mr. Spence that has prompted this record to-day,—the value of his teaching and the debt I owe for it are present to me each day of my life,—but it seemed opportunity for just praise in which we might all join, for entertaining a memory which it sometimes seems to me tends to pass too quickly from "the places of his youth," and one which regarded in after-days, when Time, having foreshortened the landscape, will have

left only the strong parts of his work visible, must ever be held in high and grateful appreciation.

Spence has left a name to which Scottish surgery will ever point with pride, and the influence of whose lifework will be long enduring. How long, however, who can tell? for of him and of all men it is true, as our Laureate sings—

> "We pass; the path that each man trod
> Is dim, or will be dim, with weeds;
> What fame is left for human deeds
> In endless age? It rests with God."